

# AN EXPERIMENTAL STUDY ON MEASURING EFFICACY OF GENERIC MEDICINE IN REDUCING TYPE 2 DIABETES (RANDOM BLOOD SUGAR LEVEL)

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## **ABSTRACT:**

Generic medicine serves as a life of many poor and middle-class people of India who can't purchase branded medicine. The purpose of this study is to evaluate impact of generic medicine on reduction of Random blood sugar level. Student t-test is applied to evaluate significant impact of generic medicine on reduction of Random blood sugar level. It is seen that there is a significant difference in pre random blood sugar and post random blood sugar and generic medicine is effective in reducing random blood sugar level. Further studies can be conducted to evaluate impact of generic medicines on various heart diseases, Lung diseases, cancer, Fasting and postprandial diabetes etc.

**KEYWORDS:** *Generic medicine, Experimental research, student t-test*

## **INTRODUCTION:**

Diabetes refers to a chronic and long-lasting condition of health which impacts the body of how it turns food into energy. The body breaks down the major part of the food that one consumes into sugar and then ecetyakky releases it in your bloodstream. When the level of blood sugar level increase, the pancreas are signallef for releasing insulin. The insulin plays an important role of letting the blood sugar within the cells of the body that could be used as energy. There are 3 important types of diabetes which are classified into Type 1, Type 2 and Gestational Diabetes. Type 1 diabetes refers to the diabetes caused due to autoimmune reaction when the body mistakenly attacks itself. This results in stopping the body to make insulin. About 5-10% of people suffer from Type 1 diabetes. Type 2 diabetes refers to the body does not using insulin well and which does not play an effective role in keeping up with the blood sugar level at Normal. Approximately 90-95% of the population suffer from Type 2. Here it develops in down of many by years and is generally found out in adults. Gestational diabetes develop among pregnant women who do not have a history of diabetes. The baby is at a higher risk with relation to health problems.

Generic medicines or drugs refers to the medication which is being created in the same manner as the already marketed and branded drugs in the form of its dosage, strength, safety, administration route, characteristics of the performance, use intended and it's quality. This commonalities helps in demonstrating bioequivalence, that mrans a generic medicine works in same manner as well as provide same benefits clinically as what a branded medicine performs. A generic medicine is equally a substitute for their branded medicine counterparts.

The government of India with the aim yo make quality generic medicines to Br made available at affordable pricings for everyone, has launched the Pradhan Mantri Bhartiya Janaushadhi Pariyojana in 2008 in November by the Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India. As per the scheme, there are outlets which are referred to as Janaushadhi Kendras which are open for providing generic medicines at prices

are affordable for all. Till August 6, 2021, there are about 8012 Janaushadhi Kendras which are functioning throughout the nation. The scheme covers about 1616 drugs as well as 250 surgical items. The scheme

implementation is done by the society as registers under Societies Registration Act, viz., Pharma & Medical Bureau of India.

The most important benefits of using generic medicines is the cost. The price of generic medicines could be less than 85% of the same type of branded medicines. Also the low cost generic medicines have showed up to increase the likeness of patients going for essential medication that is being prescribed by the doctor or physician and for improving the health of the patient's. It helps those patients who are not able to afford the expensive medication and then have to suffer. So the generic medicines are a source for them to take care of their health.

## REVIEW OF LITERATURE

**1. MacKrill, K. et al (2019)** examined in the study about analyzing the impact of the changes in the apparent formulation of medication on basis of subjective as well as objective measures of the impact of the medication and their side effects. For the conduct of the study, 62 students from the university participated in the research for the purpose of testing the impact of fast-acting  $\beta$ -blocker medication to reduce the anxiety of preexaminations. Every tablet was placebo. In the first session, every participant had been given a yellow tablet known as "Betaprol". In the second session, they were given Betaprol randomly or white tablet called as "Novaprol" or "Generic". The level of blood pressure and anxiety state was measured before as well as after the ingestion of the tablet. The side effects were analyzed. The changes in the formulation of medication, specifically with reference to generic medication, are more associated with subjective as well as objective measures of impact of medication and increased side effects.

**2. Schmidt, S. et al (2016)** described in the research about testing the impact on adolescents' participation towards health services and Quality of Life with respect to analysis of generic transition-oriented patient education program. The study was conducted through a comparison made on basis of controlled trial among 29 transition workshops in which treatment was given to 274 adolescents with a mean age of 16.8 and SD = 1.76, who were diagnosed with cystic fibrosis, inflammatory bowel disease or type I diabetes. The workshop was carried in over 12 cities in Germany in the form of a 2-day transition workshop, which focused on standardized modules for adjustment towards settings for adult care, partnership, career choices, organization of future disease management. The outcomes derived from the study showed relation with self-efficacy, transition competence, patient activation, Quality of Life, and satisfaction with care on health. The measures derived were being examined with the baseline and with a follow-up of 6 months. The program revealed having a positive impact on the level of competence among the adolescents during the phase of transition.

