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The impact of a mobile application-based nursing intervention on reducing minor discomforts experienced by primigravida women

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***Abstract*---**Pregnancy-related hormonal changes cause modest discomforts in every part of the body, including exhaustion, constipation, nausea, vomiting, and excessive urination. The majority of their discomforts can be controlled by self-care techniques or healthy lifestyle choices. **Aim:** To determine the impact of a mobile application-based nursing intervention on reducing minor discomforts experienced by primigravida women**. Subjects and method: Design: To** conduct this study a quasi-experimental research design was used. **Setting:** The study was conducted at antenatal outpatient clinics at Sohag University Hospitals. **Subjects**: A convenient sample of 200 primigravida women was involved in the study from the previously selected settings. **Two Tools were used for data collection** 1) a structured interviewing questionnaire, 2) primigravida women's reported practices about minor discomforts tool. **Results**:

The present study revealed that there were statistically significant differences between primigravida women's knowledge and reported practices about minor discomforts before and after mobile application-based nursing intervention. **Conclusion:** Mobile application-based nursing intervention has a positive effect on reducing minor discomforts experienced by primigravida women**. Recommendations:** In a variety of maternity healthcare settings, mobile application-based nursing interventions should be implemented. For all primigravida women, health education programs about minor discomforts and self-care skills should be taught.

***Keywords*---**Minor discomforts, Mobile application based nursing intervention, Primigravida women.

Introduction

Hormonal changes during pregnancy induce rapid physiological changes in pregnant women, which can lead to minor physiological discomforts such backache, leg cramps, exhaustion, nausea and vomiting, sleep disturbance, heartburn, and increased frequency of urination. Pregnant women should be aware of typical minor discomforts, since these can be properly explained and controlled through changes in lifestyle patterns. They should also understand how to keep themselves healthy and alleviate these discomforts **(Almalik & Mosleh, 2019).**

These discomforts are manageable at home and are not regarded as harmful. Prior to using pharmaceutical therapy, non-pharmacological management ought to be taken into consideration as a first line of treatment. On the other hand, medications or medication may be utilized to protect the pregnant woman's health and prevent negative effects on the fetus or occasionally the pregnant woman **(Bhuvaneswari, 2018).**

A mobile application-supported nursing intervention typically refers to the use of mobile apps to deliver targeted nursing interventions, support patient care, and promote health outcomes **(Department of Health and Human Services, 2018).** One easily available communication tool for health nursing interventions is mobile. In addition to improving the interaction between patients and caregivers, it facilitates access to care services **(Zakeri et al., 2019).**

Self-care is the process of creating and utilizing coping mechanisms and personal health practices. Through the use of knowledge and beliefs, self-control abilities and skills, and social support, they can achieve health outcomes during pregnancy, advance their health, avoid or limit disease, and maintain wellness. For some minor aches and pains that don't need medical attention, such as nausea, indigestion, constipation, increased micturition frequency, and backache, these actions are typically performed without professional aid. They need to be explained, though. Preventive interventions or healthy self-practices can help ease these discomforts **(Ahmed, 2019).**

Community health nurses and obstetrics and gynecologist nurses are essential in supporting health throughout pregnancy through health promotion, which has changed from a disease paradigm to a health model **(Piper, 2019).** The most important duty is to educate and give pregnant women the knowledge they need to keep healthy during pregnancy **Nisar and White,2019).**

Nurses are crucial in helping women uncover misconceptions and in offering counseling and direction to strengthen their responsibility for self-care activities. educating expectant mothers about potential risks and offering solutions to mitigate them in order to prevent harm to both their lives and the health of their unborn children. Nurses should know the different kinds of health issues, such as small discomforts, and how pregnant women can minimize them. To assist pregnant patients throughout referrals, manage symptoms and treatment side effects, and preserve and advance their health, nurses must possess sufficient information about self-care techniques. Additionally, maternity nurses contribute significantly to the enhancement of the quality of prenatal care, which offers pregnant women support, education, and recommendations. At the same time, the community health nurse is essential and can offer health promotion services such health education, counseling, assessment, and appropriate referral **(Hassan et al., 2019).**

