ORIGINAL ARTICLE

Knowledge, Attitude and Practice Pattern regarding Diabetic Retinopathy among the patients of Diabetes Mellitus presenting to a Tertiary Health Care Center in Uttarakhand

Renu Dhasmana[1], Ruchi Juyal[2], Hennaav Kaur Dhillon[3]

[1]Professor, Department of Ophthalmology, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, Jolly Grant, Dehradun; [2]Professor, Department of Community Medicine, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, Jolly Grant, Dehradun; [3]Senior Resident, Department of Ophthalmology, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, Jolly Grant, Dehradun

Corresponding Author

Dr Hennaav Kaur Dhillon, MS, Senior Resident, Department of Ophthalmology, Himalayan Institute of Medical Sciences, Swami Rama Himalayan University, Swami Ram Nagar, Jolly Grant, Dehradun, Uttarakhand.
E Mail ID: hennaavdhillon@gmail.com

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Abstract

Introduction: Diabetes Melltius (DM) is an established silent killer in the developed world and is slowly increasing the burden of morbidity in the developing nations as well. Diabetic retinopathy (DR) screening protocols are not standardized in the developing world and not available to many practioners. **Methods:** This is an observational analytical study aimed to assess the levels of knowledge, attitude and practice patterns regrading DR among the patients of DM in Uttarakhand. These were correlated with the educational status, socio-economic status, duration of DM, residence and gender. **Results:** Higher levels of knowledge which were statistically significant were observed as the socioeconomic status rose, with the increase in the duration of DM and with higher levels of educational status. A corresponding positive tone was also seen with respect to attitude and practice. However, the levels of knowledge did not correspond to the levels of practice. **Conclusio**n: Integration of the health services along with the educational system would be an advancing step in spreading awareness about the disease entity itself and its morbid consequences. This would create an environment of high awareness and screening protocols will be easily streamlined.

Keywords

Diabetic Retinopathy; Diabetes Mellitus; Knowledge; Awareness; Attitude; Practice

Introduction

Diabetes Mellitus (DM), particularly type II, is a major public health concern worldwide. There will be an alarming increase in the population with type II DM both in the developed as well as the developing world as predicted by the World Health Organisation (WHO) (1). By the year 2030, the figures are estimated to increase by approximately 46% in the developed world and at a whopping 150% in the developing world (2).Being a lifelong disease, it reduces the quality of life and increases the morbidity and mortality. At the same time, the disease and its complications pose a huge economic burden for patients and their family and the society as a whole (3).

The report of the WHO states that India harbours the maximum number of diabetic patients in the world. Blindness and visual impairment due to Diabetic Retinopathy (DR) is preventable if detected early(1). DR screening protocols in most places are either not available, or not strictly adhered to.

Aims & Objectives

1. To determine the general awareness of DR among the patients of DM
2. To correlate these levels of awareness with the socio-economic and educational status and the duration of diabetes.

Material & Methods

Study Type: It was an observational analytical and non-interventional study.

Study Population and consent: A total of 200 diagnosed diabetes patients were included in the study after obtaining a written informed consent.

Study Duration: This study was conducted over a period of 12 months.

Inclusion criteria: All the patients above 10 years of age having diabetes mellitus

Exclusion criteria: Patients with corneal opacities and cataract in which the fundus was not visible.

Study Protocol: After carrying out a detailed search of literature on guidelines for conducting a Knowledge, Attitude and Practice (KAP) study and KAP questionnaire was prepared in English to suit the target population. A detailed interview was conducted with the patient regarding the patient's diabetic status, lifestyle habits and awareness of patient regarding DR in a pre-set format. Assessment of the patient included best corrected visual acuity (BCVA), slit lamp examination for anterior chamber and iris neovascularisation. Exanimation of the fundus was carried out with +90D slit lamp bio microscopy.

The study subjects were divided in rural and urban areas according to the criteria mentioned in the census 2011 (4). The study subjects were divided into following classes (Highly skilled, skilled, semi-skilled, un-skilled, housewives) based on their occupation as per the Minimum Wages Act 1948 (5). Highly skilled and skilled were clubbed together and the house wives were taken as a separate entity. Patients were also sub divided into subgroups accordingly to their educational status (Illiterate, literate up to class 8, literate up to class 12^{th}, and graduates and above) as defined by UNESCO (2003) (6). Patients were also divided according to their socioeconomic status (poor, lower middle, middle, upper middle and rich) based on their monthly family income by McKinsey (2005) (7).

