

A Study to Assess the Effectiveness of Computer Assisted Teaching on Knowledge Regarding Antenatal Care among Primigravida Mothers at Selected Hospitals of Amritsar (Punjab)

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Abstract

Nurses are in a unique position to educate and empower women, through the phases of child birth, for them to achieve a healthy pregnancy with the optimum outcome of a healthy baby. Despite various measures taken to reduce maternal mortality and morbidity, it remains very high in India. Knowledge and awareness about care risks associated with pregnancy among women can help them to seek maternal care services and reduce maternal mortality and morbidity. The objective of the study was among primigravida mothers assess the effectiveness of computer assisted teaching regarding antenatal care among primigravida mothers. The research design adopted for this study is quasi experimental one group pre test post test design. The setting is selected hospital in Amritsar, Punjab. The sample size is 60 primigravida mothers. Sampling technique used was simple random sampling. A structured knowledge questionnaire was used to assess knowledge and assess the effectiveness of computer assisted teaching. The reliability of the tool was established by using test, retest method. Differential and inferential statistics was used to analyze the data. The result indicate that the pretest mean knowledge score on knowledge regarding antenatal care found to be 7.7 and $SD=3.16$. The post test mean knowledge score on knowledge regarding antenatal care to be found 17.67 and $SD=3.88$. This indicates that the computer assisted teaching was proved to be effective to increase the knowledge of the primigravida mothers regarding antenatal care.

Keywords:- Antenatal care, computer assisted teaching, knowledge, primigravida mothers.

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INTRODUCTION

“Of all rights of women, the greatest is to be a mother” -Lin Yutange

Pregnancy and Child birth are special events in women's lives and indeed in the lives of their families. This can be a time of great hope and joyful anticipation. The primary aim of antenatal care is to achieve, at the end of pregnancy, a healthy mother and healthy baby. The quality of care is more important than the quantity. Pregnancy requires specialized care generally agreed to preventive activity^[1].

Pregnancy is that wonderful period in a women's life when she spends each and every day in pleasant anticipation, waiting to hold her bundle of joy in her arms at the end of the ninth month. Every women hope for a normal pregnancy and normal delivery so that she can cradle and nurse a healthy baby. For that mother has to get proper antenatal care. The women require adequate antenatal care to ensure a normal physiological process^[2-3].

Minor but significant interventions like tetanus immunization, folic acid tablets, healthy diet, and good hygiene are

required to improve the condition of the woman and to regulate the physiological process. Pregnancy though considered to be a usual process in the life of a woman is stressful and can lead to the risk and threats. Unless appropriate antenatal care measures are taken in time, it may reach its peak & endanger life. Knowing the do's and don'ts of pregnancy can empower a woman with the ability to stay in control all the time and to experience the transition to motherhood without any untoward incidents^[4].

Antenatal care is the systemic medical supervision of women during pregnancy. Its aim is to preserve the physiological aspect of pregnancy and labour and to prevent or detect, as early as possible, all that is pathological. Early diagnosis during pregnancy can prevent maternal ill-health, injury, maternal mortality, fetal death, infant mortality and morbidity. Hence, the earlier in pregnancy a woman comes under the supervision of an obstetrician, the better^[5-6].

The overall aim of antenatal care is to produce a healthy mother and baby at the end of pregnancy. In India majority of mothers are poor and malnourished and live under unsanitary condition. Maternal (301/ 1,00,000 live births) and infant mortality rates (57/ 1000 live births) are high compare to other in developing countries. In the light of this fact, we need to improve the health of the antenatal mothers^[7].

The aim of antenatal care is to assist women to remain healthy, finding and correcting adverse conditions when present, and thus aid the health of unborn. Antenatal care should also provide support and guidance to the women, her partner or family, to help them in their transition to parenthood. This implies that both health care and health education are required from health services care during pregnancy should enable women to make informed

decisions, based on her needs, after discussing matters fully with the professionals involved. Any interventions offered in the antenatal period should be of proves effectiveness and be acceptable to the recipients. Both the individual components and the full package of antenatal care should conform of these criteria. Minor but significant interventions like tetanus immunization, folic acid tablets, healthy diet, and good hygiene are required to improve the condition of the woman and to regulate the physiological process^[8].

