CHAPTER 4

FINDINGS AND DISCUSSION

This chapter would present and discuss the findings of the research on developing the breastfeeding support program for preterm infants. It is organized into two sections. The first section describes the general characteristics of the participants and the findings corresponding to the research questions:1) What are the breastfeeding problems among preterm infants at Bangkok Metropolitan Administration (BMA) Medical College and Vajira Hospital?; 2) What is the breastfeeding support (BS) program for preterm infants that will enhance practical nursing practice at BMA Medical College and Vajira Hospital?; 3) How do the researcher and the participants develop the breastfeeding support program for preterm infants?; and 4) What are the outcomes of implementing the breastfeeding support program for preterm infants? The findings are further discussed in the second section.

General Characteristics of the Participants

This study is a participatory action research jointly conducted by the researcher and the participants in the project of developing the breastfeeding support program for preterm infants. This part would discuss the general characteristics of the participants determined to take part in the research. Initially, the participants included 15 nurses at premature infant unit (PU), but later one participant withdrew from the project as she was moved to other hospital in the upcountry. Consequently, the

number of nurses who joined the project from the start to the end was 14. All participants were female nurses with the average age at 36.2 years (SD 7.9), lowest age at 25 years and highest age at 56 years. Seven nurses (50%) were married while the others were single. All of them were Thai and Buddhists. Concerning the education level, all participants held the Bachelor degree. Their working experiences or periods of working as nurse averaged 14 years (SD 7.2) and the longest working experience was 31 years and the shortest was 2 years. In other words, there was 1 nurse who has worked in this field for less than 5 years, four have worked for 6-10 years, and nine have worked for more than 10 years (Table 1).

Table 1

General characteristics of the participants

General Characteristics	Number (N=14)	Percentage (%)
Gender		
Female	14	100
Male	-	0
Marital Status		
Married	7	50
Single	7	50
Race		
Thai	14	100
Religion		
Buddhism	14	100
Education level		
Bachelor degree	14	100
Years of working experience		
(X=14, SD 7.2 years)		
Less than 5 years	1	7.1
6-10 years	4	28.6
more than 10 years	9	64.3

Research Question 1: What are the breastfeeding problems among preterm infants at BMA Medical College and Vajira Hospital?

The initial problem found is that there was insufficient information about breastfeeding at PU. The participants, therefore, purposed conducting a survey of breastfeeding in preterm infants so as to get an overall picture of the behavior of breastfeeding to confirm that PU actually faced the breastfeeding problem. The survey was then conducted through collecting the information of types and methods of breastfeeding by using the Infant Feeding Record Form developed by the participants. The result showed that the type of milk fed to preterm infants born in June 2003 and the method of feeding most used was formula milk (88.9%) and bottle feeding (65.1) respectively (Appendix C and D). It confirmed the participants' initial perception and made them aware of the problem and realize the necessity of improving the situation of breastfeeding by developing the BS program for preterm infants. After setting the topics with the same interests, the issues and problems of breastfeeding in preterm infants were explored and identified. Apart from the medical limitations for underweight preterm infants, the problems of breastfeeding in preterm infants as perceived by the participants stemmed from maternal factors, infant factors, and health care provider and hospital service related factors as follows:

1. Maternal Factors

The problems related to mothers perceived by the participants were that some preterm mothers did not realize the importance and benefits of breastfeeding and they were not ready and confident of breastfeeding and taking care of their babies. Moreover, some had inappropriate behaviors of breastfeeding such as keeping the milk expressed from several times during the day in the same bottle and some did

not want to express milk for their babies or even did not go to visit their newborns at PU. The breastfeeding problems in preterm infants related to mothers according to the participants' point of view could be divided into groups as follows.

1.1 Sociodemographic characteristics

The participants perceived that sociodemographic characteristics of the mothers in relation to maternal age, employed mother, and economic status were associated with breastfeeding problems of preterm infants. The older mothers would have high risk for breastfeeding failure. They also pointed that mothers' need to work was another problem as return to work prevented them from visiting their infants who still required treatment at the hospital (even the Cabinet has approved the extension of maternity leave for government employees to 90 days, most of the mothers in private sector return to work earlier). This group of mothers thought they could breastfeed for only a short time so they did not want to and some of them thought they have to work outside so it might not be inconvenient to breastfeed. Another problem in breastfeeding of preterm infants perceived by the participants was that the financial problems impeded mothers to go to visit and breastfeed their newborns at PU as they did not have enough money for the travel costs to the hospital. These were shown by the following statements.

"The older mothers had insufficient milk, so they failed to breastfeed their child"
"Some mothers must go back to work, so it's not convenient for them to come to the hospital for that reason."
"The mothers who have to return to work think they can't breastfeed long enough, so they don't want to do it."
"They can't afford to go to the hospital."

1.2 Mothers with stress

The participants gave opinions that mothers with stress would have an impact on breastfeeding in preterm infants as they were concerned over their premature infants who were not as healthy as other term infants. The possibility that premature infants would develop complications caused mothers to be anxious about their babies' diseases that might threaten their babies' life and kill them. Due to the very small size and lots of medical aid equipments, mothers dared no to take care of or nurse their babies. This problem was mostly found in mothers of preterm infant as shown by the following statements.

> *"Mothers are worried as their infants are very small. The babies' diseases worried them."*
> *"Mothers aren't confident and dare not to take care of their tiny babies."*
> *"They are very afraid of carrying their babies because of fear over falling them."*
> *"They're anxious. Seeing their newborns full of equipments scares them away."*

1.3 Mothers' lack of knowledge and skills of breastfeeding

The participants thought that due to an unawareness of the breastfeeding benefits, mothers of preterm infants did not realize the importance of nursing their babies. They might not know how to maintain their abundant milk supply and how to express milk. These problems were possibly due to the fact that these mothers could not recall what they were instructed or they probably received the conflicting information about this matter. In addition, the participants perceived that some of the mothers did not possess the skills of breastfeeding as they just had first pregnancy or did not have previous nursing experiences as shown by the following comments:

"I think mothers don't know and don't realize the importance and benefits of breastfeeding."
"Mothers think that feeding milk from bottle is the same as feeding from their breasts."
"Mothers don't know how to get large milk supply and to increase it and some don't know how to express her milk."
"The problem is that the mothers keep milk expressed from several times in the same bottle."
"It's because we don't teach them because we think that we don't have knowledge on this matter. We may give them conflicting information. I might teach the mothers to do this way while others might teach them to do that way."
"Mothers are unskilled because it is the first pregnancy."

1.4 Mothers with negative attitude in breastfeeding

The participants thought that some mothers had negative attitudes towards breastfeeding, resulting in the ignorance of the importance of breastfeeding. Some of them thought feeding with formula milk was not different from breastfeeding as their children can similarly grow up and bottle feeding was more convenient. In some cases, they were afraid that their breasts could sag and will not be firm if they breastfeed as shown by the following statements.

"They don't see the importance of breastfeeding as they think children can grow up if fed from bottle."
"They're afraid that breastfeeding could make their breasts sag and not firm."
"They don't realize the importance of mother milk but trust in formula milk instead."

1.5 Unprepared mothers

The participants thought that a lack of preparation would be one of breastfeeding problems related to mothers. It might be due to the unwanted pregnancy

and lack of being prepared after getting prenatal care as shown by the following statements.

"Some mothers did not cooperate. In some cases, I told them to express milk but they refused to do so by saying they weren't ready to do."
"Those who've got nipple problems don't receive treatment therefore they got difficulty in breastfeeding their babies"

1.6 Mothers' health problems

The participants thought some mothers had health problems that impeded them from nursing their infants. Mothers who had personal illness or take medicines that might affect their infants must stop breastfeeding. The pain from incision after giving birth could also prevent mothers from breastfeeding as shown by the following statements.

"Some sick mothers aren't able to breastfeed their infants because of their medical reasons."
"Mothers still get injured on their wounds so they don't breastfeed."
"They must suspend breastfeeding after taking medicines."

1.7 Lack of bonding between mothers and infants

The mother-baby attachment was another cause discussed by the participants as preterm infants must be immediately isolated after birth due to medical reasons. Some preterm infants must be separated from their mothers for a long period because they must receive long treatment by the hospital. In addition, some mothers did not have chance to hold, touch and hug their preemies like other term infants because preterm infants must stay in incubators. All of these might lead to a lack of

bonding between mothers and infants and thus mothers would not have attention to breastfeed their infants as shown by the following statements.

> *"Infants are placed in incubators and their mothers don't care to see them. This leads to a lack of bonding between both of them. Even toddlers, mothers still cuddle them up, not for breastfeeding, though, but that makes them confident. Only cleaning babies but not holding them in arms doesn't make mothers confident. That's why their bonding decreases."*
> *"Preterm infants stay at NICU for too long so the relationship between mother and infants is weak."*

1.8 Lack of husband's support

The participants pointed out one of breastfeeding problems stemming from the mothers' husbands who did not realize the benefits of breastfeeding. Thus, they did not give their cooperation. It also derived from the lack of knowledge about breastfeeding.

> *"Some women have problems with their husbands. A husband claimed that his wife didn't come to see the infant but went to somewhere else not the hospital. They didn't understand so we need to make them aware of and support the importance of breastfeeding. Another case is that a wife wanted to stay at the hospital to breastfeed her infant but her husband rejected by taking her back home."*
> *"Husbands don't know the breastfeeding benefits so they don't see the importance."*

1.9 Inconvenience

The problems of breastfeeding among preterm infants related to mothers perceived by the participants were possibly due to inconvenience including far distance between the mothers' houses and the hospital and inconvenience of going to the hospital. Some women had to "Yoo Fai", a Thai traditional method used by Thai women to get her uterus contract back to its size after giving birth, so they cannot go

to the hospital. In addition, some mothers could not come to breastfeed their infants at the hospital because of the need to take care of other children at home.

2. Infant factors

The participants indicated that there are two major causes of breastfeedingproblems related to the infants. These are the characteristics of preterm infants and nipple confusion.

2.1 Characteristics of preterm infants

Preterm infants have specific characteristics because of immaturity of physical systems. It would be hard for them to suckle as the coordination of suckling, swallowing and breathing does not work well. They are also highly vulnerable to such disorders as hypothermia; therefore, preterm infants must have body temperature controlled in incubators. This characteristic causes more difficulties for preterm infants to suck milk from breasts than term infants.