Significance of the study:

Mobile applications are crucial mHealth resources and are typically simple to obtain. Patients can obtain health information and healthcare services from any location at any time with the use of smartphone apps. Research has shown that using mobile applications to assist patients in clinical settings and healthcare is both feasible and useful **(Schlachta, 2015).**

Pregnant women who are adequately informed about mild discomforts may experience less anxiety and, in turn, experience better results. Thus, mobile application-assisted nursing interventions for expectant mothers may alleviate their anxieties and help them learn appropriate self-care techniques and awareness about small discomforts. Pregnant women's status may be impacted by the hormonal changes that take place during pregnancy, increasing their risk of difficulties and potentially leading to a number of negative outcomes in terms of obstetrics complications and pregnancy outcomes **(Hassan, 2016)**.

The purpose of this study was to determine the impact of a mobile application-assisted nursing intervention on minor discomforts among primigravida, as no prior research had been done in the obstetrics and gynecological department of the nursing faculty. The purpose of this study was to ascertain how a nursing intervention based on a mobile application affected the reduction of mild discomforts that primigravida women experienced.

Aim of the study:

The study aimed to determine impact of a mobile application-based nursing intervention on reducing minor discomforts experienced by primigravida women.

Research hypothesis:
Primigravida women who receive a mobile application-based nursing intervention regarding minor discomforts will experience an enhancement in their knowledge about these discomforts and their ability to self-manage them after the intervention.

Subjects and Methods:

Research Design:
This study employed a quasi-experimental research design, utilizing pre and post-test assessments.

Setting:
The research was carried out at the antenatal outpatient clinics of Sohag University Hospitals.

Subjects:
A convenient sample of 200 primigravida women participated in the study, recruited from the designated settings over a six-month period from July 2021 to December 2021. This sample included all primigravida women who owned mobile phones and were experiencing minor pregnancy discomforts.

Tools for Data Collection:
Two instruments were utilized to gather data for this study as follows:

Tool I: A structured interviewing questionnaire
This tool was developed by the researchers following a review of relevant literature and previous research studies **(Bhuvaneswari, 2018; Ahmed, 2019; Zakeri et al., 2019).** It comprised two sections:
The first section included demographic information such as age, educational level, occupation, and residence.
The second section assessed the knowledge of primigravida women regarding minor discomforts, featuring a pre/post-knowledge assessment sheet. This sheet evaluated the women's knowledge of minor discomforts, had a scoring system that permitted a maximum score of 26 for the 13-item knowledge test. Both known and unknown answers were used to determine the overall knowledge percentages. An incompletely accurate response was worth one point, while each completely correct response was worth two and incorrect or unknown answers received 0 points. The scores for each knowledge area were summed, and the total was divided by the number of items to yield a mean score for knowledge. These scores were then converted into percentage scores. A percentage score of 60% or higher indicated satisfactory knowledge among primigravida women and unsatisfactory if was less than 60%.

Tool II: Reported Practices of Primigravida Women Regarding Minor Discomforts: This tool was developed by the researchers following a review of relevant literature and previous research studies **(Ahmed, 2019, Zakeri et al., 2019).** It was developed to evaluate the practices reported by primigravida women concerning minor discomforts. This sheet evaluated the primigravida women's practices of minor discomforts, with a scoring system for the 80-item knowledge

questionnaire that allowed for a maximum score of 80. The contents of ; it focused on fundamental practice about minor discomforts as well as self-management strategies for various minor discomforts.To help them manage their modest discomfort, self-care techniques were given to each primigravida woman. Using basic Arabic, the researchers produced an instructional booklet.

Primigravida women who participated in the study were given scores based on their practice; 1 score for done step and 0 for a not done step. The total scores for all items were calculated, and the level of practice was categorized as adequate practices if the score exceeded 60%, and inadequate practices if the score was 60% or lower.

