

## Knowledge of Nurses regarding Nutritional management of Diabetes mellitus Patients in Tertiary Care Hospitals, Peshawar.

Saddar Badshah<sup>1</sup> Samina Naz<sup>2</sup> Shakir ullah<sup>1</sup> Farhana Aziz<sup>3</sup>, Kinza Bibi<sup>3</sup>, Nazish Wahab<sup>3</sup>, Rafina Akhtar<sup>3</sup>, Tauheed Akhtar<sup>3</sup>, Nasir uddin<sup>3</sup>

<sup>1</sup>MS Nursing student institute of nursing sciences Khyber Medical University.

<sup>2</sup>Nursing lecturer Mardan institute of nursing.

<sup>3</sup>Final year post RN students institute of nursing science KMU Peshawar Pakistan.

**Corresponding author:** Saddar badshah, institute of nursing sciences Khyber Medical University.

**Objective:** To explore knowledge of nurses regarding nutritional management of diabetes mellitus patients in Tertiary Care Hospitals, Peshawar.

**Methods:** A Cross sectional study was conducted among nurses. A self-made questionnaire of 20 questions regarding the basic knowledge about nutritional management of diabetes mellitus patients was distributed among 150 nurses selected by convenient sampling technique. Data were entered and analyzed by using SPSS version 22. In descriptive statistics frequencies and percentages were calculated for categorical variable and means and SD were calculated for continues variables. Chi-square was applied to determine any significant association between variables.

**Results:** Results showed that that (54%) had poor knowledge about diabetic diet indicated by total knowledge of less than 60%, 21.3% of the nurses had average knowledge, while 13.33 % had good and only 13 % of the studied participants had excellent knowledge regarding diabetic dietary management which was above 80% score according to arbitrary scale on questionnaire. The study revealed that professional qualification, professional experience and gender of the participants has no significant association with knowledge level While significant value was found in LRH with knowledge level and professional qualification with a P value of 0.019.

**Conclusion:** Based on the results of the current study, it is found that majority of the nurses have poor knowledge regarding diabetic diet especially nurses in LRH have comparatively lowest knowledge. It directly affects the quality of care provided to the diabetic patients. It also raises concern about standard care.

**Introduction:**

Diabetes mellitus is a chronic metabolic disorder characterized by high level of sugar in blood stream, and can lead to life threatening conditions like diabetic ketoacidosis, neuropathy, retinopathy and cardiovascular diseases or even can lead to death <sup>[1, 2]</sup>. DM has mainly three types: type 1 diabetics are also known as insulin –dependent diabetes. It is also known as juvenile –onset diabetes, while type 2 diabetic is also called adult-onset diabetes and the last one is gestational diabetes <sup>[2]</sup>. DM is due to disorder of pancreas. In type 1 pancreas is unable to produce insulin while in type 2 pancreas produce insulin that is insufficient. Physical symptoms are polydipsia, polyuria, and general body weakness <sup>[3]</sup>. Type II DM is more prevalent as compared to Type I, and its incident has increased over the last 20 years due to change in modifiable risk factors like life style ,food and nutrition patterns ,and obesity<sup>[4]</sup> .diabetes is mostly triggered by life style changes<sup>[5]</sup>,and its related complications can be prevented through life style modification<sup>[6]</sup>.

DM is the tenth leading cause of death worldwide. Almost all of death due to DM attribute before the age of 70 years <sup>[4]</sup>. According to the study conducted by international diabetes federation showed that the prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030 <sup>[4, 7]</sup>. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030<sup>[7]</sup>. The commonness of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected to be doubled between 2000 and 2030. The most important demographic change to diabetes prevalence across the world appears to be the increase in the proportion of people >65 years of age <sup>[7]</sup>. Although Diabetes is not a curable disease but it can be cure through proper diet and exercise to prevent life fatal complications. Management of diabetes has currently drawn giant intention due its related issues and socio economics impacts. Lack of nutritional information among nurses has been found to be one of the fundamental concerns in the management hyperglycemia .the suboptimal nutritional knowledge amongst nurses lead to poor dietary administration and growing complications <sup>[8]</sup>.

