Effectiveness of Structured Teaching Programme on Self Administration of Insulin

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Abstract: The study was conducted with the objectives to assess the effectiveness of structured teaching programme on self-administration of insulin among diabetes patients. An evaluative approach with quasi experimental research (one group pre-test post-test) design was adopted for the study. A study was carried out with 30 patients from Primary Health Centre. Demographic proforma and knowledge questionnaire on self administration of insulin were used to collect the data. Patients were trained after the pre-test by lecture cum demonstration method and post test was implemented after eight days of training. The study findings reveals that the mean in pre test obtained is 23.23, post test mean was 32.1, SD of 3.09 and the paired t-Value is 15.54 which is significant at P<0.01 level. Therefore, it is concluded that training was effective in enhancing the knowledge in self administration of insulin.

1. Introduction:

Diabetes is a common disease, yet every individual needs unique care. - Diabetes mellitus is a multisystem disease related to abnormal insulin production, impaired insulin utilization or both. Diabetes mellitus is a serious health problem through out the world. Diabetes mellitus is not modern disease. In 1500 B.C. Papyreus of ancient Egyptians recorded a number of remedies for passing urine. In 1000 B.C. Indian physician Sushurutha diagnosed diabetes. In 1798, J.Jhon, the Greek physician found diabetes is associated with excess of glucose in blood. Discovery of insulin by Banting and Best in 1921 is a land mark in diabetes history.

The term diabetes, refers to diabetes mellitus, which roughly translates to excessive sweet urine (known as "glycosuria"). Several rare conditions are also named diabetes. The most common of these is diabetes insipidus in which large amounts of urine are produced (polyuria), which is not sweet (insipidus meaning "without taste" in Latin). The term "type 1 diabetes" has replaced several former terms, including adult-onset diabetes, obesity-related diabetes, and noninsulin-dependent diabetes mellitus (NIDDM). Beyond these two types, there is no agreed-upon standard nomenclature. Various sources have defined "type 3 diabetes" as: gestational diabetes.

Diabetes Mellitus, the commonest endocrine disorder affects developed as well as developing country. In 2011, 336 million population have diabetes and estimated to reach 552 million by 2030 globally. Low and middle-income countries have 80% diabetes burden. Diabetes will be the seventh leading cause of death in 2030. WHO (2011) reports that the prevalence of diabetes is increasing in India. Diabetes accounts for 10% total metabolic factors with 2% of mortality in 2008 in India . Though diabetes is prevalent in both urban (10-16%) and rural (5.33-6.36%), the incidence is increasing projected to double by 2030.

World diabetes day is the major global awareness campaign for patient with diabetes mellitus throughout the world. World diabetes day was introduced in 1991, celebrated on 14 November each year, to co-inside with the birthday of Fredrick Banting who, along with Charles best first conceived the idea that lead to the discovery of insulin. Diabetes is an “Iceberg” disease. All through increase in both the prevalence and incidence of type 2 diabetes have occurred globally, they have been especially dramatic in societies in economic transition, in newly industrialized countries and developing countries. Currently the number of diabetes Worldwide is estimated to be around 150 million. This number is predicted to double by 2025, with the greatest number of cases being expected in China and India. The racing prevalence of diabetes in developing countries is closely associated with industrialization and socio economic development.

It is estimated that 20% of the current global diabetic population resides in the south East Asian region. The number of a diabetic person in the countries of the Region is likely to triple by the year 2025, increasing from the present estimates of about 30 million to 80 million.
population or around 23.6 million people have diabetes with 5.7 million being undiagnosed. Most of those diagnosed have Type-2 diabetes and are usually 45 years of age or older. But this snapshot is changing as more children and adolescents are increasingly being diagnosed with this type of diabetes.

As of 2000 it was estimated that 171 million people globally suffered from diabetes or 2.8% of the population. Type-2 diabetes is the most common type worldwide. Figures for the year 2007 show that the 5 countries with the largest amount of people diagnosed with diabetes were India (40.9 million), China (38.9 million), US (19.2 million), Russia (9.6 million), and Germany (7.4 million). Currently, India is the diabetes capital of the world. It is estimated that over 40 million of those with diabetes are currently in India and that by 2025 that number will grow to 70 million.

