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KAP study on Diabetic Retinopathy amongst the paramedic nursing students

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Abstract

Introduction: Diabetes mellitus, particularly type II, is a major public health concern worldwide. It is estimated to increase approximately by 150%, from 30 million in 2000, to 80 million in 2030. Early screening and intervention is the key to treatment. Bridging the gap between the patients and ophthalmologists can be done by the paramedic staff, who can sensitize the patients towards the disease and refer the patients and susceptible relatives for screening.

Materials and Methods: Closed ended questionnaire specific to Knowledge, attitude and practices regarding to diabetic retinopathy were handed to the final year GNM and BSc nursing students of. These students would be the paramedic care providers at various organizations, hence this population was selected. There were 4 questions in knowledge evaluation, each question was evaluated as a correct or an incorrect response. There were 3 questions in the attitude evaluation which were evaluated again as a correct or incorrect response. Total number of 3 questions in the practice evaluation were grade as good practice or a bad practice.

The observations were evaluated on percentage basis and the conclusions were drawn.

Conclusions: It was found that Knowledge regarding morbidity caused by diabetes was good in most of the participants.

The evaluation of attitude based question showed that, the attitude towards diabetics for morbidity screening was good. Also the treatment options of diabetic retinopathy was appropriately chosen. However only 36% promoted screening in a asymptomatic patient for diabetic retinopathy, which was a poor attitude. However 70% of the respondents were unaware that diabetic retinopathy is not curable.

Keywords: Attitude, Diabetic retinopathy, Hypertension, Knowledge, Lasers, Nephropathy, Practice

Introduction

Diabetes mellitus, particularly type II, is a major public health concern worldwide.(1) It is estimated to increase approximately by 150%, from 30 million in 2000, to 80 million in 2030.(1) Occurrence of Diabetic retinopathy cannot be prevented but by proper awareness, regarding diabetic eye disease the sight threatening complications can be prevented. Awareness can be brought about through media, social workers and paramedic staff. Current treatment modalities are effective in preventing as much as 98% of vision loss and blindness due to severe retinopathy, if treatment is provided at the appropriate time.(3,4,5,6) However, issues related to utilization of services remain a major challenge.

The matter of concern is that usually patients begin to experience symptoms only when the disease is advanced and more difficult to treat. The morbidity of the disease is largely avoidable. If the disease is evaluated and treated in a timely manner, i.e., until the early proliferative stage, there is a reduction in the rate of blindness from 50% to 5% after 5 years. If treated during the background stage not only is it better in terms of visual outcome but also less expensive. To ensure that the disease is recognized in its earliest stage, it is important that diabetic patients get their eyes checked once a year.(7)

Due to lack of proper screening and treatment facilities mainly at primary and secondary care level, many of the undiagnosed and uncontrolled diabetic patients become blind.(8)

As opposed to population-based screening, opportunistic screening relies on detection of disease in patients who present to health care providers for various complaints. To be effective, ophthalmologists, optometrists, diabetologists, physicians and other health care personnel, must all be involved in such case detection. The National Program for Control of Blindness of India also recommends opportunistic screening for identification of DR.(8)

Training of medical staff and community nurses in screening patients of diabetes and timely referral to ophthalmology centers, and imparting the importance of screening can help decrease diabetes associated morbidity and blindness.

For preventing the blindness caused by diabetic retinopathy:

1. It is advisable who is more than 30 years or has a family history of diabetes, should be asked to get their blood sugar checked.
2. For existing and newly detected diabetics, they should do a visual acuity check-up, refraction and a dilated fundus examination with a direct ophthalmoscope preferably by an ophthalmogist.
3. Advice regarding ocular check-up for diabetic retinopathy by pharmacists to their customers, optometrists to all diabetic presbyopes, and by endocrinologists to their patients and by paramedic staff to the patients during patient care.

