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Diabetic Type 2 Patients' Perceptions Toward Diabetes And Their Diabetic Self Management: Moderating Role Of Eating Behavior

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Abstract

The purpose of this quantitative study was to investigate how people living with type 2 diabetes mellitus think about, engage in, and overcome barriers to self-care activities (including diet, exercise, blood sugar monitoring, and medication adherence) (T2DM). Diabetes is a long-term disease that happens when the amount of blood sugar, or glucose, in the body is too high. Diet is the most important part of taking care of type 2 diabetes mellitus (T2DM).The study was conducted to investigate the diabetic type 2 patients' perception toward diabetes and diabetic Self management; moderating role of eating behavior. Correlational research design was used to complete the study. Survey was conducted as a method of data collection. The data were gathered from Nishtar Medical Hospital Multan Pakistan, and Combined Military Hospital Multan Pakistan. Permission was taken for the purpose of data collection from these two hospitals. Informed consent was also taken from the participants to participate in the study. Findings of study reveal that there is positive relationship between illness perceptions toward diabetes, diabetic Self management and eating behavior (healthy behavior). In addition, results disclose that diabetic Self management is significantly predicted in a positive perspective by illness perception toward diabetes. Furthermore, it was found that eating behavior significantly moderates the relationship of illness perception and diabetic Self management. Similarly, the level of illness perception, healthy eating and diabetic Self management was reported at higher level among females than males. Moreover, married diabetic patients reported lower level of illness perception and diabetic Self management as compared to unmarried. Many factors, including respondents' own lives and their lack of diabetes awareness, were cited as obstacles to self-care among those with diabetes. People with diabetes in Pakistan cited family encouragement and healthcare professional education as two of the most important factors in their ability to manage their condition independently.

Keywords: Diabetes, Ill perception, diabetic Self management, eating behavior.

Introduction

Diabetes is a chronic ailment that is characterized by elevated blood glucose levels. The root cause of this condition is inadequate insulin synthesis, which regulates blood sugar levels (Balaji et al. 2019). Type 1 diabetes is brought on by the pancreas' insufficient synthesis of insulin. Type 2 diabetics (T2D) produce insulin, but their bodies are unable to use it efficiently. Due to the disorder's effect on insulin control, type 2 diabetes (T2D)-related hyperglycemia can eventually have fatal effects on many different physiological systems (Corbin et al., 2018).

According to World Health Organization (WHO) figures released in 2018, the number of persons with diabetes globally risen drastically from 108 million in 1980 to over 422 million in 2014. The prevalence of T2D diabetes and obesity is largely to blame for this rise. In addition to its severe effects on physical health, diabetes also has a substantial detrimental impact on mental and emotional health. For those with chronic conditions like diabetes, taking care of their emotional health is crucial (Mohanta et al., 2018).

The psychological effects of diabetes are attested to by the acceptance of the condition, understanding of how it affects the body and daily life, behavioral changes, and self-management (Powers et al., 2015). According to the American Diabetes Association (2009), a mix of environmental factors, such as obesity and inactivity, and inherited factors contribute to the development of type 2 diabetes (T2D). Problems with both large and tiny blood vessels are related to diabetes. In some nations, such as China, the prevalence of type 2 diabetes reaches pandemic proportions in recent decades (Van Loenen et al., 2016).

According to research conducted by McAndrew et al. (2014), a person's illness perceptions are an integrated perceptual-cognitive model of a health hazard that assists the individual in coping with health issues and determining the efficacy of therapies. Identity (both the name and the symptoms), timing, consequences, causes, perceived controllability or curability, and emotional representation are the six basic cognitive domains related with sickness perceptions. In addition to this, there is a non-cognitive domain that is connected to how people perceive their condition. According to research by Abubakari et al. (2016), an individual's perception of their illness can predict their behavior regarding self management and clinical results, particularly with regard to glycemic control in diabetics. According to research done by Van Puffelen et al. (2015), patients who believed they could successfully manage their diabetes engaged in more physical activity and were more likely to adhere to broad recommendations about diet and nutrition. Patients with diabetes who believed they had less control over their disease and who believed that it ran in cycles had higher levels of haemoglobin A1c (HbA1c), according to research carried out by Reagan et al. (2016). It was also discovered that focused interventions can change how people think about their illness, and that these changes can also affect how well people are able to control their blood sugar (Mc Sharry et al. 2011). This was proven to be the case.

