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Activity Report of Field Research

Factors affecting adherence to exclusive breastfeeding of infants in the first 6 months among HIV positive mothers in Ghana: Qualitative research

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I. Summary

Factors affecting adherence to exclusive breastfeeding of infants in the first 6 months among HIV positive mothers in Ghana: Qualitative research

Introduction: Breastfeeding is the ideal method not only for infant growth but also for postpartum recovery of a mother. Poor feeding practices is known to lead to malnutrition which is a major cause of death for children. In Ghana which is located in West Africa, there are still a large number of HIV infected children due to mother to child HIV transmission. The mode of transmission is known to occur during pregnancy, delivery, and breastfeeding. Since mixed feeding increases the risk of HIV transmission, and prolonged Exclusive Breastfeeding (EBF) reduce the risk of mortality and morbidity, all mothers are recommended to practice exclusive EBF for the first 6 months regardless of HIV status. Although most of the mothers know about the benefits of EBF and prefer to breastfeed infants, HIV positive mothers are less likely to practice EBF for the first 6 months because of stigma, fear of transmission to a child, and disclosure of their HIV status. As a result, low adherence to EBF practices for the first 6 months is widespread. There are very limited studies conducted on the interrelation between adherence to EBF among HIV positive mothers and adherence to EBF.

Objective: To explore factors affecting adherence to exclusive breastfeeding during the first 6 months of infant life among HIV positive mothers in Ghana.

Methods: The data was collected through in-depth interviews by a trained team using a semi-structured questionnaire to explore the attitudes and perception about infant feeding of individual mother, and both barriers and facilitators to adhering to feeding practice for 6 months in the context of preventing mother-to-child transmission of HIV. Prior to conduct the interviews, socio-demographic characteristics and information related to knowledge about HIV transmission were collected from all participated mothers using a structured questionnaire.

Results: 45 HIV positive mothers were recruited in this study. All of them were on antiretroviral therapy (ART). The numbers of mothers in EBF, exclusive replacement feeding (ERF), and mixed feeding groups were 28, 8 and 9 respectively. Regardless of their feeding methods, the common factors shared among all mothers were the vocation to be healthy for taking care of the baby by adhering to ART and the responsibility to save the baby from HIV infection. Although they were struggling with some troubles like anxiety for mother-to-child HIV transmission and the burden of treatment expenses, they completed their own 6 months feeding methods. All mothers were educated on how to feed the baby through counselling thus the lack of knowledge and education were not found in this study. Decision influencers, facilitators, and barriers were emerged in each of the groups.

Conclusion: HIV positive women completed 6month feeding practice that they chose regardless of the way of feeding methods even though they were struggling with their own dilemma. Accurate knowledge of adherence to ART and risk of transmission and sufficient support to adhere to ART are needed to spread among HIV positive mothers even though they choose any feeding methods by themselves.

ガーナ共和国において医療機関を受診している HIV 陽性の母親の出産後６ヶ月間完全母乳栄養に

影響を及ぼす要因に関する探索的質的研究

【背景】　子どもの HIV 感染のほとんどは HIV 陽性の母親からの母子感染で、子宮内、経産道、経母乳が感染ルートとされる。HIV の多剤併用療法(以下、抗 HIV 薬)の開発により、抗 HIV 薬内服下では母乳栄養による母子感染を大きく減らすことが明らかにされている。WHO は HIV の感染に関わらず、すべての母親に出産後６ヶ月間の完全母乳栄養を推奨している。しかし、HIV 陽性の母親における６ヶ月間完全母乳栄養実施にはスティグマや子どもへの感染、他者に HIV 感染を知られることの恐怖などの困難が伴い、HIV陽性の母親の間では、HIV陰性・感染未知の母親と比べて、６ヶ月間完全母乳栄養の実施率は低い傾向にあるとされている。ガーナでは未だ多くの HIV 母子感染が報告されているが、HIV 陽性の母親の母乳栄養実施に関連する要因や母親の心理状況について、社会文化的観点から深く探究した研究はあまり行われていない。

【目的】　ガーナ共和国の代表的な HIV 医療機関を受診している HIV 陽性の母親の出産後６ヶ月間の完全母乳栄養、あるいは人工栄養実施に影響する要因を、HIV 母子感染予防の観点から探究すること。

【方法】　本研究は半構造化式個別面接を用いた探索的質的研究である。２０１７年８-１０月にかけて Korle Bu Teaching Hospital の感染症科、小児科を受診した６-１８ヶ月の子どもを持つ HIV 陽性の母親を対象とした。合目的的にサンプリングした対象者に個別面接を実施し、６ヶ月完全母乳栄養群、６ヶ月完全人工栄養群、混合栄養群別に継続比較分析を行い、理論的飽和に至ったと判断された時点でサンプリングを終了した。その後、録音した面接データを逐語録化し、テーマ分析手法を用いて、コードとカテゴリーを抽出し、理論生成を行った。本論文では主に６ヶ月完全母乳栄養群、６ヶ月完全人工栄養群の分析結果を報告する。

