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"A STUDY TO EVALUATE THE EFFECTIVENESS OF STRUCTURED TEACHING PROGRAMME ON KNOWLEDGE REGARDING PREVENTION OF GENETIC DISORDERS AMONG DEGREE STUDENTS IN SELECTED DEGREE COLLEGES AT BANGALORE"

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ABSTRACT

Background: Genetic disorders are diseases that are not acquired or caused by infection or trauma, but rather children inherit the genes from their parents. By providing sufficient knowledge before conception regarding prevention of genetic disorders will help the degree students to treat the disorders and can lead a healthy life. The study was conducted to evaluate the effectiveness of Structured Teaching Program on knowledge regarding prevention of genetic disorders among degree students at selected degree colleges, Bangalore. **Objectives: (1)** To assess the knowledge of degree students before and after conducting structured teaching program regarding prevention of genetic disorders (2) To find an association between post test knowledge levels of degree students regarding prevention of genetic disorders and their selected personal variables. **Methods:** The study was conducted on prevention of genetic disorders among 50 degree students in SLN college of arts, Bangalore from 09.09.2013 to 08.10.2013. Pre-experimental design, convenient sampling method was used. Pre test was conducted by administering structured knowledge questionnaire followed by STP on prevention of genetic disorders post-test was conducted after 7 days to find the effectiveness. **Results:** Majority 86% of the respondents falls between the age 19-20 years, 76% were females, 76% were Hindus, 92% were not having a history of consanguineous marriage of parents, 86% were not having a previous family history of genetic disorders, 82% had not Attended seminars/workshop regarding prevention of genetic disorders, 56% had Major information from Electronic media. Regarding effectiveness of STP, the overall mean knowledge score in the pre-test was 37.4% and 77.3 % in the post test with enhancement of 39.9% and it was significant at 5% level. Analysis of socio-demographic variables showed significant association between age in years, gender, attended seminar/ workshop regarding prevention of genetic disorders with knowledge score at 5% level (P>0.05). **Interpretation and Conclusion:** Overall findings showed that pre-test knowledge scores regarding prevention of genetic disorders were found to be 37.4% and after STP the post test knowledge scores of degree students was found to be 77.3% which is enhanced by 39.9%. The hypothesis $\mathbf{H_1}$ stated in the study is accepted since there was significant change found between the pre-test and post-test knowledge scores of degree students. Hence the results has proved that STP was effective in improving the knowledge of degree students on prevention of genetic disorders.

KEYWORDS: Genetic disorder, Structured Teaching Programme, Congenital Defects.

INTRODUCTION

"AN OUNCE OF PREVENTION IS WORTH A POUND OF CURE." -Benjamin Franklin

Children are one third of our population, Ensuring their healthy growth and development ought to be a prime concern of all societies. Child health problems are alarming throughout the world, especially in the developing countries. In the cities genetic disorders are important cause of morbidity and mortality.[1]Genetic disorders are diseases that are not acquired or caused from infection or trauma, but rather children inherit the gene from their parents. It could be congenital, if the disease appears at birth immediately but sometimes, if they have the gene, the disease will develop later on.[2] Particularly blood genetic disorders, pose a remarkable health, economical, and psychosocial burdens on the individual, the family, and the community.

Primary prevention of genetic disorder services was recommended by the World Health Organization, as

potential to reduce the prevalence of genetic disorders. It is providing information about genetic disease, birth defects and inherited disorders. It is an educational service for individuals and families who have a genetic disease or who are at risk for such a disease. It is designed to provide individuals and their families with information about their condition and help them make informed decisions.[2]

Preconception health care is given to a woman before pregnancy to manage conditions and behaviors which could be a risk to women and baby. There are some factors such as nutrition, hazards of smoking, alcohol, radiation, work place hazards, noxious substances, genetic counselling influences genetic problems. The key to promote preconception health is to combine the best medical care, healthy behaviors, strong support, and safe environments at home and at work.[3] So the increasing use of premarital genetic screens and genetic diagnosis before marriage among youngsters is also helping to limit the frequency and the severity of birth defects in future.