Nutritionist primary role is the nutritional management but nurses also have an important role in it. They deal with the diabetic patient on daily basis <sup>[9]</sup>. According to the study in the US and in

Australia that 90% of the nurses receives request from the patients on nutritional advice .If they have an accurate knowledge on it; they would give proper care to the patients. As the nurses have a regular contact with the patients so they can guide them properly. If the nurses have the right knowledge on nutritional management, it can prevent a patient from further diabetic complications <sup>[10]</sup>.

Several studies revealed that nurses have low level knowledge regarding diabetic diet <sup>[5, 8, 11]</sup> . However, high levels of knowledge were reported by studies conducted in the United States and Scotland <sup>[12, 13]</sup>.Inadequate nutritional knowledge in nurses could lead to inaccurate information provided to diabetic patients, which may lead to poor diabetes management and also an increase in the rate of diabetes related complications and treatment costs. A study revealed that health care workers have poor nutritional knowledge and this is the main reason of poor management of hyperglycemia and increase the rate of diabetes associated complication <sup>[14]</sup>. So, it is suggestive to explore that why staff nurses are not able have low level of knowledge regarding diabetic diet. It is also significant to measure current knowledge of nurses regarding nutritional management diabetes mellitus patients.

### **Significance of the study:**

This study would appear to set forth recommendations to the hospital management to take appropriate actions for lack of current knowledge, of nurses regarding nutritional management Need based improvement in their knowledge would help in minimizing the risk of diabetic related complications.

**Rational of the study:**

A limited published work in Pakistani context especially in KPK is present on nurses' knowledge regarding diabetic diet. The previous studies were focused on overall health care workers while this study was purely focused Nurses.

**Purpose and research questions:**

The purpose of this study was to explore knowledge of nurses regarding nutritional management of diabetic patients in tertiary care hospital Peshawar.

**Methodology:****Research design and study population**

A descriptive cross sectional study design was used for the study.

**Study population and sitting**

This research was conducted among nurses in 3 government tertiary care hospitals of Peshawar which included: Lady Reading Hospital, Khyber Teaching Hospital, and Hayatabad Medical Complex.

**Sampling techniques**

Convenient sampling technique was use for the study.

**Sample size**

Sample size was calculated through Raosoft software with the total population of 1500 using 5% margin of error and 95 % confidence level and 10% Non-response rate. The calculated sample size was 150.

**Inclusion and exclusion criteria:**

The study included those nurses who were directly involved in the care of patients. Nursing students, and those who were not directly involved in caring of the patients e.g. Head nurses, nurse manager, and nursing supervisor were excluded from the study.

**Data collection procedure**

A questionnaire of 20 close ended questions was distributed among nurses. Pilot testing was done on 15(10%) nurses in the concerned tertiary care hospital, and appropriate changes were made accordingly. The questions were divided into two major parts. **Part A** was a basic part of the questionnaire. It comprised of the information based on academic qualifications, professional qualification, professional experience in the related field of the participant. **Part B** was based on the knowledge part and consisted of 15 multiple choice and 5 true false questions, to assess the participant knowledge on diabetic diet. The data collector belonged to the same profession and instructions were given regarding data collection method. Score of 5 was set for the each right answer whereas 0 was set for the wrong answer. The participant who scored 80% or above were placed in the category of excellent knowledge, 70% to 79% were categorized as good, 60% to 69% were considered satisfactory where as those who scored below 60% were considered having poor knowledge on diabetic diet.

**Ethical considerations:**

The study was officially approved by the hospital authority. The consent was taken from each participant in different medical, surgical, and allied specialties ward.

