

Research article**A study to assess the knowledge of final year B.Sc. Nursing students regarding genetics and its importance in nursing care at selected nursing colleges of Anand and Kheda district of Gujarat state****Arpan Pandya, Jayesh Patidar*, Ravi Barot**

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Abstract

Aim: The aim of this study was to assess the knowledge of students regarding genetics and its importance in nursing care.

Materials and methods: The research tools were prepared after discussion and validation from experts in nursing field and genetics. The tool was prepared in two segments. The first segment was consist of demographic variables of students like the age of participants, marital status, nursing experience in genetic disease, attended the specialized program on genetics and its use in nursing and gender of participants.

Results: The results of the study revealed that the majority of the participant is having the average knowledge regarding the genetics and its importance in nursing care. The study also revealed that students need to emphasize on knowledge of genetics.

Conclusion: The study concluded that knowledge of genetics among nursing students will promote better Nursing services.

Key words: Knowledge, Nursing, Students, genetics, nursing care

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1. Introduction

Genetic Knowledge is needed by student nurse for the health care of their clients and their families. Nurses are practicing in all areas of Healthcare with the traditional genetic disorder and common disorder with a genetic competent.

The undergraduate curriculum for nurses includes formal coursework in the biological and Behavioural Science. Nurses are expected to have a genetic knowledge that can be integrated into clinical practice and concepts learned in the basic sciences are expected to be carried into the clinical situation, where Genetic Knowledge is needed by Student Nurse by clinical practice for the health care of their clients and their families. Nurses are practicing in all areas of Healthcare with the traditional genetic disorder and common disorder with a genetic competent. The Student Nurse

must deal with how the genetic disorder impacts the appearance and management of common health problems and aging as well as vice versa. The technologic advances have enabled a person with a genetic disorder to live long who used to die in infancy or childhood. Genetic information that influences health care through the lifespan was available prenatally. So, it is more important to have the knowledge of genetics for health care [1].

Nurses have the opportunity to bring a unique perspective to genetic and genomic healthcare through their emphasis on health promotion, prevention, screening, caring, and patient, family, and community relationships. Nurses are expected to have genetic and genomic knowledge that can be integrated into clinical practice. However, researchers today are finding nursing students are not competent or comfortable in the clinical applications of genetics and genomics, even though these students will soon be working in healthcare

as it advances in these fields. The purpose of this research was to evaluate the genetic and genomic knowledge of nursing undergraduate students and explore their attitudes about using this knowledge in practice [2].

Nurse's had the job to council the patients and their families regarding genetic counselling and allows them to choose the option as an informed choice. Nurse have important duty of communicating information related to genetic conditions, providing required support, and follow up guidance to client and parents [5].

Need for the study

The purpose of this study was to describe the current genetic knowledge of nursing students regarding genetics and genetic education. This research enlightens knowledge of student nurses about genetics as well as the content of genetics in nursing curricula [1].

Nurse scientists around the world are increasingly integrating genomics into their programmes of research [4].

Nurses require knowledge of genetics and genomics for identification, support and guidance of clients either at the risk of genetic disorder or inherited a genetic mutation [6].

The goal of the study was to create awareness and sensitization among the nursing workforce with an objective to enabled competent and focused genetic nursing care.

2. Methodology

Objectives of study

1. To assess the level of knowledge of final year B.Sc. Nursing students regarding genetics and its importance in nursing care.
2. To find out the association of level of knowledge with selected demographic variables among final year B.Sc. Nursing students.

Operational definition: -

- A) Assess - Theoretical evaluation of judgment of status or quality of particular aspect, situation or another subject of appraisal. In this study assess refers to the estimation of the level of knowledge of fourth year B.Sc. Nursing students regarding genetics and its importance in nursing.
- B) Knowledge: -Amount of information possessed by the individual. In this study, knowledge refers to information possessed by fourth-year B.Sc. Nursing students regarding genetics and its importance.
- C) Final year B.Sc. Nursing students: - Student's successfully passed Third-year B.Sc. Nursing examination and are eligible to appear in final year B.Sc. Nursing examination.