Antenatal care refers to pregnancy related health care provided by a doctor or a health worker in medical facility or at home. Antenatal care should monitor a pregnancy for signs of complication detect and treat pre-existing and concurrent problems of pregnancy. It should also provide advice and counseling or preventive care, diet during pregnancy, delivery care, postnatal care and related issues. An antenatal care is necessary for ensuring a healthy mother and baby at the end of gestation. The antenatal period is a time of physical and psychological preparation of birth and parenthood. Becoming a parent is a time of intense learning both for parents and for those close to them^[9-10].

Complex examination and a variety of combination of interventions are part of modern antenatal care. There is a huge variety of tests and medical procedures included in routine antenatal care worldwide. Some of these interventions are based on evidence, but many of them are only based on long- held tradition. The state of this scientific evidence of risks and benefits of antenatal care interventions is a concern of health policy maker^[10].

Effective antenatal care can improve the health of the mother and give her a chance to deliver a healthy baby. Regular monitoring during pregnancy can help

detect the complication at an early stage before they become life-threatening emergency. However, one must realize that even the most effective scanning tools currently available; one cannot predict which will develop pregnancy related complication. Hence, every pregnant woman needs special care^[8,9].

WHO explained antenatal care as “care before birth” and includes education, counseling, screening and treatment to monitor and to promote the well being of the mother and baby. A good well balanced diet is required in pregnancy to meet the needs of fetus and to maintain the mother’s health and prepare for lactation. A high proportion of women in both industrialized and developing countries become anemic during pregnancy^[11].

This can be reduced by registering the pregnancy in hospital or centre and mainly should be counseled to come for follow up visit till the baby is born safely. The investigator during the work experience in the hospital observed that the antenatal mothers had inadequate knowledge about particular aspects like antenatal visit, diet, exercise and hygiene^[11].

Experiences from different countries have shown that reducing maternal mortality may depend in art of availability and use of a professional attendant at labor and delivery and a referral mechanism for obstetric care for managing complications or the use of basic essential obstetric care facilities for all deliveries. In many developing countries however, the majority of births occur at home, frequently without the help of a skilled assistant nurse trained as midwife or a doctor^[10,11].

NEED OF STUDY

The antenatal period is a very special time where women undergo the transition into motherhood. During this period the

antenatal mothers undergo various physiological changes which can further leads to illness and fatal results. Improper antenatal care is one of the leading causes of maternal mortality.

The knowledge of pregnant women regarding antenatal care and their compliance to it is of paramount importance in preventing maternal and infant mortality rate and morbidity. The Indian society is made of large number of socio-culturally diverse groups. Their views of antenatal care and the health care system in general, may be different. The disparity of their knowledge and practice has to be assessed for improving the delivery of such services to these groups.

The knowledge of antenatal services can help a pregnant women in understanding the different aspects of antenatal care such as diet, antenatal checkups, immunization, adequate sleep and rest, exercise, hygiene, breast care, breastfeeding the health problems and complications of pregnancy to make recommendations to enhance the knowledge and practices of antenatal care by improving the delivery of antenatal services(both quality and quantity) if they are less; and to continue with the present antenatal service rendering status if the knowledge and practices are adequate.

There are about 200 million pregnancies in the world, every year. Each of these has a chance of an adverse outcome; for the mother, the baby or both. Although risk cannot be totally eliminated once pregnancy has begun, these can be reduced through effective, affordable, accessible and acceptable maternity care.

A good, well-balanced diet is required in pregnancy to meet the need of fetus and to maintain the mother’s health and prepare for lactation. According to WHO reports that from 35% to 75% (56% on average) of pregnant women in developing and 18% of women from industrialized countries are

anemic. In India over 54% of pregnant women are anemic and for every 1,00,000 live births there are 301 maternal deaths in India. This can be reduced by registering the pregnancy in hospital or centre and mainly should counsel to come for follow up visit till the baby is born safely.

