



Received: 14-01-2024  
Accepted: 24-02-2024

## International Journal of Advanced Multidisciplinary Research and Studies

ISSN: 2583-049X

### Assesment and Description of Knowledge Regarding Self-administration of Insulin Injection among Diabetes Mellitus Patient

**Renuka Majumdar**  
Lecturer, JCON Maharashtra, India

DOI: <https://doi.org/10.62225/2583049X.2024.4.2.2440>

Corresponding Author: **Renuka Majumdar**

#### Abstract

A descriptive study to assess the knowledge regarding self-administration of insulin injection among diabetes mellitus patient.

#### Objectives

1. To assess the knowledge regarding self-administration of insulin injection among diabetic patient selected OPD.
2. To prepare and distribute on information pamphlet on regarding self-administration insulin injection among diabetic patient selected OPD.
3. To find out the association between the knowledge regarding insulin therapy with the selected demographic variables.

#### Material and Methods

The research approach adopted in this study is mixed approach. Quantitative Non-experimental Descriptive Qualitative research design was used. The sample were selected by non-Probability convenient Sampling Technique sample size was 60.

#### Result

1. It shows that according to age majority of subjects 23[38.33%] were in the age group of above 36years. Whereas 20[33.33%] were in age group of 31-35years. Whereas 13 [21.67%] were in age group of 26-30 year. Whereas 4[6.67%] were in the age group 20-25years.
2. It shows that maximum 41(68.33%) had average knowledge and 13(21.67%) had a good knowledge and minimum 6(10%) of poor knowledge.
3. It depicts that the area wise analysis of knowledge score by using median, mean percentage, SD and CV. The introduction and definition median was 3, mean 3.15, mean % was 39.38%, S.D. was 1.31, C.V. was 41.59. Introduction of insulin injection & reason of taking injection median was 5, mean 4.68, mean % was 46.8 %, S.D. was 1.23, C.V. was 26.28. Sites of taking injection & method of administrating of injection studies median was 6, mean 5.63, mean % was 70.38%, S.D. 2.23 was C.V. was 39.61, complication median was 3, mean 2.85, mean % was 71.25 %, S.D. was 39.3.

4. Show association between knowledge regarding self-administration of insulin injection among diabetic client attending OPD of selected hospital with selected socio-demographic variables using non-parametric  $\chi^2$  test. On applying the chi-square test demographic variable "Occupation" and "Duration of self-administration of insulin", "previous knowledge" was significantly associated with knowledge level. Hence H1 ie, there is significant association between knowledge level with "Occupation" and "Duration of self-administration of insulin", "previous knowledge" is accepted. Association between knowledge level and other selected sociodemographic variables such as age group ( $\chi^2=6.32$ ,  $p>0.05$ ), gender ( $\chi^2=2.47$ ,  $p>0.05$ ) religious ( $\chi^2=4.12$ ,  $p>0.05$ ) Education ( $\chi^2=10.86$ ,  $p>0.05$ ) family monthly income ( $\chi^2=5.15$ ,  $p>0.05$ ) occupation ( $\chi^2=13.40$ ,  $p>0.05$ ) previous family history of diabetic mellitus ( $\chi^2=1.03$ ,  $p>0.05$ ) duration of diabetic mellitus diagnosed ( $\chi^2=5.42$   $p>0.05$ ) duration of self -administration of insulin( $\chi^2=14.22$ ,  $p>0.05$ ) previous knowledge regarding insulin injection ( $\chi^2= 14.09$   $p >0.05$ ) if yes, source of information( $\chi^2=7.06$ ,  $p>0.05$ ). Were found to be statistically not significant. Hence H0 that there is no significant association between selected socio demographic like age, gender, religious, monthly income, education, occupation, duration of diagnosed diabetic mellitus, duration of taking insulin, previous knowledge of insulin injection, source of knowledge with knowledge level regarding self-administration of insulin injection among diabetic client attending OPD of selected hospital with selected socio-demographic variables is accepted.