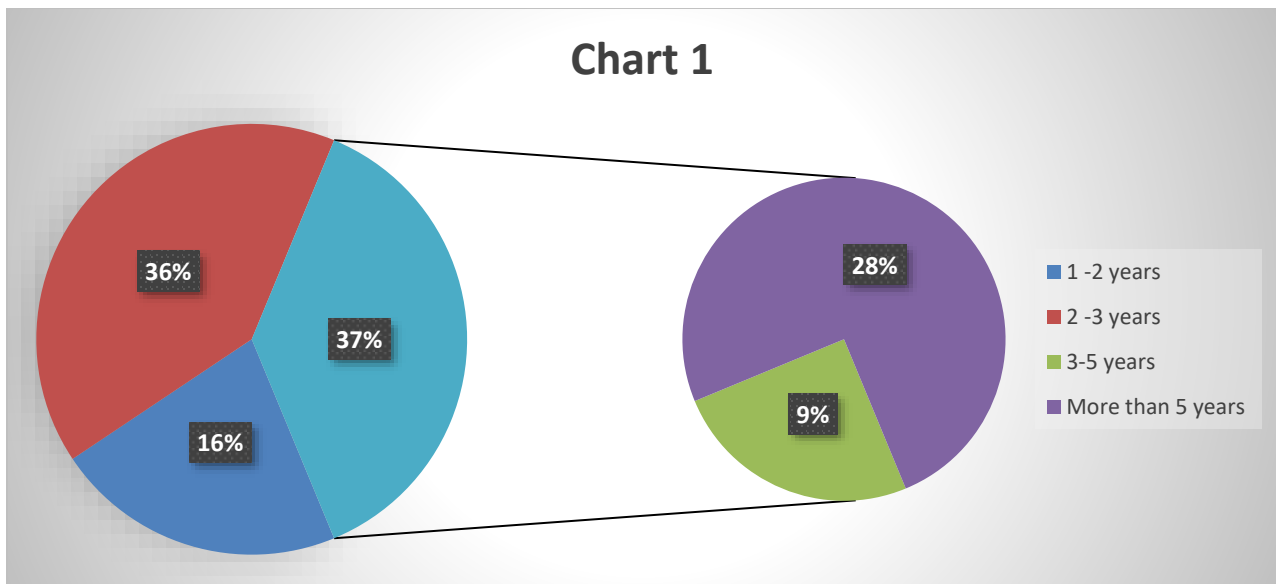
**Data analysis:**

The collected data was entered and analyzed by using SPSS version 22 software. The Results were shown in the form of descriptive statistics and charts. Chi-square test was applied as the test of significance and p-value was fixed at 0.05 to be statistically significant. In descriptive analysis, the mean and standard deviation of continuous variables and percentages of categorical variables were computed. Associations were assessed using chi- square test.

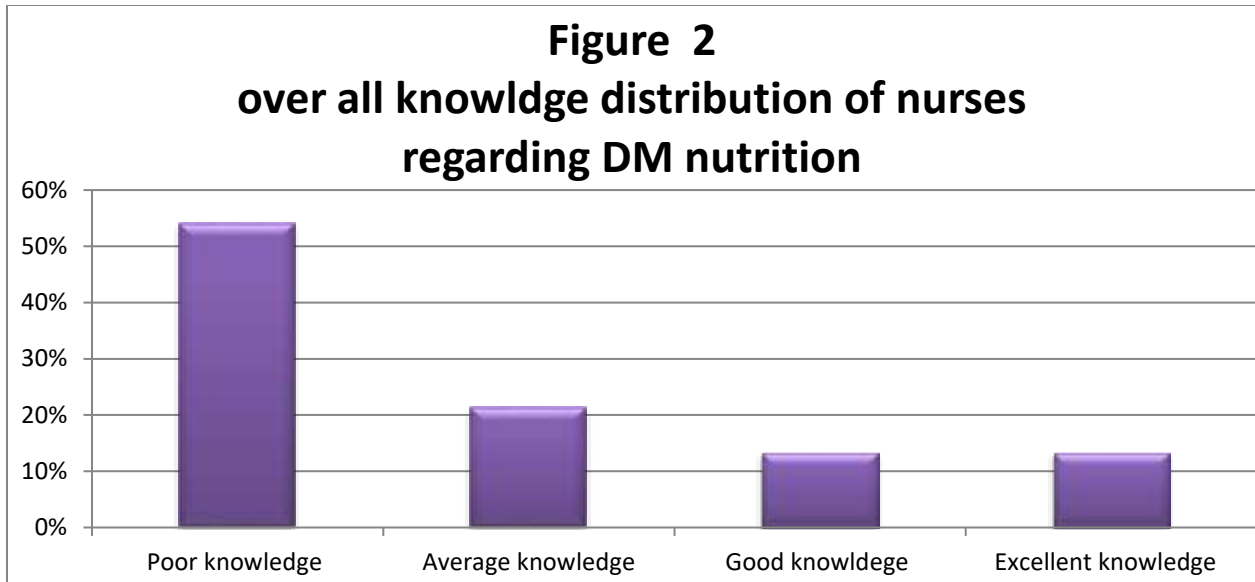
### Results

A total of 150 nurses participated in the study consisted of 101 (68%) female and 49(32%) male. Mean age of the participants was 26.8 years with SD of 5.49404%. On the basis of professional qualification 80(54%) participants were nursing diploma holders whereas 56(37%) were post RN and 11(9%) were BSN degree holder.