Need For Study

Every year, an estimated 7.9 million infants are born with serious birth defects. An estimated 3.2 million of these children are disabled for life. Moreover, birth defects are the leading cause of infant mortality in the United States. Some birth defects are inherited, others are a product of harmful environmental factors known as teratogens, and still others are multifactorial, resulting from a complex interaction of genetic and environmental influences. However, in approximately half of all birth defect cases, the causes are unknown.[4] For example in Iran, it is estimated that about 8,000 pregnancies are at risk each year. In some endemic countries in the Mediterranean region, long-established control programs have achieved 80-100% prevention of newly affected births.[5]

According to WHO, the genetic and congenital disorder is second most common causes of infant and childhood mortality and occurs with a prevalence of 25-60 per 1000 birth.[6] More than 2 billion people of various religious and ethnic backgrounds, live in countries, where a large proportion of marriages are contracted between blood relatives**.** Many studies in Egypt have shown that roughly 30% of admissions and about 40-50% of deaths occurring in pediatric hospitals are accounted for by children with genetic disorders or congenital malformations.[2]

A survey study was conducted on to evaluate the women's knowledge level and beliefs about preconception care among 499 women in Arizona. The study findings revealed that 39% could ever recall their physician discussing preconception care. The majority of the women in this study population 74.8% were interested in preconception care health education preferred the information prior to a pregnancy or 11.9% were at the time of their annual medical exam. The study findings concluded that all women in the study realized the importance of optimizing their health prior to pregnancy.[7]

The World Health Organization recommends preconception care, including folic acid supplementation for primary prevention of birth defect in developing and developed countries. Epidemiological studies published over the last fifteen years document that prenatal supplementation with folic acid reduces the risk of neural tube defects, such as spina bifida and anencephaly.[8] Pre conceptional counseling and care has been shown to improve pregnancy outcome in high risk women. It includes information regarding contraception, safe period, blood group incompatibility, teratogens, genetic screening etc.[9]

From the above facts it is clear that there is higher incidence of genetic abnormalities rates worldwide and parents have lack of knowledge regarding preventing genetic disorders. Younger generations are future women. Hence researcher thought to impart knowledge regarding prevention of genetic disorders through structured teaching programme and to educate the students to be aware of it and in future they can transform information to others and can take preventive measures to control genetic disorders in the future life.

OBJECTIVES OF THE STUDY

1. To assess the knowledge of degree students regarding prevention of genetic disorders before and after conducting structured teaching programme regarding prevention of genetic disorders.
2. To find an association between post test knowledge levels of degree students regarding prevention of genetic disorders and their selected personal variables.

Hypotheses

H_1: There will be a significant increase in the mean post test knowledge scores of degree students studying in selected degree colleges at Bangalore regarding prevention of genetic disorders

H_2: There will be a significant association between post test knowledge scores regarding prevention of genetic disorders and the selected personal variables among degree students studying in selected degree colleges at Bangalore.

Research Variables

Independent variable	**:**	Structured teaching programme on prevention of genetic disorders
Dependent variable	**:**	Knowledge scores of degree students regarding prevention of genetic disorders
Attribute variables	**:**	Age, Gender, Religion, History of consanguineous marriage of parents, Previous family h/o genetic disorders, Attended seminars/workshop, source of information.

Conceptual Frame Work

The **conceptual framework** is designed according to the Imogene King's Goal attainment Theory. The model is characterised by Perception, Judgment, Action, Reaction, Interaction, Transaction, and Goal attainment.

The theoretical framework for the present study is based on **Imogene King's Goal attainment theory.**

METHODOLOGY

Target Population

Target population in the present study was degree students studying in selected degree colleges of Bangalore.

Setting of the Study

"Setting" refers to the area where the study is conducted. It is the physical location and condition in which data collection takes place in a study. This study was conducted in SLN College of arts in Bangalore.

Sample

The sample of this study was the degree students studying in SLN College of arts, Bangalore.

Sample size

The sample of this study comprised of 50 degree students studying in SLN College of arts, Bangalore.

