

Assessment Of Knowledge Of Diabetic Patients Regarding Diabetic Foot Care At Al- Najaf Center For Diabetes And Endocrine

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Abstract

Background: diabetes mellitus (DM) is a major public health problem that is increasing in its prevalence. The number of people affected by DM was expected to rise from 171 million in the year 2000 to 366 million by 2030. In 2011, there were 366 million people affected with diabetes mellitus globally. In 2014 The International Diabetes Federation estimated that there were 20.5% of Saudis between 20 and 79 years are diabetics.

Study aims to assess diabetic patients' knowledge regarding care of diabetic foot and to find out the relationship between patients' knowledge regarding care of diabetic foot and their demographic and clinical data.

Methodology: a descriptive study design was conducted at Al-Najaf city in the southern region of Iraq in Al-Najaf Al-Ashraf Health Directorate/ Al-Sadder Medical City / Al-Najaf Center for Diabetes and Endocrine from January 8th, 2023, to May 28th, 2023, in order to assess diabetic patients' knowledge regarding care of diabetic foot. The methodological strategies for data collection used an assessment questionnaire survey.

Results: as the study shows, the diabetic patients had poor level of knowledge about diabetic foot care. The association between most demographic variables and patients' knowledge level is non-significant, except for educational status and information about diabetes management, which showed significant associations.

Conclusion: the study concludes that the majority of diabetic patients had inadequate knowledge of foot care.

-Recommendations: The study recommends implementing educational programs that specifically target diabetic foot care, with a focus on improving knowledge among patients with lower educational levels and providing information about diabetes management.

Keywords: Diabetes Mellitus (DM), Diabetic Foot.

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I. Introduction

Diabetes mellitus (DM) is a major public health problem that is increasing in its prevalence. The number of people affected by DM was expected to rise from 171 million in the year 2000 to 366 million by 2030. In 2011, there were 366 million people affected with diabetes mellitus globally. In 2014 The International Diabetes Federation estimated that there were 20.5% of Saudis between 20 and 79 years are diabetics (Goweda *et al.*, 2017)

Together with the rising prevalence of diabetes, a substantial increase in its complications is expected. One of the most serious complications of diabetes causing high degrees of morbidities and mortalities and care cost is diabetic foot. It describes various degrees of angiopathy and neuropathy affecting the foot with tendency towards destruction of the foot tissue, ulceration and infection. Many risk factors may lead to diabetic foot including long duration of diabetes, poor metabolic control, foot deformities, older age, peripheral vasculopathy and poor knowledge of diabetics (Al-Wahbi, 2006).

Diabetic foot was found to affect 8-17% of diabetics, almost 85% of diabetes-related amputations are preceded by foot ulcers, and it accounts for more than 50% of non-traumatic lower limb amputations, which is at least 15 times greater in those with diabetes than non-diabetics (Dang and Boulton, 2003)

American Diabetes Association estimates that one in five people with diabetes who seek hospital care do so for foot problems (American Diabetes Association, 2013).

Of all the diabetes related complications, those that occur in the foot are considered the most preventable. The United Kingdom Prospective Diabetes Study has shown that appropriate control of blood sugar through dietary control, exercise and proper medications prevents the development of microvascular complications. Apparently, the practice of diabetic foot care measures such as daily foot examination and the use of appropriate footwear are important as regard the early detection and prevention of the expected complications. Patients with poor knowledge and practices regarding diabetic foot care have a higher incidence of foot complications including ulcers (Chellan *et al.*, 2012).

II. Study Significance

Diabetes mellitus (DM) is one of the most common chronic diseases across the world. Type 2 diabetes mellitus (T2DM) is the major type of diabetes around the world. It is caused by the body's ineffective use of insulin added to a slow progressive loss of pancreatic β -cells. Both types of diabetes may have the same symptoms, but in T2DM they are often less marked or absent. Subsequently, it may be a silent disease without manifestation for a long time, until complications occur.⁴ For many years, this type of diabetes was observed only in adults, but, based on recent World Health Organization (WHO) data, it is also increasingly manifesting in children (World Health Organization, 2018).