- D) Genetics: -The branch of science concerned with the means and consequences of transmission and generation of the components of biologic inheritance.
- E) Importance: -Importance refers to the ability to influence. In this study, importance refers to significant difference made by knowledge of genetics in nursing care by IVth year B.Sc. Nursing students.
- F) Nursing Care: - In this study nursing care refers to any care provided by nurse including assessment, physical,
- G) Selected Nursing Colleges: -Nursing educational institutions offering B.Sc. Nursing course and have final year B.Sc. Nursing Students attending academics regularly.

Hypothesis

H₀: There was no significant association between levels of knowledge of final year B.Sc. Nursing students with selected demographic variables.

H₁: There was a significant association between levels of knowledge of final year B.Sc. Nursing students with a selected demographic variable.

Conceptual framework

Research used a conceptual framework based on Rosen stock and Backer's health belief model. The study focuses on the major 3 concepts of the health belief models which were:-

1. Individual perception.
2. Modifying factors
3. Likelihood of action

1. Individual perception

- Individual perception covers the concepts of the susceptibility and seriousness of the health-disease/conditions as perceived by the individual.
- Perceived susceptibility refers to one's subjective perception if the risk of contracting a health condition.
- Perceived seriousness concerns with the seriousness of contracting an illness or of leaving it untreated to an extent of having a serious organic or social complication.

In the present study, the perceived susceptibility of final year B.Sc. Nursing student's regarding lack of knowledge of genetics and its use in nursing care can be considered.

2. Modifying factors

- In present study modifying factors include demographic variables of final year B.Sc. nursing

students who participated in the study and structured variable.

- The socio demographic variables include the age of participants, gender, marital status, and nursing experience in genetic disease and attended the specialized programme on genetics and it's used in nursing. The structured variable includes structured knowledge questionnaire on knowledge of genetics and its use in nursing care.
- In present study perceived treat was lack of knowledge related to lack of knowledge on genetic disorders.

3. Likelihood of action

In present study likelihood of action refers to the assessment of knowledge by using structured knowledge questionnaire regarding knowledge of genetics and its use in nursing. The content arias include DNA and genes, genetic mutation, genetic disorder, knowledge on the practical application of genetics in nursing.

Methodology

- **Population:** - Students study in B.Sc. Nursing course at various Nursing Colleges of Anand and Kheda district.
 - **Sample:** - Students of Forth year B.Sc. nursing in the selected college of nursing at Anand and Kheda district.
 - **Sample size-** Sample Size was 100 samples.
 - **Sampling technique:** - A non- probability convenient sampling technique was used.
 - **Research design:** - The research design selected for present study was descriptive survey research design.
 - **Tools:** - In present study, we are going to conduct a pre-test consisting of two section i.e.
 - 1) Socio-demographic variable: - Age of participants, marital status, nursing experience in genetic disease, Attended specialized programme on genetics and it's used in nursing and Gender.
 - 2) Structured knowledge questionnaire on genetics and its use in nursing care. The analysis of results will give us a picture of knowledge possessed by students.
 - **Setting:** - The setting of the study was selected nursing colleges meeting inclusion and exclusion criteria at Anand and Kheda district.
 - **Sources of data:** - The data was obtained from students of fourth year B.Sc. Nursing at selected nursing colleges of Anand and Kheda district.
 - **Sampling Criteria**
- A. Inclusion criteria**

1. Students studying in fourth year B. Sc. Nursing and are eligible to attend fourth-year B.Sc. Nursing examination.
2. Students available at the time of data collection.

B. Exclusion criteria: -

1. Students who have not cleared genetics subject examination by the time of participation in the study.
2. Students underwent dedicated training/workshop/educational campaign regarding genetics and t's application in nursing.

Method of data collection-

In the sample selection procedure, a non-randomized purposive sampling technique was used to select the sample. The student was briefed about the purpose of interview schedule to sort their co-operation during the study.

Ethical considerations:

Permission and ethical clearance were obtained from Institutions, University, and other concerned authorities along with participants before study commencement. Research context and aims were explained to all student nurses participated in the study in order to obtain their informed consent.

Period of study: The period of the study was three months from 1st Nov.2016 to 30th Jan. 2016

3. Result

The data themselves do not provide us with an answer to our research questions. In order to meaningfully answer the research questions, this section presents the analysis and interpretation of data collected from 100 final years B.Sc. Nursing students studying in selected nursing colleges of Anand and Kheda district of Gujarat state, to assess the knowledge regarding genetics and its importance in nursing care. A descriptive survey research design was used in the present study. The data collection was based on the objectives of the study and organized, tabulated, analyzed and interpreted by using descriptive and inferential statistics and described with help of tables and graphs.

