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Research Article

Effectiveness of Interactive Digital Health Media Based on ADDIE Model on Women's Postpartum Minor Discomforts

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ABSTRACT

Postpartum period is a time of great importance for mothers and newborn. The morbidity and mortality rates are very high if appropriate and sufficient care was provided. The study aimed to investigate the effectiveness of interactive digital health media based on ADDIE Model on women's postpartum minor discomforts. Methods: A quasi-experimental design (pre and posttest two groups) was used including 200 postpartum primipara women attended at postpartum unit and outpatient clinic affiliated to Obstetrics and Gynecology department at Benha University Hospital was used. Collecting data occurred through three tools as structured interviewing questionnaire, Observational checklist and follow up record. Results: A high significantly difference ($p< 0.001$) between control and study groups regarding women's knowledge and practices post implementation of the interactive digital health media. Conclusion: Application of the interactive digital health media based on ADDIE model had positive effects on women's knowledge & practice regarding postpartum minor discomforts. Dissemination of the digital health media regarding postpartum minor discomforts to all obstetrics department at Benha city to improve women's knowledge and practices is needed.

Keywords: Interactive digital health media, Postpartum minor discomforts, primipara women.

INTRODUCTION

Background

Postpartum period is the time, which begins after expulsion of the fetus and placenta to the involution of female's reproductive system to their pre-pregnancy condition. This period especially for primiparous woman is associated with greatest physiological, psychosocial, familial role and responsibility and affected on the quality of life [(1)] Although deliveries and postpartum time are pleasing and exciting processes, they occupy lowest priority of the entire maternity care cycle in care and health teaching in clinical setting. In addition, the physiological and psychological problems occurring during postpartum period may cause life-threatening harms and result in sense of anxiety. Therefore, women need more time and assistance to be adapted for postpartum life [(2)]. Postpartum minor discomforts defined as the minor discomforts faced by the woman during puerperium. The management of such minor discomforts prevents the risk of severe forms of postpartum disorder. The most common minor discomforts of puerperium which occur in postpartum woman are after pain, physical exhaustion, breast engorgement, episiotomy pain, bowel problems, urine retention, constipation, abdominal tenderness, nipple soreness, edema on legs, piles, and backache [(3)].

A study done by [(4)] found that 91.6%, 90.3% and 83.5% of postpartum women had at least 1 problem 6 weeks and 12 months after delivery respectively, such discomforts have an effect on the lives of mothers and their families. Most of those problems might be resolved by increasing education and awareness levels [(5)].

Postpartum minor discomforts could be managed throughout education, simple remedies and changing style of life. So, pregnant women need to acquire basic information about common problems and how to avoid complications and maintain their health condition. In order to train postpartum women according to global world demands, innovative teaching strategy must be hired for nursing educations as using power point presentations in lectures, conferences, and computer-supported education which involved some supported elements as tables, videos,

pictures, and text [6] Many models of instructional design have been developed through different levels of expertise of instructional designers and became suitable for various instructional purposes. Instructional models include ADDIE model, Dick and Carey's model, Kemp model, and ASSURE model. All of them are based on the concept of the ADDIE model [7]. Instructional design model ADDIE including five steps analysis, design, development, implementation, and evaluation stages [8]

Maternity nurse plays a very important role for improving postnatal care quality and postpartum outcomes through providing postpartum women with educational programs and support during this period. Also, nurses may provide promotion of health & psychosocial service including assessment, health educations, counseling & essential referral. Nursing education which based on scientific principles and emphasizes role of knowledge and practices share among nurse and postpartum woman must be applied to control the risks of postpartum minor discomforts [9].

Significance of the study

Postpartum minor discomforts and problems have an effect on the lives of mothers & their families. Providing effective care post birth can lead to differences between life and death for both mother and newborn as complications may rapidly become life threatening [10]

A study done by [3] reported that WHO shows 96% of women are getting at least one physical health symptoms postnatal. The morbidity rate in mothers in puerperium is very high. Among this 71.4% are affecting with breast problems, 61.7% with constipation, 86.6% with fatigue, 80.4% with insomnia, and 42% with perineal pain in the first 2 weeks after vaginal delivery

The number of maternal mortality and morbidity during childbirth and postpartum period is still alarmingly high. Around the world above 500,000 women die related to pregnancy and childbirth complications every year and more than of 99% of deaths occurred in developing countries. In Egypt, maternal mortality rate was 33 /100,000 live child in 2015 [11].