Self management involves identifying and managing indicators, symptoms, treatment, psychological, emotional, and physical variables, and lifestyle adjustments needed to live with a chronic condition. Self management is actively doing self-care to improve behaviour and well-being. Self management of diabetes includes regular exercise, eating the right foods, taking medications as prescribed, and checking blood sugar levels. Dietary Self management is the most important part of diabetes Self management because it encourages healthy eating and helps

people reach their weight, blood glucose, lipid, and blood pressure goals (Derosa et al. 2014). People with T2D are often influenced by how their family members take care of their health when it comes to Self management. Family members influence T2D patients' Self management health behaviours (Vongmany et al. 2018). Family members don't have to be related by blood, marriage, or adoption. They can also be people who are an important part of your life (Peyrot et al. 2015). Health-related behaviours often receive encouragement and support from family members in various roles (Fadlon and Nielsen¸ 2019). In light of the fact that type 2 diabetes (T2D) impacts not only the person who has it but also their loved ones, it is crucial to take into account the contributions of family members in achieving successful Self management (Mayberry and Osborn, 2014).

Healthy eating is a key part of Self management practices for people with diabetes (Ekore and Ekore, 2008). Taking this into account, different organizations have come up with evidence-based nutrition recommendations (Bantle et al. 2008). These guidelines encourage healthy eating and provide guidance to persons with diabetes on how to make food choices, create a meal plan, and monitor their calorie intake. To be more specific, it is recommended that people who have type 2 diabetes eat whole grains, beans, fruits, and vegetables that are not starchy. These foods are sources of fibre, important vitamins, minerals, and antioxidants, and it is also recommended that they consume little in the way of fats, oils, sweets, and alcohol (Vickers, 2017). Salt should also be eaten in small amounts, no more than 2300 mg per day. In addition, patients should establish a meal plan that depicts eating six times a day with three meals and three snacks, and they should also account for food diversity, portion size, and serving time when developing their meal plan. In addition, people who have type 2 diabetes have additional considerations to make regarding their daily calorie consumption, including their body weight, the sort of activities they engage in, and any associated illnesses they may have (Evert et al. 2014).

Researchers have studied the attitudes of patients with type 2 diabetes in locations outside than the Chinese mainland. Less than a year after their diagnosis, type 2 diabetics in the Netherlands state that their condition is chronic but generally manageable and has few side effects (van Puffelen et al., 2015). According to research by Al-Ghamdi et al. (2018), of 383 Saudi patients, 75.5% thought that diabetes was inherited, whereas 62.4% thought that it was brought on by bad eating habits. We came to this conclusion based on the patients' knowledge of diabetes. However, a second study indicated that people with T2D had a rather high sense of personal and therapeutic control (Ashur et al., 2015). This is despite the fact that many Libyans with T2D viewed diabetes as a chronic disease.

Previous research has shown associations between several clinical and demographic variables and the symptoms of type 2 diabetes in patients. A recent study (Boonsatean et al. 2018) found that men with diabetes had higher expectations for the success of their treatment than women did. In comparison to patients with lower education levels, those with higher education levels reported more severe diabetic symptoms and a stronger sense of personal control over their health. According to Abubakari et al. (2016), people who had had type 2 diabetes for a longer time had a better understanding of the condition, a more positive emotional representation of it, and less misconceptions about it.