The data is presented in the following sections:-

Section- A: Description of sample characteristics.

The Demographic characteristics reveals that majority of sample 90% were female, 89(89%) participants were in the age group 21 to 22 years, Distributions of samples based on marital status shows majority 92(92%) participants were unmarried, based on Nursing experience in genetic 56(56%) participants were not having experience in genetic disease, Distribution of

samples based on Attended specialized program on genetics and its use in nursing shows that 86(86 %) participants were not attended specialized program on genetics and its use in nursing.

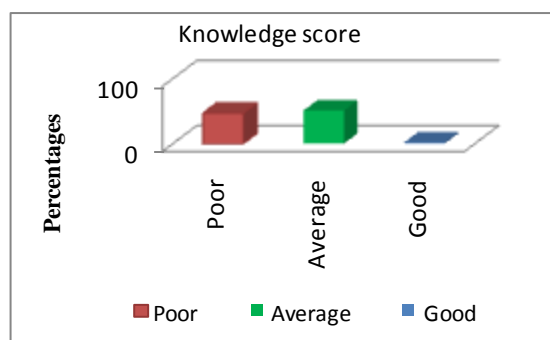
Section B: - Knowledge of participants regarding genetics and its importance in nursing care.

The result reveals that the majority of the participant is having the average knowledge regarding the genetics and its importance in nursing care

	Mean	Median	Mode	Standard deviation	Range
Test score	11.93	11	10	3.9	23

It shows that the mean knowledge score of final year BSc nursing students regarding genetics and its

importance in nursing care is 11.93, the median was 11, and the mode was 10 and the standard deviation was 3.9.



Data from the above figure depicts that 47 (47 %) subjects had poor knowledge and 51(51%) subjects had the average knowledge and 02(02%) subjects had good knowledge regarding genetics and its importance in nursing care.

Section- c: Association between knowledge score with selected demographic variables

n=100

SN	Demographic variables		< median	>median	Df	Table value	χ^2	Remarks
1	Age of participants	19-20 yrs	6	3	2	5.99	1.556 1.760	NS
		21-22 yrs	40	49				
		23-24 yrs	1	1				
2	Marital Status	Married	4	4	1	3.84	0.031	NS
		Unmarried	43	49				
3	Nursing experience in genetic disease	Yes	24	20	1	3.84	1.796	NS
		No	23	33				
4	Attended specialized programme on genetics and its use in nursing	Yes	7	7	1	3.84	0.0 59	NS NS
		No	40	46				
5	Gender	Male	1	9	1	3.84	6.106	S
		Female	46	44				

Significant at 5%

NS: Not significant

S: Significant

Table-4 findings reveal that on referring the chi-square table, at df 1 and 2, the chi square under probability 0.05 is 3.84 and 5.99 respectively. So, the calculated chi square value is less than the tabulated value at 0.05 level of significance. Hence, we accept the null hypothesis and infer there is no statistically significant difference in knowledge regarding genetics and its importance in nursing care among B.sc nursing students with demographic variables like age of participants, marital status, nursing experience in genetic disease, attended the specialized program on genetics and its use in nursing. Whereas it was found significant for the demographic variable gender.

Summary

Researchers did an extensive literature review and need analysis regarding the selection of a suitable topic for research. Out of a wide scope of selection, we found this topic suitable for study. We obtained necessary permissions for study and constructed an extensively reviewed and modified research tool for data collection. With a preplanned schedule, data was collected and analyzed using differential and inferential statistics. We found that gender was significantly associated with knowledge of responders. The study results show that students need to emphasize on knowledge of genetics as it is the demand of future.