For the past 30 years, the world has experienced a continuous raise in the prevalence of diabetes particularly in low- and middle-income countries which marks the most rapid growth.³ Earlier onset of T2DM is described in children, potentially due to modernization of lifestyle.⁵ The prevalence of diabetes worldwide in 2017, is estimated to be 8.8% (425 million people) among the adult population as presented by the International Diabetes Federation (IDF). Among IDF regions, the Middle East and North Africa (MENA) region has the second highest rate of diabetes and 9.2% prevalence. Between 2017 and 2045, it is estimated that diabetes prevalence will increase by 110% in the MENA region and will reach 629 million worldwide in 2045 (Abusaib *et al.*, 2020)

Diabetes is a heavy burden disease. In 2017, the mortality rate due to diabetes reached 10.7% in adult patients (20-79 years). In MENA Region, diabetes accounts for 373 557 deaths (21 countries and territories including Iraq) and an estimate of 51.8% of deaths are due to diabetes in patients aged below 60; this puts the region in the highest second level among IDF regions.⁶ Despite the high prevalence of diabetes in the MENA region, data on diabetes progression and complications are scarce and only 2.9% of total global spending on diabetes is invested in the region (International Diabetes Federation, 2017).

Around 1.4 million of Iraqis have diabetes. Reported T2DM prevalence in Iraq ranges from 8.5% (IDF—age-adjusted) to 13.9%. A local study including more than 5400 people in the city of Basrah, Southern Iraq, reported a 19.7% age-adjusted prevalence of diabetes in subjects aged 19 to 94 years (Mansour *et al.*, 2014).

In Iraq, there are insufficient epidemiological studies and randomized controlled trials (RCTs) related to diabetes; therefore, it remains difficult to fully understand the prevalence of diabetes in Iraq and the most effective therapies for Iraqi population. In tandem with the rise of DM is associated its complications. Some of the important complications include coronary artery disease, nephropathy, retinopathy, microalbuminuria, and neuropathy. Among these complications, diabetic neuropathy is one of the most common and serious complications. Ethical Approval Done, dated 10th April 19(Abusaib *et al.*, 2020).

Among the complications of diabetes, those that occur in the foot are considered the most preventable. Many studies cited that the prevalence of diabetic foot occurring as a result of diabetic neuropathy among outpatient and inpatient diabetics (George *et al.*, 2013)

Poor knowledge and poor foot care practices were identified as an important risk factors for foot problems in diabetes. Hence, in order to minimize, if not totally prevent, foot complications, it is important that appropriate and timely foot self-care be emphasized to patients with diabetes. Primary healthcare is the most essential type of care provided to the patient, it is the first contact healthcare and tends to be the immediate first aid for the patient; the care is either provided by the grass route healthcare worker or is provided as self-care by the patient himself. In any situation it is of paramount importance that the person concerned needs to be well aware and trained to correctly assess and subsequently dispense of proper management and care for the concerned pathology (Singh *et al.*, 2020).

III. Methodology:

Study Design: a descriptive study design was conducted at Al-Najaf city in the southern region of Iraq in Al-Najaf Al-Ashraf Health Directorate/ Al-Sadder Medical City / Al-Najaf Center for Diabetes and Endocrine from January 8th, 2023, to May 28th, 2023, in order to assess diabetic patients' knowledge regarding care of diabetic foot. The methodological strategies for data collection used an assessment questionnaire survey.

Population and Study Sample:

A Non-probability (convenience) sample of (100) patients who visit Al-Sadder Medical City / Al-Najaf Center for Diabetes and Endocrine treatment or follow up or both, are included in the study sample .A questionnaire was constructed by researcher to measure the variables of interest. The final study instrument consisting of three parts : the first part is the demographic data, the second part is the clinical data, and the third part is the instrumental Assessment of Knowledge of Diabetic Foot Care Questionnaire.