"Preemies are so small that aren't able to suckle."
"Infants who are used to be fed from orogastric tube won't suckle even as they grow up."
"The time for mothers to nurse infants must be limited as infants might have Hypothermia so we have to take them back to incubators quickly."

2.2 Nipple confusion

Preterm infants must be separated from mothers after birth to receive treatment at the special unit and some of them are separated for a long time and fed milk from bottle while being at the hospital. The participants thought that this habit causes nipple confusion, making them refuse to suckle as shown by the following statements.

"We don't have staff to help cup feeding, so the infants are bottle fed resuting in nipple confusion"
"Some infants prefer artificial nipples and don't want to suck from breasts. Mothers lose patience so they let infants get milk from bottle."

3. Health care provider and hospital practice related factors

According to the group discussion, the participants realized the problems of breastfeeding related to health care providers and hospital practice related factors including health care providers (nurses, physicians, and hospital executives), bad relationship between mothers and nurses, and facilities and equipments aiding breastfeeding.

3.1 Health care providers

Health care providers were cited by the participants as one of the causes of breastfeeding problems. They included nurses, physicians, and hospital executives, but this study focuses on the part of nurses only while the physicians and hospital executives were excluded for appropriateness. The participants agreed that the low workforce of nurses causes insufficient time of instructing mothers about breastfeeding. They also did not realize or see the importance of encouraging mothers to breastfeed. Other problems included some behaviors which did not support breastfeeding. Mothers did not get information they should know and the resource of information was not sufficient while some data were conflicting. The poor coordination between the officials at PU and between other units in the hospital kept the infants and mothers from receiving a continuous care. These problems could stem from the following 3 causes as follows:

Lack of knowledge and skills of breastfeeding

The participants thought the nurses at PU lacked knowledge and skills of breastfeeding because most of them did not obtain the intensive training course of breastfeeding, especially the practical skill courses. Also, they had little experience of breastfeeding due to lack of direct experience and little chance of trying the practical skills in the real situation. Helping mothers to breastfeed their infants needed teamwork and understanding from their colleagues as it took much time. This might push workload to other colleagues who might not understand and realize the important of breastfeeding and support it. That resulted in the lack of knowledge and skills of breastfeeding as shown in the following statements.

> *"It's the lack of confidence and knowledge that prevents us from instructing mothers. We're unsure whether what we teach is right."*
> *"Frankly speaking, even we are not clear enough on this issue. We don't know how to do. It's due to a lack of knowledge."*
> *"We don't have knowledge and skills because it has been such a long time that we didn't get a chance to attend the training courses on this issue. Or even having taken the courses, some of us still can't apply the theory in the real situation."*
> *"Some nurses have no child yet so they don't have a mother-kind experience and can't imagine how hurt they'd feel when infants suck their nipples."*
> *"We don't realize the importance. Mothers express her milk into the bottle for their infants, but we don't bring it to feed them."*
> *"Helping mothers breastfeed their babies takes a lot of time. I'm afraid other colleagues won't understand what I do and they might get me wrong as they are already loaded with other tasks at the ward."*

Stress of nurses

The participants thought the heavy workloads exceeding the number of nurses at PU prevented them from spending too much time to help mothers breastfeed while they had to bear other responsibilities, causing the stress among the nurses

consequently. In addition, nurses' stress was due to the low wage that pushed them to have sidelines for extra earnings.

"I can't figure out who should be assigned for taking care of breastfeeding. There aren't enough staff to deal with it but I still believe that we can do."
"We have only a small number of staff to take care of mothers' breastfeeding."
"We don't have cup feeding because we don't have people to do it."
"I can't put all my efforts to the job because I've to do extra jobs to earn more and I've to raise my own children."
"I think it's because of the lack of human relations. We work too hard and that causes stress."
"I think we work too hard. The appraisal team couldn't believe that we have only 3 nurses here. They were surprised. They said there are lots of staff there at Ramathibody Hospital."

Lack of good coordination

Preterm infants admitted to PU may be sent directly from the delivery room or nursery or Newborn Intensive Care Unit (NICU). However, the lack of coordination and referral of breastfeeding cases prevented mothers from breastfeeding their infants as this issue concerned other units such as the maternity ward. Therefore, there must be collaboration between the related units as the nurses at the maternity ward must inform the related units on the mothers' preliminary information. The failure of following up by the responsible units, thus, had an effect on breastfeeding.

"Some preterm infants were sent from NICU but their mothers didn't come with them. So we didn't know how to contact these mothers as we didn't have their phone numbers. The only thing we can do is waiting for them to come."
"Sometimes the nurses at the maternity ward never told the mothers that they can go to visit their infants at PU, even though we are on the 10th Floor, they can come to breastfeed their infants. The mothers told me they never know before that they're allowed to see their infants."

"They didn't know they can come to see their infants here, so they didn't come but waited until they were allowed to go home, then they would come to see their babies."
"The nurses at the maternity ward probably don't see the preemies' conditions so they don't pay attention to these cases."
"Some nurses (at the maternity ward) might think that mothers would be taught how to breastfeed by the nurses at our ward so they show no interest to tell the mothers."
"No information. We don't exchange our information that mothers must come to see their babies."

3.2 Bad relationship between mothers and nurses

The participants thought the relationship between mothers and nurses in PU played an important role to promote breastfeeding among preterm infants as shown by the following statements.

"Mothers fear of being blamed by nurses. They're afraid that they would unintentionally make the IV tube detached or do something wrong."
"If mothers have a bad relationship with nurses, they will not want to come to see their infants; as a result, breastfeeding is impossible."

3.3 Facilities and equipments aiding breastfeeding

The participants thought the distance between the maternity ward and PU was another impediment that kept mothers from visiting their infants. Due to the limited capacity of the place, it was not convenient for mothers to stay overnight at PU to get close to their infants. Furthermore, equipments such as chairs and pillows were not enough to support breastfeeding.

"The infant ward and mother ward is too far."
"The room for mothers to stay overnight at PU is not ready."
"The place is so small that it's sometimes overcrowded and hot. So some mothers have to go back."
"The facilities and equipments such as chairs and pillows aren't ready."

"It needs an improvement. The equipments aren't ready and it's quite hot here."

In conclusion, preterm infants at PU encountered the problem of breastfeeding and were vulnerable to face the failure of breastfeeding. The participants acknowledged the problems, realized the importance of solving the discussed problems and decided to develop the breastfeeding support program for preterm infants to address these problems.

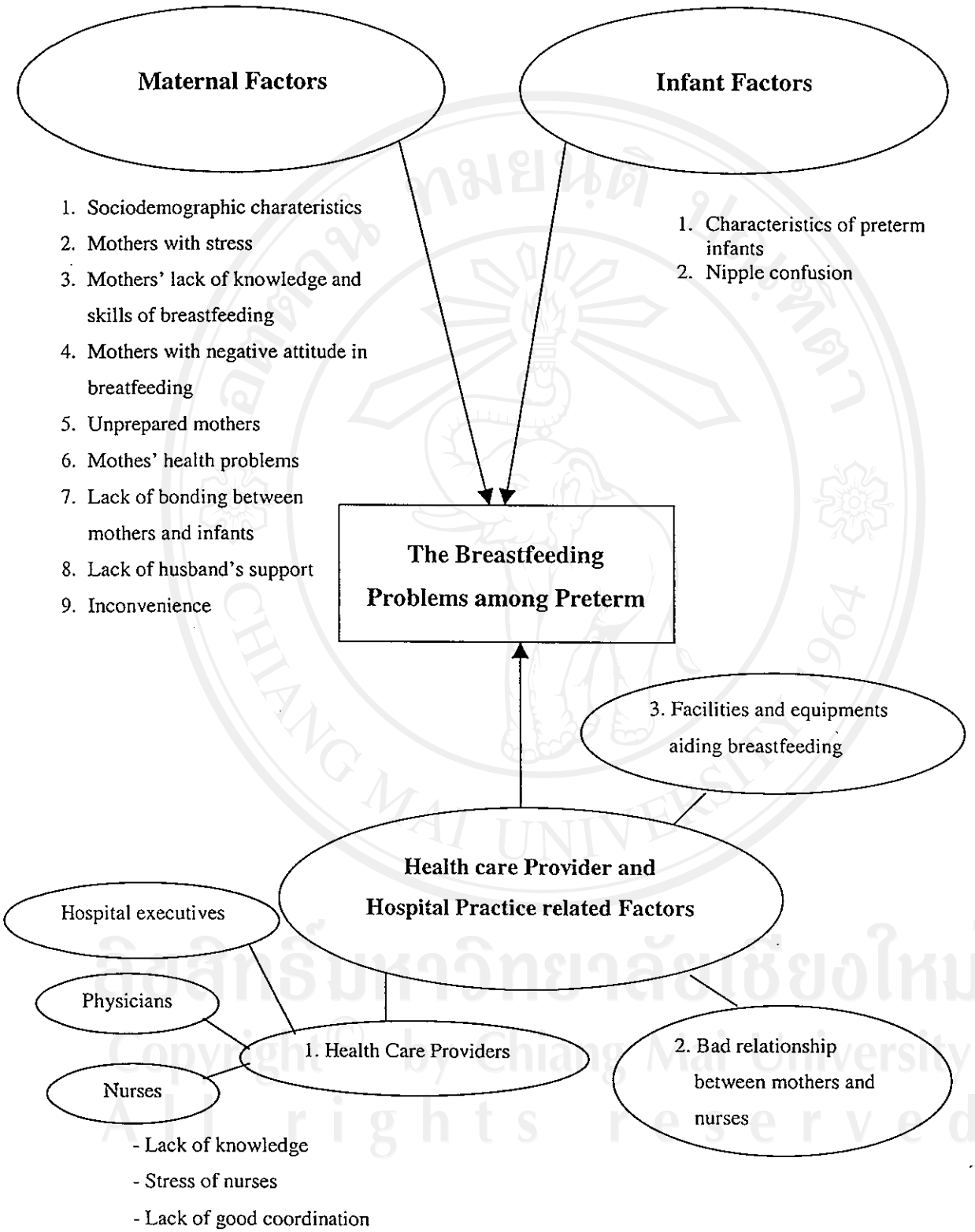

Figure 3 : Illustration of the breastfeeding problems and their causes related to maternal, infant and health care provider and hospital practice related factors

Research Question 2: What is the breastfeeding support program for preterm infants that will enhance practical nursing practice at BMA Medical College and Vajira Hospital?