Sampling Technique

Convenient sampling is in which subjects are selected because of their convenient accessibility and proximity to the researcher.

Criteria for Selection of Sample

a) Inclusion criteria

1. Degree students who are willing to participate in the study.
2. Degree students who are available at the time of data collection.

b) Exclusion Criteria

1. Degree students who are on leave and sick during the time of data collection.

Description of the tool

Section – I: Socio demographic data which included variables like Age in years, Gender, Religion, History of consanguineous marriage of parents, Previous family history of genetic disorders, Attended seminars/workshop, Source of information.

Section – II: The structured questionnaire regarding prevention of genetic Disorders consisted of 42 multiple choice questions under 4 aspects such as Basic information on chromosomes (9 items), Information on types and causes (5 items), Diagnosis (8 items), Prevention of genetic disorders (20 items). Each question has 4 responses. Score 1 was given for correct response and score 0 was given for wrong answer.

The structured teaching programme was developed based on the review of the related research and the objectives stated in the blue print.

Reliability

The reliability co-efficient of structured knowledge questionnaire was found to be 0.96 and validity co-efficient worked to be 0.97 for knowledge questionnaire, revealing that the tool is feasible for the main study. Since the knowledge reliability co-efficient for the scale $r > 0.70$. The tool was found to be reliable and feasible.

Pilot Study

A pilot study was conducted from 19.08.2013 to 26.09.2013 at visveshwarapura degree college of arts, Bangalore. Administrative approval was obtained from the concerned authority to conduct the pilot study.

Data Collection procedure

The main study data collection was done from 09.09.2013 to 08.10.2013. The pre-test was conducted to 50 degree students studying in SLN College of arts, Bangalore by using Structured knowledge questionnaire; approximately 45 minutes were spent for collecting data. The investigator gathered degree students in a comfortable room and conducted STP. It took 45 minutes for the structured teaching programme. Post test was conducted following STP after 7 days.

All the participants co-operated well with the investigator in both pre-test and post-test. The data collection process was terminated by thanking the subjects.

RESULTS

The analysis and interpretation of data of this study are based on data collected through Structured knowledge questionnaire from degree students. The results were computed using descriptive and inferential statistics based on the following objectives. The level of significance was set at 0.05%.

Presentation of the Data

The data was tabulated, analyzed, interpreted and presented under the following headings.

Section 1

Description of Socio-Demographic Characteristics of Degree Students

Major findings of the study

- Majority 86% of the respondent's fall between the age of 19-20 years.
- Majority 76% of the respondents are females.
- Majority 76% of the respondents belong to Hindus
- Majority 92% of the respondents were not having a history of consanguineous marriage of parents.
- Majority 86% of the respondents were not having a previous family history of genetic disorders
- Majority 82% of the respondents had not Attended seminars/workshopregarding prevention of genetic disoders.
- Majority 56% of the respondents had recieved information from Electronic media.

Section II

Table 1: Description of Aspect wise mean Pre test and Post test Knowledge on Prevention of genetic disorders. N=50.

No.	Knowledge Aspects	Respondents Knowledge (%)						Paired 't' Test
		Pre test		Post test		Enhancement		
		Mean	SD	Mean	SD	Mean	SD	
I	Basic information on chromosomes	59.3	11.0	76.0	9.5	16.7	11.2	10.54*
II	Information on types and causes of genetic disorders	39.6	15.7	76.0	12.6	36.4	17.3	14.88*
III	Diagnosis of genetic disorders	33.8	14.8	72.0	14.3	38.3	19.3	14.03*
IV	Prevention of genetic disorders	28.5	12.7	80.3	8.3	51.8	14.9	24.58*

* Significant at 5% level, NS: Non-Significant, t (0.05, 49) df =1.96.