“In India majority of mothers are poor and malnourished and live under unsanitary condition. Maternal (301/1,00,000 live birth) and infant mortality rates (57/1000 live birth) are high compare to other developing countries.

In the light of this fact, we need to improve the health of the antenatal mothers by providing antenatal care the safe motherhood implies good health of the pregnant women during pregnancy and also ensures good health of the body. In other words safe motherhood is related to maternal and prenatal mortality and morbidity of 100-200 million deliveries occurring worldwide. 5 lakhs women die during pregnancy, childbirth or soon after”.

The investigator during the work experience in the hospital observed that the antenatal mothers had inadequate knowledge about particular aspects like antenatal visit diet, exercise, and hygiene. By considering the above factors, the investigator developed a genuine interest and felt the need for conducting the study on particular aspects of antenatal care.

The investigator with her clinical experience and observation analyzed that many mothers came to the hospital, when they had some complications like loss of fetal movements, gross anemia or with signs of infection.

It was difficult to save the mother and the baby in such condition. The cause was mainly due to mother's ignorance and lack of information regarding proper antenatal care. In view of this it was felt that an antenatal care education should be made

available to primigravida women. A CAT will be very useful for the primigravida women to gain knowledge regarding antenatal care.

Lack of knowledge, awareness and attitude makes incorrect perception of health practices which deals with the individual to move towards the unsafe motherhood, but these can be prevented if the mother had a teaching on antenatal care during her pregnancy. So the researcher was interested to assess the antenatal mother's knowledge, attitude and prepared planned teaching programme to educate them which help the mother to move towards safe motherhood.

OBJECTIVES

- To assess the pre-test level of knowledge regarding antenatal care among primigravida mothers
- To assess the post-test level of knowledge regarding antenatal care among primigravida mothers.
- To compare the pretest level of knowledge and post test knowledge regarding antenatal care among primigravida mothers.
- To find out association between knowledge score with their selected demographic variables regarding antenatal care among primigravida mothers^[12].

RESEARCH METHODOLOGY

The main objective of the study is to evaluate the effectiveness of computer assisted teaching on knowledge regarding antenatal care. Hence an evaluative research approach was adopted.

A pre-experimental design with one group pre-test and post- test design was adopted for the study. This study was intended to ascertain gain in knowledge by the respondents who were subjected to computer assisted teaching.

The study was conducted in the OPD of at selected Hospitals and Dahruv Maternity Nursing Home. 60 primigravida mothers visiting OPD. Non-probability convenience sampling technique. The tool was prepared on the basis of objective of the study.

Part-1: Demographic Performa

It consists of 6 items like age, education, occupation, income, occupation, type of family, and residence.

Part-2: Structured Knowledge questionnaire

Structured knowledge questionnaire consisted of 30 questions. The areas included definition, importance, antenatal visits and advices regarding antenatal care. The items were of multiple-choice types with one correct answer.

Each correct response carried a weight age of one score. Thus, the maximum score was 30 and minimum score was zero. The questions were prepared in Punjabi.

Knowledge scores obtained will be arbitrarily graded as follows:

Inadequate knowledge	<50%
Moderately adequate knowledge	51-75%
Adequate knowledge	>75%

Development of Computer assisted teaching

One of the objectives of the study was to prepare and validate the Computer assisted teaching. Computer assisted teaching was prepared based on

- literature review
- discussion with experts
- investigators' own experience

The steps involved in computer assisted teaching development were

- preparation of first draft of computer assisted teaching
- development of criteria checklist and content validation of computer assisted teaching
- pre-testing of computer assisted teaching
- preparation of final draft of computer assisted teaching

The computer assisted teaching was developed according to the objectives of the study. The investigator prepared overall plan of computer assisted teaching, which covered all areas deals in the questionnaire.

Method of data collection

The purpose of the study was explained to the primigravida mothers. The confidentiality of their identity and responses was assured in order to ensure their co-operation and prompt response.