In other words, 1 in every 5 diabetics in the world will live in India. Diabetes is the number one cause of kidney failure, is responsible for 5% of blindness in adults and 1 million limb amputations. Because of the chronic nature of diabetes, the relentlessness of its complications and the means required to control both diabetes and its complications; this disease is very costly, not only for affected individuals and families but also for the healthcare systems. Studies done in India estimate that for a low income family with an adult having diabetes, as much as 25% of the family’s income may need to be devoted to diabetes care.

The treatment of diabetes mellitus is pharmacological therapy and lifestyle modifications. Pharmacological therapy includes oral hypoglycemic drugs and insulin therapy. Insulin is a hormone produced by the pancreas which controls the level of glucose in the blood by regulating the production and storage of glucose. Based on the onset of action and duration of action insulin is divided into five types. They are rapid acting insulin, short acting insulin, rapid acting insulin and combination therapy.

Injection is the better route for administration of insulin. Most commonly used areas are subcutaneous tissue of the upper arm, lateral aspect of the thigh, buttocks and abdomen. The main complications of insulin therapy are local allergic reactions, lipodystrophy, Dawn phenomenon, somogyi effect and hypoglycemia.

In Andhra Pradesh a recent survey by the Diabetic association of AP showed that of the 12,000 people surveyed in rural areas about 2% or 240 people in 10,000 population suffer from Diabetes and every 6th person is diabetic in Hyderabad.

2. Methodology:

The research approach used was Quasi experimental and research design was done group pre test post test design. The setting of the study was Primary Health Centre – Karvetinagaram. The sampling technique used was non – probability purposive sampling. The population consists of Diabetic patients under insulin therapy. The sample size is of 30 patients.

Table 1. Schematic representation of research design:

<table>
<thead>
<tr>
<th>BEFORE</th>
<th>INTERVENTION</th>
<th>AFTER</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pre test knowledge on self administration of insulin</td>
<td>Structured Teaching Programme</td>
<td>Post test knowledge on self administration of insulin</td>
</tr>
</tbody>
</table>

Variables of the study:

- **Independent variable:** Structured teaching program on self administration of insulin was the independent variable of the study.
- **Dependent variable:** The knowledge regarding the self administration of insulin is the dependent variable of the study.

Criteria of the sample collection:

**Inclusion criteria:**

- Patients with Type – I Diabetes Mellitus
- Patients attending OPD at Karveti Nagaram PHC
- Patients willing to participate in the study
- Patients able to understand and speak Tamil and Telugu

**Exclusion criteria:**

- Patients not willing to give consent
- Patients who are on hypoglycemic drugs
- Patients attending both pre and post test.

Development and description of the tool: The tool consists of 3 sections. Section I: it consists of personal and social profile. Section II: it consists of knowledge on Diabetes Mellitus. Section III: consists of the knowledge on self administration of insulin.
**Scoring interpretation:** The multiple choice questions were used where 1 mark is awarded to correct answer and 0 for wrong answer. Based on the scoring the percentage of knowledge was calculated using a formula: Obtained score/total score X 100

**Table 2. The score was interpreted as follows:**

<table>
<thead>
<tr>
<th>Level of knowledge</th>
<th>Score in percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inadequate</td>
<td>&lt;50%</td>
</tr>
<tr>
<td>Moderate</td>
<td>50-70%</td>
</tr>
<tr>
<td>Adequate</td>
<td>&gt;70%</td>
</tr>
</tbody>
</table>

**3. Data analysis:** The collected data was analysed using descriptive and inferential statistics. For analyzing the demography frequency, percentage and mean was used. While to find the effectiveness of STP t - test and SD was used and Chi Square was used for the association between demography and post test knowledge on self administration of insulin.