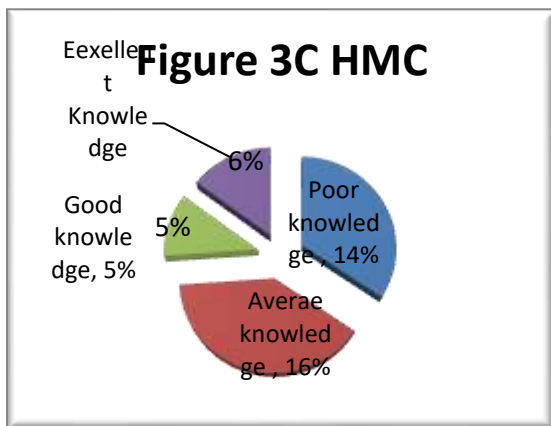
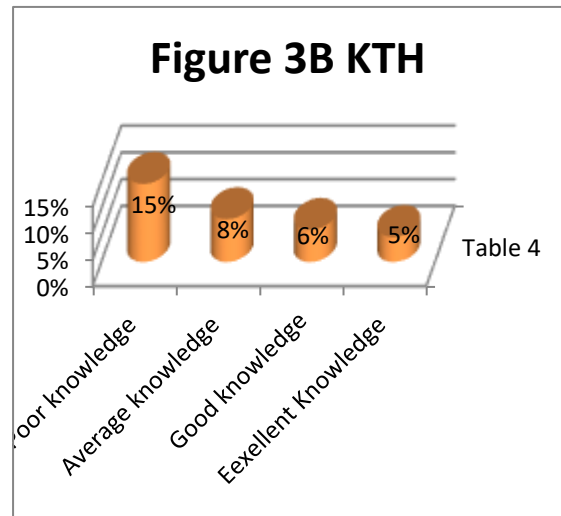
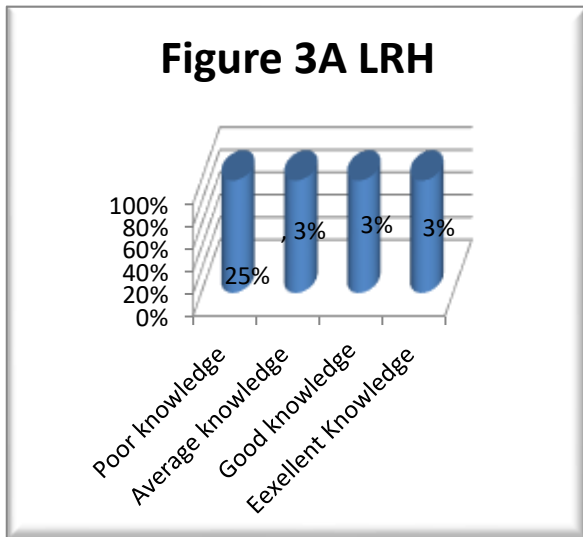
It was also noted that the participants were from different departments like 66 (44%) from general wards 57(38%) from ICUs while 24(16%) were from emergency and 3(2%) were from OT. about total professional experience in nursing field, is shown in chart 1.