After obtaining the consent for the study, the tool was administered to the group. The average time taken to conduct pre-test was 40 minutes.

Post-test was performed on the 7th date using the same self structured knowledge questionnaire. The respondents co-operated well with the investigator and were happy with the computer assisted teaching. At the end of data collection the investigator thanked the respondent for their co-operation. The investigator faced no problems during the data collection procedure.

ANALYSIS AND INTERPRETATION

Objective: Description of demographic characteristics of Primigravida mothers.

Table:1 Frequency and percentage distribution of sample according to demographic characteristics

N=60

Demographic Characteristics		Total	
		Frequency	Percentage %
Age	16-20	8	13.33
	21-24	22	36.67
	25-28	20	33.33
	29-32	20	16.67
Education	Primary/ up to 5th standard	10	16.67
	Secondary/ up to twelfth	28	46.67
	Graduation	14	23.33
	Post graduation	8	13.33
Occupation	Housewife/ Homemaker	30	50
	Self employee	6	10
	Private employee	16	26.67
	Government employee	8	13.33
Family income (In Rs)	Less than Rs 5,000	9	15
	5,000- 10,000	21	35
	10,000- 15,000	19	31.67
	Rs 15,000 and above	11	18.33
Family	Small family	42	70
	Joint family	18	30
Residence	Rural	32	53.3
	Urban	28	46.7
Total		60	100

Objective: To assess the pre-test level of knowledge regarding antenatal care among primigravida mothers.

Table 2: Frequency and percentage distribution of pre-test knowledge regarding antenatal care among primigravida mothers according to their level of knowledge.

N =60

Level of Knowledge		Grading of knowledge score	Pre-test	
			Frequency	Percentage
Inadequate knowledge	<50%	1-10	42	70
Moderately adequate knowledge	51-75%	11-20	18	30
Adequate knowledge	>75%	21-30	0	0
Total		30	60	100

Objective: To assess the post-test level of knowledge regarding antenatal care among primigravida mothers.

Table 3: Frequency and percentage distribution of post-test knowledge regarding antenatal care among primigravida mothers according to their level of knowledge.

N=60

Level of Knowledge score		Grading of Knowledge score	Post-test	
			Frequency	Percentage (%)
Inadequate knowledge	<50%	1-14	4	6.67
Moderately adequate Knowledge	51-75%	15-22	42	70
Adequate knowledge	>75%	23-30	14	23.33
Total		30	60	100

Objective: To assess the effectiveness of computer assisted teaching on knowledge regarding antenatal care

Table 4:- Overall distribution of mean and standard deviation of pretest and post test knowledge regarding antenatal care among primigravida mothers.

N=60

Variable	Mean	Standard Deviation	't' test value	Table value
Pre test	8.97	3.16	13.76	2
Post test	17.83	3.88		

df = 59

*** **Highly Significant**

Objective: Association between the levels of knowledge score regarding antenatal care with respect to their demographic variables

DISCUSSION

Section I: Percentage Distribution

Percentage wise distribution of women according to their age group reveals that highest percentage (36.67%) of them was in the age group of 21-24 years. 33.33% of them were in the age group of 25-28 years. 16.67 of them were in the age group of 28-32. Lowest percentage (13.33%) was in the age group of 16-20years. It shows that most of the women under this study were between the age group of 21-25 years. Percentage wise distribution of women according to their education reveals that highest percentage (46.67%) of the women

had 10+2/up(secondary) to twelfth level education, (23.33% of the women studied Graduation, 13.33% of them had post graduate level and 16.67% of them are studied primary / up to 5th standard . Percentage wise distribution of women according to their occupation depicts that highest percentage (50%) of the women was house wife/ homemaker. However, 13.33 % of them had government employee, whereas 26.67 % of them were private employee and lowest percentage 10 % of them had self-employee. It reveals that majority of women were housewife/Homemaker.

Table 5: Association of post test knowledge scores regarding anyenatal care among samples with their demographic variables.

