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Counseling Program about Tandem Breastfeeding for Pregnant Lactating Mothers

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Abstract: *Tandem breastfeeding is defined as two or more children of different ages who breastfeed at the same time.*
Aim: *To evaluates the effect of counseling program about tandem breastfeeding for pregnant lactating mothers.*
Research Design: *A quasi-experimental design was used.*
Setting: *This study was conducted in the Breastfeeding Clinic in the obstetrics and gynecology hospital -Ain Shams University Hospitals Cairo Governorate, Egypt.*
Sample: *A purposive sample comprised of 100 mothers divided into two groups; their age ranged from 20-30 years, pregnant post 1st trimester, having an infant child, and free from any chronic disease.*
Tools*: An interviewing questionnaire was used for data collection including: The socio-demographic characteristics of mothers' and knowledge and practices about tandem breastfeeding.*
Results: *The study revealed that, the mothers aged 26-28 years, and 56% of mothers their main source of information about tandem breast feeding was their own mothers or grandmother for control group, and 62% for study group. There were 80% of mothers had unsatisfactory knowledge regarding tandem breastfeeding at pre counseling program for control group while improved to satisfactory knowledge for 100% for study group post program with significant statistical differences, as well as 94% of mothers had inadequate practices at pre counseling program for control group but this improved to adequate level for 98% of mothers among study group through 3rd visits post program, with significant statistical differences. Also 95% of mothers initiated tandem breastfeeding among study group at first 6 hours post natal while no one of mothers of control group did.*
Conclusion: *The study proved that, the counseling program helps in improving the knowledge for study group of pregnant lactating mothers about the facts contributing to tandem breast feeding. Also the study revealed the significant statistical differences between study group and control group of mothers' total practices regarding tandem breastfeeding.*
Recommendations: *Publication and dissemination of tandem breastfeeding program in all maternity and child health care centers for pregnant lactating mothers to raise awareness about its importance and technique*
Keywords: *Mothers' Counseling, Tandem Breastfeeding, Lactating Mothers*

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I. Introduction

Tandem breastfeeding or tandem nursing is defined as two or more children of different ages who breastfeed at the same time. It might refer to having one child on each breast simultaneously or children who take turns breastfeeding throughout the day. It can refer to breastfeeding twins at the same time, but for the purposes of this research it refers to breastfeeding an older child and a new baby. Breast milk continues to be very valuable for an older child. It has immune benefits, benefits for bonding and emotional attachment, and provides an excellent nutritional base as well as documented dental benefits. As long as mother and the child are enjoying breastfeeding, the child is benefitting from breastfeeding. **[1]**

There is a common concern about abortion or premature labor due to continued breastfeeding during pregnancy. However, despite uterine contractions during breastfeeding, they are a normal part of pregnancy and similar contractions may occur during sexual intercourse, which is good for most women during pregnancy; so it is safe to breastfeed while pregnant. If the mother has any complications during pregnancy, these concerns should be discussed with the caregiver. **[2]**

During pregnancy, the mature milk is making a gradual change to colostrums, which is present at birth. Many mothers who are breastfed throughout pregnancy were noticed that, there is decreasing in supply by mid-pregnancy or sooner; it will be improved again by end of pregnancy and be back to normal after delivery. The mother will continue to produce colostrums through the end of pregnancy and it can't be "used up" by the older

nursling. [3]

In the first two months of the pregnancy, the sweet mature milk is likely to increase in concentrations of sodium, chloride and protein while concentrations of glucose, lactose and potassium decrease. So some children do not like this changes in flavor and may be started weaning. The mothers have to be aware that, the children may decide to "unwean" again later. [4]

The tandem breastfeeding technique post natal can be implemented as follow. The mother makes sure that, the new born gets plenty of colostrums because it is very important for him. So the mother who is concerned can help by making sure that, the infant has ample access to the breast so that, the baby's full appetite is satiated at the breast then letting the toddler empty the breasts when the baby is finished. This ensures the infant gets adequate colostrums, as there is a smaller amount of this precious milk. [5]& [6]

Breast milk yield increases rapidly in mothers who have breastfed before. The toddler is an expert nurser and can help build supply and reduce risk of plugged ducts. After the first few days post natal, the breasts produce milk to replace what is used so as more feeding and milk removal occurs, more milk is produced and a mother should make all that she needs for both children. [7]

Breastfeeding has a lot of benefits for the mother including: Decreases the risk of breast cancer, ovarian cancer, and endometrial cancer, lactation for at least 2 years reduces risk of coronary heart disease by 23%, decrease insulin requirement in diabetic mothers, lower risk of metabolic syndrome, lower risk of post-partum bleeding, and also long duration of breast feeding decrease risk of rheumatoid arthritis. [8]& [9] As well as breastfeeding has a lot of benefits for the infant and young child with regard to general health, growth and development. It decreases lower respiratory infections, ear infection and necrotizing enterocolitis, the incidence of sudden infant death syndrome, type I and type II diabetes mellitus, allergic disease; and possibly enhance cognitive development. Breast milk contains secretory IgA antibodies, which decrease the incidence of gastroenteritis. [10]

There are definite benefits of tandem breastfeeding, both emotional and physical: Tandem breastfeeding can help relieve engorgement in a mother with a newborn. The older child can help manage a mother's fast letdown (once mature milk comes in) before the newborn be breast fed, helping the infant not feel overwhelmed or gassy/colicky from the rush of milk to the immature digestive system. Emotionally, it may help reduce feelings of jealously from the older child. Tandem nursing can also bond the two children together, since it's an activity they can do together (if mother breast feed simultaneously). And even if they don't do it at same time, it's something they share mother's milk. It may support robust milk production in mothers. Tandem breastfeeding can also help mothers who feel they aren't bonding as much with the older child due to newborn demands. Continuing to breast-feed the older child is good for a consistent bond before and after the birth of a newborn. In addition to, the older child continues to receive the health benefits from breast milk. [11]

