



CODEN [USA]: IAJ PBB

ISSN: 2349-7750

**INDO AMERICAN JOURNAL OF
PHARMACEUTICAL SCIENCES**<http://doi.org/10.5281/zenodo.2582085>Available online at: <http://www.iajps.com>

Research Article

**KNOWLEDGE ASSESSMENT OF DIABETES AND INCIDENCE
OF HYPERTENSION IN TYPE 2 DIABETIC PATIENTS**¹Hamza Bin Zahid, ²Dr. Arsalan Nawaz, ³Dr Hasnain Ali¹Medical Officer, BHU 133 ML Kotaddu Muzaffargarh, ²Jinnah Hospital Lahore, ³House Officer, Jinnah Hospital Lahore.**Abstract:**

Diabetes is affecting the population of the world as 117 million individuals are affected which is expected to touch 366 million till 2030. Type II Diabetes is controllable by self. It is a heterogeneous combination of syndromes in the shape of insulin deficiency and high blood pressure with a higher risk of CVD and uncontrollable complications and disorders. Adverse events are controllable by controlling hypertension. Anti-diabetic medication is required for those who cannot manage diabetes with diet and exercise. Hypertension is also high in diabetic patients than non-diabetic patients. This research aims to determine the awareness and management of hypertension induced diabetes in T2DM patients. We conducted this cross-sectional research at Da Nang through a questionnaire to assess disease awareness among diabetic patients. The researcher used SPSS for statistical analysis of the research outcomes. There are thousands of diabetic patients all over Vietnam but in the project, our sample size is very less i.e. 112 patients_+ 20% hence a total of 135 patient's data was collected on the prevalence basis of the disease. Respondents from the urban area were 94 (69.6%) while those of rural area respondents were 40 (29.6%). Respondents were divided on the basis of their family history and 100 (74.1) had a family history of disease while 35 (25.9%) respondents had no family history of diabetes. 47 (34.8%) respondents suffered from diabetes less than 5 years while 86 (63.7%) volunteers had disease greater than five years. the male had more knowledge than the women with the mean rank of 69.60. the respondents with the education of graduation or above have the highest mean rank of 77.55 while illiterates had the lowest mean rank of 51.78. Research outcomes suggest tangible steps to spread awareness among the policymakers, scholars and healthcare professionals about the diabetes prevalence.

Keywords: *Diabetes, Hypertension, Knowledge, Incidence.***Corresponding author:****Hamza Bin Zahid,**

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Please cite this article in press Hamza Bin Zahid et al., *Knowledge Assessment Of Diabetes And Incidence Of Hypertension In Type 2 Diabetic Patients.*, Indo Am. J. P. Sci, 2019; 06(02).

INTRODUCTION:

Diabetes is non-communicable and chronic in nature with the features of higher glucose levels in the blood. Type-I diabetes is due to the non-production of insulin in the pancreas and T2DM due to decreased production of insulin which is a resistant action [1]. T2DM is on an increase all over the world which is also known as non-insulin dependent. T2DM is an outcome of communication between an environmental & behavioural risk factor and genetic predisposition [2, 3]. Blood glucose regulation is carried out by insulin within the body and diabetes has become a growing health issue of the present time all over the world as Diabetes is affecting the population of the world as 117 million individuals are affected which is expected to touch 366 million till 2030 in both industrialized and non-industrialized countries [4]. It also causes ten percent of the world adult deaths. Worldwide, a total of 387 million are affected by diabetes and in this population, a total of 77% are from the lower middle-income nations which will continue to increase in the coming years [5]. Different countries have been reported for different proportions of diabetes prevalence. Vietnam is at an increased risk of diabetes T2DM is affecting urban and rural population with the respective proportion of 9.5% and 9.4%. Vietnam holds the seventh position in diabetes affected countries as it is an underdeveloped country as it spends only two percent of the total GDP on the health sector [6].

METHODOLOGY:**Study Objective****General Objective**

Take step towards better management of chronic diseases.