【結果・考察】　45 名に面接を実施した。対象者全員が抗 HIV 薬内服中であった。６ヶ月完全母乳栄養実施群(28 人)と６ヶ月完全人工栄養実施群(8 人)、混合栄養群(9 人)に分けてデータ分析を行い、３群に共通する要因として、10 コードと３カテゴリー、また、６ヶ月完全母乳栄養と６ヶ月完全人工栄養の２群から 36 コード、22 カテゴリーが生成された。栄養方法の違いに関わらず、服薬を守り自身の健康を保って子どもの世話をすることへの使命感、子どもを HIV 感染から守らなければならないという強い意志は全対象者に共通し、感染の不安や費用の負担などそれぞれ葛藤を抱えながらも、選んだ栄養方法を貫いていた。全員が栄養方法についての指導を受けていたため、知識や教育不足の影響は見られなかった。各群それぞれに決定要因、継続要因、不安要因が抽出された。母乳栄養群の**決定要因**としては、一般に６ヶ月完全母乳栄養が推奨されていること、母乳の効果や抗 HIV 薬を内服すれば授乳が可能であることの理解、他の HIV 陽性の母親からの学びなど、**継続要因**としては、医療関係者の教えを遵守すれば問題が起きないという信念、母乳を与えていても子どもは健康であり、また HIV 検査が陰性であることなど、**不安要因**としては他者からの混合栄養への重圧、母乳だけでは不十分ではないかという思いが抽出された。人工栄養群の各要因は母乳栄養群の各要因をほぼ反転したものであったが、**決定要因**として古いガイドラインによる影響が存在していた。

【結論】　HIV 陽性の母親は葛藤や問題を抱えながらも、母親としての役割から６ヶ月完全母乳栄養、完全人工栄養を貫いていた。抽出されたそれぞれの決定要因、継続要因、不安要因は母親本人もしくは周囲からの不正確な情報の影響が見られたため、そうした影響を低減するための丁寧な対策の必要性が示唆された。また、自身の服薬アドヒアランスの不安から人工栄養を選ぶ母親も見られたことから、高い服薬アドヒアランスを可能とするサポートの必要性が示唆された。

II. Research Activity

Introduction

From 2000 to 2015, the rate of new HIV infection children declined by 70% due to prevention policies, however there were approximately 36.9 million people living with HIV in 2015 with 2.1 million newly infected (1); and the number should be regard as high. Globally 150,000 children became newly infected in 2015 (2). In Ghana which is located in West Africa, there are still a large number of HIV infected children due to mother to child HIV transmission (3). The mode of transmission is known to occur during pregnancy, delivery and breastfeeding. In the absence of any interventions, transmission rates ranged from 15% to 45% but it is known that effective interventions could reduce the rate to 5% (4). In 2016, WHO and UNICEF updated the guideline for infant feeding among mothers living with HIV. Breastfeeding is the ideal method not only for infant growth but also for postpartum recovery of a mother. Poor feeding practices is known to lead to malnutrition which is a major cause of death for children. The 2016 guideline was revised especially in terms of the duration of breastfeeding (4). Since mixed feeding increases the risk of HIV transmission and prolonged Exclusive Breastfeeding (EBF) reduces the risk of mortality and morbidity, all mothers are recommended to practice EBF for the first 6 months regardless of HIV status (5-9). Although most of the mothers know about the benefits of EBF and prefer to breastfeed an infant, HIV positive mothers are less likely to practice EBF for the first 6 months because of stigma, fear of transmission to a child, and disclosure of their HIV status (10). As a result, low adherence to EBF practices for the first 6 months is widespread (11-13). There are very limited studies conducted on the interrelation between adherence to EBF among HIV positive mothers and adherence to EBF. This study was conducted to seek to identify and describe the barriers as well as facilitators of adherence to EBF for the first 6 months of infant with focus on HIV positive mothers in Ghana.

This study follows the WHO guideline to categorize mother's feeding practice defined as (4); **Exclusive breastfeeding (EBF)** means that the infant receives only breast milk. No other liquids or solids are given – not even water – with the exception of oral rehydration solution, or drops/syrups of vitamins, minerals or medicines. **Mixed feeding** is defined that the infants are feeding from a bottle, regardless of its contents, including expressed breastmilk. **Exclusive replacement feeding (ERF)** is defined as giving an infant who is not receiving any breastmilk a nutritionally adequate diet until the age at which the child can be fully fed on family foods.