#### Conclusion

On the basis of finding of the study following conclusion can be drawn. It was found that among diabetic patient have less knowledge regarding self-administer of insulin injection.

**Keywords:** Insulin, Diabetes, India

#### 1. Introduction

Diabetes mellitus could literally mean "siphoning off sweet water". Diabetes mellitus is a metabolic disorder that is presently troubling the world, posing a great socio-economic burden to very nation. An overview on the definition, diagnosis, potential dangers and current prevention and treatment options available in putting a check to this disease will go a long way in helping physicians, diabetic patients and even diabetic relatives (whom themselves have an increased risk of developing the disease) in controlling the alarming increase in the prevalence of diabetes mellitus being experienced today.

Insulin is the mainstay of treatment for patients with type 1 diabetes. Insulin is also important in type 2 diabetes when blood glucose levels cannot be controlled by diet, weight loss, exercise, and oral medications. Ideally, insulin should be administered in a manner that mimics the natural pattern of insulin secretion by a healthy pancreas; however, the complex pattern of insulin secretion by the pancreas is difficult to duplicate. Still, adequate blood glucose control can be achieved with careful attention

to diet, regular exercise, home blood glucose monitoring, and multiple insulin injections throughout the day.

Shanmugam J, Roy A. (2017) Insulin therapy requires understanding and coordination of both the person with diabetes mellitus and those responsible for providing diabetic care. There is no definite insulin dose that works well for every individual, the dosage of insulin changes based on blood glucose levels and the type of insulin used. Therefore, insulin treatment must be individualized to fit the life style of the individual and underlying diabetic complications Based on current trends, over 360 million individuals will have diabetes by the year 2030. the prevalence of both type 1 and type 2 DM is increasing worldwide, the prevalence of type 2 DM is rising much more rapidly because of increasing obesity and reduced activity levels as countries become more industrialized. With respect to sex distribution, the prevalence is similar in men and women throughout most age ranges (10.5% and 8.8% in individuals >20 years respectively) but is slightly greater in men >60 years. Worldwide estimates project that in 2030 the greatest number of individuals with diabetes will be 45–64 years of age there exist a considerable geographic variation in the incidence of DM and this variability is likely due to genetic, behavioural, and environmental factors. Scandinavian countries have the highest incidence of type 1 DM (e.g., in Finland, the incidence is 35/100,000 per year) while the Pacific Rim has a much lower rate (in Japan and China, the incidence is 1–3/100,000 per year) of type 1 DM; Northern Europe and the United States have an intermediate rate (8–17/100,000 per year).

## 2. Review of Literature

1. Luhar, S., Kondal, D., Jones, R. *et al.* assess the knowledge regarding diabetic mellitus aimed to estimate the lifetime risk of diabetes and diabetes-free life expectancy in metropolitan cities in India among the population aged above 20 years and their variation by sex, age and BMI. A Markov simulation model was adopted to estimate age-, sex- and BMI. The results of the study represented that lifetime risk (95% CI) of diabetes in 20-year-old men and women was 55.5% (51.6, 59.7) and 64.6 % (60.0, 69.5) respectively. Women generally had a higher lifetime risk across the lifespan. Remaining lifetime risk (95% CI) declined with age to 37.7% (30.1, 46.7) at age 60 years among women and 27.5% (23.1, 32.4) in men. Lifetime risk (95% CI) was highest among obese Indians: 86.0% (76.6, 91.5) among 20-year-old women and 86.9% (75.4, 93.8) among men. We identified considerably higher diabetes-free life expectancy at lower levels of BMI. The study concluded that lifetime risk of diabetes in metropolitan cities in India is alarming across the spectrum of weight and rises dramatically with higher BMI.
2. Boston, C., Kurup, R., Hadi, S., Cummings, E., & O'hara, A. conducted a cross-sectional study in Georgetown Public Hospital Corporation and West Demerara Regional Hospital Guyana. A total of 200 patients with type 2 diabetes mellitus who met the inclusion criteria were selected via advertisement and telephone interviews. The data revealed about 66.5% of participants were deemed to have good knowledge with men accounting for the majority. Significant association was noted with barrier level of patients with the level of

education ( $p=0.001$ ), ethnicity (0.006) and insurance plan (0.03). Adherence to self-administration showed statistically significant association with patient's level of education.