After a review of the participants' own practices, the research team reached the conclusion that the breastfeeding support (BS) program was necessary for PU. The BS program for preterm infants was mainly developed based on the problems stated earlier. It was composed of activities for breastfeeding support including documents and all other resources, both tangible and intangible, which the participants required to facilitate the practice. The end results of the study the revision draft of the BS program was composed of two parts: 1) the main program and 2) strategies for practice and resources.

1. Main Program

The participants agreed that the program should effectively prevent and address the problems identified. The primary aims of the main program were to serve the mothers and infants needs, and provide continuous care for them from the time that the infants are admitted in PU until they are discharged. The aims and 4-phased activities included:

(According to the aims of the BS program for preterm infants, several activities were developed by the participants. They are displayed in Appendix F)

First phase: Mother's preparation for breastfeeding

The aims of the first phase were to decrease the mother's anxiety about her preterm infant and increase the maternal confidence to take care of her preterm infant. Other aims were to correct the mother's breastfeeding behavior, and support her to

breastfeed her infant. Another important aim was to help high-risk mother for breastfeeding failure (e.g. those who lack knowledge and skills of breastfeeding, those who have negative attitude towards breastfeeding, unprepared mothers and mothers with health problems) to breastfeed her preterm infant as long as possible.

Second phase: Feeding by other methods

The aims of this phase were to promote continuing milk production of the mother and help the infant consume human milk continuously with other alternative methods.

Third phase: Natural breastfeeding

The aims of the third phase were to teach the mother position her infant correctly at the breast, ensure an adequate volume of milk consumption, and ensure that the mother could identify and address breastfeeding problems.

Fourth phase: Infants' discharge

The aims of the final phase were to ensure that the infant was continuously breastfed, and instill confidence for the mother to breastfeed her infant.

2. Strategies for practices and resources

Besides the main BS program for preterm infants, strategies for practice and resources were incorporated in order to facilitate the program. They were composed of the following five parts:

2.1 Techniques of encouraging and attracting mothers to breastfeed

The aims were to create a friendly and warm environment for the mothers and their relatives, and assist them to breastfeed their infants with their family support.

2.2. Preparing the personnel's readiness

The aims were to provide positive attitudes, knowledge and skills regarding breastfeeding for all involved personnel by providing education and training for the nurses in PU regarding breastfeeding. In addition, a manual of breastfeeding was prepared for the nursing staff in PU.

2.3 Supporting breastfeeding in proactive way and coordinating with related units

The aims were to support and promote breastfeeding in an active manner, and network with other nurses, physicians, wards, and other essential staff.

2.4 Breastfeeding assessment and record form

The breastfeeding assessment and record form developed by the participants was created for three objectives: to assess and identify infant-mother breastfeeding problems; to record information necessary for monitoring the feeding progress and formulating a care plan; and to communicate with the participants and those involved to continue the activities.

2.5 Resources

The aims of the final part were to make the lactation (Oon-Rak) room suitable for mothers, infants, and all facilitating equipments for breastfeeding support for use in PU, for example: teaching media, pillows, etc.

Research Question 3: How do the researcher and the participants develop the breastfeeding support program for preterm infants?

The process of developing the BS program for preterm infants by using PAR in the study comprises of 3 phases: 1) the preparation phase; 2) the implementation phase; and 3) the evaluation phase.

Phase 1: Preparation phase

The researcher asked for the permission and cooperation from the President of the Medical Department, Bangkok Metropolitan Administration, the director of BMA Medical College and Vajira Hospital, the division of Nursing as well as the head nurse of the premature infant unit. The researcher also sought the participation from the participants, and they were willing to take part in the study. The participants were then explained about the methods of participatory action research and basic assumption for working together. They did a preliminary survey in their unit regarding breastfeeding practice to confirm that breastfeeding was a problem. After the assessment, they perceived the problems and the need for developing the program.

Phase 2: Implementation phase

The participants and the researcher started the processes of implementing the participatory action research beginning from planning, acting, observing and reflecting steps which are a continuous cycle.

Cycle 1 (1 August-December 12, 2003)

: Identifying problems and applying the breastfeeding support program

Identifying problems

During preparing the participants to be jointly aware of the problems and realize the situation of breastfeeding at PU needed to be improved, the problems were

set as topics with the same interests. In this research, the process of reflecting was applied as the main method of exploring initial problems while the researcher used the participatory observation to gather the information as another way. The issues and problems of breastfeeding preterm infants were explored and identified by posing the major question to the participants. The question was "What are the breastfeeding problems and causes among preterm infants at Preterm Infant Unit?" Problems and possible causes as perceived by the participants were widely discussed among them. The breastfeeding problems in preterm infants as perceived by the participants stemmed from maternal factors, infant factors and health care provider and health service related factors as presented earlier.

Planning

The planning phase mainly recounted the formation of the breastfeeding support program. Initially, the participants discussed and commented on the activities, which included the four phases starting from admitting preterm infants to PU until discharging. The first cycle of the planning phase took three months to complete with the production of the breastfeeding support program for preterm infants. The first draft of the BS program was developed by the participants, which had been separated into 2 groups. Both drafts were discussed and considered by the research team upon completion. The drafts were edited and developed to be the first draft of the combined research teams. The first draft was also submitted to the experts for the approval to guarantee the safety for the mothers-infants involved. Upon feedback from the experts, it was revised according to all suggestions received before implementation.

Acting

The breastfeeding support program was developed by the participants and the researcher brought into action using the PAR approach. The participants engaged in the planned actions and collected the information regarding breastfeeding in the PU. The participants were mainly the health care providers who implemented and monitored the plan during and after the execution. The researcher and the participants also wrote journals and field notes. During the program implementation, the researchers assumed the roles of consultant, participant, observer, and facilitator. Support and encouragement were also continuously given to the participants.

Observing

The changes outlined in the plan were observed for their effects and situational context. The researcher and the participants continually monitored the participants' progress, evaluated the results of action, identified possible aspects of practice improvement and modified the plan for further development. These observations were used to revise the plan for the next phase. The researcher monitored this process by writing a reflective journal, recording responses from nurse participants, listening to their comments, and observing research teamwork and behavior.

Reflecting

Initially, the participants felt that some preterm infants were not provided enough support according to the first draft of the breastfeeding support program due to a lack of availability of responsible people in the program. Some infants and mothers remained unaccounted for and not continuously supported. One mother had a diminished milk supply because she expressed her milk every 3 hours including night

time. That would cause stress and reduce lactation. Some infants, who met the criteria for feed training, could not tolerate training every feeding, and some became weak after long training sessions conducted outside incubators. The Breastfeeding Assessment and Record Form were not completely documented. It was critiqued for redundancy and time consumption. In addition, the feeding record section of the form could not demonstrate the infant's feeding progress for each feed.

Cycle 2 (December 12-26, 2003):

Revising the breastfeeding support program

Planning

According to the problems assessed after implementation of the first draft of the breastfeeding support program, the participants agreed that the first draft of the program needed to be revised; resulting in the following amendments:

1. Indicate the responsible person for each task. The one who first contacted the infant was to be responsible for admitting the preterm infant into the program, assess mother's knowledge, attitudes, skills, and check the Breastfeeding Assessment and Record Form was correctly completed. The breastfeeding assessment and record form would be filled in by the one who discharged the infant.

2. Identify the infants in the program by using signs. The first sign is the withhold bottle sign. The second is an orange sign, which would be taped on the cover of the chart of each infant. The last sign is a pink sign, which would be taped on the cover of the chart to indicate that some information in the Breastfeeding Assessment and Record Form was uncompleted.

3. Emphasize continuous care for the mother and infant 24 hours daily, including every shift in order to continue giving breastfeeding care.

4. Encourage the mother to sleep at night and dispel fears regarding night time expression of milk. In addition, remind the mother of the need to express her milk at least 6 times per day.

5. Add more criteria for infants who are breast, cup, or spoon fed. The criteria added are as follows: the infants must be active, and they must not be treated with oxygen at that time. The incubated infant should not be out for over thirty minutes to be feed trained. Furthermore, infants' signs and symptoms would be monitored and recorded before, during, and after each feeding, including oxygen saturation.

6. Help infants who are not ready to be breast fed by massage.

7. Revise the breastfeeding assessment and record form to be concise and avoid redundancy by omitting non-essential data, and adding a feeding record table for each feed instead of each day.

Reflecting

After the revisions to the BS program, the participants felt that the program was satisfactory because the objectives of the program were achieved. There were some exceptions, including the cases of infants whose mothers were on medication that might have side affects, and some mothers unwilling to cooperate. However, they suggested that the nurses should pay attention to all mothers unconditionally, and accept failures. They also thought that the program could be applied to real situations as all the activities and strategies were acceptable to other units due to its meticulous development.

The participants raised some objections during this cycle. They did not know how to massage to stimulate preterm infants to suck and swallow and needed

more information about massage. Some were concerned over mothers on medication for failing to breastfeed their babies, thus resulting in the need for syringe or spoon feeding to the babies and that might lead to the problems at the oral stage. Another problem raised by the participants was that adolescent mothers had complicated problems, and were thus unwilling to cooperate. They rarely visited their infants and failed to express milk consistently. In addition, some discharged infants were not monitored according to the program. Finally, the Breastfeeding Assessment and Record Form seemed redundant, thus calling the need for further revision.

Cycle 3 (December 26, 2003-January 16, 2004):

Revising the Breastfeeding Support Progam

Planning

The strategies were discussed to address the problems above; as a result, the participants agreed to the following recommendations:

1. Provide theoretical and practical massage sessions with experts.

2. Coordinate a feeding plan for infants whose mothers take medication with the cooperation of their physicians.

3. Formulate techniques to encourage mothers to breastfeed their infants in the hospital, and pay extra attention to adolescent mothers.