Specific Objective

- To assess the knowledge of management, treatment, prevention of diabetes that a patient is suffering from.
- To assess the correlation of Type 2 diabetes with Hypertension.

Study Design

We conducted this cross-sectional research at Da Nang through a questionnaire to assess disease awareness among diabetic patients. The researcher used SPSS for statistical analysis of the research outcomes. The study was conducted in February 2018. The reason for adopting this study design is the assessment of available assumptions, it is cost-effective and requires less time. It holds multiple variables and focuses on a single point and outcomes are helpful for other

research categories. New theories can be made out of the outcomes of cross-sectional research.

Study Setting

The study was conducted in major public sector hospitals of Dat Do Medicine Centre, Ba Ria-Vung Tau province in Southern of Vietnam in order to get the complete required information about the patient. The targeted population was diabetic patients from hospitals and some acquainted patients from various parts of the city.

Justification of selection of Da Nang City

There are thousands of diabetic patients all over Vietnam but in the project, our sample size is very less i.e. 112 patients + 20% hence a total of 135 patient's data was collected on the prevalence basis of the disease. So we don't need to circulate the country due to inadequate resources and less time. That's why we targeted Da Nang City.

Study Population

The study was conducted on diabetic patients of Vietnam and our targeted population is a diabetic patient of Da Nang.

Data Collection

A structured questionnaire was prepared both in English and Urdu languages. The tool consisted of a total of 30 questions divided into five main sections i.e. A, B, C, and D. Section A was about the demographic characters and comprised of 7 questions. Section B was about the knowledge of management of diabetes and consisted of 7 questions also. Section C was about the knowledge of the treatment of diabetes and included 9 questions out which question number 20 was a string type question. Section D was about the knowledge about the risk factors of hypertension in diabetic patients and comprised of 7 questions. Each correct answer was awarded a score of 1 while the wrong answer was marked as 0; the maximum marks obtained could be 13 while the minimum score attained could be 0.

RESULTS:**Respondent's Demographic Characteristics**

There was a total of 135 respondents calculated for our sample size through the prevalence-based formula. Male respondents included were 68 (50.4%) while the female count was 67 (49.6%). There were five age groups in which respondents were divided as follows, 25-35, 35-45, 45-55 and 56 and above. It was found that respondents with secondary education had the greatest number while higher secondary respondents were just 17.8%. Area of residence was divided into

two groups of rural and urban. Respondents from the urban area were 94 (69.6%) while those of rural area respondents were 40 (29.6%). Respondents were also divided into monthly income, four sections were made and the percentage was calculated. Respondents were divided on the basis of their family history and 100

(74.1) had a family history of disease while 35 (25.9%) respondents had no family history of diabetes. 47 (34.8%) respondents suffered from diabetes less than 5 years while 86 (63.7%) volunteers had disease greater than five years.

Table 1: Descriptive statistics of respondent's knowledge towards the management of diabetes

How can you manage your diabetes	By relaxing N (%)	by walking N (%)	by medicines N (%)	By insulin N (%)	All N (%)
	4(3.0)	14(10.4)	32(23.7)	25(18.5)	60(44.4)
Which type of exercise helps you more	Running		Walking		
	5(3.7)		129(95.6)		
	Yes		No		
Can lifestyle modification help you in managing diabetes	114(84.4)		21(15.6)		
People with diabetes should use cold drinks?	87(64.4)		48(35.6)		
Do you follow a diet chart designed for diabetic patients?	81(60.0)		54(40.0)		
Diabetic patient should check glucose level daily	88(65.2)		47(34.8)		
Does media help you in managing your condition	53(39.3)		81(60)		

Note: Every value is based upon reported value; whereas, we did not include any missing value.