S.No.	Demographic variables	Level of knowledge						Total no. of samples	Chi ²	Table value	Inference
		Adequate		Moderate		Inadequate					
1.	Age in years	F	%	F	%	F	%		10.49	12.59	NS
a.	16-20	2	3.33	4	6.7	2	3.33	8			
b.	21-24	2	3.33	19	31.7	1	1.7	22			
c.	24-28	7	11.7	13	21.7	0	0	20			
d.	29-32	3	5	6	10	1	1.7	10			
2.	Education								19.8.	12.59	S
a.	Primary	1	1.7	6	10	3	5	10			
b.	Secondary	3	5	24	40	1	1.7	28			
c.	Graduate	7	11.7	7	11.7	0	0	14			
d.	Post Graduate	3	5	3	8.3	0	0	8			
3.	Occupation								12.61	12.59	S
a.	House wife	6	10	24	40	0	0	30			
b.	Private job	3	5	12	20	1	1.7	16			
c.	Self employee	1	1.7	4	6.7	1	1.7	6			
d.	Government	4	6.7	2	3.4	2	3.3	8			
4.	Income								11.96	12.59	NS
a.	<5000	2	3.3	5	8.3	2	3.3	15			
b.	5001-10,000	4	6.7	16	26.7	1	1.7	24			
c.	10001-15000	4	6.7	15	25	0	0	13			
d.	>15,000	4	6.7	6	10	2	3.3	8			
5.	Family								12.16	5.99	S
a.	Small (Nuclear) family	5	8.33	35	58.3	2	3.33	42			
b.	Joint family	9	15	7	11.7	2	3.33	18			
6.	Residence								1.42	5.99	NS
a.	Rural	6	10	23	38.3	3	5	32			
b.	Urban	8	13.3	19	31.7	1	1.7	28			

Percentage wise distribution of monthly income of the family reveals that highest percentage (35%) of women belonged to the income group of Rs. 5001-10000. 18.33% of them were from the income group of above Rs. 15000, whereas percentages (31.67%) of them were in the income group of Rs 10,001-15,000 and lowest percentage of 5% of them were in Rs.5, 000 and below. Percentage wise distribution of women according to family shows that highest percentage (70%) of them belongs to small family (nuclear) and, whereas 30% belongs to joint family. It shows that majority of women under this study belong to nuclear family.

Percentage wise distribution of women according to residence depicts that 53.33% of the women are from rural area, whereas (46.67%) are from urban area. It shows that for most of the women's are from rural area.

Section II : Analysis of the pre-test level of knowledge score regarding antenatal care among primigravida mothers in selected hospitals, Amritsar.

It was shown that in pre-test, highest percentage (70%) of primigravida mothers had inadequate knowledge regarding antenatal care and 30% of primigravida mothers had moderately adequate knowledge regarding antenatal care, whereas none was found to have poor knowledge regarding antenatal care.

Section III: Analysis of the post-test level of knowledge score regarding prevention of puerperal sepsis among primigravida mothers in selected hospitals, Amritsar.

The post test score showed that 6.67 % of the respondent's level of Knowledge was inadequate regarding antenatal care, 70% of the respondent's level of Knowledge regarding antenatal care was moderately adequate and 23.33% of the respondent's

level of Knowledge regarding antenatal care is highly adequate. Hence majority of the respondent's level of Knowledge regarding antenatal care was moderately adequate.

Section IV: evaluation of the effectiveness of computer assisted teaching on knowledge regarding antenatal care among primigravida mothers in selected hospitals, Amritsar.

The results show that the pre-test mean knowledge score regarding antenatal care to be 8.97, with SD= 3.16. The post test mean knowledge score regarding antenatal care to be 17.83 with SD= 3.88. The t-test results indicate that the effectiveness of computer assisted teaching on the knowledge regarding antenatal care among primigravida mothers was significant as the calculated value is more than the tabulated value $t=2.00$ at 0.05 level of significance.

Section V: Association between knowledge score with selected demographic variables.

