Effect of Tele-nursing Application on Self- Management of Pregnant Women Regarding Minor Discomforts

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Abstract

Background: Minor discomforts of pregnancy are a series of commonly experienced symptoms that annoy women throughout pregnancy. Applying tele-nursing in healthcare is increasingly prioritized to reduce maternal mortality, morbidity and improve newborns' survival especially in remote areas. **Aim of the study**: To evaluate the effect of tele-nursing application on self-management of pregnant women regarding minor discomforts. **Design** A quasi - experimental design was utilized (control & study group). **Setting**: The study conducted at the Ain Shams University Maternity Hospital's Antenatal Clinic. **Sample:** A purposive sample of 120 pregnant women were enrolled in the study. **Tools:** Four tools were used for data collection; **I)** A structured interviewing questionnaire, **II)** Maternal Knowledge Assessment Questionnaire**, III)** Maternal reported self-care Practice checklist, and **IV)** Women satisfaction likert scale, in addition to supportive material (Arabic educational booklet). **Results**: there was a highly statistically significant improvement in total knowledge and total self- management practices scores among study group as compared to control group at post-intervention (p value < 0.001). Also, (95%) of the study group was satisfied with tele-nursing services, in addition, there was a statistically significant relation between the studied sample's total knowledge score and their total practices score at post-intervention (P< 0.001). **Conclusion**: the current study concluded a positive effect of tele-nursing application on enhancing pregnant women's knowledge and self-care management regarding minor discomforts. **Recommendations:** Telenursing should be programmed as a part of antenatal care for pregnant women in different health setting.

Keywords: Tele-nursing, Self- Management , Minor Discomforts

Introduction:

Pregnancy is the most significant event in a woman's life, which requires unique care from the time of conception to the postpartum period. During the period of pregnancy time there are changes occurring in a woman's body because of hormonal effect and adaptation to the gestational process. Although these physiological changes are normal, they can often be interpreted as a disease because a pregnant woman's body cannot adequately adapt to pregnancy changes (**Hassan et al., 2019**).

Minor discomforts of pregnancy are a series of commonly experienced symptoms that annoy women throughout pregnancy. It caused by the effects of pregnancy hormones and the consequences of uterine enlargement as the fetus grows during pregnancy. During pregnancy, hormones, including estrogen, progesterone, and prolactin, increases rapidly. The pregnancy hormones turn the uterus into an environment suitable for the baby's growth, and at the same time, it can cause discomfort for the mother **(Medforth et al., 2019).**

Minor discomforts varying during all periods of pregnancy and classified into discomforts occur during the first, the second, and the third trimester of pregnancy. These discomforts are nausea and vomiting, urinary frequency, fatigue, breast tenderness, increased vaginal discharge, stuffy nose, nosebleeds, pica, gingivitis, and ptyalism. Moreover, discomforts during the second and third trimesters. Most of the minor discomforts in pregnancy will spontaneously subside after delivery **(Khalil & Hamad 2019).**

Many pregnant women do not know how to treat minor ailments during pregnancy, which leads to complications and negatively affects their daily life activity. The primigravida women especially require health teaching that herbs and medicines should be avoided, especially during

early pregnancy, because they can enter the fetal circulation through the placenta. Some medications exert a toxic or teratogenic effect on the fetus **(Heitmann et al., 2016).**

Concept of self-management emerged in response to need for improved methods of promoting clinical and behavioral change in search for improved outcomes. Early research concluded that self-management consisted of three components, self-monitoring, self-evaluation, and self-reinforcement that interacted to create personal self-management of one's behavior. Self-management technique is used to assist individuals with maladaptive behaviors, as shyness, low self-concept, bullying, anxiety, autism among others **(Igbokwe et al., 2019).**

Self-management regarding minor discomforts and practices during the prenatal period is the process whereby the women use knowledge and beliefs, self-regulation skills and abilities, and social facilitation to promote the positive outcome and restore the healthy lifestyle during the pregnancy **(Sandal et al., 2019).**

Tele nursing is considered as a subset of tele health that focuses on the provision, management, and coordination of care and services using telecommunications technology within the domain of nursing**.** The most common use of telenursing is to provide opportunities for pregnant women education, nursing teleconsultations, examination of results of laboratory investigations, and assistance in the implementation of protocols management (**Alageswari & Dash., 2018).**

The nurse has important role in the prevention or reducing complications of the pregnancy through the proper education and follow up by telenursing to help pregnant women comply with health lifestyle. Nurses also have an active role in providing health education about lifestyle modifications that can affect pregnancy related symptoms to increase awareness and knowledge as well as the practice of home remedies for minor disorders of pregnancy **(Sandal et al., 2019).**

Significance of the Study:

Most discomforts experienced during pregnancy can be related to either hormonal changes or the physical changes related to the growing uterus. National Institute for Care and Health Excellence (NICE) report that minor discomforts are very common and reported by 50% - 80% of pregnant women **(Aziz and Maqsood., 2017).**

Incidences of common minor discomforts during the first trimester include nausea and vomiting that are affecting 50- 75% of pregnant women. Common minor discomforts during the second and third trimester are heartburn that affects 89.1% of all pregnant women. Constipation affects 78.2% of women, especially in the third trimester, and shortness of breath that affects 94.1% of all pregnant women, edema of ankle and feet occurs in the majority (over 80%) of healthy pregnancies. Varicosities may develop in 40% of pregnant women **(Ruth et al., 2019).**

Minor discomforts might affect the health of mother and fetus, if pregnant women are helped to change behaviors related to lifestyle, it effectively restores their health. Providing empathetic and sound advice about self-management to elevate these discomforts helps promote the overall health and wellbeing of pregnant women(**Christiana et al., 2021)**.

Telenursing is one of the methods considered by the American Nursing Association focusing on the delivery, management, coordination, and service of patient treatment using telecommunications technology used in the field of nursing. Telenursing enables patient monitoring, health education, data collection, nursing interventions, pain management and family support through technology without time and distance constraints (**Mohamed &Ahmed 2021)**.

Aim of the study:

The present study aimed to evaluate the effect of tele-nursing application on self-management of pregnant women regarding minor discomforts.

