Original Article

Pattern of Practices of General Physicians in Overt Diabetic Nephropathy- A Pilot Study in A Developing Country

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Abstract

Introduction: *Diabetes is the most common cause of chronic kidney disease (CKD) and end-stage renal disease (ESRD) in most parts of the world. Around 20 to 30% of type 1 and type 2 diabetic patients have diabetic nephropathy. General physicians can play an important role in the detection of diabetic nephropathy (DN) and its early primary management and thus prevent its long term dreaded complications. This study was designed to assess the levels of physicians practice, working in diabetic care facilities in terms of early detection and management of DN.*

Method: *A cross-sectional study was conducted among Physicians working in various affiliated associations of Diabetic Association of Bangladesh (DAB), using a pre-validated self-administered questionnaire. It was conducted in the month of April 2016. Data were collected based on the printed series of questionaries regarding "the actions when overt proteinuria was first detected in Urine R/M/E or conventional dipstick test".*

Results: *In total, 51 general physicians were included. The average age was 34.39 ± 8.54 years ranging from 25 to 64 years. Thirty (58.9 %) of them are in younger age group (25-34 age range) others in senior group (35-64). A male predominance was observed with 1.5 sex ratio. Twenty-two (43.1%) of them had undergone a Certified Course on Diabetes (CCD). Regarding intervention following first ever detection of overt proteinuria only 29.41% wanted to investigate further and 58.8% wants to repeat the test. To see the extent of renal damage 58.8 and 74.5% of the physicians wanted to do 24-hours urinary total protein (24-h UTP) and serum creatinine respectively. Twenty-seven (52.9%) physicians thought it is right to use angiotensin converting enzyme (ACE) inhibitors / angiotensin receptor blockers (ARBs) for proteinuria. Thirty-three (64.7%) of them wanted to refer to a nephrologist for proteinuria. To see the presence of other microvascular complications, 52.9 % of doctors wanted to examine for the presence of neuropathy and 62.7% wanted to exclude retinopathy by examining the fundus or referring the patient to an ophthalmologist.*

Conclusion: *Overall, the collective response of the doctors having done Certificate Course on Diabetes were much better than others. Junior doctors also fare better than seniors.*

Key words: *Diabetic nephropathy, General Physicians, Practices.*

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Introduction

Diabetes mellitus is one of the largest global health problems of the 21st century. Diabetes is among the top 10 causes of death globally and together with the other three major noncommunicable diseases (NCDs) (cardiovascular disease, cancer and respiratory disease) account for over 80% of all premature NCD deaths. In 2015, 39.5 million of the 56.4 million deaths globally were due to NCDs.[1] Chronic disease prevalence has also increased dramatically in Bangladesh in the last two decades, as has associated mortality.[2,3] Chronic, non-communicable diseases accounted for 8% of total

mortality in 1986 and 68% of total mortality in 2006 in Bangladesh.[3] Globally some 425 million people worldwide, 8.8% of adults aged 20-79 years, are estimated to have diabetes. About 79% of them live in low and middle-income countries. (IDF atlas 2017). Bangladesh belongs to one of these countries. The prevalence of Diabetes in Bangladesh is 6.79% according to IDF 2017 estimation. By 2045 Bangladesh will rank 9th in respective of diabetic population. With the increased prevalence of diabetes more and more patient will have risks of developing its chronic complications. Diabetic nephropathy (DN) which is one of the most dreaded types. Diabetic nephropathy is now the most common cause of chronic kidney disease (CKD). Both types of diabetes can lead to chronic kidney disease and eventually end stage renal disease (ESRD). But given the much higher prevalence of type 2 diabetes than type 1, often patients with ESRD have type 2 diabetes. Twenty to 30% of diabetic patients have diabetic nephropathy in type 1 and 2. Diabetes is the cause of 54% of new cases of terminal CKD requiring a kidney substitute in the United States of America.[4]

But nephro-protective measures slow kidney function deterioration and the risk of terminal CKD, alongside human and economic consequences.[5] Many studies showed that early detection and management of DN from the onset improve its prognosis.[6-8]

