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Effectiveness of video-assisted teaching programme and mobile application on knowledge, attitude, and practices regarding management of common minor discomforts of pregnancy among primigravida mothers– A pilot study from South India

M Punitha¹, Zeanath Cariena Joseph², P Srinivasan^{3*}¹Dept. of Obstetrics and Gynecological Nursing, Sri Devraj Urs College of Nursing, Kolar, Karnataka, India²Dept. of Medical Surgical Nursing, Sri Devraj Urs College of Nursing, Kolar, Karnataka, India³Dept. of Psychiatric Nursing, All India Institute of Medical Sciences, Mangalagiri, Andhra Pradesh, India

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ABSTRACT

Background: Pregnancy might lead to various physiological changes that may end up in a diversity of symptoms and frequently to gastrointestinal complaints, such as heartburn, nausea, vomiting, or constipation. With adequate information and timely care, the majority of mild problems that arise during pregnancy can be reduced.

Aim: The main aim is to evaluate the efficacy of video-assisted teaching programme and mobile application in improving primigravida women' knowledge, attitudes, and practices about how to handle common pregnancy discomforts.

Materials and Methods: A quantitative research approach with the one group pre-test and post-test design was adopted to conduct this pilot study among a total of 20 primigravida mothers attending the PHC Centre by purposive sampling technique who were administered with video-assisted teaching having the contents on knowledge, attitude, and practice aspects regarding management of various minor discomforts of pregnancy. Knowledge, attitude, and practice were measured using structured tools at the baseline (day 1) and after the administration of video-assisted teaching with mobile app-based follow-up education on day 15.

Results: We analysed the data with descriptive to describe the variables, paired t-test to test the effectiveness, Karl Pearson's correlation for the relationship, and Chi-square to find the association. Knowledge, attitude, and practice all showed statistically significant improvements following the implementation of the video-assisted teaching program and mobile application.

Conclusion: The research findings indicated that video-assisted teaching along with a mobile app in their own language was found useful method of educating primigravida mothers to increase their knowledge and to generate favorable attitudes regarding the management of minor discomforts during pregnancy.

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1. Introduction

Throughout a woman's life, pregnancy is the most significant event. From conception to the postnatal period,

special attention is needed for pregnant women. An important feature of the WHO Guidelines emphasis on standard maternal and fetal assessments, but also on nutrition during pregnancy as Most women do not meet the recommendations for healthful nutrition and weight before and during pregnancy, on the prevention and treatment

* Corresponding author.

E-mail address: vasans85@gmail.com (P. Srinivasan).

of physiological problems commonly experienced during pregnancy.¹

With appropriate knowledge and quick treatment, the majority of mild diseases that arise during pregnancy can be minimized.² Information regarding mild discomforts throughout pregnancy is the primary goal. Expectant mothers may be concerned about their daily discomforts, although hormone levels of progesterone, oestrogen, and prolactin rise during pregnancy and naturally decline following delivery.³

Pregnancy is a phase in a woman's life that is a joyful and pleasant moment. During pregnancy, there are anatomical, physical, psychological, and biochemical changes to all the systems in the body.³ Pregnancy might lead to various physiological changes that may end up in a diversity of symptoms and frequently to gastrointestinal complaints, such as heartburn, nausea and vomiting, or constipation.⁴

Morning sickness and vomiting are typical symptoms for primigravida mothers. Seventy to eighty percent of pregnant women experience nausea and vomiting.⁵ As pregnancy advances it is expected for women to gain weight. The minor discomforts can affect the primigravida mother if not managed during the early days.⁴⁻⁶ Even though they are not present in our day-to-day practice, knowledge of pregnancy-related diseases is fundamental and collaboration between gastroenterologists and obstetricians is often necessary.⁴ Research indicates that knowledge among primigravida mothers about the benefits of commencing a multivitamin regimen at conception may reduce their chance of experiencing nausea and vomiting throughout pregnancy, hence lowering the infrequent chance of developing Hyperemesis Gravidarum.⁶