The main disadvantages of tandem breast feeding are as follow: Some mothers may be suffer from overweight and struggle to lose extra weight while tandem nursing. Some mothers may experience intense feelings of sexual arousal while tandem breastfeeding, caused by higher levels of certain hormones. Some mothers feel nauseous during breastfeeding sessions, while they are pregnant. [12]

Through the effective use of basic counseling techniques, the nurse as breastfeeding counselor can provide mothers with the support and health education that will help them develop confidence in their mothering and breastfeeding. Approaching each mother with a warm, caring attitude will show deep, genuine concern and empathy that helps mother feel understood and empowers her to take positive action and appropriate decision in dealing with her concern. The guiding skills help keep the conversation going, while the breastfeeding counselor nurse gathers information and provide emotional support. The counselor nurse through using the leading skills takes a more active role in directing the conversation and helps the mother work toward developing a plan of care regarding tandem breastfeeding. The final stage of a contact is arranging appropriate follow-up and analyzing the effectiveness of the counseling program to continue assistance and support the breast-fed mothers and their children undergoing breast feeding. [13]& [14]

To maintain the lactating mother's health during tandem breastfeeding, should instruct the mother to eat extra healthy nutrients and do not try dieting while breastfeeding to lose weight; the body will naturally get rid of the fat stores when the second child decides to wean himself. Also, must drink lots of fluid, don't assign a breast to one child alone, and let them breastfeed equally as much from both breasts; this will prevent lop-sidedness. The baby's intake should be monitored by checking weight gain, urine and stool output and audible swallowing sounds. [15]& [16]

The tandem breastfeeding counseling program should start for pregnant lactating mothers in the first trimester and create a receptive environment. After a supportive environment has been established and the mother has given her consent, the breastfeeding counseler nurse collects the information by taking the mother and toddler child history, completing the physical assessment of both, monitoring the nutrition, sharing information about tandem breastfeeding technique, providing appropriate nutrition and management of health problems during breastfeeding for infants and newborns, working with the mother to develop a care plan. Part of

this plan will include a follow-up to assess the progress of the mother and child towards achieving breastfeeding goals. [17]

1. 1. Significance of the Study:

Pregnancy during lactation is the most common reproductive health problem in Egypt and is often unplanned. Overlap between pregnancy and lactation could be associated with an increased risk for the pregnant mother, her fetus as well as her nursing child. [18]

Tandem breastfeeding is apparent when a mother become pregnant during lactation period and then has to nurse her toddler and baby at the same time. Breastfeeding offers children unparalleled health and brain-building benefits. It has the power to save the lives of women and children throughout the world, and the power to help national economies grow through lower health care costs and smarter workforces. Yet many societies are failing to adequately support women to breastfeed, and as a result, the majority of the world's children—along with a majority of the world's countries—are not able to reap the full benefits of breastfeeding. [19]

1. 2. Aim of the study:

The aim of this study was to evaluate the effect of counseling program about tandem breastfeeding for pregnant lactating mothers through

1- Assessing the mothers' knowledge and practices regarding tandem breastfeeding.

2- Designing and implementing counseling program about tandem breastfeeding for pregnant lactating mothers.

3-Evaluating the effect of counseling program on improving pregnant lactating mothers' knowledge and practices related to tandem breastfeeding.

1.3. Research hypothesis:

The counseling program will improve pregnant lactating mothers' knowledge and practices related to tandem breastfeeding and also restore health status of children with feeding problems related to neonatal condition.

II. Subjects and Methods

2.1. Research design: A quasi-experimental design was used with pre, post, and follow-up tests in order to achieve the aim of the study.

2.2. Setting: This study was conducted in the Breastfeeding Clinic in the obstetrics and gynecology hospital affiliated to Ain Shams University Hospitals Cairo Governorate, Egypt. This clinic is considered the biggest clinic for counseling for breast feeding in Egypt.

Subjects: A purposive sample was selected; the total number of pregnant lactating mothers attending to the Breastfeeding Clinic at the previous selected setting in the year 2018 was (1009). The total number of the sample included in the study represented 10%, i.e. equal 100 mothers attending clinic, selected and divided into two groups (control and experimental group). The study was started by the control group then study group to prevent contamination. The pregnant lactating mothers were selected by the sequence of their registration book. The first one fulfill the criteria will be the first one in the sample till the sample reaches the pre-determined number.

2.3. According to inclusive criteria: mothers' age between 20-30 years, pregnant post 1st trimester, having an infant child, and free from any chronic disease. The interview and counseling sessions were arranged after the first visit to the Breastfeeding Clinic.