Statistical methods

1. Descriptive data analysis:
 - a. Frequencies and Percentages.
 - b. Statistical means and standard deviation
2. Inferential Data Analysis:

IV. Results:

Table(1) Characteristics and sociodemographic data of the study participants

Demographic data	Sub-groups	Frequency (N=100)	Percentage
Age / years	18-33	11	11.0
	34-49	21	21.0
	50-65	50	50.0
	66-81	18	18.0
Gender	Male	52	52.0
	Female	48	48.0
Marital Status	Single	14	14.0
	Married	49	49.0
	Widowed	37	37.0
Educational Level	Does not Read and Write	45	45.0
	Read and Write	10	10.0
	Primary school	21	21.0
	Intermediate school	6	6.0
	Secondary School	5	5.0
	Institutes	3	3.0
	College	9	9.0
Residence	Postgraduate	1	1.0
	Urban	49	49.0
	Rural	51	51.0
Monthly Income	Sufficient	10	10.0
	Barely Sufficient	87	87.0
	Insufficient	3	3.0
Occupation	Employee	11	11.0
	Free job	44	44.0
	Retired	12	12.0
	Jobless	15	15.0
	Housewife	18	18.0
Type of Diabetes	Type I	33	33.0
	Type II	67	67.0
Complications	Cardiovascular disease	26	26.0
	Renal disease	9	9.0
	Eye problems and disease	37	37.0
	Diabetic foot	9	9.0
	Others	19	19.0
Duration of the Disease/Years	1-6	35	35.0
	7-12	26	26.0
	13-18	28	28.0
	19-24	11	11.0
Smoking	Yes	25	25.0
	No	75	75.0
Information about diabetes Management	Yes	84	84.0
	No	16	16.0
Treatment	Oral Hypoglycemia	42	42.0
	Injection	41	41.0
	Diet	10	10.0
	All of them	7	7.0
Do you suffer from other disease	Yes	36	36.0
	No	64	64.0

Table (1) shows that the majority of the patients subgroups are : those with ages ranging between (52-65) years (50%); male patients (52%); those does not read and write (45%), those who are married (49%); those that live in rural area (51%); those who are Free job (44%); those with barely sufficient monthly income (87%); those with type II (67%); those with eye problems (37%); those with 1-6 duration of disease (35%); those who does not smoke (75%); oral hypoglycemia (42%); those who have information about DM (84%); those with no other diseases (64%).

Table (2) Assessment and mean of scores of diabetic patients' knowledge about diabetic foot care

No.	Items	MS	SD	Assessment
History of foot Problems				
1	Have you ever had a sore or cut on your foot or leg that took More than two weeks to heal?	1.13	0.34	Poor
2	Have you ever had a foot ulcer?	1.1	0.30	Poor
3	Have you ever had an amputation of a toe, foot, or leg? (If yes, date: ____/____/____).	1.01	0.10	Poor
Current Foot or Leg Problem				
1	Do you have an ulcer, sore, or blister on your feet at this time?	1.08	0.27	Poor
2	Do you examine your feet? (If yes, how often?) -Every day - 2-6 times a week -Once a week or less -When I have a problem	2	0.00	Good
3	Do you wash your feet every day?	1.31	0.46	Poor
4	Do you dry well between the toes?	1.25	0.44	Poor
5	Do you use a moisturizing cream on your feet?	1.58	0.50	Moderate
6	Do you cut your own toenails? (If no, who does this for you?) -Family member -Caregiver -Foot care nurse -Podiatrist	1.69	0.46	Good
Safety and Prevention				
1	Do you ever soak your feet?	1.27	0.45	Poor
2	Do you always test water temperature before putting your foot in?	1.84	0.37	Good
3	Do you use medicated products for warts, corns or calluses?	1.07	0.26	Poor
4	Do you put moisturizing creams or lotions between your toes?	1.47	0.50	Moderate
5	Do you ever walk around in your bare feet?	1.11	0.31	Poor
6	Do you ever wear shoes without wearing any socks?	1.1	0.30	Poor
7	Do you always inspect your shoes for foreign objects or torn linings?	1.11	0.31	Poor
8	Do you use a hot water bottle or heating pad on your feet?	1.08	0.27	Poor
9	Do you sit with your legs crossed?	1.09	0.29	Poor
10	Do you smoke?	1.16	0.37	Poor
Foot Care Education				
1	Have you ever attended a class on how to care for your feet?	1.09	0.29	Poor
2	Have you ever read any handouts on foot care?	1.11	0.31	Poor
3	Have you ever read any handouts on proper footwear?	1.14	0.35	Poor
4	Would you like a handout on how to care for your feet?	1.15	0.36	Poor
No.	Items	MS	SD	Assessment
History of foot Problems				
1	Have you ever had a sore or cut on your foot or leg that took More than two weeks to heal?	1.13	0.34	Poor
2	Have you ever had a foot ulcer?	1.1	0.30	Poor