In General, various minor disorders during pregnancy are highly reported such as digestive and food-related issues including nausea, vomiting, food cravings and dislikes, heartburn, and constipation, swollen veins including varicose veins, haemorrhoids, followed by various cramps and oedema, etc.,^{7,8}

Although midwives' methods during the second stage of labour differ domestically and internationally, it is important to emphasise their relevance in pregnancy management.⁹ Further, midwives are expected to play a significant role in natural childbirth.¹⁰ Providing comfort to the primigravida mother requires an efficient tool through midwives and technology aid and willingness to follow the instructions. Their awareness makes pregnancy safe and delivers a healthy baby.⁹

Numerous facets of clinical practice have changed as a result of health care professionals' (HCPs') usage of mobile devices. Due to the widespread use of mobile devices in healthcare settings, the number of medical software applications (apps) on these platforms has increased dramatically.¹¹

If primigravida mothers are having good knowledge regarding minor discomforts during pregnancy which promotes their health, early detection of complications, taking prompt measures and their enhanced learning needs, adequate knowledge, and positive attitude and self-care practices of primigravida mother along with mobile app helps them to have a healthy pregnancy and its outcome.

Previous research found that the nursing teaching programme was useful in raising pregnant women's knowledge of common discomfort issues among primigravida women, and it suggested using the specially created nursing instructions for primigravida in maternal health care facilities.²

2. Materials and Methods

A Quantitative research approach with one group pre-test and post-test design was adopted to conduct this current pilot study to determine the efficacy of a video-assisted teaching programme and mobile application on knowledge, attitude, and practices regarding management of common minor discomforts of pregnancy among primigravida mothers attending selected PHC centre was carried out during the period from April 2023 to May 2023 in the state of Karnataka, India. The study primarily aimed at determining the efficacy of video-assisted teaching and mobile application on knowledge, attitude, and practice, the correlation/relationship between knowledge, attitude, and practice, and their association with selected sample characteristics among primigravida mothers. After obtaining ethical approval from the Institutional Ethics Committee of Sri Devaraj Urs College of Nursing, Karnataka (SDUAHER/KLR/CEC/29/2018-19 dt 14.05.2018), permission was obtained from the District Health Officer for conducting the study at Narasapura PHC Centre, Kolar, Karnataka. The setting chosen for the study was a PHC centre where an adequate number of primigravida mothers regularly visit for their check-ups and it was highly convenient for the researcher to implement the educational intervention. The present study was prepared and reported as per the guidelines/checklist of Transparent Reporting of Evaluations with Nonrandomized Designs (TREND).

2.1. Procedure

A quantitative research approach with the one group pre-test and post-test design was adopted to conduct this pilot study among a total of 20 primigravida mothers attending the PHC Centre by purposive sampling technique with the following inclusion criteria that the primigravida mothers in 2nd or 3rd trimester visiting the selected antenatal clinic, able to speak and understand English or Kannada language, those willing to participate, and the study excluded primigravida mothers belongs to the healthcare profession. The calculated

sample size for the extended study was found to be a minimum 80 based on the previous one-group pre-test and post-test design study using power analysis (G^* power), and for this pilot study only 10% of the sample was required ($n=8$) but to reconsider the calculated sample size for the extended study, and also by considering the dropout percentage, the adequate sample size was considered for this pilot study also ($n=20$). Primigravida mothers were recruited in the study after obtaining written consent from them. The participant information sheet was provided with detailed information, and confidentiality was assured. The study was carried out by the guidelines laid by the Indian Council of Medical Research (2017).