2.4. Study Tools: The only tool was used in this study for data collection: At pre counseling and follow-up visits' assessment**.** An interviewing questionnaire developed by the researchers from review of literature using magazines and textbooks; it was used pre counseling and follow-up visits post implementation of the counseling program, which included the following parts:

Part I- a. It was used to assess the socio-demographic characteristics of the mothers. It included 3 closed-ended questions regarding age, educational level, and working status.

b. It was used to assess the source of information about tandem breast feeding. It included 5 closed-ended questions regarding mass media, own mother or grandmother, doctors, nurses, and dayas.

c. It was used to assess the antenatal preparation for tandem breast feeding. It included 4 closed-ended questions regarding attended antenatal visit, breast self-examination, antenatal breast preparation, and Pre-cesarean assessments of breast problems

.**Part II –** Pregnant lactating mothers' knowledge about tandem breastfeeding and its conditions, it included the anatomy, physiology of the breast, breast feeding - artificial feeding and supplementation, the importance of colostrums & breast milk, physical, psychological & social factors affecting milk production. kind of foods & drinks that increasing breast milk flow, misconceptions related to post-cesarean breast feeding, relation between tandem breast feeding and contraception, tandem breast feeding continuation, promotion and timing of weaning, breast feeding technique, milk expression & breast problems & its management,

Scoring system for knowledge: The score ranged in multiple choice questions and open-ended questions from zero to one; correct = 1 and incorrect = 0. The total score for all items was 18 and categorized into two levels as followings: unsatisfactory 0-8, and satisfactory 9-18. The mothers‟ knowledge was considered satisfactory if the percent score was 50% or more and unsatisfactory if the score was less than 50%.

Part III – Mothers practices according to their care related to breast self-examination, breast care, initiation of tandem breast feeding and its promotion, technique, breast engorgement management, nipple problems' management, feeding problem related to neonatal condition and its management,

Scoring system for practices: The scoring system ranged from one score for the done, and zero for not done. The total grades were 33 for 33 statements equal 100% .The total mothers' practices were categorized into adequate practices if the percent score was 60% or more, and inadequate if less than 60%.

2.5. Validity and Reliability: The validity of the tools was ascertained by five experts, three of them was professor of community health nursing, professor of maternity and neonatal health nursing, professor of pediatric nursing faculty of nursing and another Obstetrician and Gynecologist, faculty of medicine, Ain Shames University who reviewed the instruments for content accuracy. The reliability test of translated version was established by using the Cronbach alpha and Pearson correlation which showed good internal consistency construct validity Cronbach alpha = (0.887).

2.6. Pilot study:

A pilot study was carried out before starting data collection, and 10 pregnant lactating mothers were chosen randomly from previous mentioned setting. It was done to estimate the time required for filling out the tools and also to check the clarity, applicability, relevance of the questions. Based on the results of the pilot study, the necessary modifications were done; these mothers were excluded from the study.

2.7. Operational Design:

Field work:

- An official permission to conduct the study was obtained from the Director of the Ain Shams University hospital for obstetrics and gynecology affiliated to Ain Shams University Hospitals and the managers of Breast Feeding Clinic in this hospital. In order to obtain their agreement and cooperation, a formal letter was issued by the Dean of Faculty of Nursing, Ain Shams University, explaining the aim of the study.
- Preparation of data collection tools was carried out over a period of one month beginning from end of January 2018 to end of February 2018, after being revised from experts to test their validity.
- The application of the counseling program, done by the researchers, lasted for 6 months from the beginning of March 2018 to end of August 2018; data collection was carried out in one month for pretest and two months for implementation of counseling program for study group and another three months for post test through antenatal follow-up visits and one visit post natal for two groups control and study group, two days/week (Saturdays and Tuesdays), in the previous clinic from 9.00 a.m. to 2.00 p.m. The questionnaire took about 45 minutes to be filled in by the researchers and included about (8-15 mothers). Written consent was secured from each mother after explaining the aim of the study and ensuring that all information will be confidential and used only for research purposes and this was done after agreement of each mother.
- The counseling program was applied for study group of pregnant lactating mothers; they were assed before implementation program after first trimester of pregnancy and the follow-up of program applied through the consequences three visits which carried out every 2 months to follow pregnancy through antenatal health program and the 3rd carried out post natal. The intervention was applied in five sessions 5 hours; two sessions for giving theoretical part and two sessions for practices related to tandem breast feeding then the last session for termination of counseling program).

III. Counseling Program Development Phases

Phase 1; Preparatory phase and assessment phase: In this phase the researchers revised current local and international related literature which helped in designing the tools for data collection from mothers. This phase aimed at improving the pregnant lactating mothers' knowledge and practices toward tandem breast feeding through determine mothers' needs about technique of breast feeding and its conditions. The counseling sessions were developed by researchers according to the educational needs, assessment of mothers, and guided by related literature

Phase 2; Planning phase: In this phase the researchers set the general and specific objectives of counseling session.

The general objective of counseling program: To acquire the mothers' knowledge and practices regarding to tandem breast feeding technique and help them to take appropriate decisions toward conducting tandem breast feeding during pregnancy and post natal for newborn baby and their toddler child. At the end of tandem breast feeding counseling sessions, the pregnant lactating mothers will be able to:

- Explain the facts contributing to tandem breast feeding.
- Identify the importance of colostrums & breast milk
- Determine the physical, psychological & social factors affecting milk production
- Identify the kind of foods & drinks that increasing breast milk flow
- Explain the tandem breast feeding continuation, promotion and appropriate time of weaning
- Discuss the technique, its conditions, and management of tandem breast feeding.
- Conduct breast care and breast self-examination.
- Implement breast engorgement management.
- Apply management of feeding problem related to neonatal condition

Phase 3; Implementation of the program:

The work started by meeting the study group of mothers at breast feeding clinic. Assessment and data collection phase started by researchers introducing themselves, to the mothers and showing the formal letters issued from the health center. Then, the researchers gave them a brief idea about the study and its aim. Data was collected using the constructed tools. Any clarifications needed for the mothers were done by the researchers. The counseling session's content has been sequenced through three sessions (each session took about 45 minutes). Evaluation of the effects of counseling on tandem breast feeding decision and conducting it elapsed immediately after finishing of counseling sessions. Each session started by a summary about what was given through the previous session and stated the objectives of the new one, taking into consideration using simple and clear Arabic language. All couples received the counseling method as face to face, using effective different media of conveying information as posters, power point presentation by using laptop or tablet and a model for human breast. A booklet was constructed for mothers as an educational reference after counseling implementation. Its aim was to provide accurate information about tandem breast feeding.