So appropriate practice regarding early detection, workup and primary management of diabetes is the key to serve the purpose. But unfortunately, there are shortage of doctors in Bangladesh. There are only 3.05 physicians per 10,000 population. The number of diabetologists to take care the ever-increasing diabetic populations are also low and general physicians are to play the key role in this early detection. To this end The Diabetic Association of Bangladesh (DAB) is training the physicians (irrespective of specialization) of Bangladesh in the form of CCD (Certificate Course on Diabetes) carried by Distance Learning Programme (DLP) since 2004, which IDF endorsed in March 2015. DAB is also carrying out the diabetic care through its Affiliated Associations (AAs) almost one in a district (Total 65 from 64 district) and three Sub- District Affiliated Association (SDAAs). Globally this is the largest network for diabetic care.[9] To see the practices of early DN among the physicians of various affiliated associations of DAB, we have undertaken this study.

Objectives

To assess the pattern of current practice of general physicians working in various affiliated association of DAB in terms of early DN.

Framework and Method of Study

This study was conducted among the doctors of DAB working in its various affiliated diabetic centers. It was a cross-sectional, pilot study conducted in the month of April, 2016. Physicians from various DAB centers, coming for an orientation programme on "TB-DM co-morbidity management" in BIRDEM General Hospital, Shahbag, Dhaka, were included in the study. They all gave their informed consent to participate in the study. Diabetologists and general physicians working in nephrology unit were not included.

The physicians were questioned on several items namely:

- Age, sex, medical degrees, medical training or certificates specifically on diabetes.
- Practices when "protein was found on routine urine R/M/E or on conventional dipstick testing": no intervention, repeating the urine test, to assess the severity of renal damage like doing 24 hours urinary total protein (UTP) and serum creatinine, to add angiotensin converting enzyme (ACE) inhibitors or angiotensin receptor blockers (ARB), referral to the nephrologist and to assess presence of other microvascular diseases like diabetic retinopathy and neuropathy.

An assessment score was purposefully designed to assess DN and a practice was labeled good, satisfactory and unsatisfactory when a correct answer was made by 75-100%, 60-74% or less than 60% physicians respectively.

The self-answered form was pre-validated by a panel of nephrologists and internists. A pre-test was conducted, and the results were discussed. The survey form was used after complete validation by this panel. The questionnaire was made up of closed questions with answers of yes or no, that were more appropriate for this type of survey. Answers were categorized as right or wrong according to international guidelines on DN. During data collection, confidentiality was strictly maintained.

The statistical analysis was conducted using IBM SPSS Statistics 20 software. Descriptive analysis was done

to find the frequencies and percentages. Logistic regression analysis was done to find out the effects of multiple variables on the practices of the physicians.

Results

In total, 51 general physicians were included. The characteristic of the study population is depicted in table I. The mean age was 34.39 ± 8.54 years ranging from 25 to 64 years. Thirty (58.9 %) of them are in younger age group (25-34 age range) others in senior group (35-64 age range). A male predominance was observed with 1.5% sex ratio. Twenty-two (43.1%) of them had undergone a Certificate Course on Diabetes (CCD).

Table I. The characteristic of the study population

	Number (n=51)	Percentage
Age		
25-29	16	31.4
30-34	14	27.5
35-39	6	11.8
40-44	10	19.6
>45	5	9.8
Gender		
Male	31	60.8
Female	20	39.2
Qualification		
CCD	22	43.14
Non-CCD	29	56.86

Graph I show the overall response of parameters regarding DN. Among respondent general physicians, 70.59% did not want to investigate further following first ever detection of overt proteinuria. Thirty (58.8%) of them wanted to repeat the test twice within the next 6 months which is much better than no intervention policy. To see the extent of renal damage, 58.8 and 74.5% of the physicians wanted to do 24-h UTP and serum creatinine respectively, which shows that physicians are much more aware of the progression of the overt proteinuric stage. But to delay this progression only 52.9% wanted to use ACE inhibitors or ARBs. Thirty-three (64%) of these physicians wanted to refer the patients to a nephrologist. To see the presence of other microvascular complications, 52.9 % of doctors wanted to examine for the presence of neuropathy and 62.7% wanted to exclude retinopathy by examining the fundus or referring the patient to an ophthalmologist.