In our study we have tried to evaluate the knowledge attitude and practice regarding diabetes in 2nd year nursing student. They are the paramedical staff who will be the health care providers at various institution and are in close contact with patients and their relatives. Their apt knowledge and motivational attitude and practice can have an impact in the society in prevention of ocular morbidity and timely intervention in required patient.[8]

Materials and Methods

Closed ended questionnaire specific to Knowledge, attitude and practices regarding to diabetic retinopathy were handed to the final year GNM and BSC nursing students of Sri Siddhartha College of nursing. These students would soon pass out and would be the paramedic care providers at various organizations, hence this population was selected. These students were also exposed to clinical postings and hence had adequate exposure towards Diabetic Care. The questionnaire was then evaluated. There were 4 questions in knowledge evaluation, each question was evaluated as a correct or an incorrect response. There were 3 questions in the attitude evaluation which were evaluated again as a correct or incorrect response. Total number of 3 questions in the practice evaluation were grade as good practice or a bad practice.

The observations were evaluated on percentage basis and the conclusions were drawn.

Results

Table 1: Knowledge based Questions

Sr no	Question N=41	Retinopathy	Glaucoma	Cataract
1.	What does Diabetes cause in the eye	40 (97.56%)	1 (2.43%)	0
2.	Do You know that Diabetic retinopathy can Be prevented by strict Glycemic control	Yes	No	
	Response	32 (78.1%)	9 (21.9%)	
3.	Diabetic retinopathy is	Preventable	Curable	
	Response	38 (92.6%)	3 (7.32 %)	
4.	Diabetic retinopathy requires regular follow up	Yes	No	
	Response	37 (90.24%)	4 (4.8%)	

To evaluate if correct approach for timely referral and Screening is carried out, the general attitude trend of the paramedic staff was evaluated under the following questionnaire.

Table 2: Attitude Based Questions

Sr N.	Question			
5.	Diabetic retinopathy can be worst if associated with	Hypertension	Nephropathy	Both
	Response in %	7 (17.1%)	34 (82.9%)	0
6.	Diabetic retinopathy treatment includes	Lasers	Surgery	Oral medications
	Response in %	13 (31.7%)	20 (48.7%)	8 (19.5%)
7.	Newly detected Diabetics need not be screened for retinopathy	Yes	No	
	Response in %	15 (36.5%)	26 (63.4%)	

The correct practice of the paramedic staff regarding correct referral, and regarding the future follow up of diabetic retinopathy was evaluated with the following practice based questions.

Table 3: Practice based Question

Sr N.	Question		
8.	Diabetic patients should be ideally screened by	Optometerist	Ophthalmologists
	Response in %	3 (7.3%)	38 (92.6%)
9.	Diabetic retinopathy should be checked in	Dilated pupil	Undilated pupil
	Response in %	37 (90.2%)	4 (9.7%)
10.	Diabetic retinopathy does not recur if once cured	Yes	No
	Response in %	25 (60.9%)	16 (39.1%)

All the people who participated in the study were females doing B. Sc. Nursing in second year. Among the participants 22 of them were 21 years of age and 19 participants were 22 years of age. All were undergoing training programme at Sri Siddhartha Nursing College.

It was found that Regarding Knowledge about diabetes and its complications, 97.56% of patients knew that it causes Diabetic retinopathy, which is the commonest complication of Diabetes, however only 2% were aware of the association of glaucoma with diabetes and none of the paramedics were aware of diabetes being a direct causative factor of cataract.

The cross-sectional and prospective data from three population-based studies, the Beaver Dam Eye Study, the Blue Mountains Eye Study, and the Visual Impairment Project, have documented associations between diabetes and both prevalent and incident posterior subcapsular cataract and, less consistently, with prevalent and incident cortical cataracts but not nuclear cataract.[9,10,11]

Several large epidemiological studies have reported positive associations between diabetes with primary open angle glaucoma (POAG), the most common form of primary glaucoma, or elevated intraocular pressure in the absence of glaucomatous optic neuropathy. The incidence of glaucoma in diabetes is about 5% as against 2% as seen in the general population.[13-18]

About knowledge regarding the management, 78.13% considered glycemic control can prevent diabetic retinopathy. And only 21.98% considered that glycaemic control cannot completely prevent Diabetic retinopathy.