The context in which someone gathers and interprets information regarding their illness may have an impact on how that person views it (McAndrew et al., 2014). According to earlier

research (Pesantes et al., 2018), the type 2 diabetes patients' and their families' activities may have an impact on the patients' self management strategies. In a cross-sectional study, Gaddis (Gaddis, 2020) investigated how people's social networks, cultural norms, and prior T2D experiences affected their decisions and behaviors about self management. Differences in how disease is viewed and how health is believed have an impact on self management techniques (Matthew, 2021). Several factors affect the non-universality of self-management habits.

People with type 2 diabetes are urged to visit their doctor annually in the UK to lessen the chance of improper care. The cost-cutting BHCAA act will make it simpler for Type 2 diabetic patients in Bermuda to take care of themselves. The study's findings (Widayanti et al., 2020) indicate that the participants' cultural identities appeared to have an effect on their understanding of diabetes, which in turn affected their health-related behaviors and their use of self-management approaches.

The attitudes of type 2 diabetics toward their condition and their capacity to control their diabetes through self-management are poorly understood. The goal of this study is to determine how one's eating habits may act as a moderator and how one's perspective on health influences one's capacity to manage their diabetes. In order to better understand how gender and relationships affect illness perspective, diabetic Self management, and eating behavior, the study also examines male and female type 2 diabetes patients as well as married and single people.

Methods

Participants

Sample of study was comprised on 1117 diabetic patients, who were selected through purpose random sampling technique. The demographic characteristics were as follows; gender (male, female), marital status (married, unmarried).

Ethics

This study has emphasized to guard/protect human participants, their dignity, rights and welfare.

Measures

Three research instruments were used; Patients' Perceptions of Diabetes Questionnaire (PPDQ) was developed by Kamatani et al. (2013). It was comprised on 28 items with seven factors; 1- feeling miserable, 2- feeling of inferiority, 3- feeling of restriction, 4- feeling of importance, 5- feeling of overindulgence,6- living an orderly life, and 7- feeling of getting into trouble. Diabetes Self management Questionnaire (DSMQ) was developed by (Schmit et al., 2013). It was based on 16 items with these factors; medication adherence, blood glucose monitoring, appoint adherence, dietary adherence and physical activity. Healthy and Unhealthy Eating Behavior Scale (HUEBS) was developed by Guertin Camille (2020). This scale has 21items and two subscales: healthy eating behavior or unhealthy eating behavior. The original Cronbach's alpha reliability of the scales are; Patients' Perceptions of Diabetes Questionnaire (.869), Diabetes Self management Questionnaire (.851), and Healthy and Unhealthy Eating Behavior (.819).

Cronbach's Alpha Reliability

Scales	Items	Cronbach's Alpha Reliability

Patients' Perceptions of Diabetes Questionnaire	28	.945
Diabetes Self management Questionnaire	16	.891
Healthy and Unhealthy Eating Behavior Scale	21	.942

The values of the Cronbach's alpha reliability of research instrument are reliable to use in the study.

Statistical Analysis

The analysis of the data included both descriptive and inferential statistical methods. In order to conduct an analysis of the data, the following statistical methods were utilized: Pearson Product-Moment Correlation to investigate the connection between diabetes self management and sickness perception; Multiple Linear Regression to Examine the Impact of Illness Perception on Diabetes Self Management; Independent Samples t-Test to assess the mean differences in sickness perception, diabetes Self management, and eating behavior by gender and marital status.