Validity and Reliability of the Tool:

1. **Content validity:** Evaluated by five experts in obstetrics and community health nursing, confirming clarity, comprehensiveness, and suitability. No changes were done.
2. **Reliability:** Assessed using Cronbach's α test, yielding a score of 0.879, indicating high internal consistency.

Fieldwork:

The research involved 200 primigravida women experiencing minor discomforts. The researchers conducted their activities in the previously mentioned study setting. Scheduled sessions: 3 days a week, 9 am to 12 pm and interview questionnaire duration: 25-35 minutes per participant. This structured approach likely helped ensure efficient and consistent data collection This questionnaire was distributed to all primigravida women on two occasions: (1) a pre-test to evaluate their knowledge and reported practices concerning minor discomforts prior to the mobile application-based nursing intervention, and (2) a post-test to assess their knowledge and reported practices regarding minor discomforts two months following the mobile application-based nursing intervention. The data collection process was divided into four phases, taking place over a period of six months , from July 2021 to December 2021.
The study comprised four phases, referred to as the preparatory, implementation, planning, and evaluation phases.

A- Preparatory phase:

This phase likely involved analyzing assessment data from interview questionnaires and reviewing existing literature on knowledge and practices related to minor discomforts. The researchers developed educational materials (a booklet) after reviewing relevant literature on the management of minor discomforts and distributed it to all study participants, the primigravida women. The data obtained during this phase served as the baseline for subsequent comparisons to evaluate the impact of the implemented instructional guidelines and mobile application-based nursing intervention.

Administrative and Ethical considerations:

In order to conduct this study, administrative approval was obtained through a letter sent to the directors of the antenatal outpatient clinics by the dean of the Sohag University Hospitals' faculty of nursing. In order to secure authorization for data collection, this letter described the study's goals and the expected results of

its execution. The purpose of the study was communicated to the primigravida women, and the researchers made it clear that participation was voluntary; they had the right to decline involvement in the study. Primigravida women had the option to withdraw from the study at any point, without the necessity of providing a reason. Primigravida women were guaranteed that their information would remain confidential and utilized solely for research purposes.

Pilot study:
Ten percent of the twenty pregnant participants in the study participated in a pilot study. The results of the pilot study were used to guide the necessary changes to the final version of the tools, which improved the clarity and feasibility assessment of the research process. Women who were primigravida and took part in the pilot study were included in the main study.

Planning phase:
The researchers examined both current and historical literature, including textbooks, articles, magazines, and online resources, to create the tools for data collection and to prepare the nursing intervention content aimed at addressing minor discomforts experienced by primigravida women.

B-Implementation Phase:
The mobile application-based nursing intervention was designed with a focus on the knowledge of primigravida women concerning minor discomforts. This intervention comprised four sessions, each lasting between 20 to 30 minutes. In the first session, the goals of the mobile application-based nursing intervention were introduced, along with a pre-test. Enhancing understanding regarding minor pregnant discomforts, including their definitions, symptoms, types, and causes, was the main focus of the second session. The third session was dedicated to educating participants on self-care strategies for managing minor discomforts during pregnancy. The final session involved evaluating the mobile application-based nursing intervention and administering a post-test.

C-Implementation phase:
Prior to commencing the study, administrative approval was secured from the directors of the selected facilities. All primigravida women were approached by the researchers, who introduced themselves and provided clear and straightforward explanations regarding the study's purpose and nature. Oral informed consent was obtained from the primigravida women to ensure their acceptance and cooperation.

The contact numbers of all participating primigravida women were collected, and they were added to a WhatsApp group specifically for them. Each primigravida woman received the mobile application-based nursing intervention. Three online sessions, along with relevant health education messages via mobile, were delivered to the primigravida women. These sessions were conducted through Zoom Meetings, with one session held each week. The first session covered the goals of the mobile application-based nursing intervention and included a pre-test. During the second session, participants learned about the types, causes, signs, and meanings of minor pregnancy discomforts. During the third session, self-care techniques for handling mild pregnancy discomforts were highlighted.