Counseling sessions were conducted by the researchers according to GATHER approach (**Obregon and Waisbored, 2012):**

G: (Greet the client): The researchers established relationship with mothers emphasizing the purposes and benefits of tandem breast feeding counseling according to their tradition and religion. The researcher reassured mothers that, what will be said is confidential.

A: (Ask questions): The researchers ask mothers about their socio-demographic circumstances, and source of information about tandem breast feeding. Also assessing mothers' knowledge and their practices by using questions are similar to first tool constructed by the researcher.

T: (Tell the client): The researchers told mothers about the importance of colostrums & breast milk, the physical, psychological & social factors affecting milk production, also the kind of foods & drinks that increasing breast milk flow, and the tandem breast feeding continuation, promotion and appropriate time of weaning, and finally the technique, conditions, and management of tandem breast feeding.

H: (Help the client): The researchers helped mothers to choose alternatives management as regards management of breast feeding problems breast care and breast self-examination, implement breast engorgement management, and management of feeding problem related to neonatal condition

E: (Explain to the client): The researchers explained different lines of alternatives of the importance of breast feeding for neonate and toddler toward their health and growth & development that can be modified to breast feeding continuation.

R: (Return): The researchers returned for post test evaluation through antenatal follow up visits at breast feeding clinic according to the hospital records.

Phase 4: Evaluation phase:

Evaluation of the counseling program was done immediately after completing the program implementation by using the same pre-program tools to evaluate the effect of counseling program on mothers' knowledge and practices related to tandem breast feeding.

Ethical Considerations:

The study was approved by the Nursing Research Ethical Committee affiliated to Faculty of nursing - Ain Shams University. The necessary approval from the administrative authority of the Ain shams university hospital for obstetrics and gynecology was taken after issuing an official letter from the Dean of Faculty of Nursing, Ain Shames University. An informed consent to participate in the current study was taken after the purpose of the study was clearly explained to each mother. Confidentiality of obtained personal data, as well as the respect of mother participant's privacy was totally ensured. A summary of the program was explained to mothers who voluntarily agreed to participate in the study were informed that, they can withdraw from the study at any time without giving any reason.

Statistical Design:

Data were revised, coded, analysed and tabulated using the number and percentage distribution which by using SPSS program version (20). The quantities data were presented using the arithmetic mean, standard deviation, and analysed using t-test and analysis of variance ANOVA. Qualitative data are presented by the number and percentage and analysed by chi-square test to assess the interrelationship among variables.

Significance of results:

Non significant (NS)	if $P>0.05$
Significant (S)	if $P<0.05$
Highly significant (HS)	if $P<0.01$

IV. Results

Table (1): Reports that, 52% of mothers aged 26-28 years for control group, and 56% for study group. Regarding to educational level 20% was qualified for control group and 24% of them for study group. The table also showed that, 36% of mothers working in control group while 28% of them were participate in study group, with insignificant differences with p value $P>0.05$.

Figure (1): Illustrates that, 56% of mothers their main source of information about tandem breast feeding was their own mothers or grandmother for control group, and 62% for study group, while only 8% and 6% of them had information from nurses for control group and for study group respectively, with insignificant statistical differences with $X2 = 1.7$and p value $P>0.05$.

Table (2): Presents that, 68% of mothers attended antenatal visit follow-up for control group and 62% for study group, but only 6% and 4% of them conducted breast self-examination for control group and study group respectively. Also this table showed that, 9o% of mothers prepared their breast during antenatal period for control group and 88% for study group. Regarding Pre-cesarean assessments of breast problems it was present among 18% of mothers for control group and 22% for study group, with insignificant statistical differences with p value $P>0.05$.

Table (3): Shows that, there were 80% of mothers had unsatisfactory total knowledge regarding tandem breastfeeding at pre counseling program implementation for control group and 78% for study group with insignificant statistical differences at $P>0.05$. but this level of total knowledge improved to satisfactory knowledge for 84%, 90% and 100% of mothers among study group through 1st, 2nd, and 3rd visit respectively post implementing the counseling program, with highly significant statistical differences at $P<0.001$.

Figure (2): Illustrates that, 95% of mothers initiated tandem breastfeeding among study group at first 6 hours post natal while no one of mothers of control group did, but they reached to 38% and 44% of them initiated after 24 hours and 48 hours respectively with significant statistical differences with $X^2 = 96.4$ and p value $P<0.001$.

Table (4): Demonstrates that, there was noticed improvement of mothers' practices concerning tandem breast feeding technique at follow-up visits post counseling program implementation among study group than control group as 90% , 96%, and 98% of mothers washed hands before feeding at 1st ,2nd, and 3rd visit respectively. As regard the mother position there was 54% of mothers in control group used side-lying position at 3rd visit compared with 4% of them in study group while 46% of mothers in control group used football position compared with 96% for study group at 3rd visit assessment with significant statistical differences with p value P<0.001. This table showed that, 98% of mothers in study group used correct baby's position, signs of good suckling were present, and ended feed by the baby at 3rd visit and also 100% of mothers in study group mothers had adequate overall breast feeding technique as an effect of counseling program implementation with significant statistical differences with p value P<0.001