3. Niguse H, Belay G, aimed to assess the level of knowledge, attitude and practice of diabetes self-care and to identify the factors associated with diabetes self-care. A total of 338 patients with diabetes had mean age of 45.8 years were included in the study. Among those 70.4%, 70.4% and 25.5% of the patients had a good knowledge, attitude and self-care practices, respectively. Being male (AOR = 2.7, 95% CI 1.30-5.65), living in urban (AOR = 3.37, 95% CI 1.39-8.15) and earning medium income (AOR = 2.55, 95% CI 1.15-5.65) were significantly associated with having good knowledge of self-care while being widowed (AOR = 0.15, 95% CI 0.03-0.70) was associated with having poor knowledge. Having a higher income (AOR = 7.95, 95% CI 1.54-41.12) was significantly associated with a good attitude towards diabetic self-care. However, taking both insulin and oral hypoglycaemics (AOR = 0.06, 95% CI 0.01-0.67) was associated with a poor attitude. Being Muslim (AOR = 3.14, 95% CI 1.28-7.91), living in urban areas (6.47, 95% CI 1.38-30.43) and earning high income (AOR = 3.03, 95% CI 1.10-8.35) were determinant of good self.
4. Priscilla Surinam S. *et al.* assess the knowledge regarding insulin therapy in this study It was observed from the results that the level of knowledge among insulin therapy the study participants was as follows: 4% of them had adequate knowledge, 44% had moderately adequate knowledge, and more than half (52%) of them had inadequate knowledge. The level of knowledge among the study participants (27%) with diabetes mellitus and insulin therapy had favourable knowledge, more than half (69%) had moderately favourable knowledge, and 4% had unfavourable knowledge on insulin therapy.
5. Jonathan m Peterson the mean knowledge score was 4.97 ( $\pm 1.16$  SD) with a range from 2 to 8. Nighty-three (38.4%) respondents had good knowledge on insulin self-administration. One hundred thirty-two (54.5%) correctly answered that insulin is used to lower blood glucose. More than three-fourths (78.9%) answered that insulin injection should be done before taking a meal or just soon after a meal. One hundred sixty-seven (69.0%) correctly answered that sites for insulin injection are the abdomen, thigh, glutei, and deltoid. More than half (56.2%) answered that an insulin vial is stored in the refrigerator or cold place or sand soaked with water. One hundred eighty-five (76.4%) correctly answered that rotation of the injection site is used to reduce pain and prevent wasting of subcutaneous tissues. Two hundred thirty (95.0%) answered that the complications of insulin therapy are low blood sugar, insulin allergy, insulin resistance, and wasting of subcutaneous tissue.

## 3. Material and Methods

The research approach adopted in this study is mixed approach. Quantitative Non-experimental Descriptive Qualitative research design was used. The sample were selected by non-Probability convenient Sampling Technique. Sample size was 60. According to the objectives, a tool was prepared. The tool consists of demographic data

and Self Structured Questionnaire. The data collection was as follows – data was collected by using Self Structured Questionnaire, data was analysed in terms of frequency and percentage, summative and narrative analysis also done.