Distributing the post-test and assessing the intervention were the main goals of the fourth session.
Researchers asked primigravida women if they had modified the nursing intervention previously provided, which included providing information on managing mild discomforts, during mobile massages. Inquiries from primigravida women were permitted by the researchers.

The evaluation phase:
Determining the effect of a nursing intervention based on a mobile application was the main goal of the evaluation on alleviating minor discomforts experienced by primigravida women following two months of implementation of the mobile-assisted nursing intervention, utilizing Tool 1, part 2, and Tool 2.

Statistical analysis:
The Statistical Package for the Social Sciences (SPSS) version 23 was used to examine, code, compute, and analyze the data after it was collected. After calculating the frequency distribution, percentages, means, and standard deviations, the level of statistical significance—which was considered significant at $p < 0.05$—was assessed using the Chi-square and Paired Sample T-tests.

Results:
According to **Table 1,** 52% of primigravida women were between the ages of 22 and 26. Their mean age was 19.9± 5.58. Of these, 33% had completed secondary school, and 84% resided in rural areas (71%). It was noted that 72% of primigravida women were housewives in terms of their employment status.

Table 2 indicates that 47% of the primigravida women were in the second trimester and 63% had never had an abortion.

According to 75% of the primigravida women in the study, doctors were their primary source of knowledge on minor discomforts, as seen in **Figure 1.**

Table (3**); i**t indicates that there were statistically significant differences regarding knowledge about minor discomforts among the studied primigravida women pre and post two months of mobile application-based nursing intervention.

Figure 2 demonstrats that pre- mobile application-based nursing intervention, the majority of the studied primigravida women (92%) had unsatisfactory knowledge regarding minor discomforts however, following mobile application-based nursing intervention, 90% of them had satisfactory knowledge.

Table 4 shows that, following mobile application-based nursing intervention, primigravida womens' practices regarding minor discomforts improved with a highly statistically significant differences ($P<0.001$).

Figure (3) made it clear that 88% of the primigravida womenin the study had inadequate practices regarding minor discomforts pre-mobile application-based nursing intervention. In contrast, 90% of the primigravida women in the study had adequate practices regarding minor discomforts post -mobile application-based nursing intervention .

According to **Table (5)**, there was a statistically significant correlation between the reported practice of primigravida women and their overall understanding of mobile application-based nursing interventions (R=.89, P=0.001*).

Table (6) shows that the primigravida women's age, educational attainment, and place of residence were statistically significantly correlated with their level of knowledge and practice during the various stages of the mobile application-based nursing intervention.

Table (1): Demographic information of studied primigravida women (n=200)

Item	Primigravida women (200)	
	No.	%
Primigravida women ' age in years		
18 < 21	44	22
22 < 26	104	52
27 < 30	36	18
31 < 35	16	8
Mean ±Stander deviation	19.9± 5.58.	
- Women ' education		
- Illiterate	18	9
-Read and write	38	19
-Basic education	34	17
-Secondary education	66	33
-University education	44	22
-Residence		
-Rural	166	83
-Urban	34	17
Workin g status		
Housewives	144	72
Working	56	28

Table (2): Obstetrical history of studied primigravida women (n=200)

Item	Primigravida women (200)	
	No.	%
Abortion		
- Less than 2	60	30
- More than 2	14	7
- No abortion	126	63
Pregnancy stage		
- First Trimester	94	47.0
- Second Trimester	68	34.0
- Third Trimester	38	19