4. Discussion and conclusion

Genetics is the key to future; studying it in nursing education will empower them to provide considerably accurate and customized care for client descriptive design was selected and the sample was selected by non-probability convenient sampling technique. The data was collected from 100 respondent threw a structure knowledge questionnaire. The data was organized and analyzed using descriptive and inferential statistics. The objectives of the study were

1. To assess the level of knowledge of final year B.Sc. Nursing students regarding genetics and its importance in nursing care.
2. To find out the association of level of knowledge with selected demographic variables among Final year B.Sc. Nursing students

a) Characteristics of selected demographic variable

The Demographic characteristics reveals that majority of sample 90% were female, 89(89%) participants were in the age group 21 to 22 years, Distributions of samples based on marital status shows majority 92(92%) participants were unmarried, based on Nursing experience in genetic 56(56%) participants were not having experience in genetic disease, based on Attended specialized program on genetics and its use in nursing shows that 86(86 %) participants were not attended specialized program on genetics and its use in nursing

1. Based on the first objective- To assess the level of knowledge of final year B.Sc. Nursing students regarding genetics and its importance in nursing care. In the present study, the researcher finds that 47 (47 %) subjects had poor knowledge and 51(51%) had average and 02(02%) had good knowledge respectively. This finding is consistent with the study carried out by Cohen's (1979) findings. Cohen found that students and practicing nurses had a low mean total score of 47%, may suggest that student and practice nurses, in general, only have an adequate knowledge of genetics [7].

Vural and colleagues (2009) questioned a student's ability to discuss genetic conditions with patients given students mostly reported "minimal" knowledge about genetic concepts [8].

2. Based on the second objective- To find out the association of level of knowledge with selected demographic variables among Final year B.Sc. Nursing students In corresponding to the study findings reveal that on referring the chai square table, at df 1 and 2, the chai square under probability 0.05 is 3.84 and 5.99 respectively. So the calculated chai square value is less than the tabulated value at 0.05 level of significance. Hence we accept the null hypothesis and infer there is no statistical significant difference with demographic variables like Age of participants, Marital Status,

Nursing experience in genetic disease, attended a specialized program on genetics and its use in nursing. Whereas it was found significant for the demographic variable gender.

❖ Implication and utilization of study

The implications of study have several implications for nursing practice, research, nursing education, nursing administration and public administration.

I) Nursing practice & nursing research

Practice Implications a greater knowledge of genetics and its implications will enable students and practice nurses to feel more comfortable and proficient in providing holistic care for patients with genetic conditions.

Nursing research can be conducted on practical skills of nurse's regarding theoretical knowledge of genetics in the day to day client care & also Role of nurses can be taken on account of research basis as nurses are one of the major stakeholders in health care services. Knowledge of genetics for nurses will enable them to fulfill the demand of ever-changing healthcare profession and will allow the authorities to emphasize on key areas for improvement and modification.

II) Nursing education & nursing administration

The student's exposure to genetic conditions and applications for nursing students through curriculum content is needed. Educators can begin by identifying curriculum gaps in genetic and its importance in nursing which increasing faculty awareness about the standards of Student's knowledge regarding genetics and its use in nursing. It will provoke them to enrich nursing education curriculum by utilization of recent advancement in human genetics.

A nurse administrator can utilize the findings in preparing a competent nurse's by proper training and sponsoring in-service education program for employed nurse's to ensure quality nursing care. In view of a series of the organized campaign can be organized to detect any susceptibility of genetic disorders among children's and eligible couples to minimize genetically impaired offspring by Antenatal detection of high-risk cases.

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References

- [1] Forsman I. Education of nurses in genetics. American journal of human genetics. 1988 Oct; 43(4):552.
- [2] Munroe T. The Acquisition of Student Nurses' Knowledge of Genetics and Genomics and Attitudes toward the Application of their Knowledge in Clinical Practice.
- [3] Vural BK, Tomatır AG, Kurban NK, Taşpınar A. Nursing students' self-reported knowledge of genetics and genetic education. Public health genomics. 2009; 12(4):225-32.
- [4] Conley YP, Tinkle MB. The future of genomic nursing research. Journal of Nursing Scholarship. 2007 Mar 1; 39(1):17-24.
- [5] Navneet Kumari, Essential genetics for nursing students, Lotus publication, 3-8,223-27.
- [6] Suresh K Sharma, Human genetic in Nursing, 2nd ed, 2010, Jaypee brothers medical publisher Pg. 5.
- [7] Cohen FL. Genetic knowledge possessed by American nurses and nursing students. Journal of advanced nursing. 1979 Sep 1; 4(5):493-501.
- [8] Vural BK, Tomatır AG, Kurban NK, Taşpınar A. Nursing students' self-reported knowledge of genetics and genetic education. Public health genomics. 2009; 12(4):225-32.