Results

Table: 1 Relationship among Illness Perception toward Diabetes, Diabetic Self management and Eating Behavior

Variables	1	2	3
Illness Perception toward Diabetes	1	.814**	.850**
Diabetic Self management		1	.893**
Eating Behavior			1

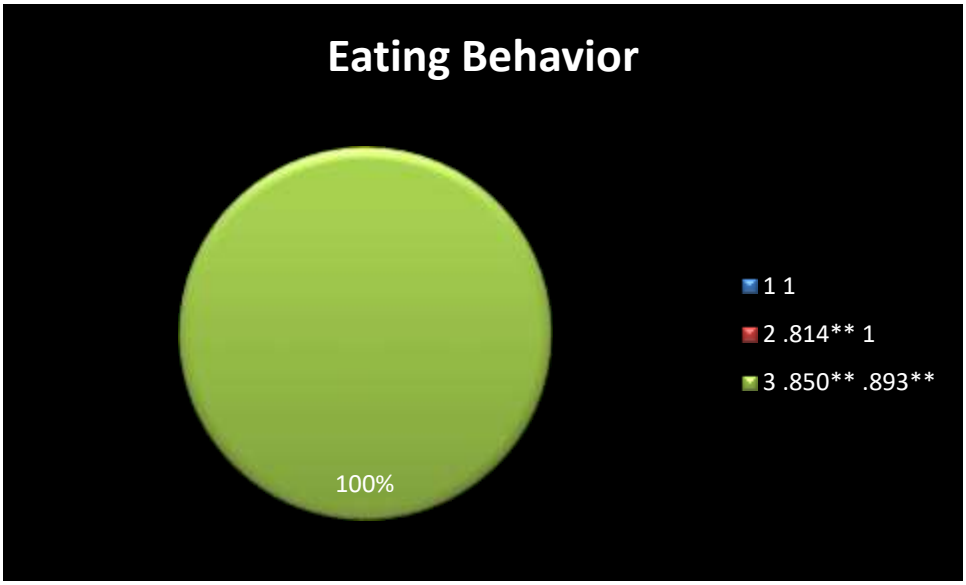

Fig.1. Eating behavior of illness towards diabetes

Table 1 and fig 1 shows the relationship among illness perception toward diabetes, diabetic Self management, and eating behavior. Results reveal that there is significant positive relationship among illness perception toward diabetes (feeling miserable, feeling of inferiority, feeling of restriction, feeling of importance, feeling of overindulgence, living an orderly life, and feeling of getting into trouble), diabetic Self management (medication adherence, blood glucose monitoring, appoint adherence, dietary adherence and physical activity), and eating behavior (health and unhealthy eating).

Table: 2 Effect of Illness Perception toward Diabetes on Diabetic Self management

Model	**Unstandardized Coefficient**		**Standardized Coefficients**	**T**	**Sig.**
	B	**Std.Error**	**Beta**		
(Constant)	18.388	1.162		15.819	.000
PPDQ	.5576	.012	.814	46.812	.000

R^2 = .663, Adjusted R^2 =.662.