3	Have you ever had an amputation of a toe, foot, or leg? (If yes, date: ___/___/___).	1.01	0.10	Poor
Current Foot or Leg Problem				
1	Do you have an ulcer, sore, or blister on your feet at this time?	1.08	0.27	Poor
2	Do you examine your feet? (If yes, how often?) -Every day - 2-6 times a week -Once a week or less -When I have a problem	2	0.00	Good
3	Do you wash your feet every day?	1.31	0.46	Poor

This table reveals the assessment and mean of scores of diabetic patients' knowledge about diabetic foot care. The responses to general knowledge questions regarding diabetic foot care are shown in this table. This shows that most of the patients have (poor) knowledge regarding diabetic foot care, some items had (moderate) knowledge, while few items exhibited (good) knowledge. This assessment is based on the statistical scoring system, in which the item is classified as (poor) if the mean of scores between (1-1.33); it is considered (moderate) if the mean of scores between (1.34-1.66); while it is considered (good) if the mean of scores is more than (1.67).

Table (3) Assessment and mean of scores of overall diabetic patients' knowledge and domains about diabetic foot care

No	Items	MS	SD	Assessment
1	History of foot Problems	1.08	0.25	Poor
	Current Foot or Leg Problem	1.48	0.36	Moderate
	Safety and Prevention	1.23	0.34	Poor
3	Foot Care Education	1.12	0.33	Poor
	Total Knowledge	1.23	0.32	Poor

Table (5) Association between the overall assessment of diabetic patients' knowledge regarding diabetic foot care and their demographic data

Demographic data	Chi Square	df	P value	Significance
Age / years	3.22	6	0.76	NS
Gender	1.22	2	0.43	NS
Marital Status	3.44	6	0.33	NS
Educational Level	26.34	14	0.02	S
Residence	3.54	2	0.26	NS
Monthly Income	2.84	4	0.22	NS
Occupation	3.61	8	0.66	NS
Type of Diabetes	1.23	2	0.23	NS
Complications	3.82	8	0.41	NS
Duration of the Disease/Years	1.34	6	0.52	NS
Smoking	4.54	2	0.16	NS
Information about diabetes Management	7.84	2	0.03	S
Treatment	3.76	6	0.76	NS
Do you suffer from other disease	0.99	2	0.83	NS

This table shows the association between the overall assessment of diabetic patients' knowledge regarding diabetic foot care and their demographic data, it shows that there is a non-significant association ($P > 0.05$) between the overall assessment of diabetic patients' knowledge regarding diabetic foot care and their demographic data ; except educational status, and Information about diabetes Management, in which there was a significant association ($P < 0.05$) with diabetic patients' knowledge regarding diabetic foot care .