Study Area

Korle Bu Teaching Hospital in Accra was selected as the study area. The hospital is the third largest hospital and the leading national referral center in Ghana. Both Fevers Unit and Child Health Department in the hospital were selected for study settings to reach the target population. Fevers Unit is a HIV specialized agency that represents Ghana.

Methodology

Mothers who were diagnosed HIV, who have aged 6-18months infants and, who were coming to either Fevers Unit or Child Health Department were included in the study. At Child Health Department, the special clinic was opened for those who were born to HIV positive mothers only on Wednesday. Therefore, the research team (Interviewer, Tanimoto and trained Ghanaian interviewer) visited there to recruit eligible individuals on every Wednesday and visited Fevers Unit on the other weekdays. The Purposive sampling method was used for this study.

Table 1. Demographic Data

Age			**Education level**		
27-30	6	13.3%	None	3	6.7%
31-35	19	42.2%	Primary School	9	20%
36-40	14	31.1%	Junior High School	23	51.1%
41-46	6	13.3%	Senior High School	9	20%
			Tertiary	1	2.2%
Religion					
Christian	38	84.4%	**Mode of life**		
Muslim	6	13.3%	Living alone	4	8.9%
None	1	2.2%	Living with family	41	91.1%
Marital status			**Electricity**		
Married	33	73.3%	No	4	8.9%
Single	8	17.8%	Yes	41	91.1%
Partner	4	8.9%			
			Refrigerator		
Work			No	13	28.9%
Trader	25	54.3%	Yes	32	71.1%
Artisan	15	33.3%			
Government	1	2.2%	**Running water**		
Housewife	4	8.9%	No	23	51.1%
			Yes	22	48.9%

Data collection

This study was conducted in compliance to the research approval as granted by the Committee for Research on Human Subjects at Kyoto University, Noguchi Memorial Institute for Medical Research, Korle Bu Teaching Hospital, as well as Ghana Health Service Ethics Review Committee. Permission and support from Fevers Unit and Child Health Department at Korle Bu Teaching Hospital were sought before data collection. All participants were asked to give a signed informed consent before participating in the study. Privacy and confidentiality were assured at all time and participants were informed of having the right to withdraw from the study anytime, even after the consent to participate.

The data was collected through in-depth interviews by a trained team using a semi-structured questionnaire to explore the attitudes and perception about infant feeding of individual mother, and both barriers and facilitators to adhering to feeding practice for 6 months in the context of preventing mother-to-child transmission of HIV. Prior to conduct the interviews, socio-demographic characteristics and information related to knowledge about HIV transmission were collected from all participated mothers using a structured questionnaire. The questionnaire was developed to be responsive to the objectives of this study. A pilot study was conducted to develop the questionnaire for validity and reliability, to solve any language discrepancies, and to train local interviewer.

Picture 2: Local interviewer and researcher

Research Findings

Since this study was not intended to quantify the association of the factors and the way of feeding practice, only the descriptive data will be shown in this report.

1. Demographic Data

45 HIV positive mothers participated in this study. The range of mother's age was 26 to 46 (Median:34) and of the child's age was 6-18months (median:13months) **(Table 1)**.

Mothers have been aware of their HIV status for more than 2 years and all are on Antiretroviral treatment.

2. The factors affecting feeding practice

During 6months of infant life, 28 mothers (62.2%) practiced EBF, 8 did ERF (17.8%), and 9 did mixed feeding (20%). This report mainly described about mothers who practiced EBF and ERF for 6 months would be described due to limitations of the space. **Table 2** provides an overview of themes and categories that emerged from the thematic analysis. Each EBF and ERF has 3 themes to represent the key factors affecting feeding practice, and those emerged themes are 1) Decision influencers, 2) Facilitators, and 3) Barriers. Additionally, 4) Factors of being HIV positive, 5) Factors of being mother were common among all groups including mixed feeding mothers.

Table 2. Themes and categories

Common Factors	Factors due to being HIV positive	Following recommendations because of HIV
		Knowledge of importance of adherence to ART for HIV patients
	Factors due to being mother	Strong will to protect the child

Each of categories from EBF and ERF groups is described below and only some varieties of narratives are presented in this paper. [] is the name of category and ***"italic"*** is participants' narratives.