This aim was achieved through the following:

- Assess pregnant women's knowledge and self-management practices regarding minor discomforts.
- Apply telenursing regarding minor discomforts among pregnant women.
- Evaluate the effect of telenursing application on pregnant women's knowledge and self-

management practices regarding minor discomforts.

Research hypotheses:

- Pregnant women who receive telenursing application will have improved knowledge and self-management practices regarding minor discomforts than those who do not receive it.
- Pregnant women who receive telenursing application will exhibit reduced frequency of minor discomforts than those who do not receive it.
- Pregnant women will be satisfied with tele-nursing application as a method of education and support after its implementation.

Subjects and Methods:

Research design:

A quasi-experimental study design (study/control group) was utilized to achieve the aim of this study.

Setting:

The study was carried out at the Ain Shams University Maternity Hospital at antenatal clinic. It is an educational hospital that serves a very large sector of citizens and huge flow rate with a nominal cost. It provides a wide range of services to women, including antenatal care, family planning, and gynecology outpatient clinics, as well as clinics that offer breastfeeding support, a delivery unit, an early detection unit, an intensive care unit, gynecological operations, post-operative care, and inpatient units.

Subjects:

Sample type: A purposive sample was used with the following ***inclusion criteria:***

- Pregnant Women with different types of minor discomforts.
- Pregnant women with gestational age of 8-30 weeks.
- Primipara or multigravida.
- Pregnant women who can read and write, access to telephone, and willing to participate in the research.

Exclusion criteria:

- High risk pregnant women.
- Pregnant women Suffer from medical or psychiatric disease.
- Pregnant women who is illiterate.

Sample size

The current study was conducted on 120 pregnant women.

Sample size Equation: The researchers depended on the following equation to calculate the sample size: Steven Thompson Equation **(Khuanbai &Yerkhanat, 2019)**

$$N = \frac{Z^2 (P (1-p)}{d2}$$ Where,

- N =Sample size.
- Z: statistic for a level of confidence. (For the level of confidence of 95%, which is conventional, the Z value is 1.96).
- P = the expected proportion in population based on previous studies.

d=error percentage = (0.05).

Sample technique:

The study sample was randomly assigned into two equal groups (study and control group). This was accomplished by assigning each of the 120 women either number one or number two on a piece of paper. Women who choose number one were assigned to the study group, while those who chose number two were assigned to the control group. This method assisted in avoiding sample contamination and bias.

- ***Control group:*** (60 pregnant women) who only received routine antenatal care. The control group was chosen first to ensure that no contamination or bias in the sample of the study group.
- ***Study group:*** 60 pregnant women were received the routine hospital care plus the tele-nursing services (telephone support).

Tools of data collection:

I) A Structured Interviewing Questionnaire:

It was developed by the researchers in Arabic language after reviewing of related literature **(Alageswari & Dash, 2019)**. It encompassed two main parts:

Part I: pregnant women's general characteristics, such as age, residence, educational qualification, and occupation status.

Part II: obstetric history, which Included gravida, para, gestational age, and occurrence of minor discomforts.

II): Maternal Knowledge Assessment questionnaire

It was developed in the Arabic language by the researchers after reviewing related literature

(Madhavi.,2016) to assess pregnant women knowledge regarding minor discomforts and its management. it included 26 multiple choice questions which divided into three sections; section (1) it consisted of two questions as concepts of minor discomforts, types of minor discomforts. Section (2); included twelve questions to assess pregnant women's knowledge about the causes of different types of minor discomforts as (morning sickness, heart burn, faintness and dizziness, constipation, dyspnea, leucorrhea, frequent urination, leg cramps, varicose veins, edema, back pain, and headache. Section (3) pertained to assess women's knowledge about the self-management of minor discomforts, it consisted of twelve questions as interventions management of different types of minor discomforts.

Scoring system:

Correct answer was given two scores, while incorrect answers or "don't know" was given one score. The total score ranged from 1 to 52. The total knowledge score was divided into:

- Adequate ≥60% (31-52 score).
- Inadequate < 60% (1-30score).

III) Maternal reported Self-Care Practice checklist: it was adapted from **(Aldossary et al., 2018)** to assess the pregnant women's actual self-management practices regarding minor discomforts. It was translated into Arabic language by the researchers (translation and back translation was done to ensure accuracy). It was consisted of 52 items divided into (12) section, each section had a different practice toward management of different types of minor discomfort including morning sickness, heartburn, constipation, faintness, dizziness, dyspnea back pain, frequency of urination, leucorrhea, leg cramps, varicose veins, edema, and headache. Each type of minor discomforts had a certain self-care reported practice.

Scoring system:

It was scored as two scores for done, and one score for not done. Total score ranged from (1 - 52). The total practice scores were classified as the following:

-unsatisfactory Practice >60% (1-30),
-satisfactory practice ≤ 60% (31-52).

IV) Women satisfaction Likert scale:

It was adapted from **(Farrag & Metwely 2016)** to assess pregnant women' satisfaction regarding telenursing support. The scale included 14 statements in the form of a three-point Likert scale as tele-nursing services are available at any time, tele-nursing services are an attractive way of learning, telenursing services save time, effort, and money, tele-nursing services have a positive effect on the minor troubles of pregnancy, tele-nursing services are important in emergency situations, tele-nursing services are appropriate for you during your pregnancy, and tele-nursing services provide accuracy and confidentiality of information. **Scoring system**:

Each item was scored on a three points Likert-scale ranging from 1 score for (not satisfied), 2 scores for (moderate satisfied), and 3 scores for (satisfied). The total satisfaction score ranged from (1 to 42) and was graded as the following.

- Not satisfied < 60% (1-24),
- Moderate satisfied 60- 74 % (25- 31)
- Satisfied ≥ 75% (32-42).

Supportive material (Arabic educational booklet)

It was developed and designed by the researchers based on the recent literature review **(Alageswari & Dash, 2019; Aldossary et al., 2018; Madhavi, 2016)** and had been confirmed by experts to enhance pregnant women's knowledge and self-management practices regarding minor discomforts. It was designed using simple Arabic language and different illustrative pictures to facilitate the women understanding of its contents. it was composed of many parts that focused on the basic knowledge about different types of minor discomfort during pregnancy as morning sickness, heartburn, constipation, faintness. and dizziness, dyspnea back pain, frequency of urination, leucorrhea, leg cramps, varicose veins, edema, and Headache). Each minor discomfort was illustrated for its definition, causes, time of start, and self-management practices to be reduced or relieved.