4. Identify people responsible and day shift nurses in order to follow up on post discharge infants. In addition, establish the use of memos to be taped on tables detailing reminders for dates of follow-up cases.

5. Revise the Breastfeeding Assessment and Record Form to remove redundancy, group activities together and provide validation with the help of three

experts. Redundant items targeted include general information, and mother-infant assessments, which are translated from LATCH.

Reflecting

The participants found that the main objectives of the program were mostly achieved. In the first phase, mothers in the program were able to express their milk correctly and maintain milk production. The second phase continued breastfeeding. In one case, an infant was breastfed every meal by Nasogastric tube for more than one month, and then was breastfed until discharge. In the third phase, almost breastfed infants had high LATCH scores. One exception was that an infant got a score of six due to oral problems. However, he was referred to the lactation clinic at Siriraj Hospital for treatment. In the last phase, the participants found that almost infants in the program were breastfed on discharge day, and only two out of the twelve were formula fed. These two cases involved an adolescent mother, and the other had a mother on medication, which resulted in a discontinuation of breastfeeding two weeks. One interesting issue, which was raised by the participants, was that mothers involved with their infants would result in successful breastfeeding. They found that absent mothers of hospitalized infants were less likely to succeed at breastfeeding, despite the efforts of nurses, the main factor is the mother and her milk.

Two main problems were identified in the fourth phase. The first was that some discharged infants were not monitored according to the program, especially the second week of post discharge. The second one was that some sections of the Breastfeeding Assessment and Record Form were not filled out completely despite the progress these forms showed. This problem may be due to an overload of paperwork.

Cycle 4 (January 16-30, 2004):

Revising the Breastfeeding Support Program

Planning

1. Promote the need for the mother to be with her infant during hospitalization in order to initiate bonding and attachment. Infants can be early initiated and continuously breastfed, thus removing the chances that infants will be fed by other methods. In addition, mothers are trained to be able to massage their infants independently.

2. Assign the responsibility for calendar follow ups and reminders to the participant who discharges the infant.

3. Reformat the Breastfeeding Assessment and Record into a breastfeeding sheet.

4. The participants mentioned that adolescent mothers had complicated problems and were thus unwilling to cooperate. They rarely visited their infants and failed to express milk consistently. Some participants felt upset and avoided to contact with them while some participants suggested that nurses should accept whatever the outcomes are and continue help the mothers even they choose the bottle feed method.

In conclusion, during developing the program the participants reflected on the results and drew conclusions for the next revision of the program. They felt that some preterm infants were not provided enough support according to the developed program due to a lack of availability of responsible people in the program. A mother had diminished milk because she expressed her milk every 3 hours including night time. Some infants, who met the criteria for feed training, could not tolerate training every feeding, and some became weak after long training sessions conducted outside

incubators. The Breastfeeding Assessment and Record Form were not completely documented. Infants whose mothers were n medication possibly faced the problems at the oral stage. In addition, the adolescent mothers had complicated problems, and were thus unwilling to cooperate. Finally, absent mothers of hospitalized infants were less likely to succeed at breastfeeding, despite the efforts of nurses, the main factor is the mother and her milk.

The program was therefore altered in every cycle, resulting in the following adjustments: 1) assign the responsible person for each task; 2) identify the infants in the program and uncompleted chart by using signs; 3) emphasize continuous care for the mother and infant 24 hours daily, including every shift in order to continue giving breastfeeding care; 4) encourage the mother to sleep at night and dispel fears regarding night time expression of milk; 5) add more criteria for infants who are breast, cup, or spoon fed; 6) revise the Breastfeeding Assessment and Record Form to be shorter and avoid redundancy; 7) pay attention to all mothers unconditionally, and accept failures; 8) provide theoretical and practical massage sessions with experts; 9) coordinate a feeding plan for infants whose mothers are on medication with the cooperation of their physicians; 10) formulate techniques to encourage mothers to breastfeed their infants in the hospital, and pay extra attention to adolescent mothers; and 11) promote the need for the mother to be with her infant during hospitalization

Phase 3: The Evaluation Phase

The study was evaluated in the final phase mainly by the participants' reflection. The outcomes were discussed and the participants indicated that the breastfeeding support program for preterm infants was contributed to the improvement of the breastfeeding situation in the PU and the positive changes in the

premature infant unit. The results would be presented to answer the researcher question number four.

Research Question 4: What are the outcomes of implementing the breastfeeding support program for preterm infants?

The BS program for preterm infants was used in PU from November 24, 2003 - January 31, 2004. After the implementation, there were two main outcomes: the improvement of the breastfeeding situation in PU; and positive changes of PU.

Improvement of the Breastfeeding Situation in PU

After the discussion among the research team, it decided to formalize the collection of data from infants and mothers who joined the developed breastfeeding support program. This was achieved through the Breastfeeding Assessment and Record Form. The findings showed that the breastfeeding situation in PU was improved as seen by comparing the feeding practice before and during implementing the project. The findings also revealed that during the program implementation, breastfeeding in preterm infants increased while bottle feeding decreased (Appendix C and D). The period during which infants would be fed breast milk was extended to 24 hours a day; previously, infants were fed from 9.00-21.00 only as detailed in Appendix E (data collected on the types of food and methods of feedings to preterm infants at PU during June-December 2003)

Positive Changes of PU

The action research recognized that human beings are social beings. To change the culture of the organization, it is necessary that the group in that organization change themselves, with others, through modifying the substance, forms

and patterns which characterize groups and interactions among their members. Accordingly, in this study there were positive changes of PU including the nurse participants themselves and their practice in PU.

In the past, the participants had positive attitudes toward breastfeeding, but they did not actively encourage mothers to breastfeed their infants or provide help to promote breastfeeding in the unit. They rarely followed up on mothers to express milk or breastfeed their infants. They felt that they had neither enough knowledge nor skills. The participants mentioned that they did not know the real breastfeeding problems within their setting. There were no media or breastfeeding support devices such as sufficient spoons, cups, pillows, small chairs and etc. Most of the preterm infants were formula fed, and only a few were breastfed by their mothers. The mothers with flat nipples were not encouraged to breastfeed while infants with oral problems were not assessed. There was neither follow-up nor referral system after discharge. Some formula was distributed freely to some mothers. The participants and mothers rarely interacted with each other. There was no responsible person for breastfeeding support activities. The following statements offered some insights:

"I have worked as a nurse for 10 years but have no idea why mothers did not want to breastfeed."
"Sometimes nurses are quite busy and they do not take human milk to the infants even though it was kept in the refrigerator."
"In the past, if I met the mother with flat nipples, I wouldn't do anything with her, but just let her go, but right now, I know that mothers with flat nipples can breastfeed."
"I can't help her breastfeed, I don't know how to do."
"I helped her all day but I couldn't make any difference, so that's why I really want to be trained."

As time went by, the participants still held positive attitudes towards breastfeeding. They had confidence that they were sufficiently knowledgeable and skilled in helping mothers to breastfeed. Of the total participants, four persons attended the breastfeeding training course at Siriraj Hospital while the others learned by themselves from the breastfeeding-related books, documents, compact discs, and visited the lactation clinic for one day. In addition, infant massage sessions were provided for all.

They were not overly concerned that their colleagues might misunderstand them as it became acknowledged that breastfeeding support was necessary and time consuming. The participants actively encouraged and helped the mothers to breastfeed their infants. There were assessments, follow ups, and referral procedures. All of the participants encouraged and checked that mothers expressed their milk and came to breastfeed their infants more often than before. Breastfeeding education was provided for mothers by the participants both individually and in class. There were media and breastfeeding support devices. The infants who were not ready, or could not be orally fed were massaged. The participants fed the infants whose mothers were unavailable by cup or spoon, instead of bottle. They helped the mothers with breastfeeding problems including those of nipples and breasts.

The participants' discourse had also changed. They talked more about breastfeeding, and were not afraid to articulate their ideas. They developed effective communication skills. Armed with vital knowledge, they were better positioned to explain concepts and ideas which were discussed and taken into consideration.

Formula distribution was discontinued. The participants established good relationships with mothers while the ward was well known. There was cooperation

among the nurses at PU and from the ones involved. These following statements showed those changes:

"After visiting the lactation clinic at Siriraj, I realized that I knew nothing, but I now I gain a lot from there."
"The nurses are more confident to help mothers breastfeed their infants."
"We all approach the mothers more than before, and I felt that everybody interacted with the mother more than before."
"I think mothers now get enough information."
"By this project, the nurses in the ward used cup feeding more than other projects of the hospital."
"Now I feel that it satisfied me a lot, and I've got what I want to use. If there is no project, everything would still be the same. Nothing would happen with the breastfeeding issues."
"The mothers were not afraid to come and see the nurses. No more fears to talk and ask questions. In the past, the mothers just sat there and looked at the nurses, but right now, mothers with their infants come to visit us more than before."
"Our unit is kind of a closed system, but right now, it is better known."
" Pee Z is ok now (the nurse who worked in the postpartum ward) and she knows well that we are promoting a breastfeeding program."
"I can see another thing in our group, it is that working in the research study makes everybody confident to express their thoughts and dare to do what they want. In the past, some junior nurses did not talk during meetings. This is a good point."

Discussion

This section presents discussion of the findings. These are corresponding to the breastfeeding problems among preterm infants at BMA Medical College and Vajira Hospital; the breastfeeding support program for preterm infants enhancing practical nursing practice at BMA Medical College and Vajira Hospital; the process of developing the BS program; and the outcome of implementing the BS program.

The breastfeeding problems among preterm infants at BMA Medical College and Vajira Hospital

Breastfeeding problems among preterm infants at BMA Medical College and Vajira Hospital as perceived by the participants stemmed from maternal factors, infant factors and health care provider and health service related factors.