Table (5): Shows That 98% of mothers in study group did milk expression adequately and did breast massage to relive breast engorgement at 2nd visit assessment while 100% of them applied warm compresses, increased duration of feeds, and numbers of feeds compared with 12%, 20%, and 30% of mothers in control group at 2nd visit respectively with significant statistical differences with p value P<0.001

Table (6): Reveals that, there was noticed improvement of mothers' practices about overall nipple problems' management post counseling program implementation as 98% of mothers in study group had adequately practices at 2nd visit assessment compared with 10% of mothers in control group with significant statistical differences with p value P<0.001

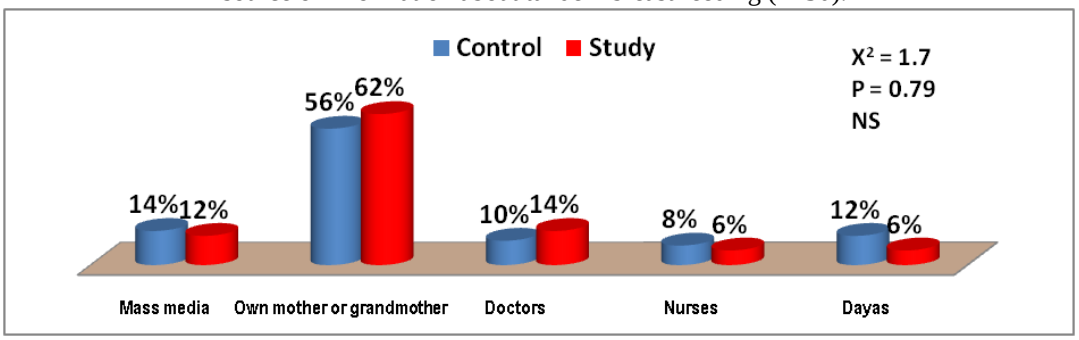
Table (7): Displays that, there was noticed improvement of mothers' practices about overall neonatal problems' management post counseling program implementation as 98% of mothers in study group had adequately practices at 2nd visit assessment compared with 16% of mothers in control group with significant statistical differences with p value P<0.001.

Table (8): Shows that there were 94% of mothers had inadequate total practices regarding tandem breastfeeding at pre counseling program implementation for control group and 92% for study group with insignificant statistical differences with p value P>0.05. but this level of total practices improved to adequate practices for 90%, 96% and 98% of mothers among study group through 1st, 2nd, and 3rd visits respectively post implementing the counseling program, with significant statistical differences with p value P<0.05.

Table (1): Number and percentage distribution of demographic characteristics of the study sample of pregnant lactating mothers (n=50).

GENERAL CHARACTERISTICS	**Control** N= 50		**Study** N= 50		**STATISTICAL TEST**	
	Nº	**%**	**Nº**	**%**	X^2	***P***
1)AGE						
20-25 y	17	34%	15	30%	0.2	0.91
26-28 y	26	52%	28	56%		
29-30 y	7	14%	7	14%		
2) EDUCATION						
Qualified	10	20%	12	24%	0.2	0.63
Read & write	40	80%	38	76%		
3) WORKING STATUS						
Working	18	36%	14	28%	0.7	0.39
House-wife	32	64%	36	72%		

Figure (1): Number and percentage distribution of the sample of pregnant lactating mothers according to their source of information about tandem breast feeding (n=50).



Table(2): Number and percentage distribution of the study sample according to their antenatal preparation for tandem breastfeeding (n-50).

ANTENATAL PREPARATION FOR TANDEM BREAST FEEDING	Control N= 50		Study N= 50		STATISTICAL TEST	
	Nº	%	Nº	%	X^2	*P*
1- Attended antenatal visit:						
Yes	34	68%	31	62%	0.4	0.53
No	16	32%	19	38%		
2- Breast self-examination:						
Done	3	6%	2	4%	0.2	0.65
Not done	47	94%	48	96%		
3- Antenatal breast preparation:						
Done	5	10%	6	12%	0.1	0.75
Not done	45	90%	44	88%		
4- Pre-cesarean assessments of breast problems:						
Present	9	18%	11	22%	0.3	0.62
not present	41	82%	39	78%		

Table (3): Number and percentage distribution of the study sample according to mothers' total knowledge concerning tandem breastfeeding at pre-counseling and follow-up visits' assessment (n=50).

PRECOUNSELLING AND FOLLOW-UP VISITS'	Control N= 50		Study N= 50		Statistical analysis		
	Satisfactory	Unsatisfactory	Satisfactory	Unsatisfactory	Analysed difference	x^2	p
A- Pre-counsel	20%	80%	22%	78%	(A) control vs (A) study	0.1	0.806
B- 1st visit	22%	78%	84%	16%	(D) control vs (D) study	58.7	<0.001*
C- 2nd visit	22%	78%	90%	10%	(A) study vs (D) study	63.9	<0.001*
D- 3rd visit	26%	74%	100%	0%	(A) control vs (D) control	0.5	0.476

Figure (2): Percentage distribution of the mothers' practices concerning initiation of tandem breastfeeding at postnatal (3rd follow up visit) assessment (n=50).