Intensive therapy of patients with IDDM delays the onset and slows the progression of clinically important retinopathy, including vision-threatening lesions, nephropathy, and neuropathy, by a range of 35 to more than 70 percent. Hyperglycemia is also associated with the presence or progression of complications in NIDDM, as it is in IDDM.[19]

This shows that the knowledge regarding the treatment amongst the paramedics was not adequate.

Diabetic retinopathy was said to be preventable by 92.6% of the paramedic personnel and only 7.4% of them said it was curable.

About 90.24% of paramedic staff recommended regular follow for diabetic retinopathy screening and only 4.8% people did not advice a regular follow up.

Diabetic retinopathy and loss of vision can often be prevented by regular eye examination and timely intervention with lasers or surgery. Screening people with diabetes is also cost effective.[20,21,22]

Thus the knowledge regarding the follow up and disease progression was found to be fairly good among the paramedics.

The attitude based questions tried to evaluate the awareness of the influence of other systemic conditions of diabetes along with retinopathy. The questions also tested the treatment options and the attitude of the paramedics towards newly detected diabetics.

About 82.9% of the paramedics agreed that nephropathy can worsen the diabetic retinopathy, however only 17.1% of them knew about the adverse effect of hypertension on retinopathy.

The Action to Control Cardiovascular Risk in Diabetes (ACCORD)-Eye Study, has shown that blood pressure reduction in type 2 diabetic patients had no effect on the development or progression of diabetic retinopathy.[24,25]

Epidemiologic and clinical studies have demonstrated that patients with diabetic kidney disease take a much more aggressive course in the eye.[26,27] The existence of albuminuria in type 1 diabetes increases the risk for severe retinopathy by more than fourfold and the risk further increase with macroalbuminuria.[28]

In our study 26 (63.4%) participants were unaware of this fact and so probably reference of the patient with systemic complication, for retinopathy screening would be affected and hence would on a larger scale might affect the overall control of the disease at the community level.

Diabetic retinopathy treatment involves laser treatment, intravitreal injections, surgical treatment as well as oral medications. Oral Drugs such as protein kinase inhibitors are newer drugs introduced for diabetic retinopathy.[29]

In our evaluation we found 13 participants (31.7%) to have answered as lasers to be the main stay of treatment. 20 participants (48.7%) answered as surgery to be the mode of treatment. This is a correct response,

hence we can conclude that almost 80% of the students were aware of the correct treatment modality for diabetic retinopathy.

Diabetic retinopathy with sight threatening complication was found at the time of diagnosis of diabetics in targeted screening group as well as in newly diagnosed diabetics in the general practice group.[30]

Hence it is important that all newly detected diabetics should be screened for retinopathy.

The most effective screening modality for diabetic retinopathy was retinal photography through dilated pupils. Indirect ophthalmoscopy was an effective screening strategy in trained hands. Subsequently, further evidence has emerged on the effectiveness of optometrist screeners using slit lamp biomicroscopy. The widely assumed superiority of photographic screening over optometrists using appropriate equipment therefore remains to be evaluated.[31]

Among our study population 38(92.6%) of the participants considered ophthalmologists referral for screening of Diabetic retinopathy as against 3 (7.3%) who answered referral to a optometrist for diabetic retinopathy screening, which was appropriate.

Also a dilated pupil examination is considered to be an effective method of screening, for better detection of diabetic retinopathy.[31]

In our study population 37 (90.2%) considered dilated pupil screening to be effective for diabetic retinopathy as against 4 (9.7%) who answered undilated pupil evaluation for diabetic retinopathy. Which is a good practice amongst the paramedics.

The management of diabetes-related eye diseases is primarily preventative, and regular eye examinations and appropriate ophthalmology referral remains the key strategy to reduce the impact of diabetes-related vision loss. In many instances, vision loss associated with most of the conditions discussed is gradual.[32]

Hence Diabetic retinopathy is a continuous disease, which cannot be cured and needs monitoring.