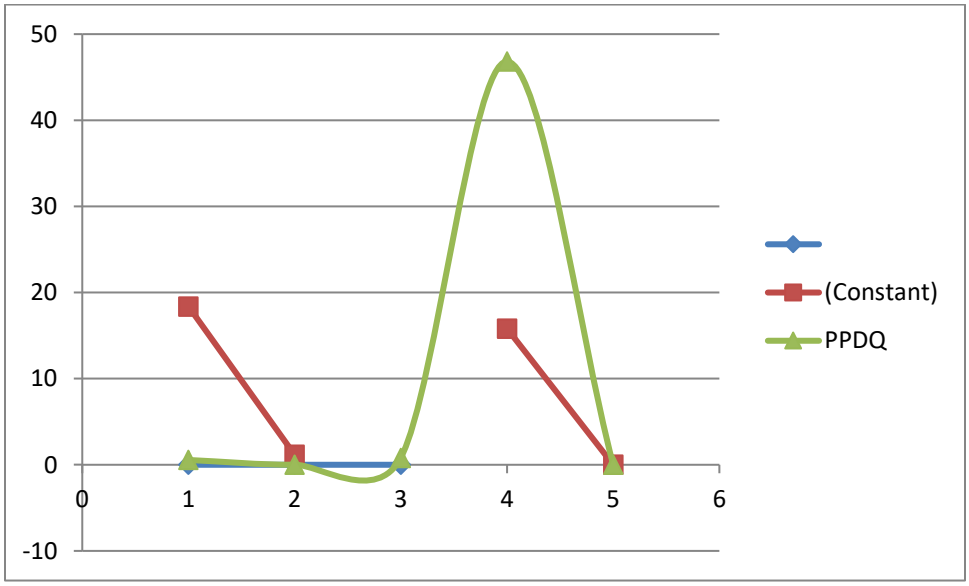

Fig.2. Significance of Self management diabetic

Table 2 and figure 2 depicts that diabetic Self management is significantly predicted by the illness perception toward diabetes among diabetic patients. It indicates that attitude toward the diabetic Self management is predisposed by illness perception.

Table: 3 Gender Based Comparison of Illness Perception about Diabetes, Diabetic Self management and Eating Behavior

Variable	Gender	N	M	Std. Deviation	df	t-test	p-value
Illness Perception toward Diabetes	Male	521	83.196	16.071	1115	-21.325	.000
	Female	596	105.97	19.196			
Diabetic Self management	Male	521	64.626	13.692	1115	-16.635	.000
	Female	596	77.540	12.253			
Eating Behavior	Male	521	43.624	11.733	1115	-15.447	.000
	Female	596	53.930	10.563			

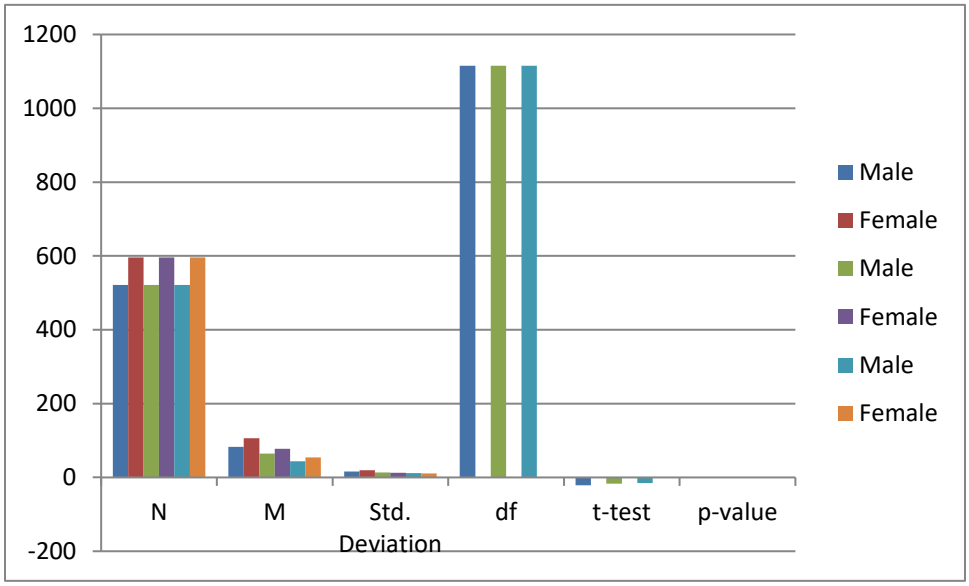

Table 3 and figure 3 compares the mean difference of illness perception toward diabetes, diabetic Self management and eating behavior between male and female diabetic patients. The level of illness perception toward diabetes, diabetic Self management and eating behavior is higher among female diabetic patients as compared to male. It indicates that females are more sensitive than males so they are more conscious to diabetic Self management and healthy eating behavior.