The sample characteristics proforma was used to collect the data regarding demographic variables, clinical variables, and psychosocial variables using SAQ (Paper-pencil) technique with record analysis, and structured knowledge questionnaire, attitude Likert scale, and practice scale were employed to collect the data regarding knowledge, attitude, and practice regarding management of common minor discomforts of pregnancy using SAQ (Paper-pencil) technique. Tools were validated by research experts and the internal consistency reliability of KR-20 for knowledge questionnaire, and Cronbach's Alpha for attitude and practice scales was ensured before the data collection and found to be acceptable. After obtaining consent from the mothers, they were administered video-assisted teaching having the contents on knowledge, attitude, and practice aspects regarding the management of various minor discomforts of pregnancy. Later the mobile app was installed for further enhancement of knowledge among mothers on various minor discomforts such as morning problems, heartburn, back pain, frequent urination, constipation, etc (Figure 1). All the intervention was administered by the researcher alone. Knowledge, attitude, and practice were measured using structured tools at the baseline (day 1) and after the administration of video-assisted teaching with mobile app-based follow-up education on day 15.

2.2. Data analysis

The data was checked for its normal distribution with the Shapiro-Wilk test and found knowledge, attitude, and practice scores were normally distributed. Thus, the hypotheses were tested at the 0.05 level of significance using the parametric test. The data were analysed with trial SPSS version 22.0. Descriptive statistics comprising of frequency, percentage, mean, and standard deviation were used to describe the sample characteristics and dependent variables (knowledge, attitude, and practice). Inferential statistics such as paired t-test was employed to test the effectiveness of video-assisted teaching programme with mobile app applications on knowledge, attitude, and practices regarding management of common minor discomforts of pregnancy

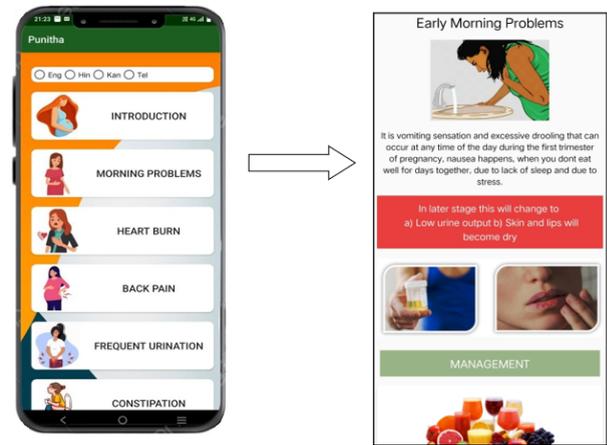


Figure 1: The mobile-app based follow-up contents view

among primigravida mothers, Karl Pearson's coefficient of correlation for the relationship between knowledge, attitude, and practice, and Chi-square was used to find the association of knowledge, attitude, and practice with selected sample characteristics.

3. Results

3.1. Description of sample characteristics among primigravida mothers

Based on the sociodemographic variables profile of primigravida mothers, majority of the primigravida mothers participated in the study were in the age group of 21-30 years (90%), all of them belonged to Hindu religion (100%), Majority of the primigravida mothers studied up to secondary education (55%), undergone non-consanguineous marriage (80%), were housewife (80%), coming from semi-urban (75%) and nuclear family (65%). Based on the clinical variables, the majority of the primigravida mothers reported normal BMI (75%), were in the second trimester (85%), and the majority of them had no family history of hypertension, diabetes, obesity, cardiovascular diseases, no self-history of alcohol intake and any other medications. Based on psychosocial variables during pregnancy, the majority of them reported moderate to severe stress with regard to certain items (Table 1).

3.2. Description of knowledge, attitude, and practice before and after intervention among primigravida mothers

Based on the level of knowledge, the majority 11 (55%) of the primigravida mothers had inadequate knowledge whereas the majority of the primigravida mothers 14 (70%) had reported adequate knowledge after undergoing video-

assisted teaching program and mobile application with the overall knowledge mean score improved from 34.47 ± 2.31 to 59.14 ± 9.62 .

Based on the level of attitude, the majority 12 (60%) of the primigravida mothers had a favorable attitude whereas the favorable attitude increased among the primigravida mothers 13 (65%) after undergoing the video-assisted teaching program and mobile application with the overall attitude mean score improved from 68.30 ± 1.08 to 77.90 ± 5.12 .