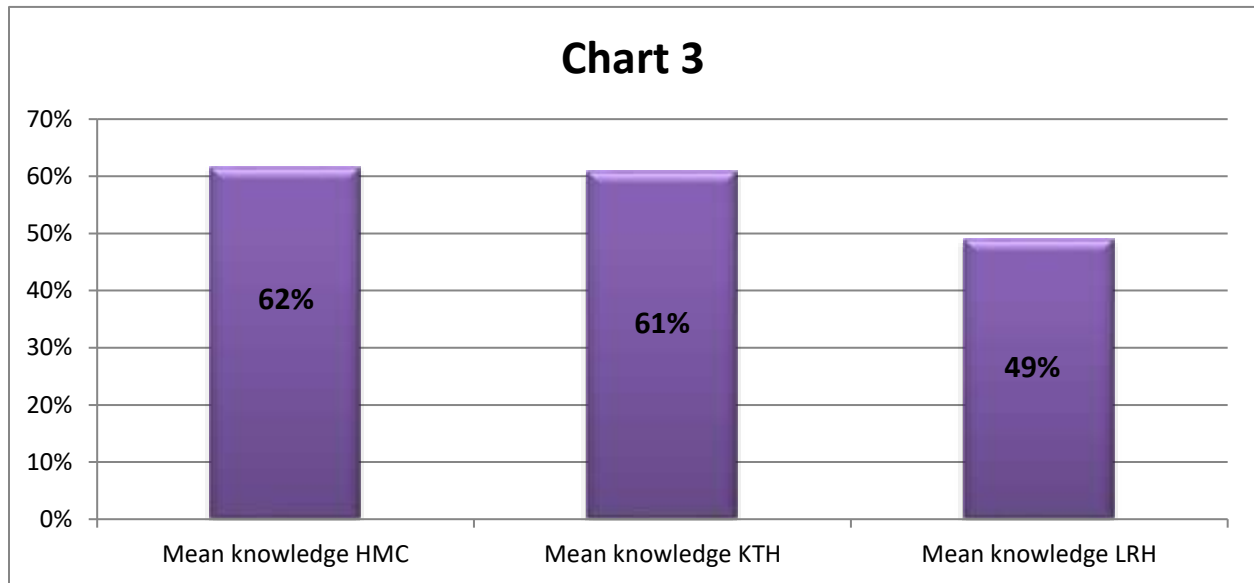
The study revealed that Nurses had poor, average, Good and excellent knowledge about diabetic diet according to arbitrary scale total knowledge of less than 60% and more than 80% as shown in figure 2.



As discussed previously that the study was conducted in three major Hospitals i.e Hayatabad Medical Complex (HMC), Lady Reading Hospital (LRH) and Khyber Teaching hospital (KTH). The study gave different results. As shown in chart 3A, 3B, and 3C.



The result of the study presents that the nurses had mean knowledge about diabetic diet of 57.426% with SD 16.1832. Mean knowledge for each hospital was calculated as shown in figure 4.



Chi-square test was applied to identify the association of knowledge, with professional qualification, work experience and gender of the participants. The results of the study represent that professional qualification, professional experience and age of the participants has no significant relation with knowledge level of nurses .While significant value was found in LRH with knowledge level and professional qualification with a P value of 0.019.



**Discussion:**

In health care system nurses have an important role in educating diabetic patients to understand the disease, its management and complications related to diabetes. As the nurses have a regular contact with the patients so they can guide them properly. If the nurses have the right knowledge on nutritional management, it can prevent a patient from further diabetic complications. Nurses should have primary knowledge on nutritional management of diabetes so that they can guide or answer the patient in a satisfactory manner.

The finding of the current study revealed that majority of the nurses (54%) had poor knowledge level about diabetic diet indicated by total knowledge of less than 60%. The result of the study also identified that 21.3% of the nurses had an average knowledge, while only 13.33 % had good and only 13 % of the studied participants had excellent knowledge regarding diabetic dietary management which was above 80%. Similarly a study was conducted in 5 tertiary care teaching hospitals in Karachi on resident trainee and registered nurses, which showed that the residents from surgical unit and RN (Registered Nurses) had low level of knowledge [8]. While a study conducted by Ghani et al [11] in Lahore showed that 84% of the nurses had poor knowledge regarding diabetic diet while .4% was found with excellent knowledge. This difference could be due to the nature of participants as the study conducted in Karachi included more than one type of health care workers; while the current study had included only nurses. This may conclude that the nurses who participated in our study comparatively had more knowledge about diabetic diet and its management.

The result of the study presents that the nurses had mean knowledge about diabetic diet of 57.426% with SD 16.1832 which is comparatively lower to another study conducted in Saudi Arabia on Jordanian Nurses which was 71.1 % [3]. The study conducted in Saudi Arabia on Jordanian Nurses was in private sector hospitals while the current study is purely government based hospitals which signifies the difference in nurses knowledge regarding diabetic diet.

Lack of information among health care suppliers has been found to be one of obstacles in the management of hyperglycemia [18, 19]. Among health care suppliers, our nurses possess a major role in provision of care to those patients. Before developing a teaching material for academic activities for health professionals, a comprehensive assessment of health

professional's current knowledge should be tested. Identification of the gaps in the knowledge would help us in highlighting these areas more specifically in future educational programs with an ultimate aim of improving diabetes care delivery in Pakistan.