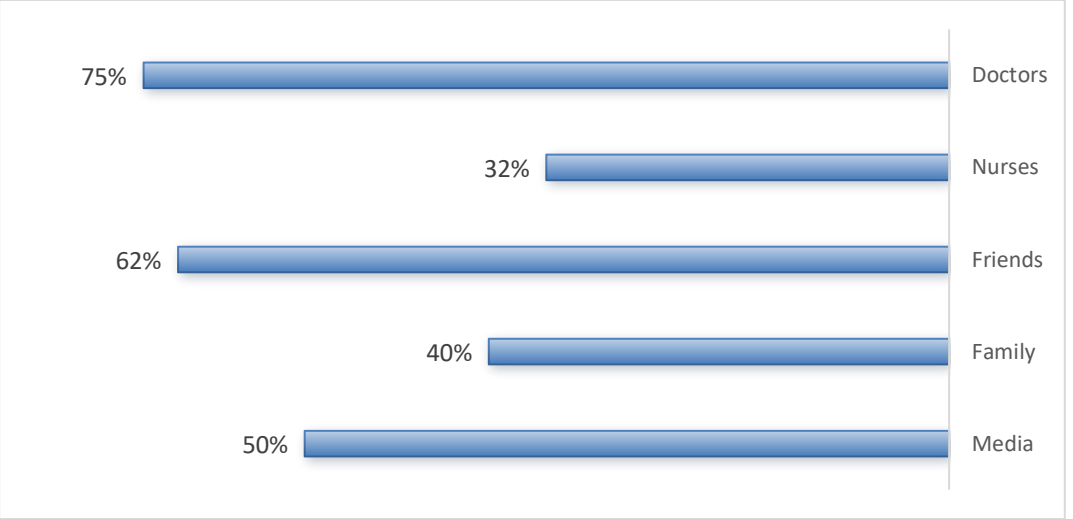

Figure (1): Source of Knowledge regarding minor discomforts among the Studied primigravida women (n=200)

Table (3): Comparison between knowledge among the studied primigravida women regarding minor discomforts pre and post two months of mobile application-based nursing intervention

Minor discomforts	Primigravida				
	Pre -mobile application-based nursing intervention		Post -mobile application-based nursing intervention		Test of significance
	No	%	No	%	
1-**Definition of minor discomfort:**					
- Know	46	23	178	89	X2= 0.25
- Don't know	154	77	22	11	P= 0.09
2-Types of minor discomfort:					
- Know	54	27	186	93	X2= 0.67
- Don't know	146	73	14	7	P= 0.10
3-Complications of minor discomfort:					
- Know	98	49	184	92	X2= 0.54
- Don't know	102	51	16	8	P= 0.12
4- **Nausea &vomiting Causes during pregnancy**					
- Know	62	31	194	97	X2= 0.68
- Don't know	138	69	6	3	P= 0.08
5-Self-care regarding nausea & vomiting during pregnancy					
- Know	46	23	180	90	X2= 0.66
- Don't know	154	77	20	10	P= 0.21

Minor discomforts	Primigravida				
	Pre -mobile application-based nursing intervention		Post -mobile application-based nursing intervention		Test of significance
	No	%	No	%	
6- heartburn Causes during pregnancy					
- Know	78	39	170	85	X2= 0.63
- Don't know	122	61	30	15	P= 0.21
7-Self-care regarding heartburn during pregnancy					
- Know	66	33	192	94	X2= 0.78
- Don't know	134	67	12	6	P= 0.09
8- constipation causes during pregnancy:					
- Know	12	6	178	89	X2= 0.87
- Don't know	188	94	22	11	P= 0.07
9-Self-care regarding constipation during pregnancy:					
- Know	8	4	194	97	X2= 0.23
- Don't know	192	96	6	3	P= 0.08
10- increased frequency of micturition causes during pregnancy					
- Know	38	19	180	90	X2= 0.67
- Don't know	162	81	20	10	P= 0.10
11-Self-care regarding increasing frequency of micturition during pregnancy					
- Know	42	21	178	89	X2= 0.67
- Don't know	158	79	22	11	P= 0.10
12-low backache causes during pregnancy:					
- Know	22	11	190	95	X2= 0.68
- Don't know	178	89	10	5	P= 0.10
13-Self-care regarding low backache during pregnancy:					
- Know	46	23	188	94	X2= 0.58
- Don't know	154	77	12	6	P= 0.10
Total scores	**7.5±1.4**		**23.4±2.7**		