Based on the level of practice, the majority 14 (70%) of the primigravida mothers had good practices whereas the level of good practices increased among the primigravida mothers 17 (85%) after undergoing video-assisted teaching program and mobile application with the overall practice mean score improved from 13.80 ± 2.82 to 20.32 ± 6.10 (Table 2).

3.3. Effectiveness of video-assisted teaching programme and mobile application on knowledge, attitude, and practices regarding management of common minor discomforts of pregnancy among primigravida mothers

The efficacy of video-assisted teaching and mobile application on knowledge, attitude, and practice using paired t-test revealed that the mean post-test knowledge ($t=12.54$, $p<0.001$), attitude ($t=8.07$, $p<0.001$), and practice ($t=3.47$, $p<0.01$) scores significantly improved from the baseline score at 0.05 level of significance (Table 3).

3.4. Correlation between knowledge, attitude, and practice among primigravida mothers

The Pearson coefficient of correlation test for a relationship between all dependent variables revealed that the non-significant moderate positive correlation was reported between knowledge and attitude ($r=0.27$, $p=0.10$), and knowledge and practice ($r=0.33$, $p=0.08$) whereas significant highly moderate positive correlation was reported between attitude and practice ($r=0.64$, $p<0.01$) at 0.05 level of significance which infers that knowledge, attitude, and practice are positively related and changes in any one component would bring changes in the similar direction among other components (Table 4).

3.5. Association of knowledge, attitude, and practice with selected sample characteristics among primigravida mothers

The association of post-test knowledge, attitude, and practice levels with selected sample characteristics calculated using Chi-square revealed that both knowledge and practice levels were associated with type of family, income status, and place of residence, and attitude

post-test level were associated with religion at 0.05 level of significance. Further, practice was additionally associated with religion and occupation. All the other socio-demographic, and clinical variables were found to be independent of knowledge, attitude, and practice in primigravida mothers.

4. Discussion

Findings from this study reveal that video-assisted teaching and mobile app were, an effective method of teaching to improve knowledge, Attitude, and practice. This shows that educational programmes are very important for enhancing Primigravida knowledge and attitudes and practice towards minor discomforts during pregnancy. Moreover, involving family members, and utilizing the mobile app was very much effective in managing minor discomforts during pregnancy. The investigator's most significant discovery was that many preconceptions about how to handle minor disorders during pregnancy were dispelled by this video-assisted instruction, which led to an increased positive attitude of primigravida women.

Ninety percent of the primigravida moms in the current study were between the ages of twenty-one and thirty. In a similar vein, the most of primigravida women (87%) in the study on their understanding of how to self-manage mild pregnancy discomforts fell into the same age range.¹² Another study also stated that about 79% of primigravida mothers were in the age group between 20-30 years.¹³

Despite having a better attitude and practice at baseline, most of the primigravida mothers in this study had poor knowledge. However, after receiving video-assisted instruction with follow-up via mobile apps, their knowledge significantly improved. These results were corroborated by another study, which found that the majority of primigravida mothers (59%) lacked adequate understanding about how to manage their own modest pregnancy discomforts.¹²

According to the study on primigravida mothers' knowledge base regarding antenatal care, these mothers generally lacked knowledge and practice during pregnancy. As a result, it was suggested that the health education aspect of antenatal care should be well organized to fill all information gaps for the pregnant women.¹⁴ However, in contrast, a small number of additional studies found that although primigravida mothers' behaviours varied when it came to managing mild illnesses, most of them had fair awareness of common and minor pregnancy discomforts.^{13,15}

In the present study, the intervention was found significantly effective in improving knowledge, attitude, and practice at 0.05 level of significance with huge effect size. Likewise, the evaluation of the intervention's efficacy in raising pregnant women's awareness of minor discomfort issues shown a noteworthy enhancement in their mean knowledge score, which increased from 19.3 ± 7.7 to