The above table indicates the The pre test mean knowledge score regarding the Basic information on chromosomes was 59.3% and the post test score is 76 %**.** The enhancement of the knowledge is found to be 16.7%. Regarding the types and causes of genetic disorders the pre test score was found to be 39.6 % and post test score of 76% with the enhancement of 36.4 %. The pre test score regarding the Diagnosis of genetic disorders was found to be 33.8 % and post test score of 72 % with the enhancement of 38.3 %.The Prevention of genetic disorders pre test score was 28.5 % and the post test score of 80.3 % with the enhancement of 51.8 %.

Table 2: Classification of Respondents pre and post test Knowledge level on Prevention of genetic disorders.

Knowledge Level	Category	Classification of Respondents				χ^2 Value
		Pre test		Post test		
		Number	Percent	Number	Percent	
Inadequate	≤ 50 % Score	38	76.0	0	0.0	74.15*
Moderate	51-75 % Score	12	24.0	14	28.0	
Adequate	> 75 % Score	0	0.0	36	72.0	
Total		50	100.0%	50	100.0	

* Significant at 5% level, χ^2 (0.05, 2df) = 5.991

The above table reveals that in pre test 76 % of them had inadequate knowledge, 24 % of them had Average knowledge and no of them. In post test 28 % had moderate knowledge and 72 % had adequate knowledge.

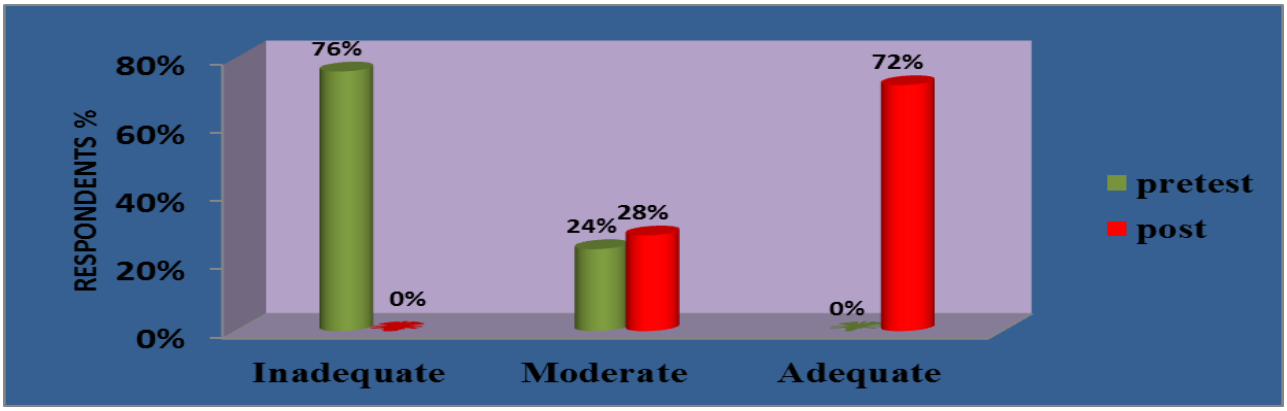

Fig 1: Classification of Respondents on pre and post test knowledge level on Prevention of genetic disorders.

The above Figure reveals that in pre test 76 % of them had inadequate knowledge, 24 % of them had Average knowledge and none of them had adequate knowledge. In post test none of them had inadequate knowledge, 28 % had moderate knowledge and 72 % had adequate knowledge

Section 3

Table 3: Over All Pre Test and Post Test Mean Knowledge On Prevention Of Genetic Disorders. N=50.

Aspects	Max. Score	Respondents Knowledge			Paired 't' Test
		Mean	SD	Mean (%)	
Pre test	42	15.72	4.2	37.4	25.88*
Post test	42	32.46	2.6	77.3	
Enhancement	42	16.74	4.6	39.9	

* Significant at 5% level,
t (0.05,49df) = 1.96

The above table reveals that the pre test mean knowledge score was 37.4% and post test value was 77.3 % with enhancement of 39.9%. The paired "t" test value is 25.88*. So it is more than the table value. Hence there is significant association between mean pretest and post test knowledge scores of respondents. since it is significant at 5% level.