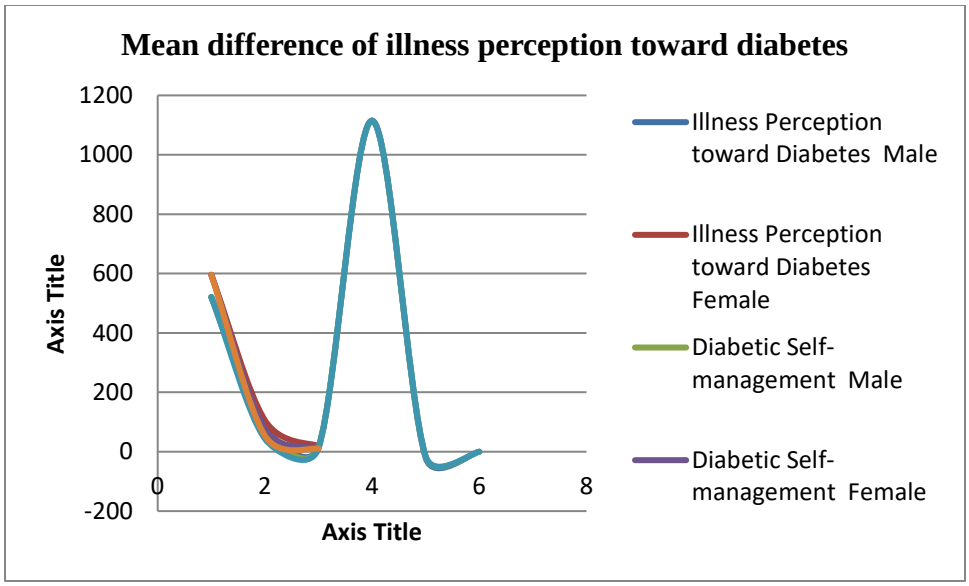

Fig.3. Mean difference of illness perception toward diabetes

Table 4: Marital Status Based Comparison of Illness Perception about Diabetes, Diabetic Self management and Eating Behavior

Variable	MS	N	M	Std. Deviation	Df	t-test	p-value
Illness Perception toward Diabetes	Married	372	87.874	19.401	1115	-8.629	.000
	Unmarried	745	99.081	20.963			
Diabetic Self management	Married	372	69.667	10.656	1115	-3.034	.000
	Unmarried	745	72.440	15.944			
Eating Behavior	Married	372	49.272	11.082	1115	.287	.000
	Unmarried	745	49.048	12.801			

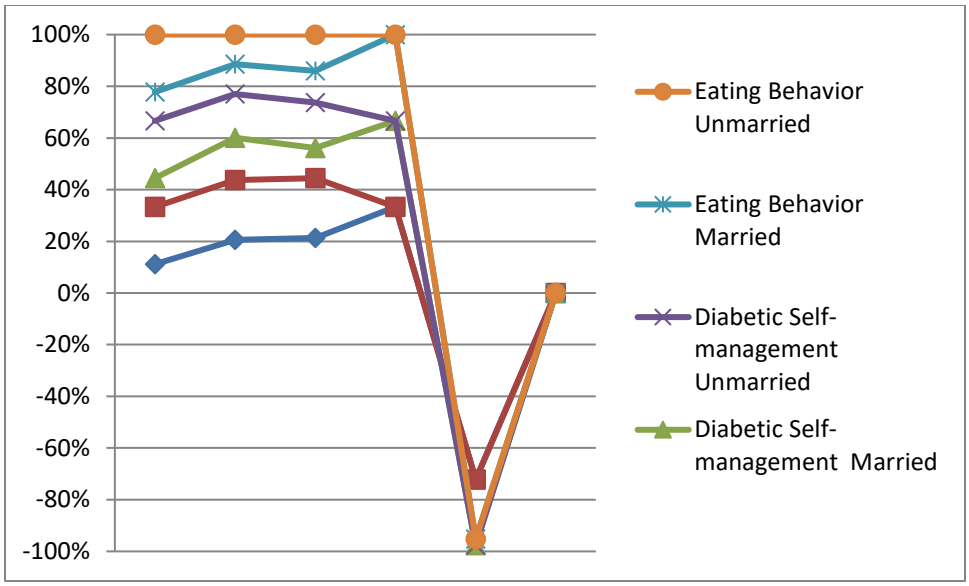

Fig.4. difference of illness perception toward diabetes, diabetic Self management

Table 4 and figure 4 and 5 shows the difference of illness perception toward diabetes, diabetic Self management and eating behavior between married and unmarried diabetic patients. Results reveal that significant difference is found between married and unmarried on illness perception toward diabetes and diabetic Self management. Unmarried diabetic patient are more conscious toward diabetic illness perception and ability to diabetic Self management. But there is no significant difference is examined on eating behavior between married and unmarried diabetic patients.

