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Review Article

Critical review of evidence for the role of physical activity in the management of type 2 diabetes and physical activity in patients with diabetes in the state of Qatar

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ABSTRACT

Globally prevalence of diabetes is increasing. Sedentary lifestyle and lack of physical activity is strongly associated with its prevalence and complications from the disease. This is also reflected in the people living in Qatar. Attempt to critically review the evidence on the effect of physical activity on diabetes and also review on the evidence available about the perception of people about physical activity in the state of Qatar. Critical appraisal of PubMed and google scholar using PICO model to gather the evidence available, including search of worldwide web for the terms 'physical activity', 'diabetes mellitus type 2'. The results were critically appraised and presented in this review. Qatar has strong infrastructure of healthcare to support the people suffering from diabetes with its stable primary care, advanced secondary care and facilities. The municipalities have provided good green zones for the people to carry on the physical activity. The weather is not favorable throughout the year due to extremely hot summers but there are facilities which continue to function providing opportunities for physical activity. With the continued efforts of the governmental bodies increasing awareness, the perception of people is positive towards physical activity.

Keywords: Diabetes mellitus, Physical activity, Qatar, Review

INTRODUCTION

Diabetes is a chronic illness affecting individual where the blood sugar level is higher than the normal range. This has both short- and long-term implications on the health of the individual suffering from it.

According to CDC (Center for Disease Control and Prevention) report, nearly 1 in 4 adults living with diabetes don't know that they suffer from diabetes.[1] The diagnosis could be an incidental finding when they have screening test or when they are being investigated for other illnesses.

Globally the incidence of diabetes is increasing. According to IDF 2017 report, 400 million patients suffer from diabetes and this keeps growing.[2] There are more deaths from diabetes related complications compared to any other chronic illness.

Most of the patients have type 2 form of diabetes, where major cause is the lifestyle-obesity, physical inactivity, and diet rich in carbohydrates. According to ADA, routine physical activity, along with DSMES (Diabetes self-management education and support), MNT (Medical nutrition therapy), smoking cessation where necessary and psychosocial care are essential for reaching the treatment goals.[3] We would like to discuss the role of physical activity in the management of type 2 diabetes.

NICE (National Institute for Health and Care Excellence) has defined 'physical activity' to has kept the definition to include many everyday active movements-and defines it as -physical activity includes everyday activity such as

walking and cycling to get from A to B, work-related activity, housework, DIY and gardening.[4] It also includes recreational activities such as working out in a gym, dancing, or playing active games, as well as organized as well as the competitive sport.

The incidence rates of chronic illnesses like CVD, diabetes and cancer has been increasing in Qatar rapidly. The prevalence of diabetes in MENA (middle east and North Africa) region is 9.2% and that for Qatar is whopping 13.9%.[2] These could be tackled by changes in lifestyle including physical activity.

LITERATURE SEARCH

Search was done on PubMed, google scholar and the worldwide web for the terms 'diabetes mellitus type 2', 'physical activity', 'recommendations for physical activity', 'perceptions for physical activity in Qatar' and related terms. The results were appraised and presented in this article.

DISCUSSION

Recommendations from health bodies for physical activity

ADA recommendations for children and adolescents with type 2 diabetes is engagement in 60 min/day or more of moderate- or vigorous-intensity aerobic activity, with vigorous muscle-strengthening and bone strengthening activities at least 3 days/week.[3] For adults, 150 mins or more of moderate to vigorous intensity aerobic activity per week spread over at least 3 days/week. Shorter durations (minimum 75 min/week) of vigorous-intensity or interval training may be sufficient for younger and more physically fit individuals. NICE also recommends similar duration and amount of exercise for all adults aged 19 years and over.[4]