The causes of problems related to mothers could be divided into groups as follows: sociodemographic characteristics (sociodemographic characteristics of mothers were emphasized in relation to maternal age, employed mother and economic status), mothers with stress, mothers' lack of knowledge and skills of breastfeeding, mothers with negative attitudes towards breastfeeding, unprepared mothers, mothers' health problems, lack of bonding between mothers and infants, lack of husband's support, and other factors. The problems related to mothers, except maternal age, perceived by the participants are in consistence with previous studies. The participants initially thought that older mothers would have high risk for breastfeeding failure that was inconsistent with most of the literature review. Scott and Binns (1999) found there was a strong and consistent association between breastfeeding and maternal age. Mothers who were older chose to feed their infants' breast milk (DaVanzo, Starbird, & Leibowitz, 1990; Grossman, Fitzsimmons, Larsen-Alexander, Sachs, & Harter, 1990; Ryan, Wysong, Martinez, & Simon, 1990), whereas the number of adolescent mothers who chose to breastfeed their babies was significantly lower compared with older mothers (Dennis, 2002; Ineichen, Pierce, & Lawrenson, 1997). Even among women who fed their preterm infants' breast milk, older age was related to more consistent breast milk feeding during hospitalization. These women might better recognize the advantages of breast milk and have more resources at their disposal that

make it easier to express milk or to make milk available to the infants more consistently (Espy & Senn, 2003).

However, during conducting the study the participants stated that adolescent mothers had complicated problems and were thus unwilling to cooperate. They rarely visited their infants and failed to express milk consistently. The participants reflected that they were not successful to promote breastfeeding in adolescent mothers. It is supported by the previous study showing that low breastfeeding rates in teenagers have been reported (Lumley & Brown, 1993). The teenage mothers may stop breastfeeding for many reasons including fatigue, lack of appropriate long-term social support from their support network and the father of their infants, peer pressure and /or inadequate education. Conflicts within the family may occur as a result of limited social support and the emerging family integrity may be challenged (McVeigh & Smith, 2000).

In addition, teenage mothers are more likely to have difficulty understanding infant behavioral cues (Pridham & Chang, 1991) and are significantly less likely to breastfeed (Lumley & Brown, 1993). Adolescent mothers may also be concerned about weight gain and breast disfigurement (Robinson, Hunt, Pope, & Garner, 1993). Others showed no interests in breastfeeding because they would not be able to smoke, drink or use illicit drugs if they breastfed (Weiman, DuBois, & Berenson, 1998). It clearly showed that adolescent mothers need more encouragement and motivation for breastfeeding. Efforts should be made to better understand the factors that promote optimal lactation performance in adolescent mothers (Motil, Kertz, & Thotathuchery, 1997). Previous studies supported that young mothers are more likely to breastfeed their infants when encouraged and supported by nurses as

well as physicians (Lu, lange, Slusser, Hamilton, & Halfon, 2001). The BS program was therefore adjusted, resulting one amendment for the participants to pay extra attention to adolescent mothers.

The breastfeeding problems related to mothers perceived by the participants were possibly due to other factors including inconvenience of going to the hospital. Some women had to "Yoo Fai", so they cannot go to the hospital. This thought was supported that individual health behaviors were embedded by insignificant cultural pattern exchanges that were reinforced by strong family ties and tradition. Thai women would be confined to the home for at least 30 days following childbirth. This time is translated into the term "doing the month" during which they would avoid many activities in order to rest, particularly in the first few days after childbirth. Traveling long distances and any heavy household duties were also avoided. (Kaewsarn, Moyle, & Creedy, 2003b). Therefore, the participants thought that one reason why mothers of preterm infants did not breastfeed their infants was due to those cultural beliefs.

For infant factors, the participants stated that there are two major causes: characteristics of preterm infants; and nipple cunfusion. Preterm infants have specific characteristics because of immaturity of physical systems. It would be hard for them to suckle as the coordination of suckling, swallowing and breathing is still poor. They are also highly vulnerable to such disorders as hypothermia. This characteristic causes more difficulties for preterm infants to suck milk from breasts than term infants. In addition, preterm infants must be separated from mothers after birth to receive treatment at special unit, some of them are fed milk from bottle while being at the

hospital. The participants thought that this habit causes nipple confusion, making them refuse to suckle.

Ahluwalia, Morrow, Hsia, and Grummer-Strawn (2003) noted that the mother of an infant who had low birth weight or who was admitted to the NICU showed lower overall rates of breastfeeding initiation. It might be because of a serious infant illness that would affect the infant's feeding behavior. Adair and Popkin (1996) indicated one of the possible reasons was that low birth weight children in their study were not readily accessible to their mothers for breastfeeding in the maternity ward or that women had specific perceptions about feeding infants who seemed vulnerable at birth. In addition, the reasons why mothers weaned were examined in several studies. The findings showed that the breastfeeding behaviors of preterm infants cited most frequently by mothers included resisting latching onto the breast, having a weak suck, refusing the breasts and having difficulty with latch-on (Hill et al., 1997); the infants showed no interests and thus did not get enough breast milk (Adams, et al., 2001). Without proper lactation management, this may cause problems that deter successful initiation of lactation.

According to the group discussion, breastfeeding problems related to health care provider and health service related factors were identified by the participants. These were health care provider (nurses, physicians, and hospital executives), bad relationship between mothers and nurses, and facilities and equipments aiding breastfeeding. The participants did not give any detail in other health care provider, and they mostly mentioned on nurses. Problems related to nurses could stem from the following 3 causes as follows: 1) lack of knowledge and skills of breastfeeding; 2)

bad relationship between mothers and nurses; and 3) facilities and equipments aiding breastfeeding.

The participants thought the nurses at PU lacked knowledge and skills of breastfeeding because most of them did not obtain the intensive training course of breastfeeding especially the practical skill courses. Also, they had little experience of breastfeeding due to lack of direct experience and little chance of trying the practical skills in the real situation. It is supported by the study of Hannon, Willis, Bishop-Townsend, Martinez, and Scrimshaw (2000) which reported that efforts to promote breastfeeding as the preferred method for infant feeding were less than successful among nurses and other health care providers. The impediments included lack of knowledge, non-supportive behaviors and attitudes of maternity nurses, and inconsistent advice (Green, Coupland, & Kitzinger, 1998).

However, midwives' general breastfeeding knowledge was adequate overall (Cantrill, Creedy, & Cooke, 2003). They demonstrated a better understanding of most concepts than medical physicians (Freed et al., 1995). Still, the number of incorrect responses to questions revealed the deficiencies in breastfeeding management decisions (Cantrill et al., 2003). Midwives' knowledge is not always superior to that of other health professionals who gain breastfeeding knowledge from personal or on the job experience (Pantazi, Jaeger, & Lawson, 1998).

Lack of knowledge by health professionals may also inhibit changes to some hospital routines (Burglehaus, Smith, Sheps, & Green, 1997), while inadequate training in the practical aspects of lactation management may contribute to a lack of understanding of the needs of breastfeeding women (Vogel & Mitchell, 1998). Lack

of technical, evidence-based knowledge may therefore result in inaccurate, confusing (Wilmonth & Elder, 1995), inconsistent (Green et al., 1998), and conflicting (Hailes & Wellard, 2000; Humenick, Hill, Spiegelberg, 1998; Raisler, 2000; Scott, Landers, & Hughes, 2001; Vogel & Mitchell, 1998) advice regarding breastfeeding and a lack of technical assistance, and contribute to a sense of discouragement and failure in new breastfeeding mothers (Hoddinott & Pill, 2000; Raisler, 2000; Whelan & Lupton, 1998).

The participants also thought the heavy workloads exceeding the number of nurses at PU prevented them from spending too much time to help mothers breastfeed while they had to bear other responsibilities. That caused stress among the nurses. In addition, nurses' stress was due to the low wage that pushed them to have sidelines for extra earnings. Meier et al. (1993) observed the breastfeeding activities in a neonatal intensive care unit and found that mothers of preterm infants require more time-consuming interventions in relation to breastfeeding and experienced problems with milk supply. Therefore, it would not be surprising that time constraint was another cause of breastfeeding problems perceived by the participants in this study. Mothers' capacity for simultaneous breastfeeding was dependent on the nurses' adequate support enabling them to handle their infants by themselves and to feel in control of the situation. Breastfeeding would be easier when there are an adequate number of nurses available who could answer questions and give practical assistance when needed (Nyqvist, 2002).

Preterm infants admitted to PU may be sent directly from the delivery room or nursery or Neonatal Intensive Care Unit (NICU). However, the lack of coordination and referral of breastfeeding cases prevented mothers from breastfeeding

their infants as this issue concerned other units. Therefore, there must be collaboration between the related units.

The participants thought the distance between the maternity ward and PU was another problem that kept mothers from visiting their infants. Due to the limited capacity of the place, it was not convenient for mothers to stay overnight at PU to get close to their infants. Furthermore, equipments such as chairs and pillows were not enough to support breastfeeding. The studies showed that it is necessary that the environment provide mothers with the feelings of comfort to breastfeed and having privacy (Yimyam, 1997). The mothers preferred an armchair with a soft seat and a back supporting them in a comfortable, right angle position. A special breastfeeding pillow and a footstool were also useful for holding the infants comfortably in an appropriate position (Nyqvist, 2002).

Breastfeeding support program for preterm infants enhancing practical nursing practice at BMA Medical College and Vajira Hospital

The participants shared the same opinion that PU encountered the problems of breastfeeding in preterm infants, and they reached the conclusion that the breastfeeding support program was necessary for PU. It is supported by the idea that breastfeeding interventions designed for healthy infants need to be tailored specifically to the needs of families with preterm infants and must address the specific problems. Mothers of low birth weight infants may need additional help (Perez-Escamilla, et al., 1998). While there are many barriers to successfully breast milk feeding to preterm infants, many women can initiate feeding with sufficient

education, hands-on skill teaching and ongoing support, although they may not appear capable in the stressful environment (Espy & Senn, 2003).

The breastfeeding support program for preterm infants was developed by the researcher and the participants who were nurses working at PU. It is also supported that the successful breastfeeding promotion program depends partly on the support of the staff involved both directly and indirectly in its administration (Losch, Dungy, Russell, & Dusdieker, 1995; Williams & Hammer, 1995). Establishing successful breastfeeding, which meets the women's self-determined goals, requires encouragement from her family members, appropriate lactation management and consistent evidence-based advice from the health professionals providing care for her and her infant (Tarrant, Dodgson, & Fei, 2002).

The BS program consisted of activities for breastfeeding support, documents and other support that the participants needed to facilitate the practice. It was composed of two parts: 1) the main program and 2) strategies for practice and resource management.