Health education during the postpartum period is limited and focus on breastfeeding or care of baby and does not consider the needs of puerperal women hence, puerperal women should have access to qualified care from the health team which can be provided through clinical, emotional and social support [12]

In Egypt limited studies about health teaching of women regarding postpartum minor discomforts were published. Accordingly, this study was conducted at Benha University hospital for evaluating effect of interactive digital health media based on ADDIE Model on women's postpartum minor discomforts.

Purpose

The study aimed to investigate effectiveness of interactive digital health media based on ADDIE Model on women's postpartum minor discomforts. This aim was achieved through-

- Assessing women's knowledge and practices regarding postpartum minor discomforts.
- Designing, implementing, and evaluating the effect of an interactive digital health media based on ADDIE Model on women's postpartum minor discomforts.

Research hypotheses:

- Postpartum women who receive the interactive digital health media based on ADDIE model would have better knowledge and practice about postpartum minor discomforts than women who would not.
- Postpartum women who receive the interactive digital health media based on ADDIE model would have improved postpartum minor discomforts than women who would not.

METHODS

Study Design

A quasi-experimental design pre & posttest two groups).

Participants

The study sample involved 200 postpartum primipara women attended at postpartum unit and outpatient clinic affiliated to Obstetrics and Gynecology department at Benha University Hospital and that met the following inclusion criteria: Postpartum primipara women, Full term pregnancy, vaginal deliveries with or without episiotomy, Free from any medical and obstetrical complications, At least can read and write. The total number of postpartum women at Benha University Hospital in 2019 was 4055 at postpartum word ***(Benha University Hospital Census Report, 2019)***. Sample size calculated according to Yamane, (1967).

$$n = \frac{N}{1 + N(e)^2}$$

n = the sample size, N = population size, e= level of significance or (limit of tolerable error). Error = 0.05 & 1 = unit (a constant), Sample was recruited according to the inclusion criteria and distributed into two groups (study and control).

- Group (A) study group comprising 100 postpartum primipara women who received the interactive digital health media

- Group (B) control group comprising 100 postpartum primipara women who did not receive the interactive digital health media

Measures

(I)**: A structured interviewing questionnaire consisted of three parts:**

1: Socio-demographic characteristics of women and consisted of seven questions as (ages, residences, educational levels **...**etc.).

2: Obstetrics profile consisted of 6 questions as (number of antenatal cares follow up, type of delivery**...**etc.).

3: Women's' knowledge about postpartum minor discomforts included 37 questions as (Concept of postpartum minor discomforts, Warning signs during postpartum period **...**etc.).

Knowledge's scoring system:

Every item assigned score (3) for completely correct answer, (2) for incompletely correct answer and (1) for incorrect answer or unknown. Knowledge's total score were classified as:

- Good ≥ 80%
- Average 60 - < 80%
- Poor < 60 %

(II) **: Observational checklist:**

Also was designed by own researchers post reviewing [13] to assess women's practices concerning postpartum minor discomforts and included seven procedures (Bathing, Lochia observation, Perineal Care, Breast care, Episiotomy care, Fundal assessment, and postnatal exercise).

Observational checklist's scoring system:

Every item of procedure was assigned score (3) if correctly done, (2) for incorrectly done and (1) if not done. Total practice's score were classified as:-

Satisfactory ≥ 70%
Unsatisfactory < 70%

(III) **Follow up record of woman's postpartum minor discomforts:**

which designed by own researchers through comprehensive review of current literatures [14] and included eleven items as (after pain, physical exhaustion, breast engorgement, episiotomy pain, bowel problems, urine retention, abdominal tenderness, nipple soreness, edema on legs, piles, and backache).

Scoring system of follow up record:-

It was in the format of Likert scale included 3 scores, (3) for improved symptoms, (2) for not improved symptoms and (1) for can't judge. Follow up was done for each woman every week covering a period of three weeks after delivery by telephone call or attendance at outpatient clinic.

