(REVIEW ARTICLE)

Diabetes prevention and role of professionals: An early idea

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Abstract

Newly diagnosed cases of Diabetes Mellitus type 2 are increasing day by day in Middle east and especially in United Arab Emirates. In United Arab Emirates medical costs if Diabetes mellitus is 563 US dollars per annum and it can increase to Eight-fold in next ten years.[4] While working in Dubai Health, we have a blessing to have Dubai Diabetic Center running under the umbrella of Dubai health and is running an active diabetic specialty clinic setup for general community. Dubai Diabetes Center is awarded as a Center of Excellence in overall Diabetes Management by the International Diabetes Federation. My aim is to enhance the effectiveness of screening the high-risk individuals with the help of active multi-modality team. Dubai Diabetes Center follows the American Diabetes Association guidelines of Medical Care in Diabetes, which is based on a comprehensive specialized medical team that includes diabetologists, Endocrinologists along with a group of experts in a variety of medical specialties, including clinical dietitian, nurse educators, psychologists, ophthalmologists, podiatrists and physical therapists. The Dubai Diabetes Center has a special gym for patients, as well as a demonstration kitchen for teaching and preparing healthy food for patients. Ministry of Health in United Arab Emirates suggests and finalize the team involved in diabetes care at Dubai Diabetic Centre.[4]Almeheiri Et al. (2024) have explained that diabetes is a chronic and debilitating disease and its cases are increasing worldwide

To prevent Diabetes Mellitus Type 2 Multi professional health care team is required. It needs Multi professional collaboration between Specialty doctors, Diabetologist, Junior doctors, General practitioners, nurses, study nurses, secretaries and supportive clinical staff. For a better policy making and avoiding financial burdens policy makers, pharmaceuticals and politicians can be involved.[1] My plan will be to take approval for including nurses, junior doctors and secretaries to our team from Ministry of health of United Arab Emirates as others are already involved in our current setup. We have example of FINRISK study where Schwarz and reimann(2009) stated that nurses and study nurses also took part in the study.[3]

Keywords: Diabetes Mellitus; Prevention; Screening; Risk Identification; Nephropathy; Hyperglycemia

1. Introduction

In Dubai Health it is extremely necessary to establish a Diabetes Prevention program which can cause a sharp decline in newly diagnosed cases of Diabetes Mellitus type 2 and also Prediabetes. Different professionals of health care system can take part in such program to prove their expertise. Our aim is to elaborate the duties and roles of different professionals and also analyze them in future.

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2. Role of Doctors

Especially GP doctors is central and essential. As they are usually the first physician encountered by the patients. They are required to complete a full medical review and examination. Also, the basic laboratory investigations for the screening of patient and also enrolling in Diabetic registry is usually performed by the General practitioners. Diabetologist are usually encountered after the General practitioners, they have to evaluate the diagnosed diabetic patient for vital system wellbeing and also to assess the diabetes complications as Diabetic neuropathy, Retinopathy or Nephropathy. Junior doctors working in departments also have similar responsibility as General Practitioners, as they also perform the initial assessment and general physical and systemic examination of the Emergency and admitted patient. They also can order basic investigations and also can evaluate for any systemic complications or involvement particularly for the diabetic patients. Specialty doctors usually meet the diabetic patients who have already have developed complications. Cardiologist, Ophthalmologist, nephrologist and Neurologist are usual specialty doctors dealing with the diabetic system complications.

3. Role of nurses

General staff nurses working in General practitioner clinics, departments and Emergency have a vital role as they can explain the screening tools and investigations to the patients in humble way. Most of the clerical work for appointments and follow up of the patient are done by these nurses. Diabetes nurses trained and specialized in dealing with the detailed assessment of diabetic patient and also evaluating them for the upcoming complications have a critical role in prevention of diabetes.

4. Role of Medical secretaries

They have additional roles and responsibilities for fixing appointments, follow up, maintaining records and recalling patients for clinic visits.

5. Role of Nutritionist

Nutritionists are nutrition therapy experts, they provide medical nutrition therapy and also counseling. Nutritionist plays a vital role by controlling the diet plans of patient. In this way they decrease carbohydrate intake and replace the energy source by healthy proteins.

In addition to above professional's policy makers, politicians, economists and scientists can also be added to the financial committee of diabetes prevention program. Dattani Et al (2024) elaborated that pharmaceutical industry representatives also have a role in supporting the study and risk assessment analysis but there should not be any conflict of interest. [10]

Following interventions would be needed to prevent Type 2 diabetes:

Our aim is to target all individuals who fall in the category of non-diabetic Hyperglycemia previously called as Prediabetics having HbA1c between 5.7% and 6.4% so that their disease process should not further proceed to the range of confirmed diagnosis.

Diet management: With the help of our team including nutritionist, we would recommend healthy diet rich in proteins. There are low calorie and very low-calorie diet formulas available in market which can be offered to high risk and obese individuals. High fiber fruits and vegetables can also be added to regimen.

Decrease Sugars in diet, avoid white Rice and food with high glycemic index. Fruits with high glycemic index like mangoes, water melon, cherries, grapes, pineapple and banana should be avoided. Low Sugar index fruits like green apples, figs, prunes, oranges, kiwi and avocado must be introduced

Increasing awareness of inactivity scores: Inactivity leads to accumulation of carbohydrates in blood stream. High risk individuals should be encouraged to do not stick to their chairs either at home of in office. Driving is also accounted as inactivity so patients who are driving for long should be encouraged to add exercise to their daily routine.