Main Program

The participants agreed that the program should effectively prevent and address the problems earlier identified. The primary aims of the main program were to serve mothers and infants needs, and provide continuous care for them, from the time that the infants are admitted in PU until they are discharged, in the four phases.

First phase: Mother's preparation for breastfeeding

In the first phase, mothers would be assessed in terms of their knowledge, attitudes and skills (regarding breastfeeding, her preterm infant's conditions and care

needed), and other problems such as the mother' breasts. These activities came from the participants' perspectives that breastfeeding problems among preterm infants stemed from maternal factors. In addition, these activities are supported by the study of Kong and Lee (2004), suggesting that an individual assessment of a client's knowledge and other influencing factors encourage effective health promotion on breastfeeding.

In this phase, the mothers would be explained the vital issues, such as the benefits of breastfeeding, process of breastfeeding., maternal guidelines for early and sufficient milk production, express breast milk for preterm infants, strategies for trouble shooting, e.g. nipple complications. It is supported with the ideas that for mothers to initiate and maintain breastfeeding, beliefs regarding disease protection, bonding with the infants and other health benefits of breastfeeding need to be emphasized and reinforced. Mothers must be informed about the supply and demand of the nature of milk production and how to carry out, with confidence, the physiologically sound feeding practices. All mothers dependent on manual milk removal must be taught the principles of milk expression. The use of breast massage prior to the expression of milk will help to stimulate milk ejection and an electric breast pump with a simultaneous (Double) collection set will save time and maximize the volume produced (Jones, Dimmock, & Spencer, 2001). However, the use of breast pump was not emphasized in the BS program for preterm infant in this study.

In addition, the study in Hong Kong by Ho and Holroyd (2002) showed that new mothers reported that antenatal care providers did not prepare them for the complexities of breastfeeding. Educators primarily stressed the positive aspects of breastfeeding, neglecting the problems commonly experienced with the establishment

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In addition, the study in Hong Kong by Ho and Holroyd (2002) showed that new mothers reported that antenatal care providers did not prepare them for the complexities of breastfeeding. Educators primarily stressed the positive aspects of breastfeeding, neglecting the problems commonly experienced with the establishment

of lactation. Effective management of lactation problems in the early postpartum period is a key to prevent early weaning. Therefore, in the first phase of the program the educational programs also need to focus on helping mothers build the skills required to overcome common breastfeeding problems. In addition, for mothers of preterm infants they must have more breastfeeding knowledge than needed for nurturing their infants.

Moreover, in the first phase mothers are promoted to contact with her preterm infant as soon as they can. Evidence-based practice in support of breastfeeding is outlined in the UNICEF/WHO Baby Friendly Initiative, Ten Steps to Successful Breastfeeding. Skin-to-skin contact at birth and early suckling has been shown to increase the duration of breastfeeding. Babies, therefore, should be offered unrestricted access to their mothers' breasts in the early hours and days after birth, rooming in with their mothers (Fraser & Cullen, 2003). These supportive activities in the BS program for preterm infants would allow mothers to have a visit and be with their infants in the unit with an aim to increase their bonding.

Second phase: Feeding by other methods

In the second phase, in cases of inability to breastfeed, the infants are protected from nipple confusion by being fed by gavage, cup or spoon method. Cups were used as the principal alternative feeding method when the infants only took a small volume of milk from the breasts and in the mother's absence. Bottles were used only upon the mother's own request and when the mother did not produce enough milk to allow full breastfeeding when the infants' discharge from the hospital was impending (Nyqvist, 2002).

Third phase: Natural breastfeeding

In the third phase the mother's position at the breasts and infant's latch on, sucking and swallowing reflex would be assessed. It is supported from the breastfeeding problems among preterm infants related to infant factors identified earlier which preterm infants have their own characteristics because of immaturity of physical systems. It would be hard for them to suckle. The mothers therefore would be demonstrated and return demonstrated regarding breastfeeding at the breasts. It is important that a mother is demonstrated how to position and attach her baby to breasts correctly at the first feed. Correct attachment and positioning are fundamental to breastfeeding success since they are essential to effective milk drainage and a satisfied infant. Correct positioning skills will minimize such problems as sore and cracked nipples, breast engorgement and mastitis. Frequent feeds will continue until the milk supply is abundant, and then the space between feeds will gradually become longer. If an infant is positioned incorrectly at the breasts, the stimulus for an increase in milk yield will be compromised, which may lead to infant dehydration, jaundice and inadequate milk supply and maternal fatigue (Spencer & Jones, 2002).

However, health professionals need to go further than simply conveying the facts and information, promoting learning and understanding. Jamieson and Long (1997) have achieved this in the form of practical client-centred breastfeeding workshops. The importance of teaching and supervising correct attachment at the breasts is absolutely vital, as the inability to achieve this is particularly detrimental to lactation. Verbal support for breastfeeding was often inadequate and women valued practical demonstrations and being shown how to feed their infant (Hoddinott & Pill, 2000).

In addition, the decision to initiate breastfeeding and the confidence and commitment to persevere is influenced by embodied knowledge gained from seeing breastfeeding rather than theoretical knowledge (Hoddinott & Pill, 1999a; Hoddinott & Pill, 1999b). Mothers described interactive discussion with a breastfeeding mother and baby as providing more relevant preparation for breastfeeding than professionally led classes which used a more didactic. Mothers who were shown how to feed and care for their baby were more satisfied with their professional care than those who were not (Hoddinott & Pill, 2000).

The third phase included test weighing; that is the infant's weight was assessed before and after feeding sessions to confirm the volume of milk intake in milliliters, defined as net weight gain in grams. All electronic scale that gave the infant's weight to the nearest 5 g was used. Test weighing continued until the infant consumed the prescribed daily volume at the breasts or by breast and bottle; thereafter, the infant was weighed about once a day to ensure that the weight gain was adequate (Nyqvist, 2002).

The anxiety expressed by some women in relation to their inability to visualize the volumes of milk being produced and consumed by their babies was also reported by Leff, Gagne, and Jefferis (1994) and Kavanagh et al. (1995). This desire to see and quantify breast milk appeared to reflect the undermining influence of the readily available artificial milk. At a deeper level, it is likely to be a feature of our technological culture with its emphasis on measurement and to see is to believe (Dykes & Williams, 1999). However, mothers suggested test weighing should be avoided if possible (Nyqvist, 2002).

Fourth phase: Infants' discharge

In the final phase mothers would be reviewed the benefits of breastfeeding and the feeding plan in the days preceding discharge, be ensured that they can breastfeed her infant. In addition, mothers would be called within 24 hours and 2 weeks post discharge to assess problems, support, and answer questions if necessary via telephone counseling, home visits, referral or hospital visit. The mothers are encouraged to contact the nurse participants for hospital visits for any reason at any time after discharge. These activities are consistent with the idea that mothers of preterm infants have unique concerns about breastfeeding at home compared with healthy term infants (Kavanaugh et al., 1995). Furthermore, Hoddinottt & Pill (2000) indicated that gaining confidence was one of the key determinants to successful breastfeeding. It is imperative that all breastfeeding mothers understand the principle of lactation prior to discharge from hospital in the early postpartum period (Lothian, 1995). Breastfeeding support is a time-intensive process, requiring time to retrain infant behavior and for mothers to master new skills. Significant problems, such as poor infant attachment, cracked and bleeding nipples or a low milk supply require extended support. This distressing clinical situation may be very difficult to address in the short term and if mothers are not adequately supported, they will feel forced to turn to formula feeds (Spencer & Jones, 2002).

In Canada, many women received one routine home visit by a public health nurse during the first month after discharge from hospital. Whereas in the UK, at the time of the two studies contained in this review, postnatal care at home consisted of daily home visits from a midwife until 10 days after birth (and possibly until 28 days

if necessary) and a routine home visit from a health visitor (with an infant feeding advisory function) at approximately 10 days postpartum.

It is necessary to encourage mothers who have initiated breastfeeding to continue by providing support services postpartum in health care facilities as well as in the community and at workplaces. Perhaps innovative and targeted efforts are necessary to increase the likelihood of women in vulnerable groups to continue breastfeeding because these groups gained in initiation but not in continuation (Ahluwalia et al., 2003).

The BS program also needed to give an anticipatory guidance postpartum which includes how to implement a variety of feeding options to better prepare postpartum women for the transition back to work (Tarrant et al., 2002). Hill, Humenick, Argubright, and Aldag (1997) pointed to the outstanding importance of a regional field nurse's visits; in the first six weeks, these should be carried out every week and from then on until the fourth month, a telephone contact should be maintained with mothers once a fortnight. This has significantly contributed to the success of breastfeeding, as well as shortened the time of hospitalization and reduced the costs involved.

However, in the literature it would appear that the strategies depending mainly on face to face support seem more effective than those that rely primarily on telephone contact (Sikorski, Renfrew, Pindoria, & Wade, 2003). Early follow-up visits at home or in a clinic setting are critical for breastfeeding continuation to address maternal concerns (Lieu, et al., 2000).

After discharge, nearly all mothers expressed concerns about adequate supply of breast milk (Meier et al., 1993). It is critical that health care professionals

teach mothers to identify signs of adequate intake and to seek professional assistant before routinely supplementing breastfeeding. Health care professionals must recognize signs and symptoms of insufficient milk, such as infant lethargy and/or irritability, jaundice, infrequent defecating or urinating, and/or either failure to gain weight or excessive weight loss (7-10% of birth weight) and intervene when an infant's health is in jeopardy. Intervention should include a full assessment of lactation and a plan to preserve breastfeeding.

Monitoring and assessing infant growth is an important part of identifying potential lactation problems and providing appropriate intervention. The growth rate of breastfed infants is more significantly different than the rate of infant who are fed with human milk substitutes, particular after 4 month when breastfed infants appear to gain weight slower than indicated on the 1977 NCHS growth charts (Dewey et al., 1995). Therefore, a new set of international growth charts based on the growth of exclusively breastfed infant was developed for use.

The main program generally aims to prevent and address breastfeeding problems among preterm infants, especially the problems related to maternal factors and infant factors. A good point of the main program is that it provides for all preterm mothers who are either willing or unwilling to breastfeed. In this study, support was usually given to mothers intending to breastfeed but mothers intending to bottle feed were not exclusion criteria. However, even mothers decide to breastfeed or bottle they should not be treated differently. Informed decision should be provided because a mother in this study received the disapproval from some of participants not to breastfeed. As a consequence of this approval, she had chosen to hide her decision to bottle feed and then she did not do it in hospital, but wait until she went home.

