

Original Article

Is computer assisted teaching effective on improving knowledge of preconception care? A hospital based study

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Abstract

Introduction: Preconception care is any intervention provided to women and couples of childbearing age to improve health outcomes of women, newborns and children. Computer Assisted Teaching has been used for more than five decades for educational purposes. This study was done to assess the effectiveness of computer assisted teaching to improve knowledge of preconception care among married women in selected hospital at Bangalore.

Methods: An evaluative approach with pre-experimental, one group pretest posttest design was selected and a judgmental sampling technique was used to select the samples for preconception care for married women in Seventh Day Adventist Multi Specialty Hospital, Bangalore. Pretest was done using structured knowledge questionnaire on knowledge of preconception care. After the pretest, computer assisted teaching was administered, and on the 8th day post test was conducted using the same questionnaire. The duration of study was one month.

Results: The study revealed that, among 40 married women, during pretest, majority i.e. 70% (28) were having inadequate knowledge and 27.5 % (11) were having moderately adequate knowledge regarding preconception care. After administering computer assisted teaching on knowledge of preconception care, the post test result showed that majority of 97.5% (39) women gained adequate level of knowledge and no one had inadequate knowledge.

Conclusion: The study concluded that there was overall 96.21% mean percentage knowledge regarding preconception care after administration of computer assisted teaching. This indicates that, computer assisted teaching is an effective teaching strategy in the education system, because this technique make study more interesting and easy to comprehend.

Key words: Preconception care, married women, computer, teaching, reproductive service clinic

Introduction

Once *Brigham Young* said- “You educate a man; you educate a man. You educate a woman; you educate a generation.” The objective of the study is to understand the effectiveness of computer to educate the married women on preconception care. Preconception care may be defined as “any intervention provided to women and couples of childbearing age, regardless of pregnancy

status or desire, before pregnancy, to improve health outcomes for women, newborns and children”¹.

American College of Obstetrics and Gynecology (ACOG) and Association of American Physician (AAP) have grouped the main components of preconception care under four categories of interventions: a) maternal assessment (e.g., family history, behaviors, obstetric history, general physical exam); b) vaccinations (e.g.,

rubella, varicella and hepatitis B); c) screening (e.g., HIV, STD, genetic disorders); and d) counseling (e.g., folic acid consumption, smoking and alcohol cessation, weight management). Many of these interventions are currently available to women and, when indicated, to couples².

The preconception care has now been identified as a key area of health care. The aim of preconception care is “to ensure that the woman and her partner are in an optimal state of physical and emotional health at the onset of pregnancy”. It also provides prospective parents with a series of options that may not be available once a pregnancy is confirmed. The preconception period refers to a time span of anywhere between 3 months to 1 year before conception but ideally should include the time when both the ova and sperm mature, which is approximately 100 days before conception. Although pregnancy for some couples will be unplanned, the majority of couples who do plan a pregnancy could benefit from preconception care so as to do the best for their baby or as an effort to mitigate against conditions that can adversely affect the outcome of pregnancy³.

Although most pregnancies result in good maternal and fetal outcomes, some pregnancies may result in adverse health effects for the woman, fetus, or neonate. Although some of these outcomes cannot be prevented, optimizing a woman's health and knowledge before planning and conceiving a pregnancy—also referred to as preconception care or pre-pregnancy care—may eliminate or reduce the risk. For example, initiation of folic acid supplementation at least 1 month before pregnancy reduces the incidence of neural tube defects such as spina bifida and anencephaly⁴⁻⁶. Similarly, adequate glucose control in a woman with diabetes before conception and throughout pregnancy can decrease maternal morbidity, spontaneous abortion, fetal malformation, fetal macrosomia, intrauterine fetal death, and neonatal morbidity⁷.

Computer assisted teaching (CAT) refers to instruction or teaching presented on a computer. Computer programs are interactive and can illustrate a concept through attractive animation; sound and demonstration. They allow students to progress at their own pace.⁸.

Computers capture the women's attention because the programs are interactive, colorful and animated and engage the women's spirit of competitiveness to increase their knowledge. Computer assisted instruction

is considered valuable, as it allows more individually tailored instruction⁹.