The level of knowledge about DR among the patients was assessed according the occupation, education, residential area, duration of DM and the economic status. Five questions were utilised:

1. Can controlled diabetic have eye problems?
2. Is DR a common health problem?
3. Can DR be prevented?
4. Is DR curable?
5. Can DR be prevented with early treatment of DM?

The attitude of the diabetic patients was assessed on the need of annual ocular examination and the response was graded as yes, no and don't know.

Ethical approval: The study adhered to the Declaration of Helsinki and former approval from the institutional ethical committee was taken.

Data Management and Statistical analysis: Interpretation and analysis of the data obtained was carried out using SPSS version 19; SPSS Inc Chicago, Illinois, U.S.A. Chi square tests were applied to evaluate relation between awareness and unawareness among study subjects. A "P" value of <0.05 was taken to be significant.

Results

Correlation of levels of knowledge with various parameters: As the duration of diabetes increased, the knowledge about controlled diabetics having eye problems increased from 7 (10.6%) >5 years to 7 (36.8%) of 16-20 years. Knowledge about the curability of DR increased from 16 (24.2%) in >5 years to 11 (57.8%) in 16-20 years of duration of DM. The knowledge regarding the prevention of DR by timely intervention of DM was, 14 (21.2%) among the >5 years to 13 (31.7%) among 11 – 15 years and 4 (21.1%) in 16-20 years.

The level of knowledge about DR according to occupation, educational status and socioeconomic status is depicted in (Table 1), (Table 2) and (Table 3) respectively. The patients were also asked if they felt an annual ocular examination was necessary in the patients of DM. Out of the 200 surveyed patients, 51 (25.5%) had knowledge about the necessity of the yearly ocular examination out of which 32 (62.7%) were males and 19 (37.3%) were females. A total of 88 (44%) patients were not aware about the necessity of ocular screening. A statistically significant difference was seen in the knowledge about the necessity of yearly ocular examination (p=0.0172)

Correlations of Attitude towards the disease entity with various parameters: The study group that underwent regular ocular examinationwas further assessed according to location, occupation and education. 41 (20.5%) population underwent regular ocular examination out of which 9 (21.9%) belonged to rural areas where as 32 (78.1%) belonged to urban areas. Population not undergoing regular ocular examination compromised a total of 98 (61.6%) belonging to rural areas and 61 (38.4%) belonged to urban areas. There as a statistical significant difference of patients undergoing regular ocular examination in rural and urban areas (p=0.0000). The attitude on importance of yearly ocular examination on the basis of gender is depicted in (Table 4).

Correlation of practice levels towards the disease entity with various parameters: There was a statistically significant difference seen among the patients undergoing regular ocular examination belonging to various occupational groups, with more awareness among the skilled and semi-skilled groups (p=0.0000) as depicted in (Figure 1). Similar statistically significant results have been observed on the basis of educational status (p=0.009) as depicted in (Figure 2).

The practice of diabetic patients who aware of the necessity of regular ocular examination, referring other diabetic patients for ocular check-up was also assessed and is depicted in (Table 4) and (Figure 3).

Discussion

Diabetic retinopathy originally thought as to be a disease of the developed world has slowly creeped into the developing countries and is forming a major share of lifestyle diseases. It is becoming a leading cause of blindness in the adults in the productive age group. With the current developments in the healthcare system the life span of these diabetic patients if increasing and hence the burden of the ocular morbidity is increasing exponentially which will be difficult to manage with the current health care resources.it is well established that early detection is the key to prevention of this ocular morbidity. The goal is within our reach only if there is adequate awareness of the disease and appropriate health care facilities are made available. Awareness creation in the community is the key step in any program aimed to prevent DR.

In the current study it was observed that knowledge about various aspects of DR was significantly higher in the study subjects who were graduates and above (26.5%), this correlates well with other studies conducted by Thapa et al in Nepal (8), Kadri et al (9), and Addir KR et al in Malaysia (10), where highest levels of awareness about DR was seen in the higher education group.

A statistically significant correlation in the knowledge about DR was seen in people living in urban areas in comparison to the rural areas. This could be due to the fact that people living in urban areas are more educated as compared to the rural population. Similar results were seen in studies conducted in other parts of India by Rani PK et al (11), Mahesh G et al (12) and Mithal S et al (13).