**3. Wang, J. et al (2022)** pointed out in the research about evaluating the effect of 1st round of National Centralized Drug Procurement pilot or as it is called the '4+7' policy related with the usage of generic and original drugs with respect to its usage. For the conduct of the study, a retrospective natural experimental design was taken. The data of the procurement of the drugs was taken from the China Drug Supply Information Platform database, which involved 9 pilot cases related to '4+7' among intervention groups and 12 non-pilot cases among the control group. The sample included 25 drugs from the list of '4+7' procurement and the alternative drugs as well which were still not covered in the same. Then afterwards, the '4+7' drugs list was categorized on basis of bid-winning and non-winning products as per the results of the bidding. The drugs which were included were sorted into generic and original products. The Difference-in-difference method was applied for estimating the total net impact of policy. The policy of '4+7' is being conducive with respect to substitution of generic drugs, reduction in their prices and pharmaceutical cost-containment in the country of China.

**4. Colgan, S. et al (2016)** conducted in the research paper about investigating the impact of educational intervention to improve the perception as well as the perceived efficacy related to that of generic medicines. The research included 70 participants who on a frequent basis experienced tension headaches, who were on a random basis entitled in receiving an educational video in relation to generic medicines or a control video. The participants then on an alternative basis took generic ibuprofen and branded ibuprofen for treating their next two headaches consecutively. The change in the perception of generic medicines, the side effects and the relief from the pain was being examined. The research revealed that educational intervention is being impactful to modify and improve the perceptions related to generic medication but produces a paradoxical impact on the efficacy of the drugs and their side effects.

**5. Johnson, F. et al (2013)** surveyed in the research about assisting the researchers particularly with evaluation of the different alternative approach towards experimental designs, which constitute a significant element of successful DCEs. The research in particular does not endorse any particular approach, it doesn't provides a guide to choose approach which would be correct for the study. But on the other hand, it provide overview regarding role played by experimental designs towards implementation of DCE approach in health care studies in a successful manner. This provides the researchers gain an introduction for construct of experimental designs based on objectives of the study and the statistical models that would be used by the researchers while selecting the study.

**6. Sapiun, Z. et al (2018)** identified in the research paper about the main aim of the study is observing the impact of information and education with respect to alterations regarding the knowledge of the patient's, their perceptions and attitudes towards generic drugs. The study was conducted on basis of a simple random sampling divided among a sample size of 45 people. The selected sample size was further divided into 3 groups, the first one were educated by nurse, second by the pharmacist and the final one were through collaboration of both the nurse as well as the pharmacist. The data collected was then analyzed through Wilcoxon Sign Rank Test for verifying the changes. The result through the analysis of the data showed an important changes in the knowledge, perceptions and attitude towards before and after education provided by the nurse, pharmacist and or both.

## OBJECTIVE

To evaluate impact of generic medicine on reduction of Type-2 diabetes.

## HYPOTHESIS

**Ho:** There is no significant difference in pre random blood sugar before taking generic medicine and post random blood sugar after taking generic medicine for the period of one month.

**H1:** There is a significant difference in pre random blood sugar before taking generic medicine and post random blood sugar after taking generic medicine for the period of one month.

## MATERIAL AND METHODS

Experimental research design is used for the current study. 100 patients of Type -2 diabetes who intakes generic medicines have been selected for the current study. Pre random blood sugar of the patients have been recorded and after one month post random blood sugar scores have been recorded. Current study uses random sampling method. The tool used to evaluate impact of generic medicine on blood sugar reduction is SPSS and technique for the current study is parametric student t-test.

## RESULTS AND FINDINGS

**Table no:1 Paired Samples Statistics**

	Mean	N	Std. Deviation	Std. Error Mean
Pair 1 Pre random sugar	236.5000	100	65.07765	6.50777
Post random sugar	119.8500	100	47.49192	4.74919

**Table no:2 Paired Samples Test**

	Paired Differences					t	df	Sig. (2-tailed)
	Mean	Std. Deviation	Std. Error Mean	95% Confidence Interval of the Difference				
				Lower	Upper			
Pair 1 Pre random sugar – post random sugar	116.65000	74.75027	7.47503	101.81792	131.48208	15.60599	99.000	

Parametric student t-test is applied to examine impact of generic medicine on reducing the random blood sugar level. It is seen that t statistics =15.605 and p(value)=0.000 which is less than level of significance 5% thus the Ho is rejected and H1 is accepted and it can be concluded that there is a significant difference in pre random blood sugar and post random blood sugar. Mean pre random blood sugar=236.500 and mean post random blood sugar=119.850.

**CONCLUSION**

Generic medicines are FDA approved medicines and provides the same benefits as derived by the Branded medicines. It is seen that generic medicine plays an effective role in reducing Type-2 random blood sugar level. Clinical benefits derived by the generic medicines are effective in reducing the blood sugar level. This study is very important for the doctors, private hospitals and government hospitals in recommending generic medicine in case of type-2 diabetes and save lots of money of patients who consumes branded medicines. Further studies can be conducted to evaluate impact of generic medicines on various heart diseases, Lung diseases, cancer, Fasting and postprandial diabetes etc.

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