Validity and reliability of tools

Tools of data collection were reviewed through three-panel expertise of obstetrics and gynecology and community health nursing to test contents validities. Reliability done by Cronbach's alpha, (internal consistency for knowledge was 0.75 were, practice was 0.84 and follow up was 0.87).

Field work

The study conducted at beginning of December 2019 to end of May 2020, ADDIE model was used as a conceptual framework for designing and performing the interactive digital health media and included five phases:

Phase I (Analysis)

all postpartum women who meet the inclusion criteria were select and distributed to 2 groups (study and control). Tool I distributed to women to obtain women's demographic characteristics and assess women's knowledge about postpartum minor discomforts. Then the researchers used the observational checklists (tool II pretest) to assess women's practices concerning postpartum minor discomforts. and the researchers instruct the women that follow up will be done throughout outpatient clinic and telephone calls.

Phase II (Designing)

based on the results of the analysis phase, the researchers identified women's needs and designed the interactive digital health media which covered the following objectives: concept of postpartum minor discomforts, warning signs during postpartum period, causes of postpartum minor discomforts and management of postpartum minor discomforts. In addition, certain procedures regarding postpartum care were designed to improve women's practices regarding postpartum minor discomforts as Bathing, Lochia observation, Perineal Care, Breast care, Episiotomy care, Fundal assessment, and Postnatal exercise.

Phase III (development)

The researchers developed the interactive digital health media in an Arabic language using Microsoft office power point presentation 2010 that included text, images, narration, layout, and animation to the study group.

Phase IV (Implementation)

Implementation of the interactive digital health media was carried out at the pre mentioned setting. The researchers gave the women in the study group power point presentation projected on a laptop accompanied with verbal instructions then researchers distributed digital CDs to women for re demonstration and reeducation after hospital discharge at home. This phase took approximately 60 minutes divided into three sessions (one theoretical and two practical sessions). The theoretical session lasted about 15-20 minutes and included knowledge about

postpartum minor discomforts while the practical sessions lasted about 30-40 minutes and involved certain practical procedures regarding management of postpartum minor discomforts. The women were encouraged to continue self-education using these measures after postpartum hospital discharge. Throughout 3 weeks post last session, study group receive no other contacts or additional information other than digital CDs. For control group, instructions were provided regarding postpartum minor discomforts management only.

Phase V (Evaluation)

women's knowledge about postpartum minor discomforts was reassessed again immediately after the implementation of the interactive digital health media by using (tool I posttest) and women's practices was evaluated again at the end of the 3rd week postpartum through telephone calls (tool II posttest).Follow up was evaluated each week for 3 consecutive weeks from discharge through post-partum minor discomforts follow up record by telephone calls or attendance at outpatient clinic.

Ethical considerations

Official permission from Research committee and selected study setting obtained before starting study. The study aim was reported to every woman before implementation of study. Oral consent was obtained. In addition, the study would not cause any physical, social, or psychological risk. The researchers maintain confidentiality, self-esteem, and dignity of all studied women. All women have freedom to withdraw from participation at any time.

Pilot study carried out on 10 % of sample (20 women) to estimate time required to fill in questionnaire. No modification was done so women involved in pilot study included in our investigation.

Statistical analysis

Data was analyzed using SPSS version 20. Tests of significance (Chi - square test) applied for testing our hypothesis. Pearson correlation coefficient was used for investigating the relationship among knowledge and practice scores.

RESULTS

1. **Demographic characteristics of the studied women**

The results illustrated that not significantly difference among study and control groups concerning all demographic items (Table 1). Also, no significantly differences among control and study groups related to obstetric history. Also, 42% of control and 47% of study groups had first ANC >7 months. Moreover, 50% of control and 51% study groups have 2-4 ANC visit. Moreover, 70% of control and 64% of study groups have normal delivery with episiotomy (Table 2). The family is the source of information about post-partum minor discomforts in more than half (52.0%) of control and study groups (50.0%) (Figure 1).