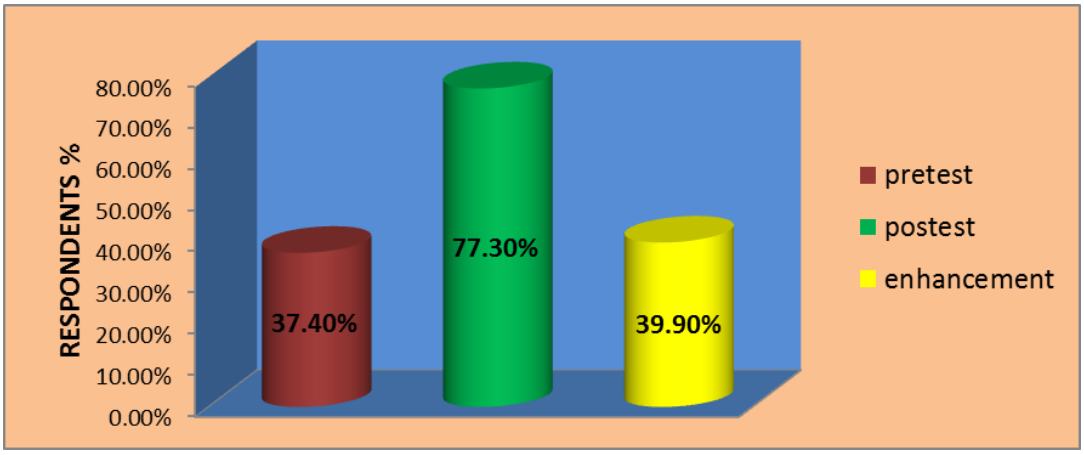

Fig 2: Over all Pre test and Post test Mean Knowledge on prevention of genetic disorders.

The figure table reveals that the pre test mean knowledge score was 37.4% and post test value was 77.3 % with enhancement of 39.9%. The paired "t" test value is 25.88*. So it is more than the table value. Hence, there is significant association between mean pretest and post test knowledge scores of respondents. since it is significant at 5% level.

Section 4: Association Between Socio-Demographic Variables And Post Test Knowledge Level Of Respondents On Prevention Of Genetic Disorders

There is significant association between post test knowledge score and personal variables computed by using chi-square test i.e age χ^2=7.62, gender χ^2=6.14, attended seminar/workshop regarding prevention of genetic disorders χ^2=4.27, (P<0.05) and knowledge scores.

However, there was no significant association between personal variables such as religion χ^2=2.66, History of Consanguineous marriage of Parents χ^2=0.02, Previous family history of genetic disorders χ^2=0.76, and source of information regarding prevention of genetic disorders χ^2=0.72, (P>0.05) and knowledge scores.

DISCUSSION

The findings of the study are discussed under the following headings

Assessment of knowledge of degree students on administration of STP regarding prevention of genetic disorders.

The present study confirms that the overall knowledge in pre-test is 37.4%, which is less. This shows that there is lack of information among degree students regarding prevention of genetic disorders. Although some degree students had moderate knowledge (24%), and majority of them had inadequate knowledge (76%) regarding prevention of genetic disorders. There was a considerable improvement of knowledge after the Structured Teaching Program on prevention of genetic disorders and is statistically established as significant. The overall post test score was 77.3 %.with 39.9% mean percentage knowledge enhancement.

The above results are supported by study findings among 60 women in selected hospital of Erode, Tamil Nadu revealed that majority of primigravida mothers have inadequate knowledge regarding preconception care.

Significant difference was seen in the pretest mean score value 44.10% and post test mean score value 58.89% and paired't' value was 10.79. A study concluded that structured teaching programme was effective.[58]

Association between post test knowledge scores with selected personal variables.

Among Socio-demographic variables analyzed in this study, 7.62* age in years, 6.14* gender, 4.27* attended seminar regarding prevention of genetic disorders, were found significant with post test knowledge scores at 5% level. There was no significant association between, 2.6 religion, 0.02 History of consanguineous marriage of parents, 0.76 Previous family h/o genetic disorders and 0.72 Source of Information on Prevention of genetic disorders and the post-test knowledge scores.