Methods

This study was done among 40 married women of age group of 20-35 years who attended the reproductive service clinic in a tertiary level hospital in Bangalore. The study was evaluative pre-experimental design (one group pretest-posttest research design). The sampling was done with judgmental non probability sampling technique. The duration of the study was one month.

Inclusion criteria were married women of reproductive age group (20-35 years) attending reproductive services clinic at selected hospital, Bangalore, married women attending education on preconception counseling clinic for the first time, women who are willing to participate in the study and women who understand English and Kannada. **Exclusion criteria** were women who have already attended the reproductive services and preconception counseling clinic in the past, women who are diagnosed with primary or secondary infertility, women who are not available for follow up.

A structured knowledge questionnaire was prepared consisting of 35 items which included five items on general knowledge, 10 items on components of preconceptional care, 8 items on risk factor assessment and intervention and 12 items on counselling. Score 1 and 0 was given for correct and incorrect answer respectively. The level of knowledge was interpreted as inadequate if <50% and adequate if >75%.

A formal consent from respective hospital authorities was taken and samples selected through judgmental sampling technique. Written consent was taken from the participants after explaining the purpose of the study. Pretest and posttest was conducted using structured knowledge questionnaire to assess the knowledge of the women regarding preconception care. Paired 't' test was used to assess the effectiveness of computer assisted teaching and “Chi-square” tests to find out the association.

Results

The data obtained from the married women in terms of demographic variables includes age, birth order, religion, educational status of the women and husband, occupation of wife and husband, family income, type of family and any previous information regarding preconception care.

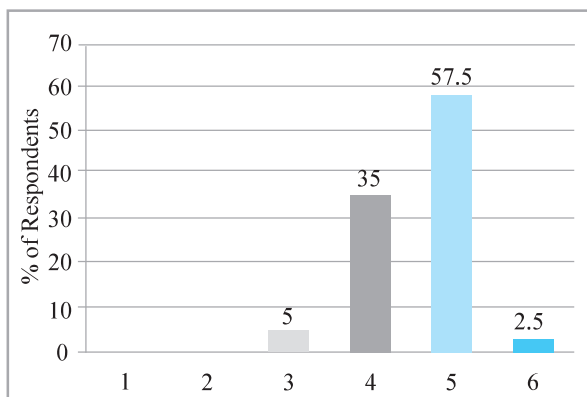


Figure 1. Educational status

The bar graph shows percentage distribution of married women on the basis of level of education.

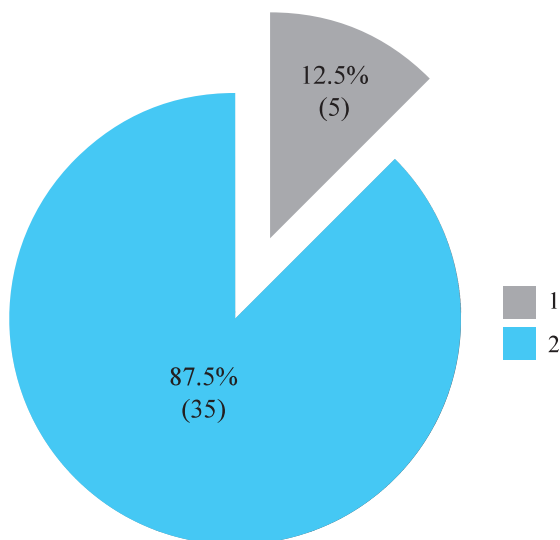


Figure 2. Percentage distribution of women with information on preconception care.

This pie chart shows percentage distribution of married women with or without information on preconception care

Table 1. Mean, S.D and mean percentage score for the pretest Knowledge score.

SL. NO	Area wise	No. of items	Mean	S.D	Mean%
1	Meaning , period and purpose of preconception care	5	2.9000	1.00766	58.00
2	Component of preconception care	10	4.9250	1.70049	49.25
3	Risk factor assessment and intervention	8	2.9750	1.14326	37.19
4	Counseling advice	12	4.9750	1.59305	41.46
	Overall knowledge	35	15.7750	3.66191	45.07

The overall mean and mean percentage of pretest knowledge score was 15.77 and 45.07% respectively with standard deviation of (± 3.66). It reveals that the married women had inadequate knowledge on preconception care.