In the current study a significant association was found between the duration of DM and the know of DR. Similar results were also obtained in the studies conducted in south India (8), and by Mohammed et al in Nigeria (14) and by Addoor et al in Malaysia (15). However, no correlation was found between the duration of DM and the levels of knowledge in a study conducted by Thapa et al in Nepal (8).

In the present study group, knowledge about the various aspects of DR was statistically correlated with the economic status of the patients. This result correlated well with several studies conducted in South India by Rani et al (11) and Dandona et al (16).

A statistically significant difference was seen in the level of knowledge about the treatment of DR with increase in the level of education (p=0.035), occupation with more among the skilled subjects (p=0.000) and residential area (p=0.0005). in the current study patients with graduate degree were more aware. A statistically insignificant level of awareness about treatment of DR was seen in our study with economic status (p=0.546). similar results can be observed in other studies conducted in India by Sihota et al (2), Mahesh et al (12), Kadri et al (9) and Singh et al (17).

In the present study out of the 39.5% of patients aware of ocular involvement among diabetic patients, 20.5% underwent ocular examination. Similar results were seen in studies conducted in India by Mahesh et al (12) and by Mohammed et al in Nigeria (14) and Addoor et al in Malaysia (15). There was little or no knowledge of retinopathy risk factors or the need for early detection through screening.

In a study conducted by Rani et al in South India (11), a higher percentage (63.5%) of people aware about ocular involvement underwent regular ocular examination. Similar results were seen in studies conducted in USA by Klein et al (18) and by Tapp et al in Australia (19).

Conclusion

Integration of the health services along with the educational system would be an advancing step in spreading awareness about the disease entity itself and its morbid consequences. This would create an environment of high awareness and screening protocols will be easily streamlined. Greater involvement of paramedical staff, grass root levels health workers such as ASHA workers, ANMs and MHW at primary and community health centers would help in increasing awareness among the masses. Cooperation from the media houses both print and electronic is the need of the hour to create more awareness. In the wake of social media, campaigns promoting the timely screening of DM as well as early ocular examination in DM is a welcoming step that is much needed.

Recommendation

In a developing country such as ours where the incidence of DM is increasing by the day, it is important to raise awareness about the long-term side effects of the illness. It is also essential to create awareness regarding screening protocols at regular intervals to avoid diagnosis at vision threating levels. In addition to being beneficial to the patient, it contributes to alleviating the financial burden over the patient, family and the society as a whole.

Relevance of the study

With the increase in the number of cases of DM and consequently DR, it is important know the level of awareness regarding the disease and its management protocols among the general population.

Authors Contribution

RD: Conception, design and accusation of data and drafting of the manuscript and final approval to the published version. RJ: Conception, design and accusation of data and drafting of the manuscript and final approval to the published version. HKD: Conception, design and accusation of data and drafting of the manuscript and final approval to the published version

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Tables

TABLE 1 KNOWLEDGE ABOUT DIABETIC RETINOPATHY ACCORDING TO OCCUPATION(N=200)

		Skilled	Semi skilled	Non skilled	Unemployed	Housewives
Controlled diabetics have eye problems	Yes	45.4%	24.2%	6.6%	33.3%	16.2%
	No	30.3%	12.1%	6.6%	0.0%	12.5%
	DK	24.3%	63.7%	86.8%	66.7%	71.3%
Chi square = 19.59	**P value=0.006**					
DR a common health problem	Yes	72.7%	33.3%	2.2%	44.4%	16.3%
	No	3.1%	12.1%	4.4%	0.0%	10.0%
	DK	24.2%	54.6%	93.4%	55.6%	73.7%
Chi square = 56.42	**P value=0.000**					
Can DR be prevented	Yes	54.5%	42.4%	4.4%	44.4%	10.0%
	No	18.8%	9.1%	0.0%	0.0%	3.7%
	DK	26.7%	48.5%	95.6%	55.6%	85.3%
Chi square = 28.37	**P value=0.0001**					
Is DR curable	Yes	54.5%	36.4%	4.4%	44.4%	13.7%
	No	12.1%	6.1%	0.0%	0.0%	2.5%
	DK	33.4%	57.5%	95.6%	55.6%	83.8%
Chi square = 36.25	**P value=0.0000**					
Can DR be prevented with early treatment of DM	Yes	54.5%	42.4%	4.4%	44.4%	10.0%
	No	18.1%	9.1%	0.0%	0.0%	3.7%
	DK	27.4%	48.5%	95.6%	55.6%	86.3%
Chi square = 43.90	**P value=0.0000**					