Validity & reliability:

The data collection tools were presented to a committee consisting of five experts from the maternal and neonatal health nursing Department, the Faculty of Nursing, Obstetrics & Gynecology Department, Faculty of Medicine, Ain Shams

University to test the validity of the content. Adjustments made according to the committee's opinion regarding the clarity of sentences and the appropriateness of the content.

Tool reliability was performed by the Cronbach's alpha test, which revealed that each tool consisted of relatively homogeneous elements, as shown in the medium to the high reliability of each instrument. 0.86 for maternal knowledge assessment questionnaire, 0.85 for maternal self-care reported practices checklist, and 0.87 for women's satisfaction Likert scale.

Pilot Study:

It was carried out for three weeks on 10% of the sample (six pregnant women for control group & six for study group). The pilot study was conducted to assess the tools' clarity, comprehensiveness, and feasibility of the study process. The necessary modifications were done based on the pilot study findings, such as (omission and addition of some questions from/to the tools) to strengthen their contents, or for more simplicity and clarity, or to be concise and focused. These groups were excluded from the study sample.

Administrative design:

An official written approval letter clarifying the title, purpose, and setting of the study was obtained from the Dean of the Faculty of Nursing of Ain Shams University & director of Ain Shams Maternity University Hospital.

Ethical considerations:

Ethical approval was obtained from the Scientific Research Ethical Committee of Faculty of Nursing at Ain Shams University before starting the study. Informed consent obtained from participants after explaining the purposes of the study. No harmful methodology used with participants. Every participant has the option to leave the study at any time. Human rights were guaranteed. The information is kept private and encrypted.

Fieldwork:

The study was carried out through four phases: preparatory, interviewing and assessment, implementation, and evaluation phase. These phases were carried out from the beginning of May 2021 October 2021, covering a period of six months. The previously mentioned setting was visited by the researchers three days per week from 9.00 am to 12.00 pm.

Preparatory phase:

It included reviewing local and international related literature on various aspects of the study problem. This phase assists the researcher to be acquainted with the magnitude and seriousness of the problems and guided the researchers to prepare the required data collection tools and prepare the teaching material.

Interviewing and assessment phase:

During this stage, every pregnant woman in the outpatient clinic's waiting area was interviewed individually. The researchers greeted the women at the start of the interview, introduced themselves to each pregnant woman involved in the study, explained the goal of the study, and obtained the woman's written consent to participate in the research. The researchers started to assess pregnant women's general characteristics, obstetric history, knowledge, self-management practices regarding minor discomforts by using tool (I), (II), (III). The average time for the completion of each woman's interview was around (20-30 minutes). Every day, the researchers interviewed five to six women. The data obtained during this phase constituted the baseline for further comparison to assess the intervention's effectiveness. The educational booklet was distributed to each pregnant women among study group.

Implementation phase:

Control group: In the control group, pregnant women received only regular prenatal care in the above-mentioned setting.

Study group: The study group received tele-nursing services through (WhatsApp and telephone follow up) provided by the researchers for 8 weeks. The researchers divided the study groups into six subgroups, each subgroup consisted of ten women. Each subgroup was added to a WhatsApp group on mobile after gathering their phone numbers. The study group received three recorded sessions as well as suitable health education mobile messaging and illustrative videos through WhatsApp. one session per week. Each session lasted approximately 20 to 25 minutes. First session included basic information about minor

discomfort as definition, types of minor discomfort according to pregnancy trimester. Second session concerned with minor discomfort during first trimester and second trimester as morning sickness, fainting and dizziness, heart burn, leucorrhea, headache, and leg cramps. Third session focused on minor discomforts during third trimester including constipation, dyspnea, frequent urination, varicose veins, hemorrhoids, edema, and back pain. Each minor discomforts' definition, causes, onset time, and self-management practices to eliminate it were illustrated. Telephone follow up was performed twice weekly. The total frequency of telephone counseling averaged 12 calls per subject. The average length of these contacts was10- 15 minutes per call. At each call, the mother was asked about her problems and the researcher guided the mothers. As well, the researcher asked the mother if she adapted the instructions that was given before. At the end of any telephone call, the mother was once again invited to ask her questions.

Evaluation phase:

- The effect of telenursing application was done through comparing between control and study groups by assessing their knowledge and self-management practices regarding minor discomforts after one month of intervention, as well as assessing the occurrence of minor discomforts between two groups, and assessing women's satisfaction regarding telenursing services among study group by using the pre intervention tools at ante natal clinic or by telephone.

Limitations of the Study:

- Some women didn't answer from first call and the researchers tried to call them again and all this was time consuming, and great effort for the researchers .

A Statistical Design: The collected data was revised, coded, tabulated, and introduced to a personal computer using Statistical Package for Social Sciences (IBM SPSS 20.0). Descriptive statistics were used to calculate percentages and frequencies for qualitative variables, mean and standard deviations for quantitative variables. The statistical tests such as chi-square test (X2) were used to estimate the statistically significant differences. For normally distributed data, a comparison between two independent populations was made using independent (t) test. A significant level value was considered when $p < 0.05$, a highly significant level value was considered when $p < 0.01$, and no statistically significant difference when $p>0.5$.

Results:

Table (1): reveals that (56.7 %) & 51.7% of study and control groups their age ranged between (20-30) years respectively. Regarding residence, (53.3%) of study group were living in urban areas as compared to (48.3 %) of control group. Concerning to level of education, (73.4%) of study group compared to 68.3%s of control group had secondary. In addition, 81.7% of the study group and 75% of the control group were housewives. There was no statistically significant difference between the study and control groups regarding their general characteristics ($P > 0.05$).

Table (2): shows that 73.3% &70% of study and control groups, respectively were multigravida, regarding parity, 51.6% of study group were para one to two as compared to 48.3 % of control group, in relation to pregnancy trimester, 50% & 36.7% of study group were in first and second trimester respectively compared to 51.6% & 33.3 of control group.

Table (3): indicates that there was no statistically significant difference between study and control groups regarding their knowledge about minor discomforts during pregnancy at pre-intervention ($P>0.05$). While a highly statistically significant improvement regarding all knowledge elements among study group was observed compared to control group at post intervention ($P< 0.001$).