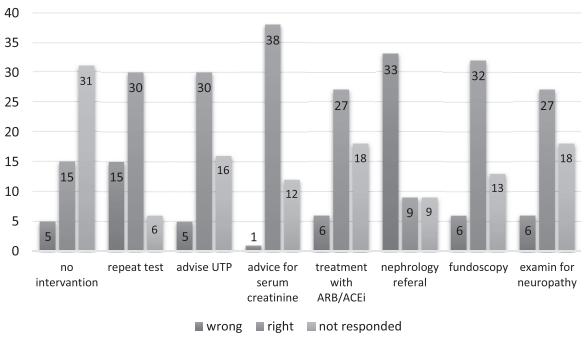

Figure 1. Shows the General physicians' practice when protein is found in urine R/M/E or conventional dipstick test (overt diabetic nephropathy).

In regression analysis, age had negative and CCD training had positive influence on overall score. One-year increment of participant's age was associated with 0.089 point less overall score (p=.029) and participants with CCD training was predicted to score 1.625 point more than participants without CCD training (p=.02)

Discussion

There is no known assessment grid to evaluate general physicians for DN. That is why we developed our own questionaries regarding the overt nephropathy. The form was submitted to a panel of experts including nephrologists and internist. We did not include diabetologist to prevent biasness as we were evaluating the doctors working in diabetes facilities and many of them had completed Certificate course on Diabetes (CCD).

In our study, most general physicians (70.6%) had not upto the mark practices in terms of working up of DN regarding its macroalbuminuric stage. This could primarily be explained by the lack of continuing training on diabetes or its complications during their medical practice or may be due to decreased facilities to do the albumin creatinine ratio (ACR) or albumin excretion rate (AER) in the district level. In a study conducted by general physicians in Israel on the management of diabetic patients with chronic kidney disease, Eilat T et al. observed that these physicians had a better ability to

search parameters such as blood pressure and lipid profile instead of parameters related to kidney impairment which are proteinuria, hematuria, referral to the nephrologist.[10] But in another study done in Indiana, USA, eighty-six percent of physicians reported screening more than half of their patients with type 1 diabetes for overt albuminuria, as did 82% of physicians for their patients with type 2 diabetes. Only 17% of physicians indicated performing microalbuminuria testing on more than half of their type 1 patients.[11]

But the doctors are more aware of the markers of advanced renal damage so that 58.8 % wanted to do 24 hours UTP and 74.5 % wanted to do the serum creatinine. It may be due to the facts that many type 2 diabetic patients already had passed the macroalbuminuric stage and presented to these physicians with the advanced disease markers.

Interestingly again only 52.9% wanted to use ACE inhibitors or ARBs in the macroalbuminuric state which was rather disappointing. It is consistent with other study showing the fact that doctors are reluctant to use these drugs when albuminuria is present without hypertension.[11] But recommendations are to use them regardless of hypertension.[12]

In our study thirty-three (64%) physicians wanted to refer the patients to a nephrologist which is not necessary in early nephropathy stage. Patients should be referred for evaluation for renal replacement treatment if they have an estimated glomerular filtration rate, < 30 mL/ min/1.73 m^2.

Though every patient should be screened for the presence of neuropathy and retinopathy when they have features of DN, 52.9 % of doctors wanted to examine for the presence of neuropathy and 62.7% wanted to exclude retinopathy by examining the fundus or referring the patient to an ophthalmologist. This practice may arise from the lack of knowledge or facilities to do so.

In this study we have found a fairly large (sometimes > 30%) number of the physicians did not made any respond to the questionaries, which may be due to lack of knowledge on DN leading to overall poor practices.

Interestingly during regression analysis, we have found that younger the physicians, better is the practice (p=.029), most likely indicating that experience without knowledge may not be always result in good practice. And at last but not at least we found that formal training in diabetes in any form result in good practice. In our study those physicians having CCD training are significantly better than others (p=.02). This is in consistent with other studies.[11,13,14]

We have got limitations in our study. Our study populations were small. Though they are general physicians, all of them were working in diabetes affiliated facilities. So, we could not compare their practices against the general practioners who are not. A large-scale study involving physicians working in both diabetic and non-diabetic facilities can give us the real pictures of the practices regarding diabetic nephropathy.

Conclusion

Special training targeted on diabetes can impact positively on general physicians practices about its complications. It is therefore necessary to boost the continuing training system in view of improving the early detection and management of this disease.

Conflict of interest: Nothing to declare.

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