▪ Grope of EBF for 6 months

1) Decision influencers

[Belief that BF is good for all mothers]

EBF	Decision influencers	Belief that BF is good for all mothers
		Knowledge of the importance of EBF
		Knowledge of the importance of adherence to ART
		Learning from other mothers
		Can't afford
	Facilitators	Following recommendations from care providers
		Effort to avoid HIV infection
		Sense of security that the child is healthy on BF
	Barriers	Pressure from others to do mixed feeding
		Perspective that 6months EBF is too long
ERF	Decision influencers	Belief that RF is the only way to avoid infection completely
		Fear of HIV transmission on BF/ Feeling of being free
		Risk of HIV transmission to child in case of non-adherence to ART
		Successful experience with RF
		Affordability
		Influence of previous guidelines
	Facilitators	Awareness of both BF and mixed feeding risks
		Reliance on social network to pay
		Strategy to avoid the pressure from others
	Barriers	RF is expensive
		Burden of carrying the goods for RF
		Wish to BF and Pressure from others to BF

EBF for 6 months is widely recommended for all mothers, although HIV positive mothers are given two options whether to feed the baby with only breastmilk for 6 months or without any breastmilk. The participants recognized that EBF for 6 months is a common thing to all mothers regardless of HIV status and the choice to EBF made them feel comfortable not being different from other mothers.

"Some people are there who don't have the HIV, but still do the six months. So I take myself as a normal person who does the six months breastfeeding." (35/EBF6)

[Knowledge of the importance of EBF]
All mothers who chose EBF for 6months understood the effects of breastmilk such as that breastmilk will affect the intelligence of the child and boost immune systems because they were taught about the effects of EBF for 6 months and the risk of mixed feeding at the hospital and the knowledge led to their choosing EBF for 6 months. Also, they told that giving only breastmilk doesn't cost any expenses and is easy.

"They told me that baby's intestines are not grown so if you mix food with breastmilk, the food can create a hole in the baby's intestines, and if there is a small hole in his intestines it will make some of the virus enter the breastmilk." (9/EBF6), "If you only breastfeed the baby and you don't add anything to it for that 6 months, as a parent you are able to save a little money and it also helps you to be free from preparing food for the baby in the morning, afternoon and evening." (4/EBF6)

[Knowledge of the importance of adherence to ART]
For HIV patients, to keep adhering to ART is essential for not only maintaining their health but preventing the child from HIV transmission through breastfeeding. The understanding that mother's adherence to ART saves their child from HIV infection through breastfeeding was obtained from all participants. Additionally, they understood taking ART would affect their own health and told that being healthy is a necessity for taking care of their child as a mother.

"I was told that if I don't strictly adhere to medicines, my son will contract the disease and I don't want my son to have it so I decided I had to do the something." (7/EBF6), "After I was diagnosed HIV positive, I tried my best to take my medication because my health is important and there is no one to take care of my children for me in case, so I have to be strong and healthy to take good care of them and protect them." (35/EBF)

[Learning from other mothers]
The participants' own past experience to have raised their child healthy with breastmilk and to see other HIV positive mothers are giving breastmilk gave participants positive image to breastfeed their child. The lesson from other mothers who might have the same situation played a role in removing the barriers to breastfeeding.

"The elderly ones I breastfeed, I know the benefits I have gotten from it." (32/EBF6), "When I started attending the meeting with other mothers with HIV, I realized there was nothing to fear about breastfeeding the baby." (27/EBF6)

[Can't afford]

Although some participants didn't want to breastfeed the child at all, they had no choice but to breastfeed because they can't afford to buy formula feeding for 6 months.

"Because there was no money, I had no other choice than to breastfeed." (31/EBF6), "If I have a good job doing and have enough money, I will not breastfeed. I prefer not to breastfeed my child at all. I am not comfortable with that at all." (37/EBF6)

2) Facilitators

[Following recommendation from care providers]

All participants who practiced EBF for 6 months told that they just followed the teaching not to give anything other than breastmilk for 6 months. They believed that the child's health would be ensured in compliance with the teachings from medical staffs.

"Because doctors advised us to give only breastmilk and that is why I did that. I obeyed what they told me so that my baby will be healthy." (3/EBF6)

[Effort to avoid HIV transmission]

Participants recognized the risks of HIV transmission to child through breastfeeding. Therefore, they couldn't stop being anxious about the infection during breastfeeding and making all their efforts prevent it. They told to be never reluctant to make any exertions for protecting their child. They had strong will not to infect HIV to own child and to practice EBF for 6 months no matter what would happen. Additionally, the experience of mother to child transmission increased the awareness of infectious risks and reminded them of the thoughts never to get infected to a child again. Consequently, they cared about every move of an action for protecting their child.

"Because of the lifestyle of the mother, the baby could be infected." (18/EBF6), "The burden is on the mother to do everything possible to make sure the baby does not get infected, or is it not true?" (7/EBF6), "I think about every action I take." (26/EBF6)

[Sense of security that own child is healthy on BF]

The children who were born to HIV positive mothers are recommended to examine HIV status 3 times until getting the age of 18 months. For the mother who did EBF for 6 months, the result of HIV tests is very important not only to know the status of own child but also to evaluate mother's assiduous efforts for the child during 6 months of EBF. The successful results of not transmitting HIV to the child and the child's good condition directly contributed to the mother's confidence.