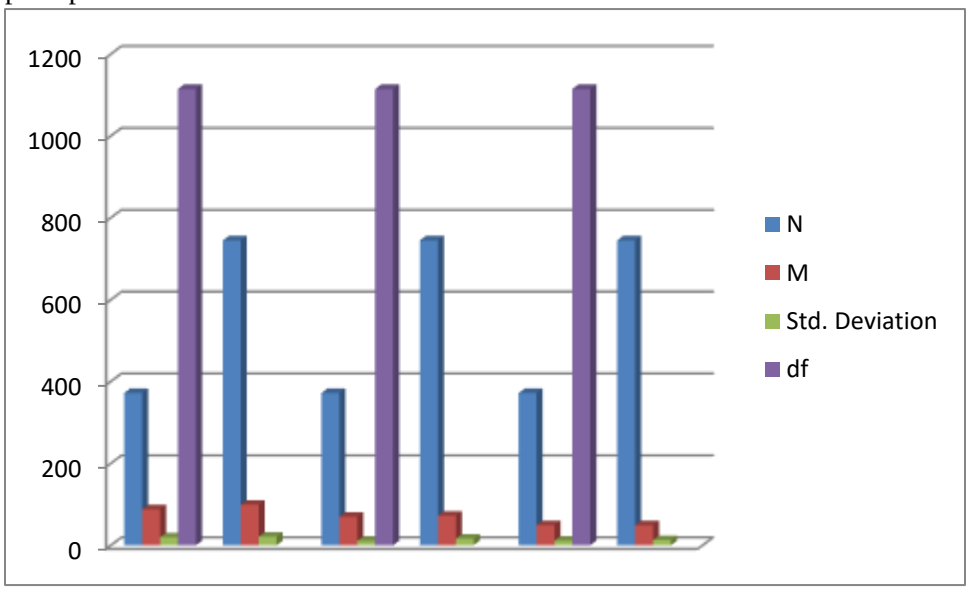

Fig.5. Standard deviation of number of patients

Discussion

Diabetes type 2, also known as T2D, is a hazardous and frequent form of chronic disease that is caused by the complex interplay between hereditary and environmental factors, including risk factors such as having a sedentary lifestyle and being obese. Diabetes type 2 (also known as T2D) is a condition that affects the body's blood sugar levels and can lead to serious complications. The findings of the study suggest that there is a positive correlation between illness perception (feeling miserable, feeling of inferiority, feeling of restriction, feeling of importance, feeling of overindulgence, living an orderly life, and feeling of getting into trouble) and diabetic Self management (medication adherence, blood glucose monitoring, appoint adherence, dietary adherence, and physical activity). The findings of the study are in line with the findings of earlier research. A recent study indicated that a statistically significant beneficial link was observed between the perception of one's disease and diabetic self management (Matthew, 2021). It would appear that the concept of diabetes as an illness has a good impact on diabetic self management. Patients with diabetes who believed they could successfully manage their condition engaged in more physical activity and were more likely to adhere to broad recommendations for diet and nutrition (van Puffelen et al. 2015). According to the results of the study, the association between sickness perception and diabetic Self management is considerably moderated by the eating habit of patients with type 2 diabetes. According to the findings, females exhibited a higher level of disease perception in relation to diabetes than males did. This included feelings of misery, feelings of inferiority, feelings of limitation, feelings of importance, feelings of overindulgence, leading an orderly life, and feelings of getting into trouble. The findings of the study also revealed that female diabetic patients had a better level of self management of their condition than their male counterparts, as measured by adherence to medication, blood glucose monitoring, appointment adherence, dietary adherence, and physical activity. In addition, the findings indicate that female patients are more likely to engage in good eating behaviors throughout the course of their illness compared to male patients. These findings are in line with those found in earlier research. There is an increasing body of research suggesting that type 2 diabetes and the complications associated with it are gender-related. Alterations in hormone levels, sociocultural behaviors, changes in the environment (including food, lifestyle, stress, and attitudes), and interactions between genes and the environment are the root causes of these variances (Ober et al. 2008). According to the findings of another study, men are more likely to be diagnosed with type 2 diabetes at a younger age and with a lower BMI than women are; nevertheless, women are more likely to have obesity, which is a significant risk factor for type 2 diabetes (Ng et al. 2014). Additionally, it is more common for women to get DM earlier than it is for males. Despite the fact that men and women who did not have diabetes generally had lower incidence of cardiovascular events, Wannamethee et al. (2012) found that alterations in glucose metabolism seemed to contradict this pattern.It's possible that this is due to the fact that females have a higher predisposition for adipocyte growth, which can lead to abnormalities in fat accumulation. Diabetes mellitus was shown to be three times as likely to raise the risk of incident heart disease in females as it did in males, according to the findings of a pooled analysis that included 900 000 persons from 64 cohorts and 28,000 coronary events (Peters et al. 2014). In light of the fact that hormones produced during sexual activity have a discernible impact on the metabolism, vasculature, and inflammation of the body. With regard to sickness perception and diabetic self management, there was a significant difference that was looked into in relation to marital status.