V. Discussion:

Table (1) Descriptive statistics (frequency and percentage) for the demographic data of patients

Shows that there is about fifty percent of the ages range between (52-65) years. They Diabetic patients. This outcome is reinforced by a study done by (Ayele, et al., 2012). Who studied the "Self-care behavior among patients with diabetes in Harari, Eastern Ethiopia: the health belief model perspective." Who concluded in their results that the dominant age of the study sample is 55 years old and more. The danger for DM increases with the increase in age of the patient which will contribute to raising the occurrence of diabetes in those individuals when

age is advanced (AL-Bayati, 2014). "Assessment of Factors Affecting on Patients' Adherence to Therapeutic Recommendations after Ischemic Heart Diseases in Al-Najaf City."

Regarding gender, the results reveal that the majority is about fifty-two percent of subjects are male. Mentioned that males are the dominant gender for patients, which are diabetic mellitus. (George, Hanu, et al; 2013). "Foot care knowledge and practices and the prevalence of peripheral neuropathy among people with diabetes attending a secondary care rural hospital in southern India."

Concerning marital status, the majority about forty-nine percent are married. Several studies are in agreement with results the present of the study (Hailu, et al 2012). They studied the "Self-care practice and glycaemic control amongst adults with diabetes at the Jimma University Specialized Hospital in south-west Ethiopia: A cross-sectional study." (Shrivastava, et al., 2015) They studied "An epidemiological study to assess the knowledge and self-care practices among type 2 diabetes mellitus patients residing in rural areas of Tamil Nadu." (Albikawi, et al., 2015) "Diabetes self-care management behaviors among Jordanian type two diabetes patients."

In their studies they found that the highest results of their studies samples were married patients. Concerning educational levels, a higher percentage is about forty-five percent are illiterate. This result is in agreement with other studies (Oleiwi, et al; 2012). "Determination of Diabetes Type 2 Clients' Self-Management Skills toward Dietary Pattern." (Chaurasia, et al; 2015). "A self-care management awareness study among diabetes mellitus patients in rural Nepal." Their studies found that the majority of the study subjects are illiterate regarding occupational status, the highest percentage is housewives is about forty-four percent. This result is in agreement with the results which are obtained from (Raithatha, et al; 2014). "Self-care practices among diabetic patients in Anand district of Gujarat."

Most of the sample results indicate that about eighty-seven percent of the study sample are insufficient monthly income. Regarding residency, the current study results show that most sample is about fifty-one percent live in rural areas. This result is in agreement with (Elyasi, Forouzan, et al; 2015). "Sexual dysfunction in women with type 2 diabetes mellitus". The majority of the patients have type 2 diabetes mellitus.

For those who do not smoke about seventy-five percent. Cigarette smoking predicts incident type 2 diabetes. For smokers at risk for diabetes, smoking cessation should be coupled with strategies for diabetes prevention and early detection. (Yeh, Hsin-Chieh, et al; 2010). "Smoking, smoking cessation, and risk for type 2 diabetes mellitus: a cohort study."

For those with eye problems is about thirty-seven percent. The eye is considered the mirror of the human body. (Van Crevel, R., et al; 2018). "Clinical management of combined tuberculosis and diabetes."

We evaluated the clinical characteristics of patients with type 2 diabetes for whom different types of oral hypoglycemic about forty-two percent. We found agents this information would provide guidance for pharmacotherapy based on specialists' prescriptions as individualized therapy for T2DM. (Inzucchi, Silvio E., et al; 2012). "Management of hyperglycemia in type 2 diabetes: a patient-centered approach: position statement of the American Diabetes Association (ADA) and the European Association for the Study of Diabetes (EASD)."

Regarding the duration of the disease, the higher percentage about thirty-five percent is for those who are suffering from the disease for a period from (1-6) years finding is consistent with the results of (Omari, et al; 2014). "OP79 Assessment of the level of knowledge, self-care practice and glycemic control among patients with type 2 diabetes attending the diabetes clinic at Kenyatta National Hospital."