Strategies for Practices and the Resource Management

Besides the main BS program for preterm infants, the strategies for practice and resources are included in order to facilitate the program. They are composed of the following five parts: 1) techniques of encouraging and attracting mothers to breastfeed; 2) preparing the personnel's readiness; 3) supporting breastfeeding in proactive way and coordinating with related units; 4) the breastfeeding assessment and record form; and 5) resources.

1. Techniques of encouraging and attracting mothers to breastfeed

The participants perceived the bad relationship between mothers and nurses was one of the factors related to breastfeeding problems among preterm infants at PU. In addition, the participants accounted to the important of supporting from the significant persons, especially mothers' husbands. Therefore, the first strategy for practice was the techniques of encouraging and attracting mothers to breastfeed. It aimed to create a friendly and warm environment for the mothers and their relatives, and assist them to breastfeed their infants with the family support. The support and encouragement of one person can make a difference to whether a woman weans her infant from breast milk or successfully continues to breastfeed. Studies have consistently shown that family support is critical for breastfeeding mothers (Dykes & Griffiths, 1998; Scott et al., 2001).

Support from the mother's husband may be a critical factor in the decision making process (Kessler, Gielen, Diener-West, & Paige, 1995) and this support during this stressful period can influence whether the mother continues or discontinues breastfeeding. Lactation consultants, nurses and health care professionals indicated that mothers who receive support from their spouses are more likely to

prolong breastfeeding (Scott et al., 2001). Including both parents in breastfeeding educational sessions is likely to influence how long breastfeeding continues (Scott, Binns, & Aroni, 1997). Mothers who perceived the father of their infant as supportive express greater satisfaction with motherhood, experience easier transitions, enjoy their infant more and are less stressed (Reece, 1995). Furthermore, separation from husband and older children was described as the worst part of the mothers' situation (Nyqvist, 2002).

Mothers' infant feeding behaviors are strongly influenced by the way in which family members and close friends feed their babies, as well as by the advice of family and friends (Dykes & Griffiths, 1998; Scott et al., 2001). Because positive family support is critical in maintaining lactation, significant family members, namely the fathers, maternal mothers and grandmothers, whenever possible, need to be included in breastfeeding education programs (Kaewsarn et al., 2003a; Kong & Lee, 2004; Tarrant et al., 2002). To ensure that husbands and relatives are also prepared and supportive of breastfeeding, nurses should provide education opportunities, discuss attitudes and outline expected supportive behaviors of partners (Kaewsarn et al., 2003). Such interventions focus on reducing fathers' reservations about breastfeeding, building comforting skills and support the breastfeeding mother so that the father can serve as an important source of social support for the breastfeeding mother (Sharma & Petosa, 1997).

The different goals between the nurses' and mothers' can give rise to dissatisfaction with communication that is often seen as breastfeeding centred rather than mother centred. The goals of health professionals seemed to be initiation of breastfeeding then prolonging it for at least 4 months. In contrast, the most important

goal for mothers was generally maternal, infant and family well being (Hoddinott & Pill, 2000).

The relationship between nurses and mothers was of significant importance to mothers when they feel physically and emotionally fragile after birth. If advice to persevere was offered in lieu of practical and emotional support, it was often resented. Attention to the process of care with more emphasis on apprenticeship style learning, together with verbal and nonverbal communication skill training may be as important as the actual content of the message. Another reason might be that mother preferred verbs like suggestions which facilitated their own decision-making. Facilitating mothers to make their own decisions was empowering and building up their confidence as a mother. Mother wants to make informed choices about infant feeding rather than feel pressured by health professionals (Hoddinottt & Pill, 2000).

Spending time with a midwife with whom the mother had developed a personal, continuing relationship was highly valued. Mothers in the study seemed more capable of accessing the support they required if a personal relationship had developed (Hoddinottt & Pill, 2000). Therefore, the program designed the ways mother and nurses can develop a good relationship with each other in order to create a warm circumstance.

2. Preparing the personnel's readiness

Health care providers were cited by the participants as one of the causes of breastfeeding problems among preterm infants at PU. They mentioned only nurses because of their own reasons not to taking about others. The problems could stem from lack of knowledge and skills of breastfeeding, stress of nurses, and lack of good coordination. The second strategy aimed to provide positive attitudes, knowledge and

skills regarding breastfeeding for all involved personnel, especially nurses by providing education and training for nurses in PU regarding breastfeeding. In addition, manual of breastfeeding was prepared for the nursing staff in PU.

Saljo (1981) described an approach to learning that involves surface and deep learning. In surface learning, the person tends to memorize the required information. Perhaps some nurses memorize basic information but lack deep knowledge of some issues that adversely effect practice (Cantrill, Creedy, & Cooke, 2003). Cantrill et al. also suggested that while all nurses need basic knowledge of breastfeeding and adequate scientific basis for practice, there is a need for deeper understanding and necessary evidence-based information (Dykes, 1995; Rajan 1993) to effectively meet the needs of women who plan to breastfeed, not just rely solely on personal experience to manage clinical situations. As a result, it is still needed to call for continuing education related to breastfeeding (Cantrill et al., 2003).

Another study found that a high level of breastfeeding knowledge was the best predictor of supportive behavior in providing information, technical support and emotional encouragement to breastfeeding mothers (Bernaix, 2000). A professional commitment to promote breastfeeding might be strengthened by increasing nurses' knowledge about the important differences between breast and formula milk (Spear, 2004). Rajan (1993) believed that the information and support received from health care personnel is a contributory factor to the success. The health professionals should be acquainted with the latest knowledge on breastfeeding and advice mothers in accordance with that knowledge.

Therefore, the BS program includes providing education and training regarding breastfeeding for nurses; however, that is not the project for all employees. It might be another task because of the support idea from Beshgetoor and LaMaster (1999), the need to provide education in-service programs for employees involved directly and indirectly in breastfeeding promotion programs to ensure that accurate information and positive support are consistently provided to mother.

3. Supporting breastfeeding in proactive way and coordinating with related agencies

The aims are to support and promote breastfeeding in an active manner, and network with other nurses, physicians, wards, and other essential staff. It is supported by the study of Hoddinottt and Pill (2000) which found that the majority of mothers waited for health professionals to be proactive and offer support with feeding. This passivity reflected an underlying lack of confidence in coping with new experience following birth in an unfamiliar environment.

4. Breastfeeding assessment and record form

The breastfeeding assessment and record form was developed for three objectives: to assess and identify infant-mother breastfeeding problems; to record the necessary information to monitor the feeding progress and formulate a care plan; and to communicate with the participants to continue the helpful activities. The form developed was supported by the idea that management requires sensitive counseling, taking a careful history to establish the source of problems, differentiating between problems related to the infant and those related to the mother; and providing appropriate assistance. The majority of problems can be solved by giving close attention to feeding techniques and support (Fraser & Cullen, 2003).

When dealing with a feeding problem, a thorough and systematic approach is required. The mother's level of knowledge regarding the breastfeeding process should be ascertained and the advice she has been given should be assessed. A history must also be taken which includes: age of the baby, relevant delivery details, early feeding history, frequency and length of feeds, urinary and stool output and the pattern of breast rotation used (Livington, 1990). A maternal history is also important, regarding mammary development during pregnancy, perceived milk supply nipple condition and breast fullness. Once a history has been taken the necessary advice and help can be offered and mothers should be encouraged to continue to breastfeed (Spencer & Jones, 2002).

5. Resources

In order to address the problems of facilities and equipments aiding breastfeeding perceived by the participants, Oon Rak room and all facilitating equipments for breastfeeding support were made to suit for mothers and infants. Oon-Rak room provided for mothers is supported by the suggestions of Nyqvist (2002) that mother should have the opportunity to breastfeed in a separate room outside the nursery. Information to parents about the availability of parent rooms should be given routinely and parents of preterm infants especially twins should be given the opportunity to stay together in the unit to enable the father to assist the mother and participate in the infants' care.

In addition, there should be enough chairs with soft seats and upright backs, footstools, and adjustable breastfeeding pillows that are high enough and fit the mother's size. These varied sources may not only influence a mother's decision to breastfeed, but also her feelings of success and satisfaction with the breastfeeding

experience (Giugliani, Caiaffa, Vogelhut, Witter, & Perman, 1994; Isabella & Isabella, 1994).

Process of developing the BS program

The process of developing the BS program for preterm infants by using PAR comprises of 3 phases: 1) the preparation phase; 2) the implementation phase; and 3) the evaluation phase.

In the preparation phase, the researcher asked for the permission and cooperation from the president of the Medical Department, Bangkok Metropolitan Administration, the director of the BMA Medical College and Vajira Hospital, the division of Nursing as well as the head nurse of the premature infant unit because they all held power of the setting. It is consistent with the community researchers who stressed the importance of knowing the politics of the community and the people who held power, and seeking commitment from these people at the onset (Lindsey & McGuinness, 1998). By this initial support, the participants were more motivated to support the project. Furthermore, it was important to set clearly defined goals and objectives for the study.

The researcher found that obtaining the commitment of the participants from the onset of the research is also critical for success. The participants should not be persuaded or compelled to take part in the study. The researcher thought that with such commitment the participant could make an effort and their time until the study is finished. Although the participants were not informed of how the effort and time needed for the study, the time-line of the study was proposed and discussed among the participants.

In the study, the participants did a preliminary survey in their unit regarding breastfeeding practice to confirm that breastfeeding was a problem. After the assessment, they perceived the problems and the need for developing the program. It was not because others told them, affirming that people's own knowledge learnt from direct experiences is valuable, these approaches regard people as agents rather than object; being capable of analyzing their own situations and designing their own solutions (Cornwall & Jewkes, 1995).

In the implementation phase, a series of cycles consisted of a spiral of steps which include planning, acting, observing, and reflecting was formulated. The researcher and the participants were always in the uncertainty because the study was flexible to the time and events due to the fact that action research is considered to be a very flexible strategy for changes (Hyrkas, 1997). Cohen and Manion (1980) stated it is characteristic of action research that its objectives, progress and content can be changed during the research if necessary. It has been indicated that in action research things are examined in their own circumstances, suggesting that action research is tied in time and in the organization in which it has been conducted.