Table 2: Mean, S.D and mean percentage score for the posttest knowledge

SL. NO	Area wise	No. of items	Mean	S.D	Mean%
1	Meaning , period and purpose of preconception care	5	5.0000	.00000	100.00
2	Component of preconception care	10	9.5250	.50574	95.25
3	Fisk factor assessment and intervention	8	7.4250	.54948	92.81
4	Counseling advice	12	11.7250	.45220	97.71
5	Overall knowledge	35	33.6750	.91672	96.21

The overall mean and mean percentage of posttest knowledge score was 33.67 and 96.21% respectively with standard deviation of ($\pm .91$).

Table 3: Frequency and percentage distribution of posttest level of knowledge

Knowledge Level	Category	Classification of women on Post test knowledge level	
		Frequency	%
Inadequate	<50%	0	0.0
Moderate	50-75%	1	2.5
Adequate	>75%	39	97.5
Total		40	100.0

The above table shows that, after computer assisted teaching 97.5% (39) of women exhibited adequate level of knowledge and 2.5% (1) of women exhibited moderate level of knowledge and none of them had inadequate knowledge regarding preconception care.

Table 4: Frequency and percentage comparison of pre and posttest knowledge scores of married women in preconception care clinics

Knowledge	Pre test		Post test	
	Frequency	%	Frequency	%
<50%	28	70.0	0	0.0
50-75%	11	27.5	1	2.5
>75%	1	2.5	39	97.5
Total		100.0	40	100.0

The above table shows that, before computer assisted teaching, 70% (28) were having inadequate knowledge level, whereas after computer assisted teaching 97.5% (39) of the women exhibited adequate level of knowledge. When the t-value (31.87) was computed to find the significance of the difference, it was observed that it was significant at 0.05 level as it is higher than the table value of 2.001. Hence the CAT was found to be effective.

Discussion

In the present study, it was found that in socio demographic variables, the maximum number of women 52.5 % (21) was in the age group 26-30 years. Regarding the educational status of husband, majority were under graduate 52.5% (21). The pre-test knowledge scores on preconception care majority of the participants 70% (28) were having inadequate knowledge level, 27.5%

(11) had moderately adequate knowledge and none of the women had adequate knowledge level.

The comparison of pre and posttest knowledge shows before administration of Computer Assisted Teaching, almost all the participants had inadequate level of knowledge. But after administration of Computer Assisted Teaching, 97.5% of the participants acquired adequate level of knowledge. On analysis of data, the computed "t,-value 31.69 was higher than the table value (2.02), which shows a statistically high significance at $p < 0.05$ level. This indicates that there is significant difference between pre-test and post-test knowledge of the married women exposed to CAT on preconception care.

The present study findings are supported by the study conducted in Los Angeles catholic college which used the Computer teaching program to make the participants aware on the preconception care. Pre- and post-tests were used to measure the knowledge and it revealed that about 78.5% of participants acquired adequate knowledge after the computer teaching program. Therefore, the Computer Teaching Program was effective.

Computer assisted teaching provides an instructional interaction between the learner and the computer in a variety of contents. Computer assisted teaching uses the computer to facilitate and improve learning. Thus employing computer assisted teaching on knowledge of preconception care must be interesting and easy to understand for the learner.

The findings of the study revealed that there was significant association of pretest level of knowledge on preconception care with their demographic variables like educational status of husband; educational status of women. But there was no association with other variable like (age, birth order, religion, educational status of the wife and husband, occupation of wife and husband, family income, family income and any previous exposure information regarding preconception care etc.). The finding is supported by a study conducted on 'Decrease MMR globally' countries reduced the mortality rates i.e. South East Asia made a dramatic decrease of 59%, and Africa showed a decline of 27%. On further analysis it was seen that there was significant association between educational status of wife and

level of knowledge, which is a great factor in reducing MMR.

Conclusion

This study showed that most of married women had inadequate knowledge on preconception care during the pretest. It was seen that 70% of married women had inadequate knowledge in the pre-test. The study showed that there is a highly significant difference between the pre and posttest knowledge of married women on preconception care. The improvement mean was 51.14%. The study showed that the computer assisted teaching was very effective in improving the knowledge level of the married women on preconception care. The computer assisted teaching had enhanced the knowledge of married women and it will help them care in preconception and thereby reduce morbidity in mother and fetus.

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Conflicts of interest: None declared

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