TABLE 2 CORRELATION OF LEVELS OF KNOWLEDGE WITH THE EDUCATIONAL STATUS

		Illiterate	Simple Literate	Upto class 8	Upto class 12	Graduate and above
Controlled diabetics have eye problems	Yes	6.5%	20.5%	0.0%	51.4%	31.4%
	No	9.2%	2.5%	53.3%	8.5%	22.8%
	DK	84.3%	77.0%	46.7%	40.1%	45.8%
Chi square = 35.35	**P value=0.003**					

DR a common health problem	Yes	10.5%	20.5%	53.3%	34.2%	40.0%
	No	3.9%	2.5%	20.0%	22.8%	0.0%
	DK	85.6%	77.0%	26.7%	43.0%	60.0%
Chi square = 22.70		**P value=0.00014**				
Can DR be prevented	Yes	9.2%	17.9%	20.0%	28.5%	54.2%
	No	0.0%	2.5%	0.0%	20.0%	11.4%
	DK	90.8%	79.6%	80.0%	51.5%	34.4%
Chi square = 28.05		**P value=0.0001**				
Is DR curable	Yes	0.0%	0.0	0.0	2.8	0.0
	No	5.2%	5.1	13.3	73.2	25.7
	DK	94.8%	94.9	86.7	64.0	74.3
Chi square = 4.74		**P value=0.0315**				
Can DR be prevented with early treatment of DM	Yes	9.2%	17.9%	20.0%	28.5%	54.2%
	No	0.0%	2.5%	0.0%	20.0%	11.4%
	DK	90.8%	79.6%	80.0%	51.5%	34.4%
Chi square = 28.76		**P value=0.0008**				

TABLE 3 CORRELATION OF LEVELS OF KNOWLEDGE WITH THE SOCIO ECONOMIC STATUS

		Poor	Lower Middle	Middle	Upper Middle	Rich
Controlled diabetics have eye problems	Yes	6.5%	17.9%	13.3%	51.4%	31.4%
	No	9.2%	5.1%	40.0%	14.2%	28.5%
	DK	84.3%	77.0%	46.7%	34.4%	40.1%
Chi square = 31.53		**P value=0.0002**				
DR a common health problem	Yes	10.5%	20.5%	53.3%	27.1%	40.0%
	No	5.2%	2.5%	20.0%	25.8%	5.7%
	DK	84.3%	77.0%	26.7%	37.1%	54.3%
Chi square = 25.26		**P value=0.0004**				
Can DR be prevented	Yes	9.2%	15.3%	20.0%	28.5%	54.2%
	No	2.6%	5.1%	13.3%	20.0%	11.4%
	DK	88.2%	79.6%	66.7%	51.5%	34.4%
Chi square = 29.13		**P value=0.0007**				
Is DR curable	Yes	5.2%	5.1%	13.3%	11.4%	11.4%
	No	5.2%	5.1%	13.3%	28.5%	25.7%
	DK	89.6%	89.8%	73.4%	60.1%	62.9%
Chi square = 3.07		**P value=0.546**				
Can DR be prevented with early treatment of DM	Yes	7.8	17.9	20.0	28.5	42.8
	No	2.6	2.5	13.3	20.0	17.1
	DK	89.6	79.6	66.7	51.5	40.1
Chi square = 19.70		**P value=0.0005**				

TABLE 4 ATTITUDE ON IMPORTANCE OF YEARLY OCULAR EXAMINATION

Yearly Ocular Examination	Males N(%)	Females N(%)	Total N (%)	P Value
Yes	32 (67.7)	19 (37.3)	51 (25.5)	0.017
No	36 (59.9)	25 (41)	61 (30.5)	
Don't Know	42 (47.7)	46 (52.3)	88 (44.0)	