2. **Knowledge of the studied women regarding postpartum minor discomforts**

There was highly significantly difference was observed among control and study groups post program implementation ($p<0.001$) (Table 3). The minority of control group (7%) and study group (8%) have good knowledge pre implementations of program while post implementation of program the majority of study group (88%) has good knowledge comparing to 8% of control group (Figure 2).

3. **Practices of the studied women regarding postpartum minor discomforts**

There was highly statistically significance difference among control and study groups post program implementation (Table 4). The minority of control group (17%) and study group (18%) had satisfactory practices before implementation of the program while post implementation of the program the majority of the study group (85%) had satisfactory practices compared with (19.0%) of control group (Figure 3).

4. **Effect of interactive digital health media on women's postpartum minor discomforts over three weeks of follow up**

There were significant improvements of women's postpartum minor discomforts over three weeks of follow up as (32%) of the study group mentioned improved symptom in 1st week, (77%) of them mentioned improved symptom in 2nd week and (84%) of them mentioned improved symptom in 3rd week. There was a highly statistically significant difference between control and study groups through the three weeks of follow-up after delivery ($p<0.001$) (table5)

5. **Correlation between studied women's (study and control groups) total knowledge and total practices score about postpartum minor discomforts pre and post program implementation**

There was a positive statistically correlation between total knowledge and total practice scores pre and post program implementation ($p<0.001$) (Table 6).

Table (1) Distribution of the studied women (study and control groups) regarding demographic characteristics (n= 200).

Items	Control		Study		X2	p-value
	No.	%	No.	%		
Age						
<20	21	21.0	14	14.0	5.15	0.161
20-<25	56	56.0	66	66.0		
25-<30	15	15.0	8	8.0		
30->35	8	8.0	12	12.0		
Mean ±SD	23.65±4.83		22.73±3.70			
Residence						
Rural	29	29.0	18	18.0	3.36	0.067
Urban	71	71.0	82	82.0		
Education						
read and write	22	22.0	10	10.0	5.36	0.069
Secondary school	56	56.0	65	65.0		
high education	22	22.0	25	25.0		
Age of marriage						
<20	31	31.0	32	32.0	6.44	0.092
20-<25	61	61.0	54	54.0		
25-<30	8	8.0	8	8.0		
>30	0	0.0	6	6.0		
Mean ±SD	20.96±2.36		21.57±3.68			
Occupation						
House wife	70	70.0	81	81.0	3.27	0.071
Work	30	30.0	19	19.0		
Family income						
Low	52	52.0	51	51.0	0.649	0.723
Middle	36	36.0	40	40.0		
High	12	12.0	9	9.0		
Family type						
Nuclear	46	46.0	36	36.0	2.06	0.151
Extended	54	54.0	64	64.0		

Table (2): Distribution of studied women (study and control groups) regarding obstetric history (n= 200)

Item	Control		Study		X2	p-value
	No.	%	No.	%		
Health problem						
Colic	29	29.0	31	31.0	2.74	0.601
Backache	27	27.0	19	19.0		
Dizziness	17	17.0	16	16.0		
hyperemesis gravidarum	16	16.0	23	23.0		
burning urination	11	11.0	11	11.0		
First ANC						
1-4month	26	26.0	31	31.0	2.57	0.276
5-7month	32	32.0	22	22.0		
>7month	42	42.0	47	47.0		
No. of ANC						
Once	26	26.0	35	35.0	3.96	0.137
2-4	50	50.0	51	51.0		
>4	24	24.0	14	14.0		

Type of delivery						
normal without episiotomy	30	30.0	36	36.0	0.81	0.367
normal with episiotomy	70	70.0	64	64.0		