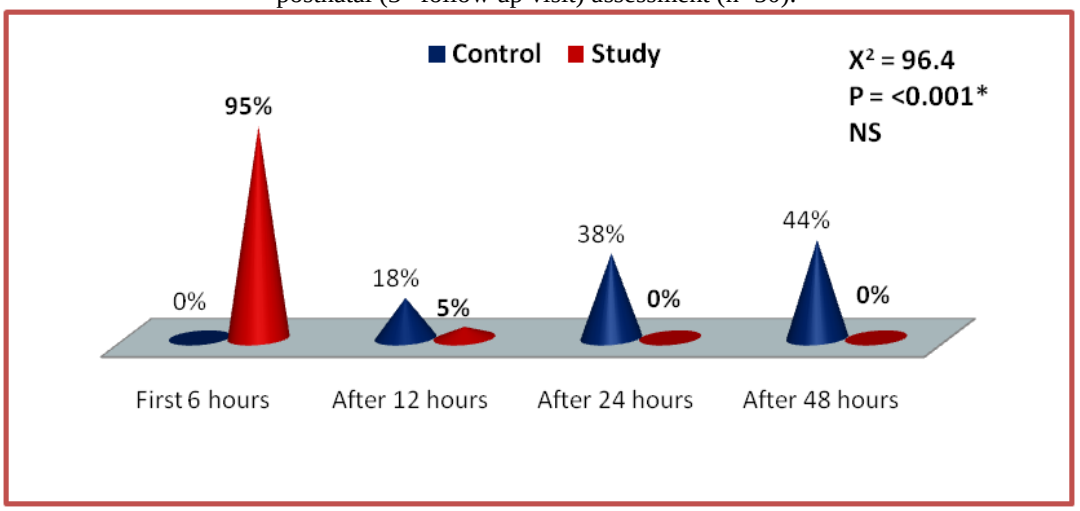


Table (4): Percentage distribution of study sample according to the mothers' practices concerning tandem breastfeeding technique at follow-up visits' assessment post counseling program implementation (n=50).

Breast Feeding Technique	Control N=50			Study N=50			Statistical analysis		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit	Analysed difference	x^2	p
1- PRE-FEEDING HAND WASH:									
• Done	6%	10%	12%	90%	96%	98%	1st visit: Control vs study	70.7	<0.001*
• Not done	94%	90%	88%	10%	4%	2%	Control group	0.7	0.711
							Study group	2.3	0.311
2 MOTHER'S POSITION:									
• Side-lying position	40%	48%	54%	86%	10%	4%	1st visit: Control vs study	22.7	<0.001*
• Football position	60%	52%	46%	14%	90%	96%	Control group	1.1	0.581
							Study group	74.7	<0.001*
3- CORRECT BABY'S POSITION;									
• Done	80%	92%	94%	88%	96%	98%	1st visit: Control vs study	1.2	0.551
• Not done	20%	8%	6%	12%	4%	2%	Control group	4.3	0.117
							Study group	3.5	0.170
4- ATTACHMENT:									
• Adequate	72%	76%	80%	94%	98%	100%	1st visit: Control vs study	8.6	0.014*
• Inadequate	28%	24%	20%	6%	2%	0%	Control group	0.4	0.803
							Study group	2.2	0.329
5- SIGNS OF GOOD SUCKLING:									
• Present	88%	90%	94%	90%	96%	98%	1st visit: Control vs study	0.1	0.950
• Not present	12%	10%	6%	10%	4%	2%	Control group	0.4	0.800
							Study group	2.3	0.311
6- ENDING FEED BY THE BABY:									
• Done	40%	46%	56%	92%	98%	98%	1st visit: Control vs study	30.1	<0.001*
• Not done	60%	54%	44%	8%	2%	2%	Control group	1.1	0.573
							Study group	2.6	0.272
OVERALL BREAST FEEDING TECHNIQUE:									
• Satisfactory	4%	6%	20%	94%	96%	100%	1st visit: Control vs study	81.0	<0.001*
• Unsatisfactory y	96%	94%	80%	6%	4%	0%	Control group	2.9	0.236
							Study group	1.2	0.556

Table (5): Percentage distribution of the mothers' practices concerning breast engorgement management at follow-up visits' assessment (n=50).

Breast engorgement Management	Control N=50			Study N=50			Statistical analysis		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit	Analysed difference	x^2	P
1- MILK EXPRESSION:									
Adequate	8%	10%	---	94%	98%	---	1st visit: Control vs study	74.0	<0.001*
Inadequate	92%	90%	---	6%	2%	---	Control group	0.1	0.941
							Study group	1.0	0.594
2- WARM COMPRESSES:									
• Done	8%	12%	---	96%	100%	---	1st visit: Control vs study	77.6	<0.001*
• Not done	92%	88%	---	4%	0%	---	Control group	0.4	0.801
							Study group	2.0	0.360
3- BREAST MASSAGE									
• Done	6%	12%	---	92%	98%	---	1st visit: Control vs study	74.0	<0.001*
• Not done	94%	88%	---	8%	2%	---	Control group	1.1	0.577
							study group	1.9	0.388
4- INCREASE DURATION OF FEEDS:									
• Done	14%	20%	---	96%	100%	---	1st visit: Control vs study	67.9	<0.001*
• Not done	86%	80%	---	4%	0%	---	Control group	0.6	0.727
							Study group	2.0	0.360
5- INCREASE NUMBER OF FEEDS:									
• Done	24%	30%	---	96%	100%	---	1st visit: Control vs study	54.0	<0.001*
• Not done	76%	70%	---	4%	0%	---	Control group	0.5	0.796
							Study group	2.0	0.360

Table (6): Percentage distribution of the mothers' practices concerning nipple problems management at follow-up visits' assessment (n=50).

NIPPLE PROBLEMS' MANAGEMENT	Control N=50			Study N=50			Statistical analysis		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit	Analyses difference	x^2	p
OVERALL NIPPLE PROBLEMS' MANAGEMENT:									
• **Adequate**	8%	10%	---	92%	98%	---	1st visit: Control vs study	70.6	<0.001*
• **Inadequate**	92%	90%	---	8%	2%	---	Control group	0.1	0.941
							Study group	1.9	0.388

Table (7): Percentage distribution of the mothers' practices concerning feeding problem related to neonatal condition and its management at follow-up visits assessment (n=50).