Respondent's Descriptive Statistics about knowledge towards Diabetes Management

Section B was of management of diabetes consisting of 7 questions. 32 (23.7%) of the respondents said that diabetes could be managed by just taking medicine while the least percentage was obtained for the option of managing diabetes by relaxing which was 4 (3.0%). 60 (44.4%) people responded that it can be managed by all the options which are actually the right option. Type of exercise adopted by the patient affects the patient condition in a great manner. 5 (3.7%) people said they run while 129 (95.6%) respondents said they did walk. Lifestyle modification was very well

understood but the respondents as only 21 (15.6%) respondents said no. Use of cold drinks in diabetic patients should be limited. But 87 (64.4%) respondents said yes one should limit the use of cold drinks while 48 (35.6%) said no. Diet charts are usually designed for the patients and 81 (60.0%) people said they follow the diet chart while 54 (40.0%) showed they didn't. Diabetic patients should monitor their glucose level on daily basis and 88 (65.2%) said yes while 47 (34.8%) said no. Media has a great impact on people but it was shown from data that only 53 (39.9%) said that it was useful while others said no.

Table 2: Descriptive statistics of respondent's knowledge towards the treatment of diabetes

How do you get rid of your elevated blood glucose level?	By proper management	By medication	Insulin	All
	N (%)	N (%)	N (%)	N (%)
	6(4.4)	28(20.7)	27(20.0)	74(54.8)
How often do you visit your doctor for a follow-up checkup?	Every week		Every week	
	14(10.4)		121(89.6)	
	Yes	No	I don't use insulin	
	N (%)	N (%)	N (%)	
Before changing insulin dose do you consult your physician	77(57.0)		15(11)	43(31.9)
Do you change the site of administration of insulin daily	58(43.0)		34(25.20)	43(31.9)
Have you ever missed your dose	22(16.3)		111(82.2)	
Which type of treatment of diabetes you think can be easily practised by elderly patients	Injection		Tablets	
	69(51.1)		66(48.9)	
	Yes	No	I don't use insulin	
Have you ever reused your syringe for insulin injection	68(50.4)		27(20.0)	40(29.6)
Are you satisfied with the treatment and management of your disease	107(79.3)		27(20.0)	

Note: Every value is based upon reported value; whereas, we did not include any missing value.

Missed dose due to busy routine, carelessness, didn't like medicine, due to allergy, due to carelessness, due to depression, due to forgetfulness, due to a stomach problem, due to laziness, due to the hectic routine.

Section C is about the treatment of diabetes and consists of 9 questions. 74 (54.5%) respondents responded correctly that diabetes could be treated by all the means. 77 (57.7%) of the respondents said that they consult their physicians before changing the dose of insulin. While 43 (39.1%) didn't use insulin and managed their disease by using medicines. 58 (43.0%) of the respondents do change the site of administration of insulin while respondent. 111 (82.7%) respondents said they don't miss their doses while 22 (16.3%). They usually miss their doses out which tow gave the

reason due to hectic routine, 2 said carelessness, 3 said forgetfulness, 1 said due to allergy, 1 said due to stomach problems, 1 said he missed a dose because he doesn't like taking medicines. 66% of people thought that it was better for the elder patients to use tablets while 69 (51.1%) thought injections were preferable. 68 (50.4%) respondents said they reused their insulin syringes while 27 said they don't reuse their insulin syringe. 107 (79.3%) respondents said they were well satisfied with their treatment while 27 (20.0%) patients said they were unsatisfied.

Table 3: Risk factors of hypertension in diabetic patients

	Yes (%)	N	No (%)	N
Do you think progressive age is a risk factor of hypertension?	119(88.8)		15(11.1)	
Does obesity aggravates the risk of hypertension	115(85.2)		20(14.8)	
Do you think alcohol intake is one of the causes of hypertension	93(68.9)		42(31.1)	
Do you think smoking increases blood pressure	93(68.9)		42(31.1)	
Do you think diabetes itself is a risk factor of hypertension	101(74.8)		34(25.2)	
Does your family has a history of hypertension	85(63.0)		50(37.0)	
Are you suffering from hypertension?	96(71.1)		39(28.9)	

Note: Every value is based upon reported value; whereas, we did not include any missing value.