6. Risk Identification Tools for Diabetes Mellitus type 2

At Dubai Health we have an existing screening criterion for all population above 18 years old to be screened with Fasting blood sugar and HbA1C which is invasive way to screen a huge population and also have a burden of cost. There is a future plan to use Artificial intelligence program for identification of High-risk individuals to develop Diabetes Mellitus in future. Name of the program given is an Arabic word EJADA Ai System which means Invention, this program is still in newspapers only. Guan Z et al (2023) also have emphasized the importance of digital health intelligence in Diabetes management, it will help in categorizing the high risk population and also finding the undiagnosed individuals.[11]

My plan is to introduce a self-evaluating questionnaire as recent studies are evident that noninvasive questionnaires also can evaluate risk of getting diabetes in a huge population[5]. This questionnaire which can be considered as initial screening tool will be distributed by email to all registered community in my area. People who don't respond to email will be tried to be contacted by mobile numbers or by Sending Short Messaging Service.

Questions will be simple to understand and also easy to answer by patients. For example, height, weight, abdominal circumference, number of first-degree family members diagnosed with diabetes, any other endocrine disorder or darkening of skin especially at nape of neck, any history of polydipsia or polyuria and any history of recurrent infections. From these forms we can get a score for each individual. In a recent study by Simmons RK et al. (2012) performed over ten years in Cambridge United Kingdom similar proforma was used to assess the risk of Diabetes Mellitus.[6] Another way is also to introduce online risk scores on secured website so that each individual can access and fill the online score form.

At risk population who get a higher score will be further screened with Fasting Glucose levels, Urine analysis for sugar, HbA1c and if needed an oral Glucose tolerance test can be added.

Investigation used as Risk identification tool should be weighed for sensitivity more than specificity. More sensitive tests detect the positive cases in a society and Specific test detects Negatives out of positives[7]. There is also debate in some recent studies for the age of screening. Kahn R et al. (2010) elaborated that Screening per se started in any age group have reduce mortality and also the cost of treatment.[8]

6.1. Resources needed for Type 2 diabetes Prevention

Approval from Ethics committee of Ministry of Health will be taken for introduction of Questionnaire in community risk evaluation for Diabetes.

Funds for the general screening in terms of printing of forms and also arrangement of a team of Data operators who can send the electronic copies of forms on emails of patients and also follow them, are usually provided by government of Dubai. Full time doctors and Nurses are required to assess the results of screening will be paid through Government of Dubai.

Patient Education Library where general population can get awareness regarding types of diabetes, screening, prevention and treatment options.

Podcast on multimedia would be arranged for general population to increase awareness for types of diabetes, screening, prevention and treatment options

Flyers and handouts for general public for the complications and consequences of untreated diabetes mellitus.

Awareness to Mention the calories over all food products especially dairy and confectionaries and also the percentage of carbohydrates so that end user will be cautious before consumption. Dubai Municipality who is controlling the Food regulations shall be contacted for this concern.

Different offers can be arranged for patients who wish to lose weight and improve their sugar levels, for example Relief of income tax for some particular time or Providing discount vouchers or providing discounted memberships for different Clubs and Gyms.

School nutrition/awareness program for weight loss in children and also performing sugar levels for school going kids.

Introduction of Life Style Clinics in general Practice, recently a new branch of family medicine is introduced with the name of life style Medicine which specifically embarks on Healthy life style change and also to treat metabolic syndromes.

6.2. Expected Effective intervention results

In Dubai Health we follow American Diabetic association guidelines for Laboratory assessment.

Fasting plasma glucose more than 126 mg/dL (7.0 mmol/L) is considered diagnostic for Diabetes and between 100 and 125 are taken as impaired or non-diabetic hyperglycemia. Similarly, HbA1c ≥6.5% (48 mmol/mol) is considered diagnostic for Diabetes and between 5.8 and 6.4 are taken as impaired reading for Glycated Hemoglobulin. Random plasma glucose of reading of ≥200 mg/dL (11.1 mmol/L) is also considered as diagnostic for Diabetes.

Ideal expected results after all healthy interventions are to reduce incidence of Diabetes Mellitus type 2 in High-risk individuals especially who are in Non-diabetic Hyperglycemia stage.

We will assess the final results by invasive and non-invasive measures. Invasive measures will be to repeat fasting sugar levels and HbA1c every 3 months and to observe reduction after health and dietary education, especially in Non-diabetic Hyperglycemia patients. Fasting cholesterol levels can be added to obese individuals.

Noninvasive methods will be Weight management[2] and also reduction in waist circumference of overweight individuals.

Public awareness should be our main concern, so that they should understand the severity of disease and also mortality associated with un identified cases of Diabetes Mellitus. Attendance and involvement into the screening is also key factor in success of a risk analysis tool. As we have seen in some extensive studies like Diabetes Prevention Program of National health services in United Kingdom mentioned by V Jonathan Et al (2020) the turning up ratio of patients was low as 19% and it can affect the results of screening. [9]

Dietary education and awareness towards low carb diet would be provided by nutritionist.

Reduction in prevalence of physical inactivity would be addressed to all patients.

7. Conclusion

An effective Diabetes prevention awareness program with measurable results is expected for the general population of Dubai. A multi-modality team of professionals who are well versed in evaluating and analyzing the risk of diabetes in all age groups would be included in the program. Decline in the ratio of newly diagnosed cases of Diabetes Mellitus type 2 is expected which will give fruitful results in future.

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