"I am satisfied because the first lab was negative and the second one too" (41/EBF6), "The benefit after giving breastmilk to my baby is that, I see my baby is doing okay. Just like those who do not have the disease. The baby is even stronger than others." (33/EBF6)

3) Barriers

[Pressure from others to mixed feeding]

Although EBF for 6 months is recommended to all mothers in spite of HIV status, participants got the advice to do mixed feeding from other people who don't know their status. However, some of them recognized mixed feeding as old-fashioned feeding practice that passed down through generations.

"It was not easy, people were talking that I should give him water, they really talked so it was not that easy but I tried." (18/EBF6), "I wanted mixed feeding. The reason is that it has been the practice in our house for long time for the baby to gain strength." (7/EBF6)

[Perspective that 6 months EBF is too long]
Some mothers thought EBF for 6 months wasn't enough and considered to add water or any other things.

"It looked like his throat needed water" (28/EBF6), "I think that the breastmilk alone is not enough for him" (37/EBF6)

・Grope of ERF for 6 months

1) Decision influencers

[Belief that RF is the only way to avoid infection completely]
All HIV mothers were given two options to feed their child but once to choose to breastfeed, it involves a risk of mother to child transmission. For the participants who chose ERF for 6 months, practicing ERF was the only way to avoid the transmission. Some participants told that they could have given their breastmilk if they weren't infected with HIV or didn't have to be anxious or suffer from getting infected to their child.

"If I have a chance, I will tell them if you have some disease in you, and don't want to transfer to another person or children, don't give breastmilk. Small Small sickness, you are keeping it." (43/ERF6), "I gave formula. It is because of the disease. That's why I have decided not to breastfeed the baby." (24/ERF6)

[Fear of HIV transmission on BF/Feeling of being free]
All participants told the fear to transmit HIV to their child through breastfeeding. They understood that not giving breastmilk at all could prevent HIV and it meant to get relief from the struggling and worries.

"Because of my thing. That's all. I was afraid that if I give it to my child, it will affect her. That's why I didn't give breastmilk." (43/ERF), "With regards to the sickness, I prefer not to give him the breastmilk, it's better for me. Possibly your nipples might develop sore and I'm scared. I will rather not breastfeed at all. So that the baby will not be infected with the disease through breastmilk." (23/ERF)

[Risk of HIV transmission to child in case of non-adherence to ART]
Participants understood that their own adherence to ART would affect the child through breastfeeding. No matter how careful, they still have a possibility to forget taking essential medicines ART because of human's nature. Therefore, some mothers chose not to breastfeed at all.

"I do take the drug but as human as we are, we are bound to be forgetful. You know we are human and can fail at a certain point." (24/ERF)

[Successful experience with Replacement Feeding (RF)]

The undesirable consequence due to past experience of breastfeeding made mothers avoid giving breastmilk to their child but the successful experience to have done RF motivated them to give formula feeding to their child instead.

"Because I gave all my children formula, I gave this child too." (12/ERF), "For the second child, when I breastfed him for 5 months, I realized he tended to fall sick and was refusing to take breastmilk. That's why I decide not to give the last born any breastmilk." (44/ERF)

[Affordability]
Unlike EBF, ERF requires mother to have enough expenses to buy formula. The affordability made it possible for participants to choose ERF. Additionally, some participants raise some money by cutting down own food expenses.

"I think that if you have the money and you can give the food it is good." (12/ERF), "If you breastfeed, you don't have to buy. You could buy food for yourself." (10/ERF)

[Influence of previous guidelines]
The previous guideline recommended not to give any breastmilk at all. The guideline affected some mothers and they couldn't accept the change so they chose not to breastfeed at all.

"I am not happy in that aspect because I was advised not to breastfeed my first child and they are now telling me to breastfeed this one. I don't understand it. The initial advice that you gave me is still in my mind and so it has still." (24/ERF)

2) Facilitators
[Awareness of both BF and mixed feeding risks]
The understanding that breastfeeding could be a cause of transmitting HIV to a child, which was taught in the hospital, led to strong will not to give any breastmilk. Some participants heard from other mothers who practiced mixed feeding and ended up infecting HIV to their child. It made mothers to stick to ERF, not to practice breastfeed or mixed feeding.

"Doctors said that I have HIV, so if I give breastmilk to the child, he will get some. That's why I didn't breastfeed." (43/ERF), "A friend of mine said that people forced her to breastfeed her baby mixing it with food. So she mixed it with food for the baby. When she did the test, the baby got infected with the disease." (12/ERF)

[Reliance on social network to pay]
Participants could continue RF if they have someone who can pay the expense on behalf of them because of the RF's high costs.