Risk factors of hypertension in diabetic patients

Section D consisted of 7 questions; it was about the relationship between diabetes and hypertension. These sections showed that the majority of the individual was well known about the risk factors of diabetes and the relation between diabetes and hypertension. 119 (88.8%) agreed that progressive age was an associated factor of the disease. 115 (85.2%) said that obesity was linked with the aggregation of the patient condition. Alcohol intake is a causal factor of hypertension and it was evident from the results as 93 (68.9%) people said yes. 93 (68.9%) of the respondents said smoking was a risk factor of hypertension. 101 (74.8%) patients said that they thought diabetes itself is a risk factor of hypertension. 85 (63%) respondents had a family history of hypertension while others had no history. 96 (71.1%) diabetic patients had associated hypertension along with diabetes, which shows that indene of co-morbidity of hypertension and diabetes.

DISCUSSION:

A cross-sectional study about the assessment of knowledge of diabetes and the incidence of hypertension in type 2 Diabetic patients has performed in which most of the respondents were male. Most of the study participants were illiterate. Some were secondary and few respondents were higher secondary and about three quarter were graduated or above. Most of the study participants were belonging to an urban area and others belong to the rural area. Furthermore, the subjects with better socioeconomic status score were higher than the lower socioeconomic status. Therefore, rural and low-income areas outcomes are

endorsed in our research about diabetes related awareness. Majority of the patients had a diabetic history in the family as they were not well aware of diabetes or their family members were not aware. Thai research also presented similar outcomes. In the present study most of the respondents suffering from diabetes having duration more than five years while other respondents suffering from diabetes having a duration of fewer than five years. In our study, most of the respondents said that they managed their diabetes by all these aspects by walking, relaxing, by medicines and by insulin. These results are consistent with findings from a study in BWP Vietnam that out of 378 general populations 273 were managed their diabetes by all these parameters.

Physical activity has a deep association with insulin resistant reduction and hypertension management. In our study, more than three-quarter respondents said that walking helps them more in managing their diabetes and a few respondents preferred running. We also compared the outcomes with Hypertension prevention and treatment (2017) which recommends 30 – 60 minutes of dynamic physical exertion such as walking. In current study, most of the respondents responded that lifestyle modification helps them in managing their diabetes and the similar findings are available in another locally conducted research in which 79.1% respondents were agreed that lifestyle modification helps them in managing diabetes [7]. Drinks with added sugar can also cause an increase in the blood sugar levels so it recommended avoiding such sugar added drinks and we have found same results in a discussed study in which most of the

respondents agreed that the people with diabetes should not use cold drinks.

We all are well aware that diabetes can be managed by following the diet charts as prescribed by the physician and the same results have found in the study under discussion in which most of the respondents follow their recommended diet charts. In present study more than half of the respondents responded that diabetic patients should check their glucose level daily as it helps them in management and the similar findings were observed in a study conducted in Shifa medical college of medicines Islamabad Vietnam in which 61% of the patients regularly checked their blood sugar level. Although most of the patients were aware of the risk factors but according to our study most of the patients do not get any information through media but few of them agreed that media help them in managing diabetes and the study conducted in the Appalachian population had the same results in which only a few participants sought information from social network [8].

In present study about more than half of the respondents were get rid of their elevated blood glucose level by using all these parameters insulin, medication and proper management some respondents said that they get rid of this by medication and insulin ad few of them, by proper management .this study is compared with the study of (Sofie Hædersdal, MD; Filip K. Knop, MD, PhD; Auger Lund, MD, PhD; and Tina Vilsbøll, MD, DMSc) in which they discussed the clinical features on the insulin role and medicines with awareness about diabetes [9, 10]. In current study, most of the patients about 89.6 % visited their doctor for a follow-up checkup monthly and few of respondents 10.4% were used to visit their doctor weekly and the major reason behind this is that most of our respondents about 69.6% are from the urban area. In present study 57.0 % of the respondents said that they consult their physician before changing insulin and only 11% of the respondents do not consult and the rest of 31.9% were not used insulin and in the same way most of the patients change their site of administration insulin daily few of them do not change and rest of the respondents do not use insulin. This study is compared with the study of Joy A. Dugan in this less frequent office visits should only occur once target measures are achieved [11].