***Significance at 0.001 levels**

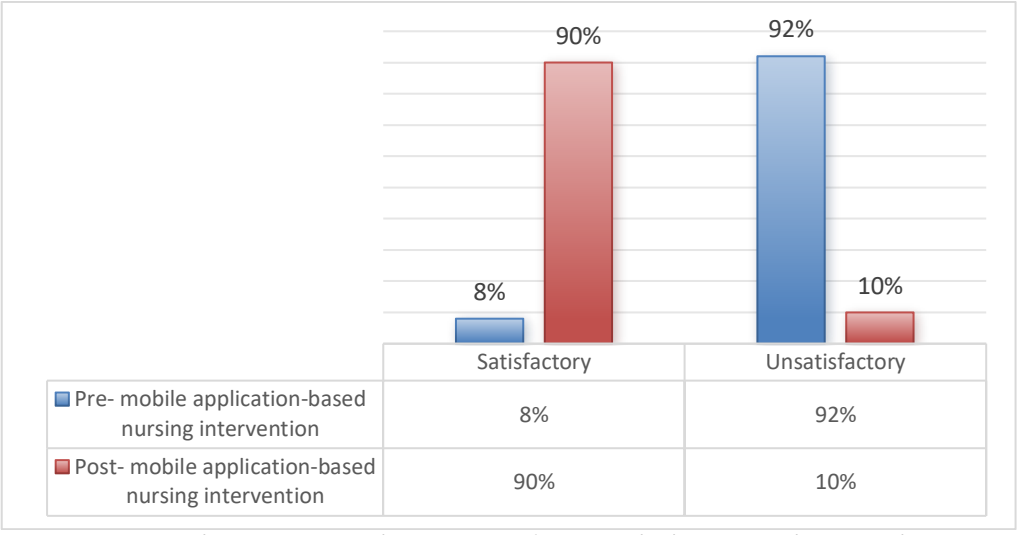

Figure (2): Total primigravida womens' Knowledge Level regarding minor discomforts pre- post mobile application-based nursing intervention (n=200)

Table (4): Practices Total Mean Scores among the Studied primigravida women about minor discomforts Pre and Post mobile application-based nursing intervention (n=200)

Items	Pre -mobile application-based nursing intervention	Post -mobile application-based nursing intervention	t-test	P-value
Total knowledge scores	37.5 ± 1.34	77.6 ± 5.7	56.32	0.0001**

**Highly statistically significant differences

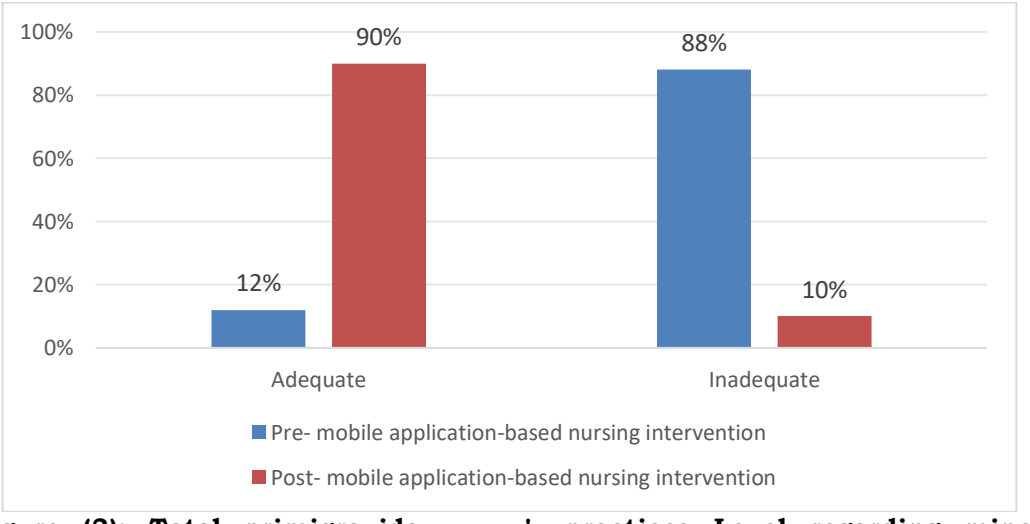

Figure (3): Total primigravida women's practices Level regarding minor discomforts pre- post mobile application-based nursing intervention (n=200)