Another problem from the action research's flexibility was that the participants did not fully understand about the research process. As Emerson, Fretz and Shaw (1995) described that ethical dilemmas in action research are not completely avoided by informing the participants of the research purposes. Although the participants may have consented to the research, they might not know exactly what the research involves or what the researcher will do to carry it out.

The researcher felt that sometimes it was not easy to conduct PAR. Ironically, action researchers often have difficulty moving from the theory to the

actual practice of action itself (Waterman, Webb, & Williams, 1995). It is because the complexity of a situation in which feelings of confusion might be a result.

In the implementation phase, conversation guides were used to process the meetings. It is consistent with the suggestion by Comstock (1982) that the participatory action research needs to use a framework of questions that can initiate and structure the group process without assuming an imbalance of power. Possible themes for the initial group sessions include posing general and then specific questions and it is a beginning point for both the researcher and the participants (Soltis-Jarrett, 1997).

Meeting was the most important technique incorporated within the research design in this study for several reasons. It provided a forum that brought together the team of the participants who are responsible for providing care to preterm infants in the unit. Meeting also empowered the participants and made them feel free to reflect ideas; it ultimately constructed the critical theory. Upon reflection, the researcher planned and implemented reciprocity by using an experience-based knowledge to gather rich and valid data from the group, and at the end the content and outcome of the group become the language, voice and action of their reality. The researcher found that the researcher and the participants learned more with one another, being empathy and a rapport for negotiating the meaning and power within those relationships. This process assists the participants to understand that their thoughts, feelings, and ideas are their reality and not false or unfounded. They, therefore, felt free to say anything they think without reluctance as they ever have. Furthermore, the meetings provided the opportunity for the action research spiral to develop and occur in this study as noted by Soltis-Jarrett (1997).

When the plan was put into action, the researcher entered into the setting to get close to the participants with aims to know them and their conditions by participating in the daily routines of the setting while observing what was going on. The researcher became their member in order to gain fuller insight and understanding into these people and their activities. Anyway, the researcher still felt that there were some gaps impeding the researcher from being a full member of the group. This is in accordance with Emerson et al. (1995) who indicated that even learning about others through active participation in their lives and activities, no researcher can be a complete neutral. The researcher never becomes a member in the same sense that those naturally in the setting are members.

Throughout the study, the researcher kept writing a research diary. There was not an exact pattern to write it down but the researcher just described the experiences and observations she has made while participating in an intense and involved manner. It is supported by the idea that there is no correct way to write about what one observes. Rather, because descriptions involve issues of perception and interpretation, different descriptions of the same situations and events are possible. A recommendation for writing a field note is to write it as soon and as fully as possible after events of interest have occurred in order to encourage detailed descriptions of the process of interaction through which members of social settings create and sustain specific and local social realities (Emerson et al., 1995).

In this study, the collaboration between the researcher and participants was demonstrated by sharing in planning, making decisions, solving problems, setting goals, assuming responsibility and accepting accountability. Through the experiences, the participants in this study involved an innovative approach in the practice, which

highlighted the autonomy and value of nursing care. This was empowering for the nurses who felt they were truly able to do. Through collaborative practices, the participants in the setting enacted a broad range of professional actions aimed at empowerment.

The following example illustrates how the participants as both process and outcome used the empowerment. The study provided the context for the participants to practice autonomously is independent, self-directing, self-governing, and accountable for their own decisions and actions within the study and their program developed was responsive to the expressed needs. The participants were satisfied with their situation at the end of the study. Their objective to develop the breastfeeding support for preterm infants was also achieved. They decided what they should do to improve their situation and be proud of their work. It is consistent with that empowerment has been characterized as an abstract concept that implies opportunities and a sense of involving a relationship with others, focuses more on solutions than problems and is dynamic by nature (Worrell, McGinn, Black, Holloway, & Ney, 1996). It can be defined as both an interpersonal process and outcome. As an interpersonal process, empowering others means providing the resources to enable them to set and reach goals (Hawks & Hromek, 1992). As an outcome, being empowered translates into autonomous decision-making, self-determination and feelings of self-worth (Gibson, 1991).

In this study, the relationship between the researcher and the participants was that of researcher and co-researchers, allowing participants to be partners. The researcher acted as a facilitator moving with the participants rather than leading or pushing, changing the role of the researcher from director to facilitator and catalyst

(Cornwall & Jewkes, 1995). It was also recommended by Soltis-Jarrett (1997) who emphasized that the researcher must act as a facilitator who no longer practices in the traditional sense of authority where there is a fixed and distant relationship with the participants in a group. Shor and Freire (1987) also said that in this form of authority, the facilitator-led action drives the participants to use authority themselves to be active, enlightened, empowered and free rather than being manipulated, controlled and denied freedom.

It is necessary for the researcher to be trusted by the participants. In this study, the researcher was already known by the participants because the researcher used to work as a nurse in the setting and has worked as a nursing instructor later on. A gradual building of trust has arisen from the successful completion of the researcher work in the past. Trust was raised by Freire (1970) who considered trust a critical component of the relationship that a leader must have with the people with whom he works: " trusting people is the indispensable precondition for revolutionary change". People ought to trust the leader. It is implicit that the researcher must expect always to have to earn the trust of the people with whom they are working, and constantly reexamine their motives, attitudes and assumptions.

The implementation phase took around 8 months. When time went by, the researcher realized that the participations' motivation in the study might decrease. The researcher therefore reported their progress continuously to maintain their motivation and commitment to the research. It is supported by Lindsey and McGuinness (1998) who indicated that it was important to acknowledge achievements and ensure that the project goals had broad appeal. Showing charts, graphs, photographs and other visual presentations of the research progress established a motivation.

The researcher realized that the degree of participation in this study varied in the process. At the outset, the researcher found her in a position where the participants had little confidence in what they know and thus looked to the researcher for direction. After that, the participant gained more knowledge, skills and resources so they told that they all could deal with the breastfeeding problems by themselves. The activities in the program were implemented routinely. Similarly, with increasingly deep participation there is a movement towards relinquishing control and devolving ownership of the process to those whom it concerns (Cornwall & Jewkes, 1995).

After completing the study, the researcher learned that there are 2 strengths in the study. Firstly, this study has a unique component that may play a significant role in assuring its success. For several years prior to the initiation of the project, the researcher has worked as a nurse and later as a nursing instructor in the setting. Having worked with most of the participants in the past has developed a rapport, so the research was then initiated by her enthusiastic support and it assisted greatly in gaining access into the setting.

Moreover, the validity of the findings was very possibly enhanced. The participants were willing to share openly with the researcher who is not their foreign researcher. The fact that the researcher and the participants are all familiar no doubt contributed to the success of the study. It is supported by the idea that the researcher formed local communities, like academics, and carried their biases, prejudices and beliefs into research while their local knowledge and connectedness into local networks can enhance communication and commitment (Cornwall & Jewkes, 1995).

Furthermore, the commitment to the program in its original center from all is on-going, with the participants continuing to offer positive evaluations.

Outcomes of implementing the breastfeeding support program for preterm infants

After the BS program was implemented, there were two main outcomes. The program made strides to improve the breastfeeding situation in PU. The second was the changes in PU. One of the key themes of action research, as Carr and Kemmis (1986) argued, is to improve the justice of people's situations. It is consistent with Cohen and Manion (1980) who stated that action research is suitable for improving. There are an emancipatory element of action research and methods of trying to make things better although the degree of success differs between the projects. Action researchers seem almost to have an evangelical verve to try to do something to influence the practice. The approach emphasizes the political, ethical and active dimensions of the research (Waterman, 1998). In this study, the breastfeeding situation in PU was improved as seen by comparing the feeding practice before and during implementing the project. The findings revealed that during the implementation of the program, breastfeeding in preterm infants increased while bottle feeding decreased. However, in action research the main problem is usually the fact that the measurement results are also affected by variables other than the one measured. This leads to a difficulty of evaluating the effects of the intervention (Hyrkas, 1997).

Action research appears to offer the potential for changes. In one way, the project appears to be effective in helping to solve some problems at a local level; meanwhile, it appears to offer the potential for nurses to change their organization

culture. It is supported by the idea that success can often be viewed in relation to what has been learnt from the experience of undertaking the work. In this study, the lessons learnt were reviewed in the context of collaboration between the participants and the researcher; as a result, changes have already been made within the organization to act on the study's recommendations. Some positive changes were achieved in the course of the study but the study also shed light on some outstanding issues that needed to be improved in future developments. Without collaboration from the practitioners in the work place, changes in practice cannot be made. These changes are seen as necessary to solve problems in practice (Holloway, 1997).

As a result of the study, the participants are richer in knowledge, skills, experience, confidence and resources. This will serve as a strong foundation on which to build future programs and research. Although action research lends itself well to the discovery of solutions, its success should not be judged solely in terms of the extent of change achieved or the immediate implementation of solutions. As Kemmis and Mctaggart (1988) highlighted some instances that action researchers have to be patient, wait and nurture the situation before major changes can occur. The validity of an action research project ought not to be judged by its ability to effect change; the degree of change is not the measure of its validity. On the other hand, it resides in their attempt to improve people's lives to be professional through voluntary participation and co-operation.

PAR created positive experiences for those involved. The participants in this study indicated that they had opportunities to learn a great deal about the research process and about each other's issues, concern and attributes. As they came together, they gained a sense of personal growth and satisfaction in this engagement. Similarly,

one study revealed that the participants commented on how much they had learnt through this process and the satisfaction they got in making a difference to the safety of the community (Lindsey & McGuinness, 1998). Doing the action research also enabled greater understanding and communication between the units and that led to better joint working in the future. In other words, the solutions emerged from the process of undertaking the research. Plus, the researcher realized that the relationships formed in the field are valuable and enduring equally with the research product.

The findings also provide an example of how one project successfully involved the setting in PAR. The purpose of presenting these results was to provide a framework for other nurse researchers. The knowledge gleaned from this project could act as an important guide to others as they plan and proceed with the challenges and rewards inherent in PAR.