In current study, most of the people do not miss their dose as they knew that medication is very important for diabetic patients but few of the respondents missed their dose because of carelessness, busy routine, due to forgetting fullness, laziness, stomach problems, hectic routine and allergy. In study under discussion half of the respondents thought that injection can be preferred treatment option practice by elderly patients and rest

of the respondents thought that tablets can be preferred treatment practice by elderly patients due to more illiteracy rate in our respondents more than half of them reuse their syringe for insulin injection, few of them do not use and rest of them do not use insulin [12]. In the present study, most of the respondents said that they were satisfied with disease management; whereas, few were not satisfied. In the current study more than half of the respondents agreed that progressive age and obesity is the risk factor for hypertension and these similar findings were found in a study of US with increased diabetes and obesity in almost every sector of the population. Obesity is also linked with other severe risk factors [13].

In present study, most of the participants thought that alcohol intake and smoking should increase the blood pressure but others said that alcohol intake and smoking should not increase the blood pressure but according to the similar study which was performed in healthy Japanese. Steel factory workers also showed similar results and according to them the increase in BP among the quitters and current non-smokers, especially the quitters, were generally larger than those of the current smokers. In the current study, most of the respondents said that diabetes itself is a risk factor of hypertension but few respondents said that diabetes is not the risk factor of hypertension. Fifty percent of the patients had a positive hypertension history and other respondents do not have a history of hypertension [14]. In the current study most of the respondents suffering from hypertension. The 30 respondents of the age group 34-45 give the correct answer of the question that lifestyle modification help you in managing diabetes the 43 respondents of age group 46-56 gave the correct answer and the 26 respondents of age group 57-67 gave the correct answer and 8 respondents of the age group 68-78 gave the correct answer and only 6 respondents of age group 79-89 gave the correct answer. Outcomes clearly reflect the level of awareness among the affected subjects. People do know about diabetes but at the same time, they are not well conversant with the severity of the disease. Illiteracy leads to misconceptions.

Various age group did not show any visible variations; whereas, a higher score was available in the age bracket of 46 – 56 but respondents of age group 79 – 89 scored less. The illiterate respondents know less about diabetes treatment and management and scored less according to the knowledge the graduated respondents scored more because of more education and knowledge. The people of urban area scored more because of more resources and more knowledge about the disease and the people of rural area scored less due to lack of knowledge. In our study male respondents

scored more than that of female according to the knowledge and know more about the diabetes treatment, management and prevention. It was found that male had more knowledge than that the female with the mean rank of 69.60 and the results are significant and matched with the results of the study of BWP on the general population. Weak memory of the older age group caused a lack of awareness and understanding of the disease [15]. Vietnam faces numerous issues including scarcity of resources, population, disease burden and various other issues causing reduced life quality and disease management. Better diabetes management and preventive attitude will help the affected individuals; it will also decrease the disease severity. The barrier that we observed was the lack of education of most of the respondents due to this the illiterate respondents do not know truth about the management and treatment of the disease. However, participants were knowing the impact of hypertension on diabetes. Lack of interest, awareness, knowledge, believes, income and irregular disease management are barriers in the management of diabetes for healthcare providers. More research studies are also required for the quantification of diabetes in the Vietnamese population. Such studies will definitely help the management of associated factors of diabetes.

CONCLUSION:

Research shows that a number of respondents were aware of the disease and hypertension in the T2DM patients. Accurate disease awareness has an association with the residential area, socioeconomic status and gender. Illiterates were mainly unaware of the severity of hypertension and diabetes. Research also suggests the incorporation of awareness campaigns in the affected region among policymakers, scholars and healthcare professionals in order to take tangible steps for disease prevention.

RECOMMENDATIONS FOR FUTURE:

Health care professionals must collaborate with each other in order to provide benefits regarding their disease and to control the prevalence. It is necessary to broaden the spectrum of study at various levels.

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