**4. Result**

The data was analyzed by using inferential and descriptive statistics on the basis of objectives

**Part I: Analysis of data related to distribution of subjects according to socio demographic variable using frequency and percentage.**

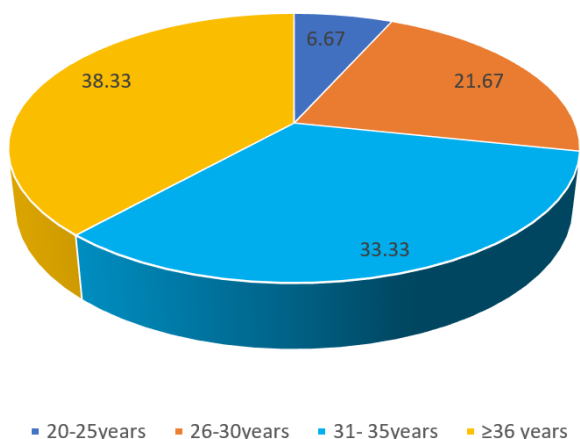
N=60

Demographic presentation

Age group (years)	Frequency (f)	Percentage (%)
20-25years	4	6.67
26-30years	13	21.67
31- 35years	20	33.33
≥36 years	23	38.33
Total	60	100

It shows that according to age majority of subjects 23[38.33%] were in the age group of above 36years. Whereas 20[33.33%] were in age group of 31-35years. Whereas13[21.67%] where in age group of 26-30 year. Whereas 4[6.67%] were in the age group 20-25years.

Age group (years)



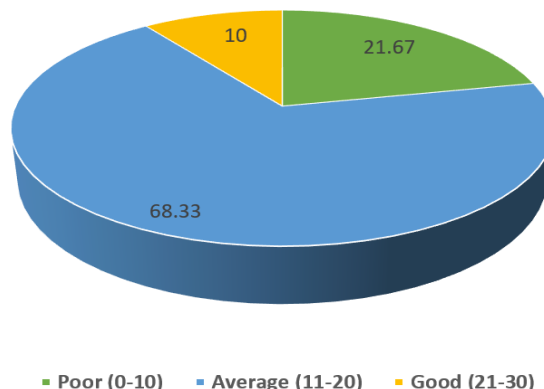
**Part II: Assessment of knowledge level**

N=60

Knowledge level regarding insulin therapy			Total
Poor (0-10)	Average (11-20)	Good (21-30)	
13(21.67%)	41(68.33%)	6(10%)	60(100%)

It shows that maximum 41(68.33%) had average knowledge and 13(21.67%) had a good knowledge and minimum 6(10%) of poor knowledge.

knowledge level regarding insulin therapy



**Part III: Area wise analysis of knowledge score by using median, mean percentage, SD and CV**

N=60

Area of knowledge	N	Knowledge score regarding self-administration of insulin injection among diabetic patient attending OPD of selected hospital					
		Min-Max	Median	Mean	Mean %	SD	CV (%)
Introduction and definition of diabetic Mellitus.	60	0-7	3	3.15	39.38	1.31	41.59
Introduction of insulin injection & reason of taking injection	60	2-9	5	4.68	46.8	1.23	26.28
Sites of taking injection & method of administrating of injection	60	1-8	6	5.63	70.38	2.23	39.61
Complication	60	0-4	3	2.85	71.25	1.12	39.3
Total	60	8-25	18	16.32	54.4	4.2	25.74

**5. References**

- Suresh K Sharma. Nursing research and statistics published by elsevier 2<sup>nd</sup> edition, p16-17.
- Rajesh Kumar. Nursing research and statistics published by jay pee 2<sup>nd</sup> edition, p30-35.
- Denise F. Polit chery/ tatano beck nursing research principal and methods 7<sup>th</sup> edition published Lippincott & willson, p325-326.
- Basvanthappa BT. Essential of medical surgical nursing published by jay pee, 1<sup>st</sup> edition, p665-666.
- Javed Ansari Davinder Kaur. A text book of medical surgical nursing II published by pee vee, p34-36.
- Brunner, Suddarth's textbook of medical surgical nursing published by Suzanne c. smeltzer Brenda bare 10<sup>th</sup> edition, p1801-1803.
- Hanslett C, Chilvers ER, Boon NA, Collerge NR, Hunter JAA. Davidson's principles and practice of Medicine. Edinburgh: Churchill Livingstone, 2002.
- Pradeepa R, Deepa R, Mohan V. Epidemiology of diabetes in India-current perspective and future projections. J Indian Med Assoc. 2002; 100:144-148.