Table (5): Correlation between primigravida women' total knowledge and reported practice score

Knowledge	Primigravida women' practice			
	Pre -mobile application-based nursing intervention		Post -mobile application-based nursing intervention	
	R	P	R	P
Pre	.43	.048*	-	-
Post	-	-	.89	0.001*

***Significance at 0.001 levels**

Table (6): Correlations between primigravida women's knowledge and practices regarding minor discomforts and their demographic characteristics (n=200).

Items	Knowledge	Practices
Pre-intervention		
Age	-.135	.068
Education	.136	.187
Residence	-.107	-.157
Working status	.063	-.069
Post-intervention		
Age	-.208	-.256*
Education	.309**	.343**
Residence	.305**	.357**
Working status	.087	-.005

***Significance at 0.001 levels**

Discussion:

During pregnancy, women experience numerous physical and hormonal changes, which are considered normal **(Womens Health, 2021).** These changes can lead to minor discomforts such as nausea, vomiting, constipation, back pain, varicosities, and leg cramps. They are termed 'minor' because they do not pose a threat to life. Many of these discomforts may subside as the pregnancy progresses; however, they can cause significant inconvenience and stress for many pregnant women **(Ricci, 2020).** This finding serves to educate primigravida women on how to manage minor discomforts based on their previous experiences during the early weeks of gestation. Additionally, it may inform them on how to handle these discomforts with guidance from their healthcare providers during follow-up visits. Consequently, the current study aimed to assess the impact of a mobile application-based nursing intervention on alleviating minor discomforts experienced by primigravida women.

The present study indicated that over half of the primigravida women were aged between 22 and 26 years, with a mean age of 19.9± 5.58. Approximately one-third of them had completed secondary education, while the majority resided in rural

areas. In terms of employment status, it was noted that less than three-quarters of the primigravida women were housewives. This finding is consistent with a study conducted by **Vincent (2019),** which evaluated the knowledge of primigravida mothers regarding minor discomforts of pregnancy and their self-management through a structured questionnaire in India. The results revealed that 87% of the primigravida mothers were aged between 21 and 30 years, 73% were homemakers, and 37% had completed high school education. Furthermore, a study by **Ramaiah (2019)** in India also found that 72% of the respondents were aged between 21 and 31 years.

The results of the current study demonstrated that three-quarters of the primigravida women identified doctors as their primary source of information regarding minor discomforts. This finding elucidated that primigravida women gain more knowledge from their doctors, who serve as a reliable source. The information source for some primigravida women indicated that less than ten percent obtained their information from their healthcare provider.

The results of the current study revealed statistically significant differences in knowledge concerning minor discomforts among the primigravida women studied, both before and after two months of a mobile application-based nursing intervention. From the researchers' perspective, this reflects the beneficial impact of the mobile application-based nursing intervention, which enhances the knowledge of primigravida women.

The findings of the current study demonstrated that prior to the mobile application-based nursing intervention, the majority of the primigravida women studied exhibited unsatisfactory knowledge regarding minor discomforts. However, following the intervention, most of them displayed satisfactory knowledge. From the researchers' viewpoint, this confirms the effectiveness of the mobile application-based nursing intervention in improving the knowledge of primigravida women and their eagerness to enhance their understanding of minor discomforts. Furthermore, a study conducted in India by **Ramaiah (2019)** corroborated these findings.

This clarifies the discomforts. These results are consistent with a study conducted in Egypt by **Elzeblawy et al. (2020)**, which found a statistically significant difference in the total knowledge of the studied women regarding minor pregnancy disorders after the educational program and at follow-up, compared to their knowledge prior to the program concerning the correct management of minor pregnancy discomforts.