Unmarried patients were shown to have a higher level of illness perception and diabetic Self management when compared to married patients, according to the study's findings. These findings are in line with what has been reported in the relevant research. Unmarried diabetic patients have been discovered to have a higher level of sickness perception regarding their diabetes, as well as a better predisposition for diabetic self management, according to a study that was conducted in the past. According to Gaddis 2020, individuals who are single are more likely to perceive their illness and have the ability to control their diabetes themselves. According to the findings of another piece of research (Abubakari et al. 2016), married people have a harder time managing their diabetes because of the various responsibilities they have.The findings of the most recent study are in agreement with those of the studies that came before it. As a result of the various responsibilities that come with married life, diabetes patients who are married and have poor diabetic self management experience the kinds of challenges that are associated with controlling their disease. In addition, a recent study suggests that female diabetic patients who are single and who are more attentive about their diabetic Self management are more likely to have a sense of their illness and are more likely to be unmarried.

Conclusion

The prevalence and number of people with diabetes mellitus (DM) are both rising quickly. Diabetes is a chronic, progressive disorder that places a heavy financial strain on healthcare systems while also causing significant morbidity and premature mortality. In 2017, diabetes-related mortality claimed the lives of up to 5.0 million persons aged 20 to 99. These results shed light on the factors of illness perceptions and their association to diabetic Self management. This research reveals positive relationship between illness perception, diabetic Self management and eating behavior among patients of type 2 diabetes. Females are more likely to illness perception, and showed greater level of diabetic Self management and healthy eating as compared to males. In addition, this research suggests that eating behavior significantly moderates the relationship of illness perception and diabetic Self management. Moreover, married diabetic patients reported lower level of illness perception and diabetic Self management as compared to unmarried.

Limitations and Suggestions

No doubt, diabetes is chronic disease but some others diseases are still unexplored with these variables. The current restricted was restricted on diabetic patient with type 2. Furthermore it was emphasized on the following demographic information; gender and their marital status. In the light of above limitations it was suggested that some valuable demographic variables of the participants should be included. Mediating effect of the variable must be investigated between the relationship of illness perception and diabetic Self management. This study must be expanded in future to generalize the results on the whole population in Pakistan.

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