Benefits of physical activity

According to NICE guideline, physical activity has a positive effect on wellbeing, mood, sense of achievement, relaxation and release from daily stress.[4] It also helps manage chronic conditions including type 2 diabetes. US department of health scientific report states that exercise improves blood glucose control, improves cardiovascular risk, reduces weight and improves wellbeing.[5] AHA recommendations on physical activity mentions about intensity, encouraging moderate to vigorous intensity physical activity, as higher intensity of physical activity is associated with greater improvement in HbA1c levels.[3,6] AHA and ADA also recommend resistance exercises at least twice a week.[3,6]

Sluik concluded in their prospective study and meta-analysis that 'high levels of physical activity were associated with lower mortality risks in individuals with diabetes'.[7]

Barriers (challenges) to physical activity

The patients with diabetes who wish to do exercise may face risks or challenges due to diabetes (hypoglycemia or hyperglycemia, neuropathy, nephropathy) but may also be due to other comorbidities like musculoskeletal problems, cardiac problems, visual impairment, body balance issues, reduced hearing etc. So, this varies depending on individual's age, diabetes, level of complications and comorbidities. The ADA consensus report[8] concluded that routine physical assessment or testing is not recommended. This is true for most of the patients with diabetes without additional illness or complications. But the high-risk patients with diabetes would need targeted assessment, should start with short periods of low intensity exercise then gradually increase their exercise capacity. It is these patients who may require thorough evaluation prior to beginning an exercise.[9] There are many other factors which act as challenges for the physical activity like current physical activity level, cultural beliefs, perception about physical activity, environmental opportunities etc. which have been discussed further here.

The recommendations are clear that the patients should receive structured education and support for the change in the behavior but not coming down into practice. Primary health care corporation (PHCC) is the national primary care service and its clinical guideline recommends 'intensive lifestyle behavioral change including a nutrition and activity plan by a dietitian, health educator or other qualified health professional.[10]

Also the Clinical guideline from the ministry of public health (MOPH) also advises on exercise programme which should be individualized to the patient.[11] Despite the guidelines and recommendations, allied healthcare professionals like dietitians and health educators both in the primary and secondary care level, we find that there is high prevalence of sedentary lifestyle and low physical activity in the population.

So how much exercise do people in Qatar do?

In a questionnaire, the participants from Qatar reported that in the previous 7 days.[12] Christmas BCR, Majed and Kenffel found in their cross-sectional study of young Qatari men and women, that physical fitness traits were low for this population compared to individuals worldwide.[13] Of these, men had performed better in physical fitness experiment. So, what could have been the reason for the population to be less involved in physical activity? To suggest changes in advice or policy which may enhance patient's participation in physical activity, I look into the cultural beliefs, environmental factors, and other reasons.

Cultural beliefs

Qatar is a rapidly growing country with median age just 31.3 years. Among the population, the health literacy is

low and general literacy is 93.5%. The qualitative study of 128 adult men and women by Donnelly et al found that Arab men and women are aware of the importance and benefits of physical activity, but the environmental factors are not supportive, so their knowledge is not transforming into action.[14] The author also reports that reducing weight and preventing obesity and other chronic diseases were the most common facilitators for participants to engage in physical activity. Maintaining an attractive or ideal body shape was important for the young participants, both male and female.

Perception about physical activity-98.6% of young 1606 participants believed physical activity is beneficial but only 45.4% were engaged in any physical activity.[14] Also, about 53.2% spent 5-10 hours sitting during weekday, while 30.3% spent 1-5 hours.

Out of 163, Qatar comes at 31st place on Global peace index list 2019 as peaceful country.[15] In another cross sectional interview study, conducted in Qatar on university students, the author found that Culture was seen as a facilitator for physical activity from the males' perspectives, which was not the case for female participants who reported the negative influence of culture on their physical activity because of the limited choices available for them.[16]

Environmental opportunities

Diabetes is a disease of lifestyle which is influenced by the individual and environmental factors. There are multiple environmental factors affecting the individual physical activity including diet, occupational and leisure time, sedentary time, housing environment, Sleep duration, sleep quality, socioeconomic status and availability of parks and fitness centers watching TV or digital gadgets, especially social media including WhatsApp, Facebook etc. affecting nearly every individual.

