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A Study to Assess the Knowledge and Practice of Insulin Self Administration among Patients with Diabetes Mellitus in Selected Hospitals of Guwahati, Assam

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Abstract: ***Background: Diabetes is a chronic disease associated with abnormally high levels of glucose in the blood. Diabetes is due to either inadequate production of insulin or inadequate sensitivity of cells to the action of insulin. The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. The global prevalence of impaired glucose tolerance is estimated to be 7.5% (374 million) in 2019 and projected to reach 8.0% (454 million) by 2030 and 8.6% (548 million) by 2045. The survey conducted during 2015-2019 by Rajendra Prasad Centre for Ophthalmic Sciences, All India Institute of Medical Sciences, New Delhi also showed that the prevalence of known diabetes cases was 8.0% and new diabetes cases was 3.8%. A study by the Indian Council of Medical Research (ICMR) has revealed that 5.5% of Assam's population is in the grip of type 2 diabetes. Objectives: To assess the knowledge regarding insulin self administration among patients with diabetes mellitus in selected hospitals of Guwahati; To assess the practice regarding insulin self administration among patients with diabetes mellitus in selected hospitals of Guwahati; To find out the association between the knowledge and selected demographic variables of diabetes mellitus patients towards insulin self administration; To find out the association between practice of insulin self administration with selected demographic variables of diabetes mellitus patients; To correlate knowledge and practice regarding insulin self administration among diabetes mellitus patients. Material and method: The study adopted a descriptive research design, 80 samples were recruited using convenient, non-probability sampling technique. Socio demographic performa, structured knowledge questionnaire, check list was used to collect the data. Descriptive statistics, inferential statistics and Karl Pearson's Correlation coefficient were used to analyze the data. Result: the finding of the study revealed that majority 40% of the study participants belong to 41-50year, 81.25% were male, 57.5% were married, 22.5% of the participants illiterate as well as primary and high school, 40% were housewife/unemployment, 37.5% had 10,001-20,000 family income per month, 58.75% had history of diabetes mellitus in family where 89.36% had first degree relationship, 38.75% had less than 1 year duration of diabetes mellitus,50% had duration of insulin therapy less than 1 year, majority 73.75% used syringe as device for insulin therapy and 83.5% source of information was health personnel. Among all the participants majority 71.25% had moderate knowledge, 16.25% had inadequate and 12.5% had adequate knowledge of insulin self administration. Majority 62.5% had moderate practice, 21.25% had adequate practice and 16.25% had inadequate practice. There was significant association between educational status and knowledge of insulin self administration. There were significant association between practice of insulin self administration with relationship with family member, duration of insulin therapy and source of information at 0.05 level of significance. There was moderately positive correlation between knowledge and practice of insulin self administration among patients with diabetes mellitus (r value= 0.03, p value = 0.791653) at 0.05 level of significance. Conclusion: the study concluded that knowledge is directly proportional to practice i.e. with increase in knowledge of insulin self administration will increase practice.***

Keyword: Assess, Knowledge, Practice, Insulin self administration, Diabetes mellitus

1. Introduction

"Life is not over because you have diabetes. Make the most of what you have, be grateful."

- Dale Evans

Diabetes is the most common metabolic disorders affecting populations in all geographical regions of the world. The World Health Organization (WHO) has projected that the prevalence of diabetes is increasing in epidemic proportions especially in developing countries. India has the highest number of people with diabetes in the World.[1] Insulin therapy is often an important part of diabetes treatment. Insulin plays key role in managing blood sugar and prevents complications of diabetes.[2] Insulin was discovered by Sir Frederick G Banting, Charles H Best and JJR Macleod at the University of Toronto in 1921 and it was subsequently purified by James B Collip. On 11 January 1922, Leonard Thompson, a 14 year old boy with diabetes, who lay dying at the Toronto General Hospital, was given the first injection of insulin.[3]

2. Background

The global diabetes prevalence in 2019 is estimated to be 9.3% (463 million people), rising to 10.2% (578 million) by 2030 and 10.9% (700 million) by 2045. The global prevalence of impaired glucose tolerance is estimated to be 7.5% (374 million) in 2019 and projected to reach 8.0% (454 million) by 2030 and 8.6% (548 million) by 2045. [4] The prevalence of diabetes in India has remained at 11.8% in the last four years, according to the National Diabetes and Diabetic Retinopathy Survey report released by the health and family welfare ministry. [5] A study by the Indian Council of Medical Research (ICMR) has revealed that 5.5% of Assam's population is in the grip of type 2 diabetes.[6]

3. Methodology

The study adopted a descriptive research design, 80 samples were recruited using convenient, non-probability sampling technique. Socio demographic performa, structured knowledge questionnaire, check list was used to collect the data. Descriptive statistics, inferential statistics and Karl Pearson's Correlation coefficient were used to analyze the data.