These results are derived from a study conducted at the obstetrics and gynecology clinic of the Women's Health Hospital in Assuit, Egypt. The study revealed that the group receiving educational guidelines exhibited greater knowledge and awareness regarding antenatal aspects, including dietary considerations during pregnancy, foods that may alleviate constipation, preparation for breastfeeding, weight gain during pregnancy, the intake of multivitamins and iron supplements, the appropriate timing to consult a healthcare provider during pregnancy, as well as the management of minor issues and care for their newborn **(Abdel et al., 2018).** Furthermore, **AbdElhaliem et al. (2018)** corroborated these findings,

noting a significant enhancement in scores during the post-intervention phase compared to the pre-intervention phase.

The results of the present study suggest that after implementing a mobile application-based nursing intervention, the practices of primigravida women concerning minor discomforts showed a statistically significant improvement. From the researchers' perspective, this confirms the effectiveness of the mobile application-based nursing intervention in enhancing the knowledge of primigravida women, which is associated with improvements in their practices.

The results of the current study revealed that a significant number of primigravida women exhibited inadequate practices concerning minor discomforts prior to the implementation of the mobile application-based nursing intervention. Conversely, a majority of the primigravida women demonstrated adequate practices regarding minor discomforts following the intervention. From the researchers' perspective, this confirms that the study's objectives were successfully met.

The findings of the current study also indicated a statistically significant correlation between the total knowledge of primigravida women and their reported practices related to the mobile application-based nursing intervention. This suggests their capability to seek out and comprehend information regarding measures to alleviate discomforts during pregnancy. In a similar vein, **Patil & Salunkhe (2019)** noted that when mothers are educated, they are more likely to read pregnancy care literature, which enhances their understanding of pregnancy and management of minor ailments. Furthermore, the educational booklet provided to participants in this study facilitated their knowledge acquisition and retention, potentially serving as a crucial factor contributing to the effectiveness of the mobile application-based nursing intervention.

The results of the present study indicated a statistically significant relationship between the age, educational attainment, and residence of the primigravida women and their levels of knowledge and practices throughout the various phases of the mobile application-based nursing intervention. An examination of the demographic characteristics reveals that women under the age of 20 possess less knowledge, with knowledge levels improving as age increases. Additionally, the knowledge level of primigravida women is directly correlated with their educational background, as those with higher degrees tend to have higher knowledge scores. This finding aligns with the results of a study conducted by **Vincent (2019),** which reported a significant association between knowledge and demographic factors of Primigravida mothers as age and educational qualification.

In this context, **Sharma et al. (2020)** in India, **Samarakoon et al. (2020) in Sri Lanka, and Khalil &Hamad (2019)** in Iraq discovered that knowledge regarding minor ailments can differ based on the changing socio-demographic profiles of antenatal pregnant women. Consequently, the levels of knowledge were found to be statistically significantly associated with factors such as age, education, occupation, and sources of information.

This may be linked to the fact that the residence of the studied women, particularly in rural areas, is correlated with higher mean scores of their knowledge prior to the mobile application-based nursing intervention. This could elucidate that women in rural regions possess distinct cultural values and beliefs, and they may experience increased stress due to their limited participation in antenatal care and the challenges of accessing health centers or hospitals in urban areas when any concerning symptoms arise. In terms of employment, this outcome may suggest that working commitments can hinder participation in antenatal care. Ultimately, pregnant women may lack the time to visit health centers and may find it difficult to leave their jobs. Therefore, the study hypothesis is validated.

Conclusion:

From the results of the current study, it was concluded that Mobile application-based nursing intervention has a positive effect on reducing minor discomforts experienced by primigravida women**.**

Recommendations:

In light of the findings from the study, the following recommendations are proposed.

- Mobile application-based nursing interventions should be adopted across various maternity healthcare environments.
- Health education programs addressing minor discomforts and self-care techniques should be provided for all primigravida women.
- An educational booklet should be distributed to primigravida women focusing on the prevention and management of minor discomforts.
- Additional research is necessary to examine the impact of utilizing new technology among primigravida women on their awareness of the most common issues encountered during pregnancy.
- It is highly recommended that a similar specific study be conducted in multiple settings with larger probability samples.

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