**4. Results :**

Pertaining to the age group of Diabetes patient’s the data shows that out of 30 samples 1(3%) were in between 30 – 40 years of age, 8(27%) were in between 51 to 60 years and 14(47%) were above 60 years of age. With regard to gender out of 30 samples 19(63%) were males and 11 (37%) were females. With regard to educational status 21 (70%) were illiterate, 7 (23%) had primary education and 2(7%) had intermediate education.

With regard to religion 28(93%) were of Hindus and 2(7%) were of Christians. With regard to occupation 9 (30%) were employed, 10 (33%) were laborers, 1(3%) is of govt. employee and 1 (3%) was doing business. With respect to type of family out of 30 samples 10 (33%) were of joint family and 20 (67%) were in nuclear family. Pertainig to family income per month 15 (50%) were earning below Rs.1000, 8(27%) were earning Rs. 1000-3000, 4(13%) were earning Rs.3001-6000 and 3(10%) were earning above 6000. Regarding the family history of Diabetes Mellitus 6(20%) were having family history of DM.

**Table 3: Percentage distribution of pre – test scores with regard to level of knowledge on self administration of insulin**

<table>
<thead>
<tr>
<th>PRE TEST</th>
<th>Inadequate</th>
<th>Moderate</th>
<th>Adequate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
<td></td>
</tr>
</tbody>
</table>

Table – 3 shows the pre test scores of knowledge on self administration of insulin. Out of 30 samples 29(97%) were having moderate knowledge, 1 (3%) was having inadequate knowledge and none of them were having good or adequate knowledge.

**Table 4. Percentage distribution of post – test scores with regard to level of knowledge on self administration of insulin**

<table>
<thead>
<tr>
<th>LEVEL OF KNOWLEDGE</th>
<th>Post test</th>
<th>Inadequate</th>
<th>Moderate</th>
<th>Adequate</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>F</td>
<td>%</td>
<td>F</td>
<td>%</td>
<td>F</td>
<td>32.1</td>
</tr>
</tbody>
</table>

Table – 4 shows the post test scores of knowledge on self administration of insulin. Out of 30 samples 28(93%) were having adequate knowledge, 2 (7%) was having moderate knowledge and none of them were having inadequate knowledge on self administration of insulin.

**Table 5 Comparison of Pre and Post – Test Knowledge on Self Administration of Insulin**

<table>
<thead>
<tr>
<th>Pre – test</th>
<th>Post – test</th>
<th>SD</th>
<th>Mean difference</th>
<th>T - value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean</td>
<td>Mean</td>
<td>3.09</td>
<td>8.9</td>
<td>15.54**</td>
</tr>
</tbody>
</table>

Note: ** significant at 0.01 level

Table – 5 shows the effectiveness of self administration of insulin. The pre test mean value obtained was 23.2 and post test mean was d32.1. the paired t – value was 15.54 which found to be statistically significant at 0.01 level.

The association of demographic variables revealed a significant association between educational status and the post test knowledge scores of the patients with Diabetes Mellitus.

**5. Conclusion:** The present study was undertaken to assess the effectiveness of Structured Teaching Programme(STP) on knowledge regarding self administration of insulin. The data was collected from thirty patients with diabetes by structured knowledge questionnaire before and after STP. Non Probability purposive sampling technique was used to select the sample of patients with diabetes. The findings of the study have been discussed with reference to the objectives, hypothesis and with the findings of other studies. The data is organized, analyzed through descriptive
and inferential statistics. The study concluded with
the following major findings. The findings
revealed that the STP was effective improving the
knowledge of diabetic patients regarding self
administration of insulin.

6. References:

1. World Health Organization. Definition, diagnosis and Classification of diabetes mellitus


3. Ramesh-et al. Diabetic knowledge of rural community and drug utilization pattern in a tertian”

2009 nov 04.


8. The Society of Hospital Pharmacists of Australia (2002) SHPA Guidelines for Self-Administration
of Medication in Hospitals and Residential Care Facilities.