Content validity of the tool was established by suggestion of five experts. The Spearman Brown split half reliability was found r=0.88 for knowledge questionnaire and r=0.94 was found for practice check list, which was considered to be reliable and adequate.

Ethical Consideration

The study was approved by Institutional Ethics Committee of Army Institute of Nursing Guwahati, Assam on 29th May, 2019.

4. Findings

Section I: Descriptive analysis of demographic proforma

S no	*Characteristics*	*Frequency*	*Percentage*
1	**Age**		
	31-40 yrs	13	16.25%
	41-50 yrs	32	40%
	51-60 yrs	19	23.75%
	>60 yrs	16	20%
2	**Gender**		
	Male	65	81.25%
	Female	15	18.75%
3	**Marital status**		
	Married	46	57.5%
	Unmarried	16	20%
	Widow/widower	15	18.75%
	Divorced	3	3.75%
4	**Educational status**		
	Illiterate	18	22.5%
	Primary education	18	22.5%
	High school	18	22.5%
	Higher secondary	15	18.75%
	Graduate	11	13.75%
5	**Occupational status**		
	Housewife/unemployment	32	40%
	Labour	28	35%
	Private job	13	16.25%
	Government job	7	8.75%
6	**Family income per month**		
	<10,000	16	20%
	10,000-20,000	30	37.5%
	20,000-30,000	24	30%
	>30,000	10	12.5%
7	**History of Diabetes mellitus in family**		
	Yes	47	58.75%
	No	33	41.25%
8	**Degree of relationship with family member**		
	First degree relationship	42	89.36%
	Second degree relationship	5	10.64%
9	**Duration of Diabetes mellitus**		
	<1 yr	31	38.75%
	1 to 10 yr	26	32.5%
	10 to 20 yr	11	13.75%
	>20 yr	12	15%
10	**Duration of insulin therapy**		
	<1 yr	40	50%
	1 to 5 yr	22	27.5%
	>5 yr	18	22.5%
11	**Device used for insulin therapy**		
	Pen	4	5%
	Syringe	59	73.75%
	Both	17	21.25%
12	**Source of information**		
	Health personnel	67	83.75%
	Mass media	13	16.25%
	Relatives	0	0

Section II: Descriptive analysis of knowledge regarding knowledge of insulin self administration among patients with diabetes mellitus, N=80

Knowledge score	*Score range*	*Frequency*	*Percentage*	*Total score*
Inadequate	0-10	13	16.25%	22
Moderate	**11-18**	**57**	**71.25%**	
Adequate	19-22	10	12.5%	

Section III: Descriptive analysis of practice regarding of insulin self administration among patients with diabetes mellitus,
N =80

Practice score	*Score range*	*Frequency*	*Percentage*	*Total score*
Inadequate	0-6	13	16.25%	13
Moderate	**7-10**	**50**	**62.5%**	
Adequate	11-13	17	21.25%	

Section IV: Association between knowledge regarding insulin self administration among patients with diabetes mellitus in selected hospitals of Guwahati, Assam with selected demographic variables, N=80

S no	*Demographic Variables*	*Knowledge score*			*χ2 value*	*df*	*P value*	*Remarks*
		Inadequate (0-10)	*Moderate (11-18)*	*Adequate (19-22)*				
1	**Age**				7.87	6	0.247783	NS
	31-40 yrs	2	8	13				
	41-50 yrs	2	27	3				
	51-60 yrs	4	12	3				
	>60 yrs	5	10	1				
2	**Gender**				1.89	2	0.38868	NS
	Male	9	47	9				
	Female	4	10	1				
3	**Marrital status**				8.32	6	0.215584	NS
	Married	7	34	5				