Feeding Problem Related To Neonatal Condition	Control N=50			Study N=50			Statistical analysis		
	1st visit	2nd visit	3rd visit	1st visit	2nd visit	3rd visit	Analyzes difference	x^2	p
OVERALL NEONATAL PROBLEMS' MANAGEMENT:									
• **Adequate**	10%	16%	---	91%	98%	---	1st visit: Control vs study	70.7	<0.001*
• **Inadequate**	90%	84%	---	9%	2%	---	Control group	0.8	0.902
							Study group	1.0	0.204

Table (8): Number and percentage distribution of the study sample according to mothers' total practices concerning tandem breastfeeding at pre-counseling and follow-up visits' assessment (n=50).

PRECOUNSELLING AND FOLLOW-UP VISITS'	Control N= 50		Study N= 50		Statistical analysis		
	Adequate	inadequate	Adequate	inadequate	Analysed difference	x^2	p
A- Pre-counsel	6%	94%	8%	92%	(A) control vs (A) study	0.2	0.695
B- 1st visit	16%	84%	90%	1%	(D) control vs (D) study	43.5	<0.001*
C- 2nd visit	16%	84%	96%	4%	(A) study vs (D) study	81.3	<0.001*
D- 3rd visit	36%	64%	98%	2%	(A) control vs (D) control	13.6	<0.001*

V. Discussion

Pregnancy during lactation is a predominant event in Egypt among low socioeconomic level mothers as women over rely on lactation in birth spacing without adequate education and knowledge about requirements of lactational amenorrhea method, which usually leads to unplanned pregnancy and wrong weaning time for previous child. [20] The current study investigated the effect of counseling program about tandem breastfeeding for pregnant lactating mothers on their knowledge and practices toward effective breast feeding.

Concerning the mothers' demographic characteristics, the current study result showed that slightly more than half of the mothers their age ranged between 26-28 years for control and study group, and one fifth of them their educational level were qualified. As regard working status, more than one third of mothers in control group were working mothers while, less than one third of them for study group among out of all mothers who agreed to participate in this study***(Table 1).*** These results are in agreement with **Shabaan [21],** who recorded that, the mean age of study sample of pregnant lactating mothers who participants were 28.82 ± 6.18 years, more than half of them were educated and one third of them were working mothers. This is due to that, the target group of study sample in this study who attending the breastfeeding clinics which provide breastfeeding counseling services to all citizens for free was characterized by low socio economics status.

This study also reported that, more than half of mothers their main source of information about tandem breast feeding was their own mothers or grandmother for control group, and study group, while little of them had information from nurses, with insignificant statistical differences with X^2 = 1.7and p value P>0.05***(Figure 1).*** These study findings are consistent with **Silva [21],** who reported that in their study, the results showed that, knowing the practices and beliefs of management with respect to grandparents with breastfeeding and their influence on feeding their grandchildren is very important, since the grandparents are key people in supporting mothers during the breastfeeding period. It is believed that understanding these issues, along with society, especially with women and their families, it may reflects the cultural issues that permeate the practices toward breastfeeding. But most lactating mothers need to be attentive to the planning and execution of actions with a focus on education and having professional knowledge. This is to give the mothers the possibility of performing the continuity of breastfeeding and care for the newborn at home.

The current study revealed that, more than two third of mothers attended antenatal visit follow-up for control group and study group but only a few of them conducted breast self-examination for two groups. Also this table showed that, most of mothers prepared their breast during antenatal period for control group and majority for study group, with insignificant statistical differences with p value P>0.05 ***(Table 2).*** This study was

in agreement with **Hassan et al., [23]** who in their study found that, the number of women who had Adequate Antenatal Care (ANC) follow-up during their last pregnancy was 312 women representing about 81% of the studied women. Description of ANC services provided for women showed that 61.9% of the studied women started ANC at their first trimester and 34.9% had their ANC at the primary health care center, and general clinical examination was done for 74.7%.

Also these results agreed with those of a study carried out by **Gary et al., [24]** who conducted their study in upper Egypt, stated that, most women had at least one antenatal care visit, and one-third of mothers had complete antenatal care (≥4 visits). Antenatal care attendance varied by region: in Aswan, most (82%) mothers had complete antenatal care, but in Fayoum, only 16% of mothers had complete antenatal care. Complete antenatal care attendance was significantly higher in Aswan than in Luxor ($p<0.001$) or Fayoum ($p<0.001$).

Regarding knowledge of mothers about tandem breastfeeding The current study demonstrated that, there was majority of mothers had unsatisfactory knowledge regarding tandem breastfeeding at pre counseling program implementation for control group and more than three quarters of mothers for study group with insignificant statistical differences, but this level of total knowledge improved to satisfactory knowledge among most mothers in study group through 1st, 2nd, and 3rd visit post program, with high significant statistical differences at value P<0.001 ***(Table 3).*** **Rea et al.,[25]** who reported that in their study about ``Breastfeeding counseling: a training course". In the post-test assessment held immediately after completion of the course, the exposed group averaged 8.35 and the control group 5.54 (P<0.001). Three months after the course, the average score of the 20 participants was 7.80. Thus although performance had declined slightly in relation to that immediately post-test, participants maintained a statistically significant increase in knowledge skills compared to the pre-test.