Table (4): indicates that there were no statistically significant differences in the total knowledge score regarding minor discomforts between the study and control group at pre-intervention ($P>0.05$). Meanwhile, a highly statistically significant difference was observed between them at post-intervention ($P< 0.001$), as most of the study group (88.3%) had adequate level of total knowledge score as compared to (41.7) of control group.

Figure (1): presents that 45% of study group received their information regarding minor discomforts from family members, while 25% of them took their information from mass media.

Figure (2): clarifies that (41.7 %) of control group received their information regarding minor discomforts from family members, while 28.3% study took their information from health care provider.

Table (5) indicates that there was not statistically significant difference between study group and control group regarding the occurrence of selected minor discomforts at pre- intervention (P value >0.05).

Table (6): shows that there was no statistically significant difference between the study and control groups regarding their self-management practices toward minor discomforts during pregnancy at pre-intervention (P>0.05). Meanwhile, a highly statistically significant improvement was observed among study group regarding all aspects of self-management practices as compared to control group at post-intervention (P < 0.001).

Table (7): demonstrates that, there were no statistically significant differences in the total self-management practices score regarding minor discomforts between the study and control group at pre-intervention(P>0.05). Meanwhile, a highly statistically significant difference was observed between them at post intervention (P<0.001), as most of the study group (83.3%) had satisfactory level of total practices score as compared to (15%) of control group.

Table (8): clarifies that there was a highly statistically differences between study group and control group regarding the occurrence of minor discomforts at post- intervention (P <0.001). As (63.3%, 60%, 51.7%, 50%, 50%, 48.3%, 46.7%) of control group had backache, vomiting, leucorrhea, heart burn, faintness and dizziness, constipation, and frequency of urination respectively compared to (28.3%, 25%, 26.7%, 30%, 31.7%, 23.3%, 30.0%) of study group.

Table (8): reveals that (95%) of the study group were satisfied with tele-nursing services in form of helped them in reducing the minor hassles of pregnancy, also tele-nursing services are important in emergency situations, in addition 93.3% were satisfied that tele-nursing services are appropriate for them during their pregnancy and they are be interested to share the use of tele-nursing with their family or friends.

Figure (3): shows that most of the study group (90%) were satisfied with telenursing application about minor discomforts during pregnancy while 3.3 % of them were not satisfied.

Table (9): demonstrates that there was a statistically significant relationship between the studied sample's total knowledge score and their total self-management practices score at post-intervention ($p \leq 0.001$).

Table (1): Comparison between study and control groups regarding their general characteristics:

Items	study group (n=60)		control group (n=60)		χ^2	P value
	No	%	No	%		
Age(years)						
20< 30years	34	56.7	31	51.7		
30< 40 years	24	40.0	26	43.3	0.993	0.109
>40 years	2	3.3	3	5.0		
Mean ± SD	**30.53± 5.21**		**30.65± 5.17**			
Residence						
Rural	28	46.7	**31**	**51.7**		
Urban	32	**53.3**	**29**	**48.3**	**0.30**	**0.58**
Level of Education Primary education	5	**8.3**	6	**10.0**		
Secondary education	44	**73.4**	41	**68.3**	**0.36**	**0.83**
University	11	**18.3**	13	**21.7**		
Occupation						
Worker	11	18.3	15	25.0		
Housewife	49	81.7	45	75.0	0.786	0.375

Table (2): Comparison between study and control groups regarding their obstetric history:

Obstetrics history	study group (n= 60)		control group (n= 60)		χ^2	P value
	No	%	No	%		
Gravida						
Primigravida	16	26.7	18	30.0	0.164	0.685
Multigravida	44	73.3	42	70.0		
Parity 0	16	26.7	18	**30.0**		
1 -2 3	31	51.6	29	**48.3**	**1.22**	**0.74**
–4	12	**20.0**	10	**16.7**		
4+	1	**1.7**	3	**5.0**		
Pregnancy-Trimester						
First trimester (8-12 weeks)	30	50.0	31	51.6		
second trimester (13-28 weeks)	22	36.7	20	33.3	1.89	0.917
Third trimester (29-30 weeks)	10	16.6	9	15		

Table (3): Comparison between study and control groups according to their correct knowledge about minor discomfort during pregnancy at pre & and post- intervention:

Items	Pre- intervention					Post-intervention				
	study group (n=60)		control group (n= 60)		χ^2 p-value	study group (n= 60)		control group (n= 60)		χ^2 p-value
	No	%	No	%		No	%	No	%	
Definition of minor discomforts	22	36.7	25	41.7	0.31 0.57	54	90.0	30	60.0	8.27 0.001**
Morning sickness	20	33.3	17	28.3	0.35 0.55	55	91.7	20	33.3	9.73 0.001**
Heart burn	21	35.0	24	40.0	0.35 0.89	54	90.0	27	45.0	8.35 0.001**
Faintness and dizziness	13	21.7	17	28.3	0.711 0.399	53	88.3	21	35.0	12.46 0.002**
Constipation	27	45.0	22	36.7	0.862 0.353	56	93.3	30	60.0	10.78 0.001**
Dyspnea	22	36.7	24	40.0	0.953 0.682	55	91.7	26	43.3	12.62 0.001**
Leucorrhea	20	33.3	26	43.3	1.27 0.260	54	90.0	26	43.3	11.37 0.001**
Frequent urination	29	48.3	27	45.0	0.953 0.682	56	93.3	29	48.3	10.57 0.001**
Leg Cramps	25	41.7	21	35.0	0.564 0.453	51	85.0	22	36.7	14.09 0.003**
Varicose veins	21	35.0	23	38.3	0.953 0.682	49	81.7	27	45.0	14.38 0.003**
Edema	16	26.7	18	30.0	0.953 0.682	48	80.0	19	31.7	16.29 0.004**
Back pain	20	33.3	21	35.0	0.0370 0.847	57	95.0	25	41.7	16.02 0.004**
Headache	25	41.7	28	46.7	0.684 0.89	53	88.3	30	60.0	15.78 0.003**

Table (4): Comparison between study and control groups according to their total knowledge score about minor discomforts during pregnancy at pre & and post- intervention:

Item	Study group (n=60)		Control group (n=60)		χ^2	P Value
	No	%	No	%		
Pre intervention						
Adequate	21	35.0	22	36.7	1.93	0.873
Inadequate	39	65.0	38	63.3		
Post intervention						
Adequate	53	88.3	25	41.7	12.53	0.001**
Inadequate	7	11.7	35	58.3		

Figure (1): Frequency distribution of study group according to their source of information about minor discomfort during pregnancy: (n=60)

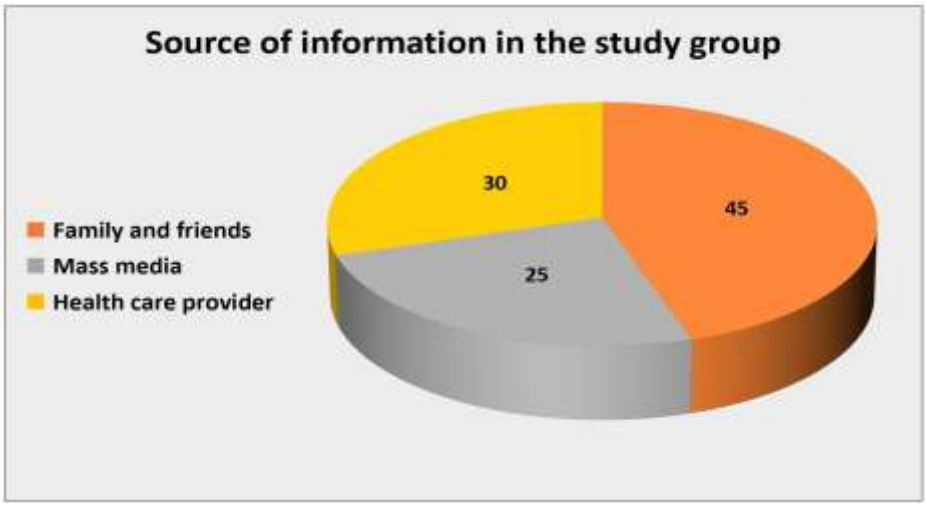

Figure (2): Frequency distribution of control group according to their source of information about minor discomfort during pregnancy: (n=60)

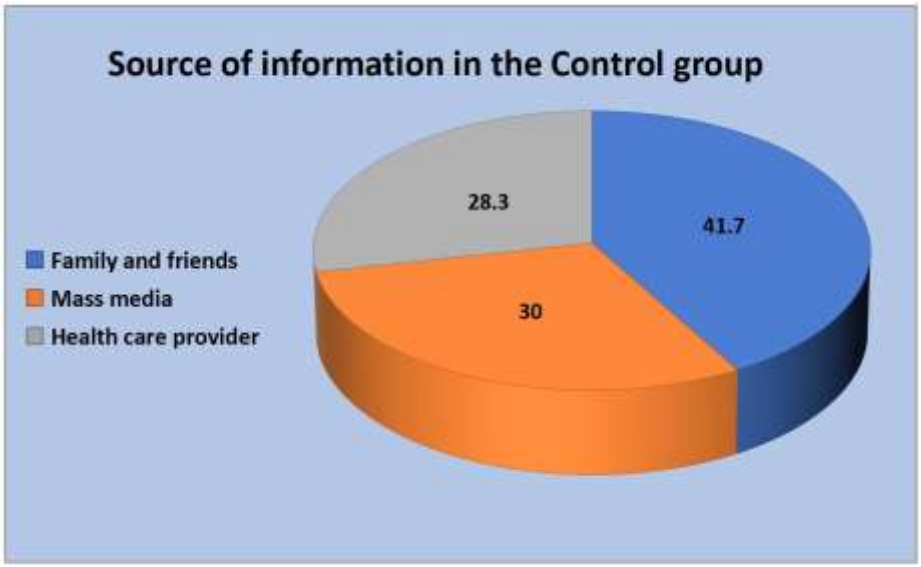

Table (5): Comparison between study group and control group according to their occurrence of selected minor discomforts at pre- intervention:

Items	Study group (n= 60)		control group (n= 60)		χ^2	P value
	No	%	No	%		
Morning sickness	45	75	40	66.7	1.01	0.315
Heartburn	32	53.3	36	60.0	0.843	0.852
Constipation	28	46.7	23	38.3.3	1.47	0.715
Faintness and dizziness	34	56.7	32	53.3	0.862	0.841
Dyspnea	28	46.7	24	40.0	0.937	0.838
Back pain	35	58.3	38	63.3	0.841	0.788
Frequency of urination	26	43.3	22	36.7	0.986	0.350
Leucorrhea	35	58.3 46.7	33	55.0	0.860	0.837
Leg cramps	28	16.7	22 8	36.7	0.934	0.782
Varicose veins	10	33.3	16	13.3	0.859	0.840
Edema	20	56.7	36	26.7	0.962	0.825
Headache	34			60.0	0.861	0.839

Table (6): Comparison between study and control groups according to their self- management practices regarding minor discomforts during pregnancy at pre and post -intervention:

Items	Pre- intervention					Post-intervention				
	study group (n= 60)		control group (n= 60)		χ^2 p-value	study group (n= 60)		control group (n= 60)		χ^2 p-value
	No	%	No	%		No	%	No	%	
Morning sickness										
Satisfactory	10	22.3	8	20.0	0.807	40	88.9	23	57.5	10.69
Unsatisfactory	35	77.7	32	40.0	0.663	5	11.1	17	42.5	0.001**
Total	**45**	**100.0**	**40**	**100.0**		**45**	**100.0**	**40**	**100.0**	
Heart burn										
Satisfactory	4	12.5	6	16.7	0.852	27	84.4	10	27.8	12.37
Unsatisfactory	28	87.5	30	83.3	0.531	5	15.6	26	72.2	0.002**
Total	32	**100.0**	36	**100.0**		32	100.0	36	**100.0**	
Constipation										
Satisfactory	12	42.9	9	39.1	1.57	26	92.9	13	56.5	9.77
Unsatisfactory	16	57.1	14	60.9	0.460	2	7.1	10	43.5	0.001**
Total	28	**100.0**	23	**100.0**		28	**100.0**	23	**100.0**	
Faintness and dizziness										
Satisfactory	6	17.6	5	15.6	0.951	30	88.2	10	31.3	11.25
Unsatisfactory	28	82.4	27	84.4	0.789	4	11.8	22	68.7	0.001**
Total	34	**100.0**	32	**100.0**		34	**100.0**	32	**100.0**	
Dyspnea										
Satisfactory	8	28.6	10	29.4	0.886	24	85.7	13	38.3	12.30
Unsatisfactory	20	71.4	24	70.6	0.631	4	14.3	21	61.8	0.001**
Total	28	**100.0**	34	**100.0**		28	**100.0**	34	**100.0**	
Back pain										
Satisfactory	8	22.9	10	26.3	0.852	31	88.6	15	39.5	10.36
Unsatisfactory	27	77.1	28	73,7	0.531	4	11.4	23	60.5	0.001**
Total	35	**100.0**	38	**100.0**		35	**100.0**	38	**100.0**	
Frequent urination										
Satisfactory	10	38.5	8	36.4	0.951	23	88.5	10	45.5	9.49
Unsatisfactory	16	61.5	14	63.6	0.789	3	11.5	12	54.5	0.001**
Total	26	**100.0**	22	**100.0**		26	**100.0**	22	**100.0**	

Items	Pre- intervention					Post- intervention				
	study group (n= 60)		control group (n= 60)		χ^2 p-value	study group (n= 60)		control group (n= 60)		χ^2 p-value
	No	%	No	%		No	%	No	%	
Leucorrhea										
Satisfactory	7	20.00	7	15.3	0.827	33	94.3	7	15.3	11.21
Unsatisfactory	28	80.00	26	78.7	0.670	2	5.7	26	78.8	0.001**
Total	35	**100.0**	33	**100.0**		35	**100.0**	33	**100.0**	
Leg cramps										
Satisfactory	4	14.3	2	9.1	1.84	25	89.3	4	18.2	10.89
Unsatisfactory	24	85.7	20	90.9	0.621	3	10.7	18	81.8	0.001**
Total	28	**100.0**	22	100.0		28	**100.0**	22	**100.0**	
Varicose veins										
Satisfactory	3	30.0	2	25,0	0.0836	9	90.0	2	25.0	10.72
Unsatisfactory	7	70.0	6	75.0	0.789	1	10.0	6	75.0	0.001**
Total	**10**	**100.0**	**8**	**100.0**		**10**	**100.0**	**8**	**100.0**	
Edema										
Satisfactory	**6**	**30.0**	**1**	**6.3**	0.0937	**18**	**90.0**	**3**	**18.7**	11.05
Unsatisfactory	**14**	**70.0**	**15**	**93.7**	0.822	**2**	**10.0**	**13**	**81.3**	0.001**
Total	**20**	**100.0**	**16**	**100.0**		**20**	**100.0**	**16**	**100.0**	
Headache										
Satisfactory	**6**	**17.6**	**5**	**13.9**	0.0957	**30**	**88.2**	**5**	**13.9**	10.81
Unsatisfactory	**28**	**82.4**	**31**	**86.1**	0.831	**4**	**11.8**	**31**	**86.1**	0.001**
Total	**34**	**100.0**	**36**	**1.00**		**34**	**100.0**	**36**	**100.0**	

Table (7): Comparison between study and control groups according to their total self-management practices score regarding minor discomforts during pregnancy at pre & and post- intervention:

Item	study group (n=60)		control group (n=60)			χ^2	P Value
	No	%	No	%			
Pre intervention							
Satisfactory	7	11.7	6	10.0		1.65	0.748
Unsatisfactory	53	88.3	54	90.0			
Post intervention							
Satisfactory	50	83.3	9	15.0		19.85	0.001**
Unsatisfactory	10	16.7	51	85.0			

Table (8): Comparison between study group and control group according to the occurrence of selected minor discomforts at post -intervention:

Items	Study group (n= 60)		control group (n= 60)		χ^2	P value
	No	%	No	%		
Vomiting	15	25.0	36	60.0	14.73	0.001**
Heartburn	18	30.0	30	50.0	10.41	0.001**
Constipation	14	23.3	29	48.3	13.86	0.001**
Faintness and dizziness	19	31.7	30	50.0	10.22	0.001**
Dyspnea	13	26.0	21	35.0	10.03	0.001**
Back pain	17	28.3	38	63.3	18.76	0.004**
Frequency of urination	18	30.0	28	46.7	16.46	0.004**
Leucorrhea	16	26.7	31	51.7	17.95	0.003**
Leg cramps	12	20.0	24	40.0	18.02	0.002**
Varicose veins	6	10.0	14	23.3	13.25	0.001**
Edema	6	10.0	20	33.3	17.35	0.004**
Headache	12	20.0	30	50.0	10.46	0.001**

Table (8): Frequency and Percentage distribution of study group' satisfaction regarding the telenursing application about minor discomforts :(n=60)

Items	Satisfied		Moderate Satisfied		unsatisfied	
	N	%	N	%	N	%
1-Tele-nursing services are an easy way to communicate and quickly access health care services.	55	91.7	3	5.0	2	3.3
2.Tele-nursing services provide more comprehensive and accommodating medical care for patients than the traditional methods.	54	90.0	5	8.3	1	1.7
3-Tele-nursing services are available at any time	51	85.0	7	11.7	2	3.3
4. Tele-nursing services are an attractive way of learning.	55	91.7	2	3.3	3	5.0
5. Tele-nursing services save time, effort, and money.	52	86.6	4	6.7	4	6.7
6.Tele-nursing services have a positive effect on the minor troubles of pregnancy	55	91.7	4	6.7	1	1.7
7. Using telenursing services for consultation	53	88.3	6	10.0	1	1.7
8. you are motivated to continue using tele-nursing services	54	90.0	5	8.3	1	1.7
9. Tele-nursing services are important in emergency situations	57	95.0	2	3.3	1	1.7
10. Tele-nursing services are appropriate for you during your pregnan**cy**	56	93.3	3	5.0	1	1.7
11. Tele-nursing services provide accuracy and confidentiality of information.	55	91.7	3	5.0	2	3.3
12. the medical team was handling of communications technology at the required level	52	86.6	4	6.7	4	6.7
13. Tele-nursing services have helped reduce the minor hassles of pregnancy.	57	95.0	3	5.0	0	0
14. you are be interested to share the use of telenursing with your family or friends	56	93.3	3	5.0	1	1.7
Total Satisfaction score	54	90.0	4	6,7	2	3.3