Table 1: Frequency and percentage distribution of sample characteristics among primigravida mothers (N=20)

| S. No | Sample characteristics | Frequency (f) | Percentage (%) | |
|--|--|---------------------|-----------------------|---------------------|
| Socio-demographic variables | | | | |
| 1. | Age in years | | | |
| | ≤20 years | 02 | 10 | |
| | 21-30 years | 18 | 90 | |
| | 31-40 years | 00 | 00 | |
| | >40 years | 00 | 00 | |
| 2. | Religion | Hindu | 20 | 100 |
| 3. | Educational status | No formal education | 00 | 00 |
| | | Primary education | 05 | 25 |
| | | Secondary education | 11 | 55 |
| | | Graduate | 04 | 20 |
| 4. | Marital status | Married | 20 | 100 |
| 5. | Type of marriage | Consanguineous | 02 | 20 |
| | | Non consanguineous | 18 | 80 |
| 6. | Occupation | Housewife | 16 | 80 |
| | | Private employee | 04 | 20 |
| 7. | Place of residence | Urban | 05 | 25 |
| | | Semi-urban | 15 | 75 |
| 8. | Type of family | Nuclear | 13 | 65 |
| | | Joint family | 07 | 35 |
| 9. | Income per month | BPL | 03 | 15 |
| | | APL | 17 | 85 |
| 10. | Dietary Habits | Vegetarian | 02 | 20 |
| | | Non-Vegetarian | 18 | 80 |
| 11. | Previous source of information on minor discomforts during pregnancy | Health care worker | 01 | 05 |
| | | Family members | 13 | 65 |
| | | Mass media | 06 | 30 |
| Clinical variables | | | | |
| 1. | BMI | Underweight | 02 | 10 |
| | | Normal | 15 | 75 |
| | | Overweight | 02 | 10 |
| | | Obese | 01 | 05 |
| 2. | Weeks of gestation | 13-28 weeks | 17 | 85 |
| | | 29-40weeks | 03 | 15 |
| 3. | Family history of - | | | |
| | Hypertension | Yes | 03 | 15 |
| | | No | 17 | 85 |
| | Diabetes mellitus | Yes | 05 | 25 |
| | | No | 15 | 75 |
| | Obesity | Yes | 04 | 20 |
| | | No | 16 | 80 |
| | Cardiovascular diseases | Yes | 02 | 10 |
| | | No | 18 | 90 |
| 4. | Habit of- Alcohol Intake | Yes | 04 | 20 |
| | | No | 16 | 80 |
| 5. | Are you taking any other medications | Yes | 03 | 15 |
| | | No | 17 | 85 |
| Psychosocial variables during pregnancy | | | | |
| | | No stress f (%) | Moderate stress f (%) | Severe stress f (%) |
| 1. | Your feeling about your pregnancy? | - | 16 (80) | 04 (20) |
| 2. | Your partner's feeling about your pregnancy? | 04 (20) | 14 (70) | 02 (10) |
| 3. | Had emotional problems during pregnancy? | 02 (10) | 14 (70) | 04 (20) |
| 4. | How is your sleeping pattern? | 13 (65) | 04 (20) | 03 (15) |
| 5. | Financial aspects of healthcare | 04 (20) | 05 (25) | 11 (55) |
| 6. | Sexual, emotional, or physical abuse during pregnancy | - | - | - |
| 7. | Problems related to alcohol/drugs during pregnancy? | - | - | - |

Table 2: Description of knowledge, attitude, and practice before and after intervention among primigravida mothers (N=20)

| Variables | Baseline | Post-test |
|-----------|--------------------------|--------------|
| | Mean±SD | Mean±SD |
| Knowledge | 34.47±2.31 | 59.14±9.62 |
| | f (%) | f (%) |
| | Adequate knowledge | 02 (10) |
| | Moderately knowledgeable | 07 (35) |
| Attitude | 68.30±1.08 | 77.90±5.12 |
| | f (%) | f (%) |
| | Unfavorable | 02 (10) |
| | Moderately favorable | 06 (30) |
| Practice | 13.80±2.82 | 20.32±6.10 |
| | f (%) | f (%) |
| | Good practices | 14 (70) |
| | Bad practices | 06 (30) |