"I was using the formula milk, the money is 35 Ghana cedis. I have to buy some, so if I have to buy 2 or 3, I will borrow some money and later give it to them." (43/ERF), "If there is no food, I won't depend on any other person. I will ask my sister because she always assist me." (44/ERF)

[Strategy to avoid the pressure from others]
Although ERF mothers tend to have pressure from others who don't know their HIV status to breastfeed, participants who completed ERF for 6 months had some ways to cope with the pressure.

"If I am in the shop where I work and giving formula, they will come asking me, 'why aren't you give breastmilk?' then I said, 'I gave it in the morning and in the afternoon I give formula.' Then they will keep quiet." (43/ERF), "I tell them that the baby does not suck when I give breastmilk to him and I could try and give to him in front of them because the baby has not been familiar with sucking my breast. (then they can understand the situation)" (23/ERF)

3) Barriers
[RF is expensive]
All participants told how it is costly and difficult to continue buying formula for 6 months.

"I have children and even getting money to buy formula is very difficult." (44/ERF), "Buying food is not easy." (12/ERF)

[Burden of carrying the goods for RF]
Unlike breastfeeding, ERF needs mothers to carry feeding bottle to feed the child wherever mothers go. It became a burden for mothers.

"The only challenge is that you have to carry food and items to be feeding the baby all around especially when you are going somewhere." (23/ERF)

[Wish to BF and pressure from others to BF]
Against the recommendation of EBF, not giving breastmilk seems strange for other mothers and they gave participants pressure to do it. However, as participants didn't want anyone to know their HIV status and couldn't explain enough about themselves, they faced the challenge that they couldn't let others understand their situation. Additionally, the situation that mother couldn't give their breastmilk at all caused a deep sadness.

"In the house or anywhere people will ask you why you are not breastfeeding the baby." (24/ERF), "Sometimes when I am watching a TV program discussing such matters (breastfeed), then I get sad that I cannot breastfeed my baby." (24/ERF)

・Common factors among all mothers
4)Factors due to being HIV positive
[Following recommendation because of HIV]
Participants told that HIV patients needed teachings from medical staffs to overcome several challenges due to the experience to get infected with HIV and to avoid any problems. Also, the participants were willing to follow the teachings in a thorough manner by the belief in medical staffs themselves and what they were taught, and by the sense of security to follow the teachings.

"If the doctor says I should stop, they know the reason behind it. (7/EBF6), "When you come to the hospital and do whatever you are required to do, everything will be okay." (14/EBF), "The doctor does not want your child to get infected and he has already shown you the way and if you don't follow, then you are causing harm to yourself" (35/EBF6), "I became terrified when I saw the results. I wept but the doctor encouraged me that this is not a sickness that kills a person. I was encouraged." (30/Mixed)

[Knowledge of importance of adherence to ART]
All participants understood that they don't need to be scared of having HIV as long as adherence to ART and that taking ART would be lifelong. Having knowledge of importance of ART and physical experience of the effect had a good impact on participant's self-esteem to adhere to ART. Additionally, they told that adherence to ART made it possible for them to be a normal person who doesn't have HIV.

"Since I have started taking my drugs, I am okay. I can work. I can go anywhere. I am always with my friends, but they don't know my status." (21/EBF), "They told me not to be afraid. I will be on medication and everything will be alright. If I should take the medications, I will continue to live." (44/ERF)

5)Factors due to being mother
[Strong will to protect own child]
All participants told forcefully that they would like to prevent mother to child transmission so as not to let the child have the same challenges, sufferings and sadness as they had to go through because of HIV. Prevention of the infection, which requires taking lifelong ART due to an incurable disease, meant for them to protect the child's future and was a recognized inevitable role as an HIV mother.

"My baby's life is important to me so I have to force and do it for him." (12/Mixed), "I have faith that child will not be infected. And if you breastfeed the child strictly according to the instructions given to you, the child will not get infected. (33/EBF), "My kid is little. I wanted to help her so that the things I have gone through, she will not go through it." (39/Mixed)

Discussion

This study found not only social, cultural, and economic factors affecting adherence to feeding practices for 6 months among HIV positive mothers but also HIV positive mother's psychological state for 6 months. Both EBF and ERF mothers have strong wills to protect their baby by their adhering to ART as being HIV positive and to save them from HIV as a responsibility of mother. Based on mothers' strong will, they chose their feeding practices. EBF mothers considered if they weren't HIV positive, they could have given breastmilk without any fears of HIV transmission to the child like HIV negative mothers. On the other hand, ERF mothers wished to give their breastmilk to the child as other normal mothers do. Our findings show that all HIV positive mothers were struggling with the conflict regardless of their feeding methods and nevertheless completed 6 months of feeding practice that they chose with a sense of mother's responsibility. Additionally, they tried to follow the recommendations from care providers and to adhere to ART to make them possible to live as a normal person who doesn't have HIV, even though some of them mentioned that sometimes they could be forgetful to take it. All participants in this study were recruited at hospital and they have had counselling one or more times before. Therefore, the influence on feeding methods due to the lack of knowledge or education couldn't be found in this study as other former study described (14). This study found out **decision influencers**, **facilitators** and **barriers** among both EBF and ERF mothers.