Figure (3): Total Satisfaction score of study group regarding the tele -nursing application about minor discomforts: (n=60)

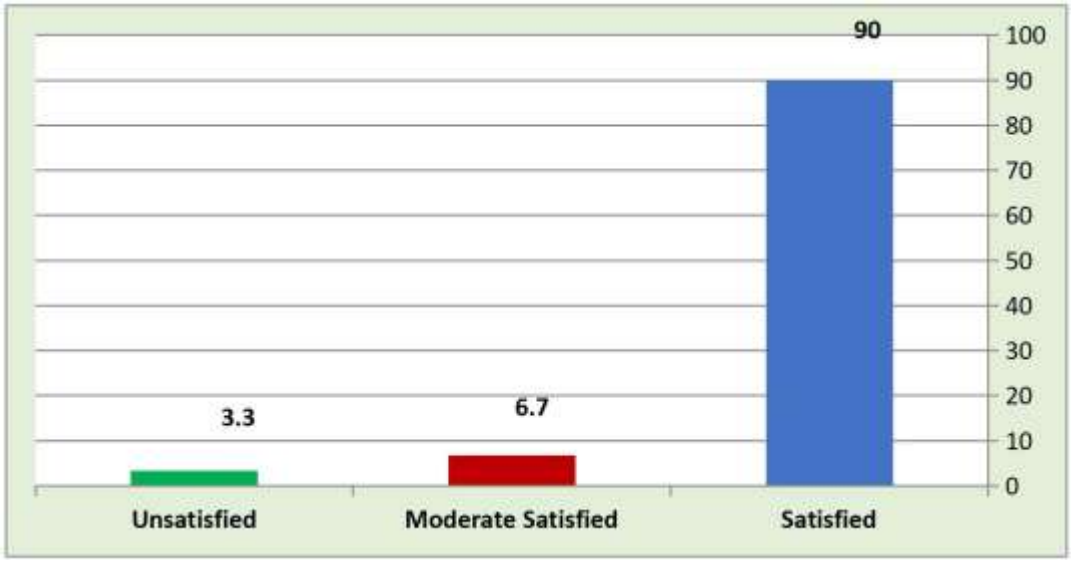

Table (9): Correlation between total knowledge score and total self -management practices score among study and control group at post- intervention:

Total self-reported practice	Total knowledge
Study group	r = 96.2 p=0.001**
Control group	r = 62.4 p=0.01*

Discussion

Minor discomforts during pregnancy would cause many problems and difficulties for the pregnant woman. Successful management of these minor discomforts requires from pregnant women to acquire adequate knowledge on minor complaints and its self-management from professional care provider (**Ibrahim& Hassan.,2020)**.

Telenursing is one of newly low-cost, highly accessible technologies used to deliver nursing care and conduct nursing education regarding many health issues practices and used widely to capture the breadth of services as well as shortage of care provider **(Dehkordi et al., 2020).** In the light of the previous outline, a quasi-experimental research design was used in this study to evaluate the effect of telenursing application on minor discomforts self-management among pregnant women.

Regarding general characteristics of the studied sample, the current study findings revealed that nearly half of pregnant women their age ranged from 20 to 30 years. While most of them are housewife and more than half of them lived in urban area. Concerning their parity, the current study illustrated that nearly half of both groups were multipara. In relation to pregnancy trimester, half & more than one third of study sample were in first and second trimester in both study group and control group.

Regarding pregnant women's knowledge about minor discomforts the current study results clarified that, there was no statistically significant difference between study and control groups regarding their correct knowledge about minor discomforts during pregnancy at pre- intervention. While a highly statistically significant improvement was observed regarding all knowledge elements among study group compared to control group at post intervention. This result may be due to the continues education support system adopted by the researchers through tele-nursing which increased the women knowledge and awareness about minor discomforts.

In agreement with our study finding **Kamel & El Toukhi., 2020** investigated the impact of using telehealth to improve maternal outcomes during Pandemic COVID-19 reported that, telenursing has shown to be a successful endeavor for education and counseling through two-way audio and video technology and revealed that nurses may use telehealth equipment to consult with specialists, or physicians regarding a particular patient.

The current study results also were consistent with **El-Sarkawy et al., 2020 who studied "**the effectiveness of the self-instructional module on knowledge and remedial practices regarding selected minor ailments among primigravida" using telephone support and follow up for more clarification and reinforcement of delivery of information, revealed that most of the study group had good total knowledge score regarding minor discomforts after applying of educational intervention.

On accordance **Mohamed et al., 2020** conducted study in Zagazig university aimed to evaluate the effect of tele nursing guidelines on knowledge among gestational diabetes women during COVID-19 pandemic, revealed that the total score of women's knowledge about gestational diabetes through the study phases (pre & post) was highly statistically significant. This similarity may assured the effectiveness of Tele- nursing that have the advantages of simple and fast communication and efficient access to information.

Providing self-management education for pregnant women regarding minor discomforts is a challenge for health care provider due to shortage

and negative behavior for pregnant woman to seek care specially for such problems, telenursing should be an important means of nursing care in the future for women education and enhancing their problems (**Alageswari & Dash.,** ***2018***). A key significant finding at the current study findings and regarding to pregnant women self-management of minor discomfort at pre and post intervention, was that there was no statistically significant difference between the study and control groups regarding their self- management practices toward minor discomfort during pregnancy at pre-intervention. Meanwhile, a highly statistically significant improvement was observed among study group regarding all aspects of self-management practices as compared to control group at post-intervention. This result may be due that the routine care given to the pregnant women was the same in control and study group before intervention, however, after intervention the pregnant women in study group had additional support, time and information to increase their awareness about self-management of minor discomfort to prevent complications through tele-nursing support.

Similar to these findings, a study conducted by **Christiana et al., 2021**who studied "Enhancing Knowledge of Pregnant Women on Self-Management of Minor Disorders of Pregnancy at a State Specialist Hospital, Southwest, Nigeria" and concluded that the training package and telephone follow up were utilized in this study enhanced the knowledge and self-management of pregnant women about minor disorders of pregnancy thus preventing complications. These results give the evidence that education via telenursing is effective way for enhancing both knowledge and practice associated with health-related issues.