Figures

FIGURE 1 PRACTICE PATTERNS ON THE BASIS OF OCCUPATIONAL STATUS

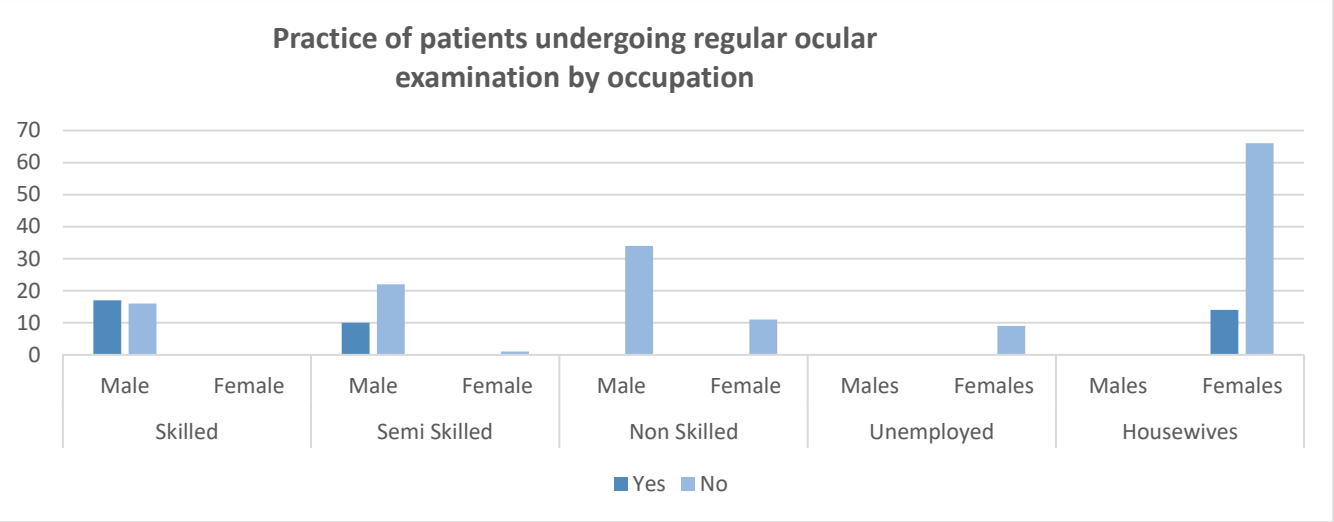

FIGURE 2 PRACTICE PATTERNS ON THE BASIS OF EDUCATIONAL STATUS

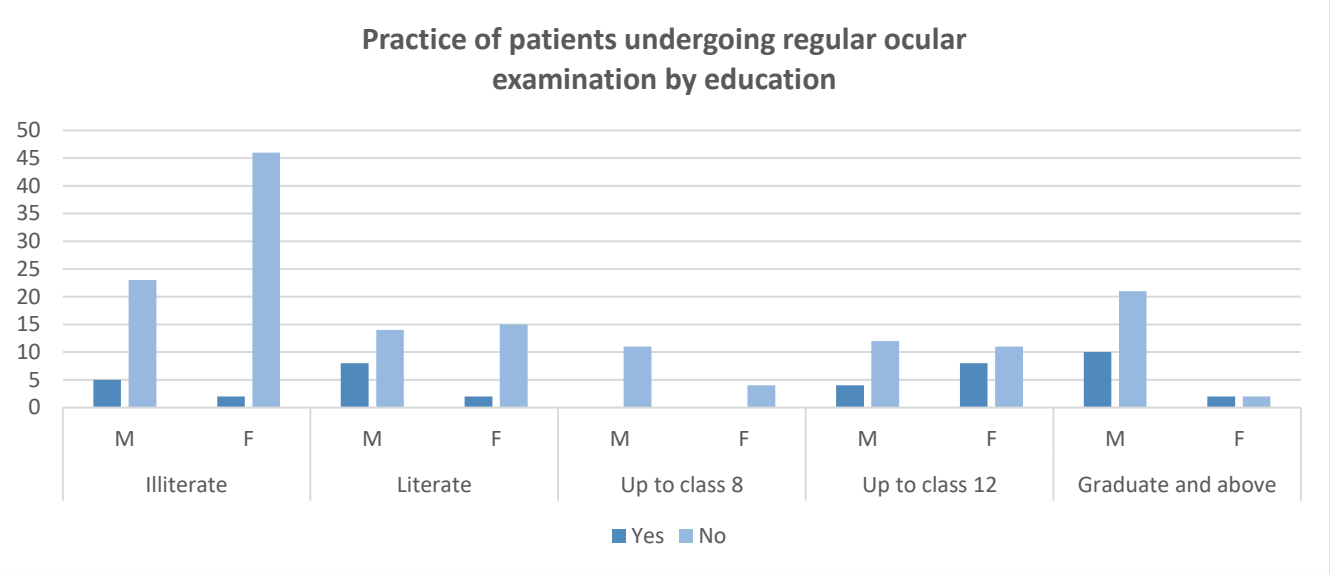

FIGURE 3 PRACTICE OF REFERRING OTHER DIABETIC PATIENTS FOR OPHTHALMOLOGICAL EXAMINATION (N=79)