The recommendation to EBF for all mothers in Ghana, the knowledge of breastfeeding and ART, and learning from other mothers were found as decision influencers of EBF. However, some mothers unwillingly completed EBF for 6 months due to an economic insecure even though they were afraid to breastfeed the child. The belief that nothing wrong would happen as long as mother followed the recommendation from care providers and the maintained good health of the child were facilitators to EBF for 6 months. Because they recognized the importance of the recommendations to give only breastmilk for 6 months while they were aware of the infection risk and motivating themselves to continue EBF, some mothers completed EBF even having problems with their nipples. Therefore, this study suggests that more education about how to deal with the problems during feeding practice are needed. Participants described that the pressure from others to change to do mixed feeding and the mother's own perception that solely breastfeeding for 6 months is too long were barriers to EBF for 6 months.

The decision influencers, facilitators, and barriers of ERF could be the opposite to each factor of EBF, therefore the comparison between EBF and ERF enriched the view of the findings in this study. Although AFASS criteria (Acceptable, Feasible, Affordable, Safe, and Sustainable) is important when to choose ERF as a feeding method (15), it has been known that affordability was emphasized more than any other factors and this study also had the same tendency as former researches showed (16). Also, the burden of expenses was barriers to keep ERF for mothers. The lack of money could cause high mortality of children or growth failure because of not enough nutrition. Therefore, the proper counseling as choosing feeding method and more discussion between care provider and mother is needed.

All mothers were aware of the importance to adhere to ART for both themselves and their children. However, EBF mothers believed their proper adherence to ART could prevent the baby from infecting with HIV through breastfeeding. Meanwhile, some of ERF mothers were afraid of infecting to the baby due to their own incomplete adherence to ART. There was little known about the relationship between feeding practices and adherence to ART. Therefore, the finding suggests spreading the accurate knowledge about adherence to ART and the risk of breastfeeding as well as providing more support for adherence to ART.

Limitation

Since this research was qualitative research, the finding of this study is not to generalize. There is also the possibility of recall and information biases given as mothers might have forgotten events that happened in the past. To reduce these biases, this study limited the recall period to 12 months. However, the criteria were modified to aged 6-18months because reaching expected number of mothers was difficult within the short research period. Additionally, although it is known that response bias, that respondents tend to answer in a manner to please the interviewer, might occur during the interview, it seemed that the participants told their honest stories because the stories include "I don't use condom with partner" or "I don't take medicines sometime". Therefore, a desirable answer might be considered to be a little in this study.

Conclusion

Our findings demonstrate that HIV positive mothers completed their feeding practices even though they were struggling with their dilemma and further need for several educational and structural support for HIV mother's feeding practices are required. For example, some mothers chose ERF because they were not confident in their own adherence to ART. Therefore, further supports are important to adhere to ART regardless of their feeding practices, and moreover, additional efforts are crucial to address mother's conflict and anxiety for supporting feeding practices that mothers chose.

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Picture 3: Dr. Folson and researcher

III. Reflection to the GLTP in Africa

Participating in GLTP program gave me a very great opportunity to meet a wonderful local supervisor and other researchers who joined GLTP program and build an academic relationship with the supervisor and the host institute. I could learn about many things from the perspectives of local people who are living there. For this study, the ethical approvals from the local institutes were required and I needed to submit the study proposal with hard copies many times. It took 7 months to be approved. That was the hardest part of this study. Additionally, asking local people cooperation and taking the leadership to conduct the study was also difficult due to culture differences. However, that I could share the frank visions and thoughts with the supervisor, local people, and participants and feel their real lives with observation was a great experience. This study could never have been done without the support and supervision of everyone. This study will be shared with the local institutes and planned to publish to open access journal. Additionally, this study would contribute to the design of interventions to improve maternal and child outcomes in Ghana through the promotion of EBF. Maternal and child health is one of the unfinished agenda from the Millennium Development Goals (SDGs). The results of this study might imply for the improvement of maternal and child health, HIV/AIDS treatment, and nutrition of children, which are related to SDG 2 and 3.

I would like to send a message to any students who are planning to go and research in Africa, **"Exercise your patience."** This is the message that I received from my best local cooperator. Conducting study in Africa was not easy but thanks to GLTP and my patience it wasn't just a dream.