The above result is supported by similar study conducted on Primary Prevention of Genetic Disorders among 750 students at secondary school in a rural area in Egypt. The study findings revealed that less than half of the male students 1st degree has family history consanguinity, while more than half of them do not prefer consanguinity marriage. A study concluded that highly statistical significant difference between pre and post program implementation and revealed highly statistically significant differences between socio-demographic characteristics of secondary school students and their total knowledge.[5]

Testing the hypotheses

In this study the overall pre test mean knowledge score was 37.4 % and post test score was 77.3 %.with 39.9 % mean percentage knowledge enhancement. The hypothesis is accepted since there was significant change found between the pre-test and post-test knowledge scores of degree students regarding Prevention of genetic disorders at $P < 0.05$ level.

The above result is supported by similar study findings revealed that overall knowledge mean value in experimental design was 48.69 with the standard deviation of 17.41 where as in the control group the mean value was only 5.36 with the standard deviation of 11.94. After structured teaching programme the paired't' value was 17.69 with the ($p<0.001$) which is highly significant.[57]

Implications of the study

The main aim of the present study is to educate the degree students regarding prevention of genetic disorders. The study revealed that there are gaps in knowledge of degree students regarding prevention of genetic disorders. The findings of this study have implications in the field of Nursing education, Nursing practice, Nursing administration and Nursing research.

Nursing Practice

Nursing profession has been developing faster in recent years in a unique way. The major change that has occurred in the profession is expansion in the role of nurses. One of the major roles that nurse play is educating the client regarding various health related facts and innovation to overcome all these medical treatments. The nurse need to have thorough knowledge regarding prevention of genetic disorders. Also they should be aware of the treatment modalities available to tackle the genetic disorders. The nurse should be prepared with insightful knowledge to provide prudent and unbiased information to degree students.

Nursing Education

The study has proved that improving the knowledge regarding prevention of genetic disorders among degree students is essential to reduce gene related problems. The health personnel should be aware of the changing treatment modalities using worldwide for preventing genetic disorders. The nursing curriculum should include newer and beneficial treatment techniques which helps to prevent genetic disorders in a safe and natural way. Active participation of nurse can be encouraged by arranging teaching session, demonstration of procedures, conducting seminars and self learning on prevention of genetic disorders for gaining better result to prevent genetic disorders.

Nursing Administration

An administrator have a better opportunity to promote improved education in the future by facilitating an evidence- based nursing approach within the nursing education. Being a nurse administrator, can arrange in-service education, continuing education, and special training programs for junior health assistants regarding prevention of genetic disorders in health centers. The administrator should emphasize and encourage health care personnel to give more information to the degree students regarding various health services available.

Nursing research

It is essential to identify the present level of knowledge regarding prevention of genetic disorders, to know what extent of information is necessary to be given on talk. The extensive research must be conducted in this area to identify several more effective methods of educating the degree students in preventing genetic disorders. Research can be done regarding what are the recent treatments are available to prevent genetic disorders. This study also brings about facts that more studies need to be done in different settings.

Limitations of the study

1. The study did not use control group.
2. Only a single domain that is knowledge is considered in the present study.
3. The sample for the study was limited to 50 degree students.

Recommendations

On the basis of the findings following recommendations have been made:

1. A replication of present study can be conducted with a larger population.
2. A study to evaluate the effectiveness of self-instructional module on knowledge regarding prenatal diagnosis of genetic disorders among staff nurses
3. Effectiveness of planned teaching programme on knowledge of eligible couples regarding prevention of genetic disorders
4. A study to assess the effectiveness of structured teaching programme on knowledge regarding premarital counselling and it's importance in preventing genetic abnormalities among adolescent girls
5. Effectiveness of computer assisted teaching on human genetics & prevention of genetic disorders in children among adolescents
6. A study to evaluate the pregnancy outcome after folate therapy and prevention of genetic abnormalities among primigravidae.

CONCLUSION

The study concluded that there is a need to introduce the basics of human genetics in the school curriculum and to implement strategies for awareness programs about genetic disorders and their early detection for possible intervention.[54]

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