Table (3) Assessment and mean of scores of overall diabetic patients' knowledge and domains about diabetic foot care

This study showed that the majority of patients who were admitted for diabetic foot infections had poor knowledge and poor practice of foot care. In terms of the foot care scoring based on the questionnaire, practice was shown to be lower than knowledge. Patients had a certain level of poor knowledge of foot care. This finding was comparable with other related studies, which also reported the same pattern of scoring for knowledge and practice of foot care. (Hasnain, et al; 2009). "Knowledge and practices regarding foot care in diabetic patients visiting diabetic clinic in Jinnah Hospital, Lahore) , ".Desalu, et al; 2011). "Diabetic foot care: self-reported knowledge and practice among patients attending three tertiary hospital in Nigeria." (Chellan, et al; 2012). "Foot care practice–The key to prevent diabetic foot ulcers in India".

An important finding of this study was the association of the level of education with the level of knowledge of foot care in diabetic patients.

Table (5) Association between the overall assessment of diabetic patients' knowledge regarding diabetic foot care and their demographic data

Shows the association between the overall assessment of diabetic patients' knowledge regarding diabetic foot care and their demographic data, showing that there is a non-significant association between the overall assessment of diabetic patients' knowledge regarding diabetic foot care and their demographic data. Except for

educational status, at a p-value of 0.02. And Information about diabetes Management, at a p-value 0.03 of these results are supported by (Souza, et al; 2019). "Health-related quality of life of adolescents with type 1 diabetes mellitus"

VI. Conclusion

Based on the study results, it can be concluded that the majority of diabetic patients had inadequate knowledge of foot care. However, there was a significant association between educational status and information about diabetes management with patients' knowledge levels.

VII. Recommendations

The study recommends implementing educational programs that specifically target diabetic foot care, with a focus on improving knowledge among patients with lower educational levels and providing information about diabetes management. Regular eye examinations should be emphasized, and individualized pharmacotherapy approaches should be considered. Long-term management plans and support systems should be established for patients with varying durations of the disease. Finally, community involvement and awareness campaigns are essential to reduce the incidence of diabetic foot complications.

By implementing these recommendations, healthcare providers and policymakers can work towards improving the knowledge and practices of foot care among diabetic patients, ultimately reducing the burden of diabetic foot complications and enhancing the overall quality of life for individuals with diabetes.

Study Limitations

The chosen participants may not have been an adequate sample size to be generalized to the larger population. Also, some patients were less cooperative than others, or uncooperative at all.

Ethical considerations

The researchers obtained an approval from the Faculty of Nursing / University of Kufa to conduct the study, also another permission is obtained from Al-Najaf Al-Ashraf Health Directorate/ Al-Sadder Medical City/ Al-Najaf Center for Diabetes and Endocrine , in order to interviewing each subject. And finally, subjects' agreement also obtained from the patients themselves after the researcher explained the purpose of the study to them; sought informed consent; and offered a respect to participants confidentiality as well as making the participation voluntary, to answer the questionnaire items.

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References:

- [1]. Ayele, K.; Tesfa, B.; Abebe, L.; Tilahun, T.; Girma, E.: Self Care Behavior Among Patients With Diabetes In Harari, Eastern Ethiopia: The Health Belief Model Perspective, Plos ONE, 2012, 7(4): P.P.: 1-6.
- [2]. American Diabetes Association. Economic Costs Of Diabetes In The U.S. In 2012. Diabetes Care 2013; 36: 1033-46
- [3]. Albikawi, Z. And Abuadas, M.: Diabetes Self Care Management Behaviors Among Jordanian Type Two Diabetes Patients, American International Journal Of Contemporary Research, 2015, 5(3), P.P.: 87-95.
- [4]. Al-Wahbi AM. 2006 ' The Diabetic Foot In The Arab World', Saudi Medical Journal, 27 (2): 147-53
- [5]. AL-Bayati, D.: Assessment Of Factors Affecting On Patients' Adherence To Therapeutic Recommendations After Ischemic Heart Diseases In Al-Najaf City, Unpublished Thesis, College Of Nursing, University Of Baghdad, 2014, P.: 96 .
- [6]. Chellan G, Srikumar S, Varma AK, Mangalanandan TS, Sundaram KR, Jayakumar RV, Et Al. 2012 'Foot Care Practice-The Key To Prevent Diabetic Foot Ulcers In India'. Foot (Edinb). 22: 298-302.
- [7]. Chaurasia, N.; Mishra, R.; Ling, H.; Thapa, B.; Pokhre, A.; Kumar, S.; De, A.: A Self Care Management Awareness Study Among Diabetes Mellitus Patients In Rural Nepal, American Journal Of Public Health Research, 2015, 3 (5A) , P.P.: 67-71.
- [8]. Chellan G, Srikumar S, Varma AK, Mangalanandan TS, Sundram KR, Jayakumar RV, Bal A, Kumar H. Foot Care Practice – The Key To Prevent Diabetic Foot Ulcers In India. Foot (Edin). 2012; 22(4):298–302.
- [9]. Dang CN, Boulton AJ. 2003 ' Changing Perspectives In Diabetic Foot Ulcer Management'. Int J Low Extrem Wounds, 2: 4-12.
- [10]. Desalus OO, Salawu FK, Jimoh AK, Adekoya AO, And Busari OA, Olokoba AB. Diabetic Foot Care: Self-Reported Knowledge And Practice Among Patients Attending Three Tertiary Hospitals In Nigeria. Ghana Med J. 2011; 45(2):60-65.
- [11]. Elyasi, F.; Kashi, Z.; Tasfieh, B.; Bahar, A.; Khademloo, M.: Sexual Dysfunction In Women With Type 2 Diabetes Mellitus, Iran J Med Sci May, 2015, 40 (3), P.P.: 206-213.
- [12]. Gerich JE. 2003'Contributions Of Insulin-Resistance And Insulin-Secretory Defects To The Pathogenesis Of Type 2 Diabetes Mellitus'. Mayo Clin Proc.; 78:447-456.
- [13]. Gesare, O.; Otieno C. ; Achieng' L.: Assessment Of The Level Of Knowledge , Self-Care Practice And Glycemic Control Among Patients With Type 2 Diabetes Attending The Diabetes Clinic At Kenyatta National Hospital, University Of Nairobi, 2014, 103(1), P.P.: 1-30.
- [14]. George, H., Rakesh, P. S., Krishna, M., Alex, R., Abraham, V. J., George, K., & Prasad, J. H. (2013). Foot Care Knowledge And Practices And The Prevalence Of Peripheral Neuropathy Among People With Diabetes Attending A Secondary Care Rural Hospital In Southern India. Journal Of Family Medicine And Primary Care, 2(1), 27.