Table 3: Effectiveness of video-assisted teaching programme and mobile application on knowledge, attitude, and practices regarding management of common minor discomforts of pregnancy among primigravida mothers (N=20)

| Variables | Baseline Mean±SD | Post-test Mean±SD | Paired t-test | df | p-value | Effect Size (Cohen's d) ^Δ |
|-----------|------------------|-------------------|---------------|----|-----------|--------------------------------------|
| Knowledge | 34.47±2.31 | 59.14±9.62 | 12.54 | 19 | <0.001*** | 4.33 |
| Attitude | 68.30±1.08 | 77.90±5.12 | 8.07 | 19 | <0.001*** | 3.06 |
| Practice | 13.80±2.82 | 20.32±6.10 | 3.47 | 19 | <0.01** | 1.53 |

*, **, ***=p- Sig at 0.05, 0.01, 0.001 level t(19)= 2.093 ^Δ=0.20 - Small, 0.50- Medium, ≥0.80- Large effect [(Cohen, Jacob (1988))

Table 4: Correlation between knowledge, attitude, and practice among primigravida mothers (N=20)

| Variables | Knowledge r (p-value) | Attitude r (p-value) | Practice r (p-value) |
|-----------|-----------------------|---------------------------|---------------------------|
| Knowledge | xx | 0.27 ^{NS} (0.10) | 0.33 ^{NS} (0.08) |
| Attitude | xx | xx | 0.64** (<0.01) |
| Practice | xx | xx | xx |

*, **, ***=p- Sig at 0.05, 0.01, 0.001 level ^{NS}= Non-significant r(18)=0.444

52.7±8.3 (p<0.001), and their mean practice score, which increased from 22.1±9.5 to 44.5±6.9 (p<0.001).²

In the present study, a non-significant positive correlation was reported between knowledge vs attitude, and knowledge vs practice whereas a significant highly moderate positive correlation was reported between attitude and practice which infers that changes in any one component would bring changes in a similar direction among other components. Similarly, primigravida mothers' knowledge and experience in managing minor illnesses during pregnancy were found to be positively correlated.²

In the present study, knowledge and practice levels were associated with type of family, income status, and place of residence, and attitude post-test level was associated with religion at 0.05 level of significance. Further, the practice was additionally associated with religion and occupation. Similarly, the other study also reported a significant association between practice scores and occupation status.² Another study found an association of knowledge with type

of family, monthly income, and occupation which is in concordance with present study results.¹⁵

Though the study found it effective in significantly improving knowledge, attitude, and practice among primigravida mothers regarding the management of minor discomforts during pregnancy, certain limitations are quintessential to report. Since it is a pilot study, generalization is not possible to the core, and due to various restrictions only one PHC was included in the study, one group design was incorporated which could bring a threat to internal validity, and only a single post-test measure was considered which might not contribute much to retention effect of the intervention.

5. Conclusion

Primigravida mothers had poor knowledge in general and were accompanied by misconceptions regarding the management of minor discomforts during pregnancy which could impact their attitude and practice as well. Their

knowledge, attitude, and practice could be increased and changed by creating mass awareness in the media and by educating them through various programmes and teaching methods. Following the intervention, it was discovered that training primigravida mothers through video-assisted instruction and a mobile app in their native tongue could improve their understanding and foster a positive attitude towards managing minor discomforts during pregnancy. According to the study's findings, knowledge, attitude, and practice changes that were anticipated might be achieved with the help of mobile applications and video-assisted instruction.

6. Source of Funding

None.

7. Conflict of Interest

None to declare.

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Author biography

M Punitha, Professor & HOD  <https://orcid.org/0000-0002-0076-2190>

Zeanath Cariena Joseph, Professor and HOD

P Srinivasan, Assistant Professor  <https://orcid.org/0000-0003-3026-8705>

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