Doha, capital of Qatar, having >70% of the total population, is one of the fitness and family friendly city-It has many parks, from small play areas for kids in nearly every residential area to a huge park of over 88 hectares in the middle of the city providing run and cycle tracks, play areas for kids and grass throughout. The city also boasts with cycle track between Doha and Al Khor town which is about 33km long and has received Guinness world record.[17] The country has even dedicated a day in a year for fitness and exercise, calling it a 'sports day', a national public holiday for everyone. Multiple outdoor events are arranged by the ministry for the residents throughout the year for the people to go out and spend time in the outdoor places like parks.[18]

There are many gyms and fitness centers in the city which offer regular classes like bootcamp, boxing, cardio, yoga, Pilates, Zumba etc. for a fee to the community. The national primary care provider PHCC also offers 'wellness centers' which are equipped with swimming pool and gym equipment, supported by a trainer under clinician supervision.[19]

BMI of general population in Qatar

According to NCD risk factor collaboration network, the mean BMI for men is 28.9 and for women 30.3, while that of the world is 24.4 and 24.7 for men and women respectively.[20]

So, what can be done to improve the change in behavior that will help more people involve in physical activity?

Even though there are many facilities available for the patients suffering from diabetes in Qatar, still not many are engaged in physical activity.[14] Only 61% of the people felt 'lack of exercise' and 'poor diet' were the risk factors for diabetes.[21] This could be brought by more awareness in the society by the public health bodies through advertisement on street boards, television, internet, social media, community events and gatherings etc. Training of healthcare staff in bringing awareness to the patients about physical activity.

So, what can be done to improve the change in behavior that will help more people involve in physical activity? I would think, 'patient empowerment' would help to achieve better glycemic targets, while continue the current treatment model. According to Peyrot et al Patient empowering about diabetes will help the patients so that they can come over self-care issues like regimen acceptance and adherence and emotional issues like diabetes related distress and depression.[22]

Marrero et al discusses about patient empowerment and gives recommendations to the health care practitioners which has been listed below.[23] This is a concise list.

Recommendations for health care providers

Frame collaborative goal setting in a full, shared understanding of the patient's clinical status, be open-minded to patient choices, ensure that the patient receives adequate training and support to encourage self-management, encourage participation in community programs, review laboratory and biometric data with the patient as part of goal setting and support, take stock and renew or revise the plan at each visit, recognize that the behaviors involved in managing or preventing diabetes are dynamic and multidimensional.

Not to forget, recommendations should be tailored to meet the specific needs of each individual, a patient-centered care.[24]

Further elaborating the patient empowerment, initially we must agree on goal setting with our patients. We can use a SMART (Specific, measurable, action oriented, realistic and timely) approach to the goal setting.[22] These patients could then be consulted in a 'motivational interviewing' model-as this will help us to change the behavior

depending on the 'level of change' patient is already on-pre-contemplation, contemplation, preparation, action or maintenance level.[25] In order to carry on the patient empowerment and support, the communication between the clinician and the patient should be good, as poor communication between doctor and patient, leads to poor adherence to oral medication and glucose monitoring.[26] The clinicians should be trained on communication skills where required.

Social support plays a vital role in the behavioral change and discussion around the family members, friends and workplace colleagues, who could help to change the behavior.[27] Emotional support plays a vital role as well-encouraging realistic expectations and enhancing motivation will help cope with distress and reduce the chance of depression. Ongoing support for those in the maintenance phase, having plan for relapse prevention to avoid demoralization should be in place to avoid worsening of the disease.

CONCLUSION

Qatar has good resources and facilities which could favor glycemic control in the patients and overall health including cardiovascular health. These resources need to be utilized well. There is public awareness about physical activity being a factor to improve diabetes but there appears lack of action. Evidence has shown that Patient empowerment would be the key to achieve it because it encompasses significant patient involvement in decision making about his health, collaborative approach, goal setting and clinician as facilitator in the care providing information and encouragement.

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