As responded by our paramedic study group, almost 60.9% patient believed that diabetic retinopathy is curable and only 39.1% responded that Diabetic retinopathy is not curable. Hence it was found that prognosis of diabetic retinopathy was not very clear amongst the paramedic study population.

Discussion

Opportunistic screening is an important screening model provided for combating diabetic retinopathy related blindness. It relies on detection of disease in patients who present to health care providers for various complaints.

Most of the elderly patients with risk of diabetes and diabetic eye disease visit either the ophthalmologists or the optometrists for other eye care need. It has been found that for this model to be effective ophthalmologists, optometrists, diabetologists and other paramedic personnel must all be involved in such a case detection and for spreading awareness and early referral.

Appropriate knowledge, attitude and practice of the paramedic staff can be a great help towards the patient for seeking the ophthalmologists opinion regularly and also in increasing the awareness of the patient regarding the disease.

Awareness should be generated in the high risk population and in diabetics by the paramedic staff in terms of

- about the disease and its complications;
- about the available treatment opportunities;
- social, economic and health-based repercussions of blindness on not only the patient but also the entire family; and
- about preventive care – all people with diabetes need dilated eye examination once a year.

To combat the blindness due to diabetic retinopathy awareness needs to be created at all levels of health care delivery system. In this study design, we evaluated the knowledge of the outgoing nursing students of Sri Siddhartha College of the nursing namely the Final year GNM and BSc Nursing. These students would be the paramedic staff in near future and hence their knowledge and attitude would reflect that of the paramedic staff.

In our study population the knowledge based questions found that knowledge regarding morbidity caused by diabetes, its progression and the regularized follow up that it requires was good in most of them with an average of 93.5% of the participants giving the correct response, however the correlation of glycemic index with diabetic morbidity was average with only 78.1% of giving the correct response.

The evaluation of attitude based question showed that the attitude towards diabetics for morbidity screening was good. Also the treatment options of diabetic retinopathy was appropriately chosen by most of the respondents. However the screening subject for diabetic retinopathy was poorly understood by the respondents with only 36% promoting screening in a asymptomatic patient for diabetic retinopathy.

The preferred clinical practices regarding diabetic retinopathy was well practiced by the respondents with regards to the evaluation pattern in diabetic retinopathy almost 91.5% of the respondents favoring the preferred practice patterns

However 70% of the respondents were unaware that diabetic retinopathy is not curable. Probably this also explained their attitude of lack of continuous and early screening towards diabetic retinopathy.

Through this study we can conclude that though the knowledge regarding diabetic retinopathy was excellent amongst paramedic students, their attitude and practice regarding the regular and early screening of diabetic retinopathy was lacking.

Screening being an important part of management of diabetic retinopathy, and paramedics being an important link between the patients and ophthalmologists, they should taught about the various screening models available for diabetic retinopathy.

Also active involvement of the paramedic students in the diabetic screening camps and various comprehensive eye care camps can improve their sensitization towards early screening of diabetic retinopathy.

Conclusion

Opportunistic screening by ophthalmologists of all diabetic patients attending diabetic clinics and hospitals need to be stressed. And this can be brought about by an alert, appropriately aware and inclined paramedic staff in a tertiary care center.

Training of medical staff and community nurses in screening patients of diabetes and referral to ophthalmology centers, registration of diabetes societies and helping awareness in diabetes patients, conducting or facilitating training or continuing medical education to community workers and paramedical staff, should be emphasized in the past to decrease the disease morbidity and blindness associated with diabetes.

Proper emphasis on Knowledge, Attitude and practice of the paramedic staff can bridge the gap between the ophthalmologists and the patients. Also it will help in early diagnosis in relatives having DM and thus could go a long way in capturing hidden cases of DM in the community.

Every opportunity of contact with the high-risk cases for DR at any health service facility should be utilized to identify patients of Diabetic Retinopathy. Paramedic staff have a significant contact time with the patient and due to their constant support can be a good motivational force to the patient.

Hence appropriate training of paramedic staff regarding diabetic retinopathy is essential.

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