	Unmarried	3	11	2				
	Divorced	0	1	2				
	Widow/widower	3	11	1				
4	**Educational status**				45.51	8	<0.00001	S
	Illiterate	7	11	0				
	Primary	0	15	3				
	High school	3	15	0				
	Higher secondary	1	10	4				
	Graduate	2	6	3				
5	**Occupational status**				2.93	6	0.81758	NS
	Housewife/unemployment	6	24	2				
	Labour	4	20	4				
	Govt job	1	5	1				
	Private job	2	8	3				
6	**Monthly family Income**				6.78	6	0.341673	NS
	<10,000	5	10	1				
	10,000-20,000	5	22	3				
	20,000-30,000	1	18	5				
	>30,000	2	7	1				
7	**History of DM in family**				0.12	2	0.941765	NS
	Yes	7	34	6				
	No	6	23	4				
8	**Degree of relationship with family member**				0.57	2	0.752014	NS
	First degree	6	31	5				
	Second degree	1	3	1				
9	**Duration of Diabetes mellitus**				8.19	6	0.224511	NS
	< 1 yr	2	24	5				
	1-10yr	7	15	4				
	10-20 yr	1	10	0				
	>20 yr	3	8	1				
10	**Duration of insulin therapy**				3.14	4	0.534676	NS
	<1 yr	4	30	6				
	1-5 yr	5	14	3				
	>5 yr	4	13	1				
11	**Device used**				1.26	4	0.868125	NS
	Pen	0	3	1				
	Syringe	10	42	7				
	Both	3	12	2				
12	**Source of information**				0.34	2	0.843665	NS
	Mass media	0	0	0				
	Health personnel	11	47	9				
	Relative	2	10	1				

S= Significant at 0.05 level of significance, NS= Not significant

The calculated Chi-square value for knowledge with Educational status is found 45.51 the 'p' value is <0.00001 at 0.05 level of significance, hence there is significant association between knowledge regarding insulin self administration with Educational status.

Section V: Association between the practice regarding insulin self administration among patients with diabetes mellitus in selected hospitals of Guwahai, Assam with selected demographic variables.

Sl no	*Demographic variables*	*Practice score*			*χ2*	*Df*	*P value*	*Remark*
		Inadequate (0-6)	*Moderate (7-10)*	*Adequate (11-13)*				
1	**Age**				5.61	6	0.468263	NS
	31-40 yr	4	8	1				
	41-50 yr	3	21	8				
	51-60 yr	2	12	5				
	>60 yr	4	9	3				
2	**Gender**				2.27	2	0.321422	NS
	Male	12	41	12				
	Female	1	9	5				
3	**Marrital status**				3.15	6	0.789799	NS
	Married	7	29	10				
	Unmarried	4	8	4				
	Divorced	0	3	0				

	Widow/widower	2	10	3				
4	**Educational status**				13.47	8	0.096669	NS
	Illiterate	2	14	2				
	Primary	2	11	6				
	High school	3	10	4				
	Higher secondary	6	8	1				
	Graduate	0	7	4				
5	**Occupational status**				2.51	6	0.867347	NS
	Housewife /unemployment	5	20	8				
	Labour	6	15	6				
	Govt job	1	5	1				
	Private job	1	10	2				
6	**Monthly family income(In rupees)**				6.35	6	0.385146	NS
	<10,000	3	9	4				
	10,000-20,000	8	18	4				
	20,000-30,000	1	17	6				
	>30,000	1	6	3				
7	**History of DM**				5.27	2	0.071719	NS
	Yes	6	27	14				
	No	7	23	3				
8	**Relationship with family member having DM**				16.63	2	0.000245	S
	First degree	5	23	14				
	Second degree	1	4	0				
9	**Duration of DM**				10.15	6	0.118476	NS
	<1 yr	9	23	3				
	1-10 yr	2	15	5				
	10-20 yr	1	8	6				
	>20 yr	1	4	3				
10	**Duration of insulin therapy**				13.45	4	0.009274	S
	<1 yr	10	28	3				
	1-5yr	0	13	8				
	>5 yr	3	9	6				
11	**Device used**				1.44	4	0.837214	NS
	Pen	1	2	1				
	Syringe	8	39	12				
	Both	4	9	4				
12	**Source of information**				10.02	2	0.006671	S
	Mass media	0	0	0				
	Health personnel	11	46	10				
	Relative	2	4	7				

S= Significant at 0.05 level of significance, NS= not significant

Thus the research hypothesis "There is significant association between practice regarding insulin self administration among patients with diabetes mellitus with selected demographic variables" is accepted with respect to **Relationship with family member, duration of insulin therapy and source of information.**

Section VI: Correlation between knowledge and practice regarding insulin self administration, N=80