Also this study result was in agreement with **Ugurlu, Yavan [26]** who stated that in their study entitled **"**The effectiveness of breastfeeding education: An integrative review" According to results of this review, in increasing exclusive breastfeeding and breastfeeding knowledge levels, education in prenatal period seemed more effective. Education beginning from prenatal period and continuing with postnatal period seemed the most effective. In a systematic analysis about the efficiency of intervention through professional counseling in breastfeeding, it is shown that beginning from prenatal period and continuing with postnatal period professional counseling is more effective

Out of researchers' view, regarding level of knowledge the current study showed high significant improvement in the knowledge of the pregnant lactating mothers at the post program implementation through the 3rd visit assessment. This was noticed in all the areas of knowledge related to tandem breast feeding information under study; this indicates the effectiveness of the counseling program in achieving the study objective related to knowledge, and acceptance of hypothesis.

This study results illustrated that, most of mothers initiated tandem breastfeeding among study group at first 6 hours while no one of mothers of control group did, with significant statistical differences at P<0.001***(Figure 2).*** The results are in agreement with **Ugurlu, Yavan [26]** who concluded that in their study about program of breastfeeding initiation of; it is very important that, mothers have to educated and counseled by nurses and other healthcare professionals about breastfeeding initiation, exclusive breastfeeding and effective continuation of it, which is very important for maintaining health status of their children which lead to a healthy family and thus a healthy community.

The counseling program reported that, there was a significant improvement in the mother decision regarding initiation of tandem breastfeeding among the study group, after implementation of the program; this indicates another success of the program in changing an important aspect of the mother concept and attitude that is related to tandem breastfeeding and led to taking decision toward tandem breastfeeding initiation as early as possible post natal.

Our study result demonstrated that, there was noticed highly significant of improvement among the most of mothers in study group compared with the other group concerning practices of tandem breast feeding technique such as washed hands before feeding, using football position during tandem breastfeeding, using correct baby's position, and taking attention of presence signs of good suckling ***(Table 4).*** This result was similar findings which reported by **Ahmad [27],** who mentioned that in her study, about an educational program to support mothers of preterm infants in Cairo, Egypt, the effect of the program on mothers' breastfeeding practices. Statistically significant differences were evident in the mean scores among the three successive sessions of breast massage, hand washing and expression, and breastfeeding technique. The study result indicated that, there was progress in the mean scores of the mothers of the intervention group compared with control group.

Also there were improvement toward mothers practices concerning management of breast engorgement for most study group mothers as a result of the efficiency of counseling program as they did milk expression adequately and did breast massage to relive breast engorgement and overall nipple problems' management while, all of them applied warm compresses, increased duration of breastfeeds for toddler child, and numbers of

breast feeds with significant statistical differences at P<0.001***(Table 5& 6).*** This result is on the same line, with **Anandhi** [28], who conducted their study on 600 postnatal mothers to know the complications associated with breast in the puerperal period, and found that, though few postnatal mothers have developed nipple pain and breast engorgement, but majority of them the nipple pain and breast engorgement was prevented by application of lukewarm water compress. Hence the investigator concluded that the intervention was effective in preventing the nipple pain and breast engorgement.

This study results showed that, there were most of mothers had inadequate practices regarding tandem breastfeeding before counseling program implementation for the two groups with insignificant statistical differences. but this level of total practices improved to adequate practices for most of study group mothers through assessment visits post implementing due to successful of the counseling program, with significant statistical differences at value P<0.05. This result was in congruence with these **Bridget et al.,** [29] whose study about the effect of lactation counseling on Exclusive Breast Feeding (EBF) in Ghana,. They concluded that, this is the first study to demonstrate the effect of lactation counseling program on EBF adjusting for the Hawthorne effect. Indeed, the 100% increase in EBF rates can be attributed to the pre and postnatal EBF lactation support provided. This result agrees with that of other randomized trials in which EBF rates were higher when lactation support was provided.

The counseling program proved its efficiency in improving the mothers' knowledge, and practices in all items regarding the tandem breastfeeding which led to change the false concept about tandem breastfeeding and take a proper decision to conduct it among pregnant lactating mothers of study group who attending the counseling program compared with the control group who didn't attend it which promote achieving the study aim and acceptance of hypothesis.

VI. Conclusion

Based on the results of the current study, and the research hypothesis the following can be concluded:

The study proved that, the counseling program helped in improving the knowledge for study group of pregnant lactating mothers about the facts contributing to tandem breast feeding. which had an strong effect on changing mothers' wrong concept related to tandem breastfeeding and taking a decision toward conducting tandem breastfeed initiation among study group at first 6 hours post natal, while no one of mothers of control group did, with significant statistical differences with at P<0.001. Also the study revealed the significant statistical differences between study group and control group of mothers' total practices regarding tandem breastfeeding technique, breast engorgement management, nipple problems management, and management of feeding problem related to neonatal condition.

VII. Recommendations

Based on the results of the present study, and research hypothesis, the following recommendations are suggested:

- Publication and dissemination of tandem breastfeeding counseling program in all maternity and child health care centers for pregnant lactating mothers to raise awareness about its importance and technique
- Further studies should to explore more about the psychological and societal aspects of pregnant lactating mothers in Egypt which are characterized by high reproductive rate.
- More attention toward other factors which affect breastfeeding beside education and counseling should be determined, and appropriate interventions should be applied
- Raising the awareness of pregnant lactating mothers about the foods & drinks that increasing breast milk flow, continuation of tandem breastfeeding, promotion of weaning and its appropriate time.
- Breastfeeding services to be provided by breast feeding counselor nurses in all maternal and child health centers and breastfeeding clinic with exploration knowledge relevant to tandem breastfeeding.
- Each and every expected mother should receive correct and appropriate education about breastfeeding and mothers should always be monitored thoroughly and supported accordingly.

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