- [15]. Hanu George, PS Rakesh, Manjunath Krishna, Reginald Alex, Vinod Joseph Abraham, Kuryan George, And Jasmin H. Prasad. 2013'Foot Care Knowledge And Practices And The Prevalence Of Peripheral Neuropathy Among People With Diabetes Attending A Secondary Care Rural Hospital In Southern India'. *Journal Of Family Medicine And Primary Care*, 2(1): 27–32.
- [16]. Hailu, E.; Mariam, W.; Belachew, T.; Birhanu, Z.: Self-Care Practice And Glycaemic Control Amongst Adults With Diabetes At The Jimma University Specialized Hospital In South-West Ethiopia, *Afr J Prm Health Care Fam Med.*, 2012, 4(1), P.P.: 1-6.
- [17]. Hasnain S, Sheikh NH. Knowledge And Practices Regarding Foot Care In Diabetic Patients Visiting Diabetic Clinic In Jinnah Hospital, Lahore. *J Pak Med Assoc.* 2009; 59(10):687–690.
- [18]. Inzucchi SE, Bergenstal RM, And Buse JB, Et Al. Management Of Hyperglycemia In Type 2 Diabetes: A Patient-Centered Approach: Position Statement Of The American Diabetes Association (ADA) And The European Association For The Study Of Diabetes (EASD). *Diabetes Care* 2012; 35:1364–79.
- [19]. J.M. Shalani Dilinika. (2017). Knowledge. *Librarianship Studies & Information Technology*.
- [20]. Jadad, A. R., Rizo, C. A., & Enkin, M. W. (2013). I Am A Good Patient, Believe It Or Not. *Bmj*, 326(7402), 1293-1295.
- [21]. Mohammed Abusaib, Mazyar Ahmed, Hussein Ali Nwayyir, Haider Ayad Alidrisi, Majid Al-Abbood, Ali Al-Bayati, Salim Al-Ibrahimi, Abbas Al-Kharasani, Haidar Al-Rubaye, Taha Mahwi, Ammar Ashor, Harry Howlett, Mahmood Shakir, Murad Al-Naqshbandi, And Abbas Mansour. 2020' Iraqi Experts Consensus On The Management Of Type 2 Diabetes/Prediabetes In Adults' *Clinical Medicine : Insights Endocrinology And Diabetes*.
- [22]. Mansour AA, Al-Maliky AA, Kasem B, Jabar A, Mosbeh KA. 2014'Prevalence Of Diagnosed And Undiagnosed Diabetes Mellitus In Adults Aged 19 Years And Older In Basrah, Iraq'. *Diabetes Metab Syndr Obes.*; 7:139-144.
- [23]. Oleiwi, S. And AL Ani, B.: Determination Of Diabetes Type 2 Clients' Self-Management Skills Toward Dietary Pattern , *Iraqi National Journal Of Nursing Specialties*, 2012, 25 (2) , P.P.:40-50 .
- [24]. Reda Goweda , Mokhtar Shatla , Arwa Alzaidi , Arij Alzaidi , Bashaer Aldhawani , Hibah Alharbi , Noran Sultan , Daniah Alnemari , Badr Rawa. 2017'Assessment Of Knowledge And Practices Of Diabetic Patients Regarding Diabetic Foot Care, In Makkah, Saudi Arabia', *Journal Of Family Medicine And Health Care*, 3(1): 17-22
- [25]. Raithatha, S.; Shankar, S.; Dinesh, K.: Self-Care Practices Among Diabetic Patients In Anand District Of Gujarat, *ISRN Family Medicine*, 2014, P.P.: 1-6.
- [26]. Satyam Singh, Suhas Jajoo, Samarth Shukla, And Sourya Acharya. 2020'Educating Patients Of Diabetes Mellitus For Diabetic Foot Care', *Journal Of Family Medicine And Primary Care*, 9(1): 367–373
- [27]. Shrivastava, P.; Shrivastava, S. ; Ramasamy, J.: An Epidemiological Study To Assess The Knowledge And Self Care Practices Among Type 2 Diabetes Mellitus Patients Residing In Rural Areas Of Tamil Nadu, *Biology And Medicine*, 2015, 3(2) , P.P.:1-4 .
- [28]. Souza, M. A. D., Freitas, R. W. J. F. D., Lima, L. S. D., Santos, M. A. D., Zanetti, M. L., & Damasceno, M. M. C. (2019). Health-Related Quality Of Life Of Adolescents With Type 1 Diabetes Mellitus. *Revista Latino-Americana De Enfermagem*, 27.
- [29]. Sarah Jarvis. 2020. Diabetes Mellitus. Patient Info. <https://Patient.Info/Diabetes/Diabetes-Mellitus-Leaflet>
- [30]. Van Crevel, R., Koesoemadinata, R., Hill, P. C., & Harries, A. D. (2018). Clinical Management Of Combined Tuberculosis And Diabetes. *The International Journal Of Tuberculosis And Lung Disease*, 22(12), 1404-1410
- [31]. World Health Organization. Diabetes. Geneva, Switzerland: World Health Organization; 2018. <https://www.who.int/news-room/fact-sheets/detail/diabetes>. Updated October 30, 2018. Accessed March, 2019.
- [32]. Yeh, Hsin-Chieh, Et Al. "Smoking, Smoking Cessation, And Risk For Type 2 Diabetes Mellitus: A Cohort Study." *Annals Of Internal Medicine* 152.1 (2010): 10-17.