Appendix

AFASS criteria defined by WHO 2007 (17)
Acceptable: The mother perceives no problem in replacement feeding. Potential problems may be cultural, social, or due to fear of stigma and discrimination.
Feasible: The mother has adequate time, knowledge, skills, resources and support to correctly mix formula or milk and feed the infant up to 12 times in 24 hours.
Affordable: The mother and family, with community or health system support if necessary, can pay the cost of replacement feeding without harming the health or nutrition status of the family.
Sustainable: Availability of a continuous supply of all ingredients needed for safe replacement feeding for up to one year of age or longer.
Safe: Replacement foods are correctly and hygienically prepared and stored, and fed preferably by cup.

References

Uncategorized References

1. 2016 Prevention Gap Report: UNAIDS; 2016 [Available from: http://www.unaids.org/sites/default/files/media_asset/2016-prevention-gap-report_en.pdf.
2. Fact Sheet; Children and HIV: UNAIDS; 2016 [Available from: http://www.unaids.org/sites/default/files/media_asset/FactSheet_Children_en.pdf.
3. HIV FACT SHEET 2014: Ghana AIDS Comission; 2014 [Available from: http://www.ghanaids.gov.gh/gac1/pubs/GAC%20FACT%20SHEET%202014.pdf.
4. Guideline updates on HIV and infant feeding: WHO/UNICEF; 2016 [Available from: http://apps.who.int/iris/bitstream/10665/246260/1/9789241549707-eng.pdf.
5. Simon VG, Souza JM, Souza SB. Breastfeeding, complementary feeding, overweight and obesity in pre-school children. Revista de saude publica. 2009;43(1):60-9.
6. Owen CG, Martin RM, Whincup PH, Smith GD, Cook DG. Does breastfeeding influence risk of type 2 diabetes in later life? A quantitative analysis of published evidence. The American journal of clinical nutrition. 2006;84(5):1043-54.
7. Owen CG, Whincup PH, Kaye SJ, Martin RM, Davey Smith G, Cook DG, et al. Does initial breastfeeding lead to lower blood cholesterol in adult life? A quantitative review of the evidence. The American journal of clinical nutrition. 2008;88(2):305-14.
8. Kuhn L, Sinkala M, Kankasa C, Semrau K, Kasonde P, Scott N, et al. High uptake of exclusive breastfeeding and reduced early post-natal HIV transmission. PloS one. 2007;2(12):e1363.
9. Coutsoudis A, Pillay K, Spooner E, Kuhn L, Coovadia HM. Influence of infant-feeding patterns on early mother-to-child transmission of HIV-1 in Durban, South Africa: a prospective cohort study. South African Vitamin A Study Group. Lancet (London, England). 1999;354(9177):471-6.
10. Marquis GS, Lartey A, Perez-Escamilla R, Mazur RE, Brakohiapa L, Birks KA. Factors are not the same for risk of stopping exclusive breast-feeding and introducing different types of liquids and solids in HIV-affected communities in Ghana. The British journal of nutrition. 2016;116(1):115-25.
11. Shapiro RL, Lockman S, Thior I, Stocking L, Kebaabetswe P, Wester C, et al. Low adherence to recommended infant feeding strategies among HIV-infected women: results from the pilot phase of a randomized trial to prevent mother-to-child transmission in Botswana. AIDS education and prevention : official publication of the International Society for AIDS Education. 2003;15(3):221-30.
12. Cai X, Wardlaw T, Brown DW. Global trends in exclusive breastfeeding. International breastfeeding journal. 2012;7(1):12.

13. Black RE, Victora CG, Walker SP, Bhutta ZA, Christian P, de Onis M, et al. Maternal and child undernutrition and overweight in low-income and middle-income countries. Lancet (London, England). 2013;382(9890):427-51.
14. Nankumbi J, Muliira JK. Barriers to Infant and Child-feeding Practices: A Qualitative Study of Primary Caregivers in Rural Uganda. Journal of Health, Population, and Nutrition. 2015;33(1):106-16.
15. Guidelines on HIV and infant feeding: WHO/UNAIDS/UNICEF; 2010 [Available from: http://apps.who.int/iris/bitstream/10665/44345/1/9789241599535_eng.pdf.
16. Marembo J, Zvinavashe M, Nyamakura R, Shaibu S, Mogobe KD. Factors influencing infant-feeding choices selected by HIV-infected mothers: Perspectives from Zimbabwe. Japan Journal of Nursing Science. 2014;11(4):259-67.
17. World Health Organization [WHO] *Integrated Management of Childhood Illnesses (IMCI) Complementary course on HIV/AIDS; module 3: counseling the HIV Positive Mother*. Geneva: Switzerland, 2007. [Available from: http://apps.who.int/iris/bitstream/handle/10665/44006/9789241594370.m3_eng.pdf?sequence=4