The present result reveals that there was highly significant association of the post-test knowledge scores with their demographic variables such as education ($\chi^2=19.8$ $P< 0.05$), type of family income ($\chi^2=12.16$ $P< 0.05$), whereas there was significant association of occupation ($\chi^2=12.61$ $P< 0.05$) with post-test knowledge scores. However there was no association of age ($\chi^2=10.49$ $P< 0.05$), income ($\chi^2=11.96$ $P< 0.05$) and residence ($\chi^2=1.49$ $P< 0.05$) with the post-test knowledge scores.

RECOMMENDATIONS

There is no doubt that pregnancy is a life changing event. Antenatal care is one of the leading problems. A computer assisted teaching will improve the knowledge of the primigravida mothers regarding

antenatal care. The present study was undertaken to assess the effectiveness of computer assisted teaching on antenatal care^[12].

Implications of the study

The findings of the study have implications in various areas of nursing practice, nursing education, nursing administration, nursing research

Nursing practice

The nurses are the first one who comes in the contact of any patient admitted in the hospital. They have a good influence on the patients as they spend more time with them. This study will be helpful for the nurses to know the level of knowledge of primigravida mother regarding antenatal care. The researcher during the study experienced that most of the primigravida mothers were lacking the basic knowledge regarding antenatal care before manipulation, but computer assisted teaching was helpful in increasing the knowledge of primigravida mothers. In the clinical setting, as a staff nurse, the nurse should provide health education to the mothers regarding importance of diet, antenatal visits, hygiene in pregnancy as well as during Puerperium. Mothers should be instructed about healthy and balanced diet, importance of antenatal visits and follows up^[13].

Nursing Education

Education allows the mental growth of an individual and it should be continuous in any age and any time. Researcher during this study felt that antenatal care during pregnancy can be enhanced by increasing the knowledge of the community. As it was found that pre-test knowledge score of primigravida mothers was less as compared to the post-test knowledge score. Hence it is very clear that teaching strategies helps in promoting knowledge of individuals. The nurses should adopt different methods to educate the women, such as seminars on health promotion and prevention of

diseases, teaching programmes on antenatal diet, antenatal exercises, and awareness regarding health care facilities provided by the government^[14].

Nursing Administration

Nursing emphasizes on providing high quality and evidence based care. Continuous measures are being taken to improve the quality of nursing care. But as it is well said "prevention is better than cure". In that case, the nurse as an administrator should organize health education programmes in the primary health centers and community settings with the purpose to make women aware regarding the antenatal care. The nurse should educate the mothers regarding diet, visits, personal and environmental hygiene so as to prevent antenatal risk during pregnancy. It will be helpful step towards the decreasing down of maternal mortality and morbidity rates^[15].

Nursing Research

Research in the field of nursing provides bases for evidence based nursing practice. Researcher has made an effort to provide and increase the knowledge of primigravida mothers regarding the antenatal care and care during pregnancy like diet, follow up, rest and sleep, exercise etc. An extensive research in this field will be helpful in assessing the attitude of the mothers regarding personal hygiene and care during pregnancy^[15].

Limitations

- The study was conducted only in two maternal hospitals, so generalization of the finding is limited.
- The study was limited to computer assisted teaching, there was no practical intervention evaluated among primigravida mothers.
- The study was limited to small population, which limits the generalization of the study.
- A structured knowledge questionnaire was used for data collection, which

restricts the amount of information that can be obtained from the respondent.

- The study did not use any control group. The investigator had no control over the event that took place between pre-test and post-test.
- No follow up was done to retain the nurse's knowledge on antenatal care^[14].

RECOMMENDATIONS

Based on the findings of the study, the following recommendations are stated:

- A similar study can be undertaken with a large sample to generalize the findings.
- A comparative study can be undertaken among different state hospitals to determine the mothers knowledge regarding antenatal care
- A comparative study can be conducted on knowledge of primigravida mothers and multigravida mothers regarding antenatal care.
- A study may be conducted to find the effectiveness of structured teaching programme on knowledge regarding selected aspects of antenatal care.
- A descriptive study can be conducted in order to assess the attitude of primigravida mothers regarding antenatal care^[15].

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