On accordance and On Investigating the effectiveness of telenursing for self-management education on cardiometabolic conditions (**Mariyama et al., 2021**) used 6 months education with 6 month follow up evaluated by single group pre and post- test design, illustrated that telenursing was effective in improving disease self-management related behaviors , as with the using of telenursing, patients can cope with their problems and learn how to change their life style. this supported the evidence that telenursing program could help to promote primary care and health maintenance process and enhance prevention of complications as well as minor problems.

(Dehkordi et al., 2020) conducted a study that supported our study finding which revealed that telehealth and telenursing practice has shown great benefits related to diagnosis and consultations, monitoring and surveillance of patients, clinical and health services outcomes. In the researcher point of view, telenursing facilitates the communication between nurses and clients, it is therefore essential that with the telenursing application nurses maintain a close relationship with clients and act as a source of ongoing support, also telenursing broaden the scope of nursing services that could be available at home.

In congruence with the current study results, (**Gidora., 2019)** stated that telenursing services empower clients to access levels of care in keeping with the severity of their symptoms, as well as enabling clients to engage in self-care when appropriate. this accordance assured that such method of giving instructions by telenursing has positive effect on changing health related behavior of clients.

In the same line the current study finding followed a study done by **Farrag R &, Metwely S., 2016**. who examined the effect of tele-nursing services on healthy lifestyle and self-efficacy among gestational diabetes women, demonstrated that tele-nursing support could significantly enhance the health promotion lifestyle profile and self-efficacy scores, as well as maintain blood glucose levels among mothers with gestational diabetes and also increase the adherence to antenatal visits, these results that go along with our study findings supported the positive effect of telenursing application on acquiring healthy lifestyle and self-management of any health problems among clients.

Contrary , in a study done by (**Razaei et al., 2020)** on comparing the effect of telenursing , face to face training techniques and routine regular care on quality of life in burn patients ,using a clinical trial with pretest and posttest designs on 3 groups revealed that posttest did not show any significant differences between 3 groups as the all 3 methods were useful ,this differences with our study may be due to the different sample characteristics and setting

among both studies as well as the difference in nature of routine care given .

Regarding to the occurrence of selected minor discomforts at pre- intervention phase between study group and control group, the current study showed that there was not statistically significant difference between both groups regarding the occurrence of selected minor discomforts. While after application of telenursing, the occurrence of selected minor discomforts was significantly reduced among study group compared to control group with a highly statistically differences between them ($P < 0.001$).

This result was parallel to the study of **Samarakoon SKSN., 2020** who conducted a cross sectional study among all registered pregnant mothers in selected antenatal clinics (ANC) of MOH area, Batticaloa. A total of 238 pregnant mothers were included in the study and revealed that the prevalence of minor discomforts (Nausea and vomiting, Urinary frequency, Heart burn, Constipation, Backache, Leg cramps, Leg edema and Varicose vein) among pregnant mothers was high at pre intervention and reduced clearly after intervention. This similarity highlighted the positive effect of such interventions in improving many health problems that relay on education.

In congruent, another study done by (**Mostafa et al., 2018)** who examined the effect of utilization of self-care brochure for relieving mother's minor discomforts during pregnancy, clarified that there were no significant differences among the intervention and control groups regarding incidence of minor discomforts during pregnancy pre- intervention. While after utilization of self-care brochure with continuous weekly telenursing follow up to provide more information and support, there was significantly relieved of the majority of the self-reported pregnancy discomforts among study group compared to no improvement among control group as reported by women three weeks post intervention. These results give the great sound of telenursing application as an effective method in reducing the incidence of many health-related problems through meaningful education.as it is easily accessible and used various audiovisual aids.

Concerning satisfaction with tele-nursing application the current study revealed that most of the study group were satisfied with tele-nursing application about minor discomfort during pregnancy. They agreed that tele-nursing services have helped to reduce the minor hassles of pregnancy and tele-nursing services are important in emergency situations, satisfied with tele-nursing services are appropriate for them during their pregnancy and they are be interested to share the use of tele-nursing with their family or friends.

In the same line with our study findings **(Farrag & Metwally, 2016**) who revealed that most women was extremely satisfied with telenursing as a method of receiving care and support, this matching of results between two studies confirmed that telenursing is perfect method of enhancing any health-related problems and thus improved satisfaction level among clients receiving care.

On examining the correlation between total knowledge scores and total practice scores among studied group post intervention, the current study showed a positive correlation coefficient with a statistically significant relationship between them, On accordance with the current study finding, a study done by **Mohamed & Ahmed.,2021,** evaluated the effect of tele-nursing guidelines on health life style and self-efficacy among women with gestational diabetes during covid19 pandemic , revealed statistical significant relation between post self-efficacy scores and post total knowledge scores through the post intervention phase, this similarity assured the significant effect of improving knowledge through education on improving the practice level and self-care , having correct available information positively affects level of practical skills and self-control.

In conclusion, the present study emphasized important evidence concerning the remarkable effect of telenursing in improving the health and health indicators among clients through effectively improving the knowledge and self-management about minor discomfort during pregnancy, this finding supported the research hypothesis that stated the positive effect of telenursing support and education in self-managing of minor discomfort and empower their control on health-related problems.

Conclusion

Discomforts among study group, also telenursing was accepted as a method of receiving education among study group who was satisfied with the methods.

In the light of the study findings, the following recommendations are suggested:

Tele-nursing should be programmed as a part of antenatal care for pregnant women in different health setting as a method for the current study concluded that there was a positive effect of tele-nursing in improving knowledge and self-management of pregnant women regarding minor discomforts for study group than control with a positive correlation between total knowledge and practice scores among control and study group post-intervention in addition to reduced occurrence of minor.

Recommendations

Transferring service especially in special circumstances from time to time, the prenatal self-education unit should be Care restructured and reviewed concerning minor discomfort to meet the health needs of pregnant women.

Further research is required to study: The effect of tele-nursing support on the pregnancy outcome and the factors affecting implementation and utilization of tele-nursing services.

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