Variables	Mean	r- value	p-value	Remark
Knowledge	14.15	0.03	0.791653	S
Practice	8.6			

S= Significant at 0.05 level of significance NS= Not significant

There is significant Correlation between Knowledge and Practice regarding insulin self administration among patients with Diabetes Mellitus

5. Discussion

The present study findings supported by the study conducted (2016) by Gholap M, Mohite VR, Chendake MB, Haremath P on assessment of knowledge and practice of self administration of injection insulin among diabetic patient attending outpatient department of Krishna Hospital, Karad ,showed that majority 82.5% (33) had average practice, 15% (6) had good practice and 2.5% (1) had poor practice.[7]

The study findings support by the study conducted by Yosef (2019) on knowledge and attitude on Insulin self-administration among type 1 patients at Metu Karl Referral Hospital, Ethiopia, revealed that increased educational level (p value=0.028) is significantly associated with good knowledge on insulin self administration.[8]

The study findings is supported by the study conducted (2012) by Surendranath A, Nagarjun B, Padmavathi GV, Anand SC, Fayaz P, Balachandra G on assessment of knowledge and practice of insulin self-administration among patients with diabetes mellitus, revealed that there was a significant positive correlation between knowledge and practice on insulin self administration (r vale= 0.62, P value=0.00001) at p<0.05. The findings of the study showed that majority 41 (68%) of the subjects had inadequate knowledge where majority 43 (72%) of the participants had

poor practice followed by 19 (32%) had moderately adequate knowledge and 17 (28%) had fair practice of insulin self administration. None of them had adequate knowledge as well as none of them had good practice of insulin self administration.[9]

6. Conclusion

Diabetes mellitus is a lifelong threatening for individual and their families. The study reveals that knowledge as well as practices of insulin self administration is moderate among the participants. The study result shows that, with increase in knowledge moderately increase practices of insulin self administration and with decrease in knowledge practices also moderately decreases. That is why it is major responsibility in nursing profession to make people aware regarding the knowledge of diabetes, importance of insulin therapy and complications related to it. Practices can be improved by providing different teaching programmes in hospital and community setting. The study can be concluded that people with diabetes should receive ongoing need based quality education on diabetes and insulin therapy by using innovative method.

References

[1] Espanol FP. Diabetes mellitus.WHO.2020. 8 June Available from: https://www.who.int/news-room/fact-sheets/detail/diabetes
[2] Mantzoros C. Insulin therapy. Mayo Foundation for Medical Education and Research (MFMER).1998-2020 available from: https://www .mayoclinic.org/diseases-conditions/diabetes/in-depth/diabetes- treatment/art-20044084
[3] The British Diabetic Association operating as Diabetes UK, a charity registered in England and Wales. First use of insulin in treatment of diabetes on this day in 1922. January 2017. available from: https://www.diabetes. org.uk/about_ us/news_landing_page/first-use-of-insulin-in-treatment-of-diabetes-88-years-ago-today
[4] Saeedi P at al. Global and regional diabetes prevalence estimates for 2019 and projections for 2030 and 2045. Results from the International Diabetes Federation Diabetes Atlas. 9th ed. September 2019. Available from: DOI: https://doi.org/10.1016/j.diabres.2019.107843
[5] Sharma NC. Government survey found 11.8% prevalence of diabetes in India. October 2019. Available from: https://www.livemint. com/science/ health/goverment-survey-found-11-8-prevalence-of-diabetes-in-india-11570702665713.html
[6] Das G. 5.5% of people in Assam have Type-2 diabetes:ICMR. Times of India. November 7, 2017. Available from: https://m.timesofindia.com/city/guwahati/5-5-of-people-in-assam-have-type-2-diabetes-icmr/amp-articleshow/61540785.cms
[7] William C. Medical Definition of Diabetes mellitus. February 2016. Available from: https://www.medicinenet.com/script/main/art.asp?artcle key=2974
[8] Gholap M, Mohite VR, Chendake MB, Haremath P.A study to assess the knowledge and practices of self administration of injection insulin among diabetic patient attending outpatient department of Krishna Hospital, Karad. International Journal of Health Sciences and Research (IJHSR). September 2016;6(9):277-282
[9] The British Diabetic Association operating as Diabetes UK, a charity registered in England and Wales. First use of insulin in treatment of diabetes on this day in 1922. January 2017. available from: https://www.diabetes. org.uk/about_ us/news_landing_page/first-use-of-insulin-in-treatment-of-diabetes-88-years-ago-today