According to current study, the overall mean score of the participants was found to be low 57.426% which may points towards the inadequacy of diabetes training. The study found higher score among those who attended refresher course or 2-3 courses during school <sup>[15]</sup>.

Fruits should not be consumed by diabetic patient, 56% of the participants were unaware about the correct answer. While inquiring about the rich source of food, Carbohydrate and it's daily intake, unfortunately most of the nurses (62, 60.9% and 63.1%) responded incorrectly. Respectively, the present study doesn't match with Mogre et al <sup>[15]</sup>. Moreover by asking about recommended diet plan, and method to treat a patient with symptomatic hypoglycemia, 54% responded correctly about meal planning and only 52% responded correctly in managing symptomatic hypoglycemia. While asking about the nutrients which is so poor in energy content that it can be eaten without restrictions, so 65% of the participants mark correct option. Moreover 50% of the nurses did not know that it is important for diabetic patients to eat balanced diets .According to WHO, the diet of the diabetic patients should be balanced containing all types of nutrients. With all the findings and study it suggests that it is important to improve the nurses' knowledge on diabetes and its management by refresher courses or by updating their curriculum.

Multiple Literatures provides a controversial debate about the effect of different variable on the knowledge of the nurses <sup>[20, 21,22,23]</sup>. The results of current study represent that professional qualification, professional experience and age of the participants has no significant effect on knowledge level of nurses with p-value 0.509. Similar findings were found in results of Al-Shwaiyat et al <sup>[9]</sup> who recognized in their study that there is no significant correlation of professional qualification, academic qualification and experience with knowledge. Moreover in the current study significant value was found in LRH with knowledge level and professional qualification with a P value of 0.19. Contrary to these findings Crogan et al <sup>[20]</sup> and Modupe et al <sup>[22]</sup> had documented in their studies that significant direct correlation was recognized between qualification and level of knowledge. Studies conducted by Özcelyk et al <sup>[21]</sup>, also demonstrated that nurses with higher level of education scored good than those who had low level of education.

### **Conclusion and recommendations**

Based on the results of the current study, it is found that majority of the nurses have poor knowledge regarding diabetic diet especially nurses in LRH have comparatively lowest knowledge. It directly affects the quality of care provided to the diabetic patients. It also raises concern about standard care. It would be recommended to revise and upgrade the nursing curriculum. Workshops should be conducted on diabetic diet and its management so that they are updated with the current knowledge. Refresher courses should be arranged for the nurses to improve the standard care. Evidence based practice should be encouraged while managing patients with metabolic disease. Clinical nurse specialist or certified nutritionist should be trained to avoid diabetic related complications.

### **ACKNOWLEDGEMENT**

The authors of this article would like to express their gratefulness to the Administration of respective study hospitals and nurses for their true co-operation. The authors also acknowledge the expertise and feedback provided by Hidayat ullah Lecturer Khyber medical University and specially nursing faculty for their valuable guidance and support at every step of this study.

## Reference list

1. Shaw JE, Sicree RA, ZimmetPZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res & Clin Prac.* 2010; 87(1):4–14.
2. Frank B. Globalization of Diabetes, the role of diet, lifestyle, and genes. *Diabetes Care.* 2011; 34(6):1249-s57.
3. Ozougwu JC, Obimba KC, Belonwu CD, Unakalamba CB. The pathogenesis and pathophysiology of type 1 and type II diabetes mellitus. *J of Physio & Pathophysio.* 2013; 4(4):46-57.
4. Shaikh S, Shaw JE, Sicree RA, Zimmet PZ. Global estimates of the prevalence of diabetes for 2010 and 2030. *Diabetes Res & Clin Pract.* 2010; 87(1):4–14.
5. Yalcin NN, Cihan A, Gundogdu H, Ocakci A. Nutrition Knowledge Level of Nurses. *Health Sci J.* 2013; 07(1):99- 108.
6. Nathan DM, Buse JB, Davidson MB, Ferrannini E, Holman RR, Sherwin R, Zinman B. Medical management of hyperglycemia in type 2 diabetes: a consensus algorithm for the initiation and adjustment of therapy: a consensus statement of the American Diabetes Association and the European Association for the Study of Diabetes. *Diabetes Care.* 2009; 32(1):193-203.
7. International Diabetes Federation (IDF) Diabetes Atlas (Internet). 6th edition. [www.diabetesatlas.org](http://www.diabetesatlas.org) 2013.
8. Ahmed A, Jabbar A, Zuberi L, Muhammad IM, Shamim K. Diabetes related knowledge among residents and nurses: a multicenter study in Karachi, Pakistan. *BMC Endocrine Dis.* 2012; 12: 18.
9. Naseem M. Al-Shwaiyat, Areej B. Sinjillawi, Abdallah S. Al-Rethaiaa, Alaa-Eldin A. Fahmy, Riyadh M. Al-Saraireh, Mohammad M. Aqel, Sabal M. Al-Hajjaj and Alaa S. Al-Sbou. Assessment of Therapeutic Nutritional Knowledge of Jordanian Nurses. *International Journal of Nutrition and Food Sciences.* Vol. 2, No. 3, 2013, pp. 142-148. doi: 10.11648/j.ijnfs.20130203.18
10. Lindseth, G. (1990). Evaluating rural nurses for preparation in implementing nutrition interventions. *The Journal of Rural Health,* 6(3), 231–245.
11. Ghani M, Akhtar T, Shuaib N, Khan NA. Female Nurses Knowledge regarding Dietary Advice to type II Diabetes patients. *Isra Med J.* 2018; 10(4): 239-243.