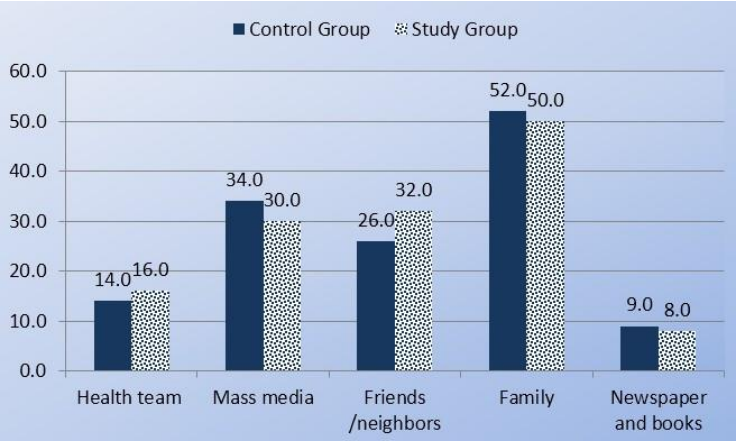

Fig.1:percentage distribution of studied women (control and study groups) regarding their source of information

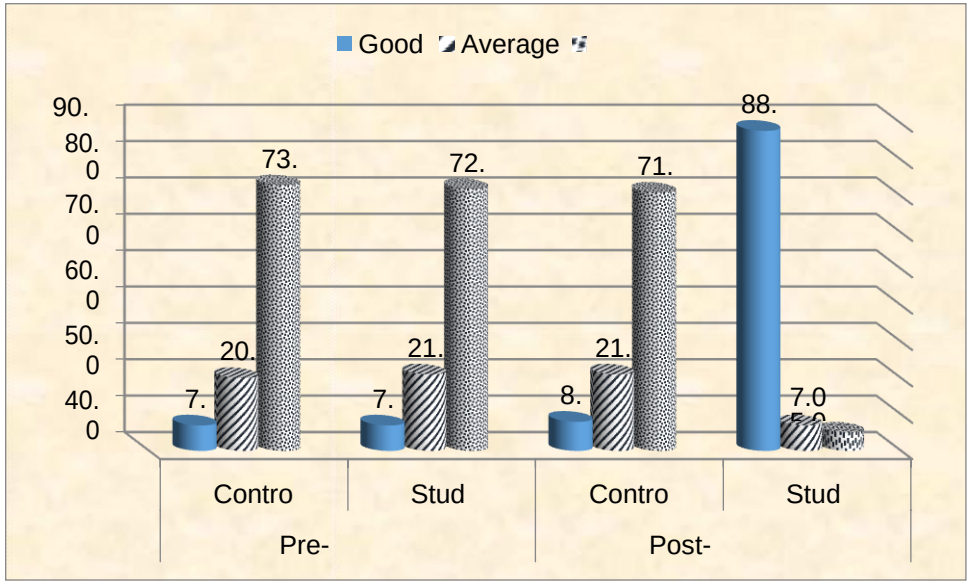

Fig.2:Percentage distribution of the studied women regarding total knowledge level about postpartum minor discomforts before and after program implementation.

Table (3): Distribution of the studied women (control and study groups) regarding their knowledge about postpartum minor discomforts pre and post program (n=200).

Items	Pre program						X2	p-value	Post program						X2	p-value
	Control group			Study group					Control group			Study group				
	A	B	C	A	B	C			A	B	C	A	B	C		
Concept	80.0	15.0	5.0	81.0	15.0	4.0	0.11	.943	74.0	18.0	8.0	7.0	9.0	84.0	121.2	0.000**
Warning signs	75.0	17.0	8.0	76.0	16.0	8.0	0.03	.982	69.0	19.0	12.0	8.0	7.0	85.0	108.8	0.000**
Beginning period	67.0	24.0	9.0	69.0	20.0	11.0	0.59	.743	62.0	26.0	12.0	2.0	3.0	95.0	138.8	0.000**
After pain	84.0	10.0	6.0	86.0	9.0	5.0	0.16	.920	88.0	4.0	8.0	3.0	4.0	93.0	150.9	0.000**
Physical exhaustion	77.0	15.0	8.0	52.0	34.0	14.0	13.8	.001*	72.0	22.0	6.0	0.0	5.0	95.0	161.1	0.000**

Breast engorgement	66.0	21.0	13.0	51.0	42.0	7.0	10.7	.005*	62.0	23.0	15.0	0.0	4.0	96.0	134.4	0.000**
Episiotomy pain	86.0	9.0	5.0	82.0	12.0	6.0	0.61	.735	86.0	9.0	5.0	7.0	5.0	88.0	142.3	0.000**
Bowel problem	54.0	41.0	5.0	77.0	19.0	4.0	12.21	.002*	58.0	38.0	4.0	7.0	7.0	86.0	136.0	0.000**
Urine retention	46.0	44.0	10.0	63.0	30.0	7.0	5.82	.054	43.0	47.0	10.0	4.0	7.0	89.0	125.0	0.000**
Abdominal tenderness	26.0	67.0	7.0	74.0	18.0	8.0	51.35	.000*	29.0	64.0	7.0	4.0	6.0	90.0	138.0	0.000**
Nipple soreness	71.0	24.0	5.0	56.0	32.0	12.0	5.79	.055	68.0	27.0	5.0	5.0	5.0	90.0	145.5	0.000**
Leg edema	60.0	29.0	11.0	73.0	16.0	11.0	5.026	.081	57.0	32.0	11.0	5.0	8.0	87.0	116.9	0.000**
Piles	75.0	20.0	5.0	79.0	17.0	4.0	0.458	.795	71.0	21.0	8.0	9.0	13.0	78.0	106.9	0.000**
Backache	70.0	20.0	10.0	61.0	20.0	19.0	3.41	.182	68.0	22.0	10.0	8.0	9.0	83.0	110.1	0.000**

A: Incorrect answer/ Don't know B: complete correct answer C: Incomplete correct answer

Table (4): Distribution of the studied women (control and study groups) regarding their practices about postpartum minor discomforts pre and post program (n=200).

Item	Pre program						X2	p-value	Post program						X2	p-value
	Control group			Study group					Control group			Study group				
	A	B	C	A	B	C			A	B	C	A	B	C		
Bathing	60.0	35.0	5.0	75.0	16.0	9.0	9.88	.007*	59.0	35.0	6.0	5.0	6.0	89.0	138.5	0.000**
Lochia observation	70.0	22.0	8.0	86.0	11.0	3.0	7.58	.023*	68.0	23.0	9.0	10.0	7.0	83.0	111.1	0.000**
Perianal care	85.0	11.0	4.0	88.0	10.0	2.0	0.766	.682	85.0	11.0	4.0	5.0	10.0	85.0	144.8	0.000**
Breast care	80.0	15.0	5.0	71.0	23.0	6.0	2.31	.315	80.0	15.0	5.0	3.0	4.0	93.0	156.8	0.000**
Episiotomy care	90.0	7.0	3.0	80.0	16.0	4.0	4.253	.119	90.0	7.0	3.0	12.0	10.0	78.0	129.6	0.000**
Fundal assessment	95.0	5.0	0.0	91.0	8.0	1.0	1.778	.411	93.0	6.0	1.0	10.0	10.0	80.0	144.9	0.000**
Postnatal exercise	91.0	5.0	4.0	89.0	9.0	2.0	1.832	.400	89.0	7.0	4.0	9.0	8.0	83.0	137.1	0.000**