12. Warber, J.I., Warber, J.P. and Simone, K.A. (2000) Assessment of general nutrition knowledge of nurse practitioners in New England. *Journal of the American Dietetic Association*, 100(3): 368–370.
13. Hankey, C., Eley, S., Leslie, W., Hunter, C., & Lean, M. (2004). Eating habits, beliefs, attitudes and knowledge among health professionals regarding the links between obesity, nutrition and health. *Public Health Nutrition*, 7(2), 337-343. doi:10.1079/phn2003526
14. Mian SI, Brauer PM. Dietary education tools for South Asians with diabetes. *J Diet Pract Res*. 2009; 70: 28–35.
15. Mogre, V., Ansah, G. A., Marfo, D. N., & Garti, H. A. (2015). Assessing nurses' knowledge levels in the nutritional management of diabetes. *International Journal of Africa Nursing Sciences*, 3, 40-43. doi:10.1016/j.ijans.2015.07.003
16. Samancioglu, S., Donmez, R. O., Surucu, H. A., & Cevik, A. B. (2017). Experiences of Clinic Nurses Regarding Diabetes Education in Turkey' Health System. *Health Systems and Policy Research*, 4(3). doi:10.21767/2254-9137.100078
17. Somerville, M., & Anderson, R. (2012). *public health and epidimiology at a glance* (1st ed.).
18. Giangola J, Olohan K, Longo J, Goldstein JM, Gross PA: Barriers to hyperglycemia control in hospitalized patients: a descriptive epidemiologic study. *Endocr Pract* 2008, 14(7):813–819.
19. Cheekati V, Osburne RC, Jameson KA, Cook CB: Perceptions of resident physicians about management of inpatient hyperglycemia in an urban hospital. *J Hosp Med* 2009, 4(1):E1–E8.
20. Crogan NL, Shultz JA, Massey LK. Nutrition knowledge of nurses in long-term care facilities. *The J of Conti Edu in Nursing*. 2001; 32(4):171-76.
21. Ozcelyk AO, Surucuoglu MS, Akan LS. Nutrition knowledge level of nurses in Turkey: Ankara as an example. *Pak J of Social Sci*. 2007; 4(3):485-89.
22. Oyetunde, M. O., & Famakinwa, T. T. (2014). Nurses' knowledge of contents of diabetes patient education in Ondo – state, Nigeria. *Journal of Nursing Education and Practice*, 4(4). doi:10.5430/jnep.v4n4p91
23. Chrysoula, D., Victoria, A., Anna<sup>3</sup>, P., Eirini, M., Maria, G., Nikoletta, M., & Sofia<sup>2</sup>, Z. (2016). Assessment of insulin treatment – related knowledge among nurses in Pediatric Hospitals. *IOSR Journal Of Pharmacy*, 6(4), 255-262. doi:10.1111/inr.12090.

24. Cardwell J, Hardy K, Ford N, O'Brien S (2016) Assessment of diabetes knowledge in trained and untrained ward nurses before and after intensive specialist support. *Journal of Diabetes Nursing* **20**: 60–4