A- Not done

B- Done incorrectly X2= Chi - square test

C- **Donecorrect**

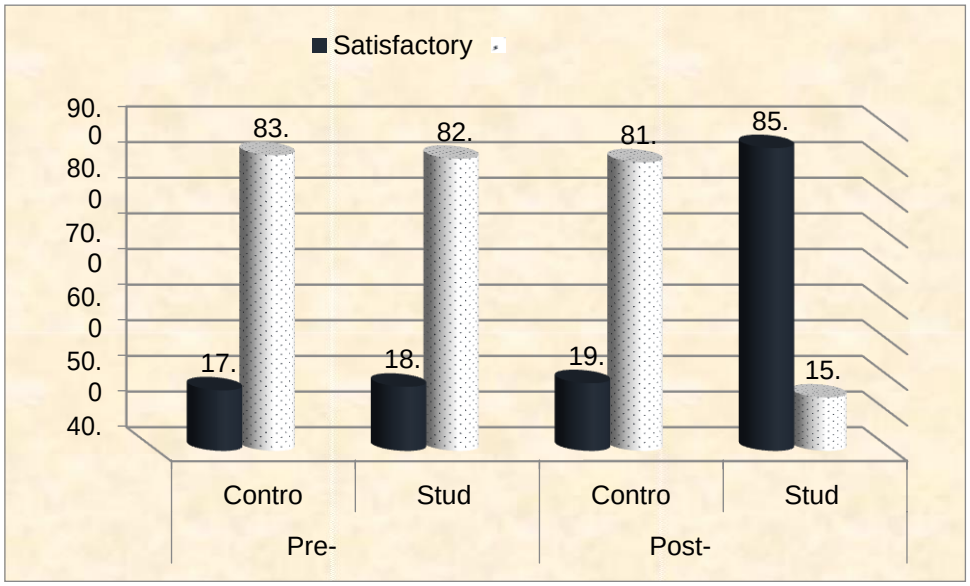

Fig.3:Percentage distribution of the studied women (control and study groups) concerning total practices about postpartum minor discomforts pre and post program implementation.

Table (5): Effect of interactive digital health media on women's postpartum minor discomforts over three weeks of follow up n= (200)

Item	1st week				2nd week				3rd week			
	Control		Study		Control		Study		Control		Study	
	No	%	No	%	No	%	No	%	No	%	No	%
Improved	4	4.0	32	32.0	5	5.0	77	77.0	10	10.0	84	84.0
Cannot judge	49	49.0	19	19.0	48	48.0	15	15.0	60	60.0	11	11.0
Unimproved	47	47.0	49	49.0	47	47.0	8	8.0	30	30.0	5	5.0
X2	35.05				108.16				119.00			
p-value	0.000**				0.000**				0.000**			

X2= Chi - square test

Table (6) Correlation between studied women's (study and control groups) total knowledge and total practices score about postpartum minor discomforts pre and post program implementation (n=200).

Variable	Total Knowledge score							
	Pre program				Post program			
	Control		Study		Control		Study	
	r	p-value	R	p-value	R	p-value	R	p-value
Total practices score	0.979	0.000**	0.964	0.000**	0.974	0.000**	0.988	0.000**

DISCUSSION

Postpartum period considered a highly critical period and the most neglected period for providing quality services for women during which most maternal and neonatal mortality occur. The results of some studies showed that providing quality services during the postpartum period is unrecognized and rated as a low priority compared to other maternity care services [15]

Hence, women in postpartum time need to have access for qualified assistance from health team throughout clinical, emotional, and social supporting. So, accurate knowledge should be discussed with postpartum woman to be motivated for self-care and care of her child [13]

The present study was aimed to study the effectiveness of interactive digital health media based on ADDIE Model on women's postpartum

minor discomforts. Our aim was significantly supported through assessing knowledge and practices of women regarding postpartum minor [9] discomforts, designing, implementing, and evaluating the impact of an interactive digital health media based on ADDIE Model on women's postpartum minor discomforts.

Generally, both groups were homogenous regarding all aspects of socio demographic characteristics and obstetric history as no statistically significant difference was found.

According to demographic characteristic of studied women, our results showed that more than half of control group and nearly two thirds of study group were in the age group of 20<25 with mean age 23.65±4.83 for the control group and 22.73±3.70 for study group. In addition, less than two thirds of control and more than 50% of study groups have age of marriage 20<25 years. Moreover, more than two thirds of the control group and the majority of the study group were housewives. Such findings are nearly similar to who studied "Effect of health teaching on postpartum minor discomfort" on 150 women at Maternity University Hospital, Egypt found that above 50% of women ages were 20–24 years and women were married in age ranged (20 < 25) and housewives. Regarding educational level, the results illustrated that more than 50% of control group and more than two thirds of study group have secondary education. In addition, more than two thirds of the control group and the majority of study group lived in urban areas. These results come in the same line with [16] who reported that more than 50% of studied women have secondary education and more than three quarters lived in urban areas.

Concerning women's source of knowledge about postpartum minor discomforts, our results showed that family was main source of knowledge in more than 50% of the control and study groups and this agrees with [10] who found that 37% of knowledge about management of postpartum minor discomforts obtained from family members. On the other hand, our results showed that only less than 25% of studied women have >4 antenatal care visits. This result agrees with [17] found that only 17.3% of women make 4 or more antenatal care visits throughout pregnancy. Regarding total women's knowledge about postpartum minor discomforts, the findings of the present study showed that more than two thirds of the control and study groups had poor knowledge before implementation of the interactive digital health media. In our view this result may be due to that all women in both groups were primigravida which had stingy knowledge about postpartum minor discomforts. This result is supported with [18] mentioned that 70% of postnatal women have poor knowledge. Also, [19] showed that majority of women had poor knowledge concerning after-pains, episiotomy pain and breast engorgement. On contrast, [20] who conducted "Study on knowledge about postnatal care among mothers in selected urban communities" found that majority of studied women have knowledge about postnatal care and used postnatal care services also; more than half of them used postnatal care services for routine follow up. Also [3] who studied "Incidence of minor ailments of puerperium and related knowledge among postnatal mothers" on 100 postnatal mothers at Kochi reported majority of postpartum women have average knowledge regarding minor ailments of puerperium.

The results of the study illustrated high statistically significance difference among control and study groups regarding all items of knowledge after implementation of the interactive digital health media ($P \leq 0.001$). This could be interpreted that all women involved in the study were primigravida and at the ninth month of gestation, which made them too excited to learn how to deal with such minor discomforts. Such result is in agreement with [21] found that prenatal counseling had positive effects on enhancing knowledge levels and improving practices of primigravida women regarding postpartum care ($p < 0.05$).

In addition, [22] reported significantly improve of primigravida women's knowledge post self-instructional module administration on postnatal care. Regarding women's practices about postpartum minor discomforts, findings of the study illustrated that there were a highly statistically significance differences among control and study groups regarding all items of women's practices after implementation of the interactive digital health media ($P \leq 0.001$). This result may be due to the positive effect of the interactive digital health media on women's knowledge which in turn improves women's practices. This result come in the same line with [23] noted that videos assisted teaching program applied on primipara mothers had significant effect on improving postnatal mothers' practices concerning postpartum minor discomforts. Concerning effects of interactive digital health media on postpartum minor discomforts among primipara, our results revealed that there was significance improvement of women's complaint of post pain, physical exhaustion, breast engorgement, episiotomy pain, bowel problems, urine retention, abdominal tenderness, nipple soreness, leg edema, piles, and backache. This

result may be due to the positive effect of the interactive digital health media also, there is a little attention directed toward providing mothers with knowledge and practices related to postpartum discomforts in postpartum units, so women are eager to learn and gain knowledge and practice in this area.

This result came in agreement with [9] mentioned that more than 75% of studied women reported improved episiotomy pain, breast engorgement, urinary retention, post pain; and constipation after application of teaching sessions over 3 consecutive weeks of observation. Also, [10] illustrated that there was statistically significant improvement in primipara's women knowledge concerning after-pains, urinary retention, breast engorgement, episiotomy pain; fatigue, constipation, and cracked nipple after conducting the video assisted teaching program ($p < 0.001$). As regards correlation between total scores of knowledge and practices of women, our finding showed positive statistical correlation between total knowledge and practices scores pre and post implementation of the interactive digital health media ($P \leq 0.001$). This result may be due to that the good level of knowledge has positive effect on the level of practice.

CONCLUSION

The findings indicate that the application of interactive digital health media based on ADDIE model has positive effect on women's knowledge and practices concerning postpartum minor discomforts and a high significantly difference between control and study groups in relation to women's knowledge and practices was found after implementation of the interactive digital health media. In addition, positive significant correlation between total knowledge and practice scores pre and post implementation of the interactive digital health media postpartum was found.

Recommendations

Based on the results of this study, the following recommendations are presented. First, developing protocols on managing postpartum minor discomforts. Second, dissemination of the digital health media regarding postpartum minor discomforts to improve women's knowledge and practices obstetrics department at Benha city. Finally, further study needs to be performed as Developing awareness programs for women in the postpartum unit to enhance their knowledge and practices regarding postpartum minor discomforts and evaluate effectiveness of an instructional program or pamphlets on improving women's knowledge and practices regarding postpartum minor discomforts.

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