Qualitative, longitudinal exploration of coping strategies and factors facilitating infant and young child feeding practices among mothers in rural Rwanda

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Abstract

Purpose

Mothers in low income countries face many challenges to appropriately (breast) feed their children in the first year such as poverty, food insecurity and high workloads. However, even in the lowest income families there are mothers who strive and succeed to feed their children according to the recommendations. In this paper, we explored the coping strategies that facilitate appropriate breastfeeding and complementary feeding practices among rural Rwandan mothers from birth to one year of a child’s life.

Methods

Mothers (n=17) who followed the recommended infant and young child feeding (IYCF) practices were selected from a larger sample of 36 mothers. Mothers of the total group were interviewed within the first week, at four, six, nine and twelve months postpartum. In the analysis, coping strategies and factors facilitating coping were extracted.

Results

Coping strategies included mothers’ effort to strengthen their diet to improve breastmilk production, balancing work and child feeding, prioritizing childcare, preparing child’s food in advance active uptake of the recommendations and persistence in overcoming barriers. Personal and social factors facilitated these coping strategies of the mothers.

Conclusion

In challenging contextual conditions, mothers manage to follow the recommended breastfeeding and complementary feeding practices through the interplay of active coping strategies, feeling to be in control and social support.

Background

Stunting is a major public health problem especially in many low- and middle- income countries. Globally, the number of stunted children under five has been declining, from 198.2 million in 2000 to 149 million children in 2018 [1]. Despite the worldwide declines, progress in reducing stunting in much of Africa has been slow [1, 2]. Africa is the only region that has seen an increase in the number
of under five stunted children, from 50.3 million in 2000 to 58.8 million in 2018 [2]. The burden of stunting is most prevalent in Eastern African region, where the number of children under 5 with stunting rose from 21.5 million in 2000 to 24.0 million in 2018 [1]. Stunting is associated with a large burden on health and development of a child that may extend to adulthood. Stunted children are more likely to have an increased risk of morbidity and mortality as well as to experience poor cognitive performance and educational attainment, reduced earning capacity as well as [3, 4]. Factors that contribute to stunted growth and development in infants include, amongst others, poor infant and young child feeding practices. Appropriate IYCF practices are those that follow the World Health Organization (WHO) recommendations of early initiation of breastfeeding, followed by exclusive breastfeeding (EB) for the first 6 months and introducing complementary feeding timely and adequate in amount, frequency and variety at 6 months of age with continuing breastfeeding up to 2 years or beyond. Inadequate breastfeeding practices, including late initiation and non-exclusive breastfeeding hold back the adequate intake of energy and nutrients from breastmilk [5], which increases the child’s exposure to undernutrition and in the end may lead to stunted growth [6]. Also the critical role played by inadequate complementary feeding in the origin and progression of stunted growth is widely recognized [7]. Studies in different settings indicated that the likelihood of being stunted was higher among children who started complementary food either before or after the recommended 6 months, and in children whose diet was not diverse and whose feedings were below the minimum (age-dependent) frequency [7-9].

In Rwanda, the prevalence of stunting among under five children has recently decreased from 44% in 2010 to 38% in 2015 [10]. However, the reduction of stunting is still of a slow pace despite the Government of Rwanda’s effort to reduce its prevalence, particularly in children living in rural area (41% stunted) [10]. Recent research showed that inadequate IYCF practices contribute to stunted growth among Rwandan children under the age of five years [11, 12]. In our previous studies on factors that impede appropriate breastfeeding and complementary feeding practices, we found that mothers encounter several challenges for appropriate IYCF practices, including mother’s perception of breastmilk insufficiency, adverse breastfeeding experience, health concerns for the mother and the
babies, excessive workload for the mother, poverty, food insecurity, and lack of support from significant family members [13, 14]. Similar challenges have been found in other studies (13–18).

So far, research on IYCF practices has mainly focused on identifying factors that impede appropriate practices. Knowing these risks factors has improved child nutrition status, however in a limited way. The risk-oriented approach fails to consider that individuals also possess, or have access to, protective resources, which may reduce the likelihood of adverse outcome either directly or indirectly [15]. Without ignoring the importance of this risk-oriented approach, we argue that mothers can find ways of dealing with those risks. Therefore, instead of looking at the determinants of inadequate IYCF practices, in this study we take a different, but complementary perspective and study factors that relate to coping strategies for appropriate IYCF practices.

Coping strategies refer to behavioral and cognitive efforts made by individuals to manage stressful situations [16], enabling the individual to perceive some sense of control over the stressful situations. According to Lazarus and Folkman (1984) two types of coping strategies can be distinguished: problem-focused strategies and emotion-focused strategies. Problem-focused strategies are efforts to target the cause of stress in practical ways to eliminate the stressor [16], for instance taking control of the stress (e.g. problem solving), or seeking information or assistance in dealing with the situation. Emotion-focused strategies involve managing the emotions associated with the situation, rather than changing the situation itself [16]. However, emotion-focused coping is often less effective because it does not provide a long-term solution to deal with a stressor. As mentioned before, in everyday life, mothers face IYCF challenges which result in stressful situations. Despite these challenges, some mothers manage well to follow the WHO recommended IYCF practices. The present study aimed to explore the coping strategies that facilitate appropriate breastfeeding and complementary feeding practices among Rwandan mothers from birth to one year of a child’s life. Gaining insights into coping strategies can offer valuable information for interventions aimed at fostering health and add to the current risk informed measures.

Methods
Study design and setting
This study is part of a larger study on IYCF practices during the infant’s first year of life in the context of rural Muhanga district, southern province of Rwanda. A qualitative, longitudinal methodology using in-depth interviews was chosen to prospectively to explore the dynamic nature of the coping strategies and factors that facilitate coping for the maintenance of the recommended IYCF practices. The qualitative approach provided a suitable methodology for exploration of the complex situations mothers faced in relation to IYCF practices and the factors influencing their decision-making. The study was conducted between December 2016 and April 2018, in the catchment area of two rural health centers facilities, Rutobwe and Buramba in Muhanga District, approximately 49 km south of Kigali City, the capital of Rwanda. Considering that the main activity is agriculture (for 76% of the households), it is also the main source of income though 90% of the total production is used for consumption. While 39.1% of Rwandan population were found below the poverty line, Muhanga district was one of the best performers because it had reduced the poverty headcount from 53.6% in 2010 to 30.5% in 2013 [17], which is still high. Despite of that, the 2014/15 Rwanda demographic and health survey (RDHS) found that 41.6% of children under age 5 were stunted in Muhanga district, which is higher than the national average of 38% [10].

Study population and sampling procedure
Expectant mothers, in their last trimester of pregnancy, visiting governmental health centers, Buramba and Rutobwe, from Muhanga district, were contacted as they were queuing for prenatal care. The study objectives and procedure were explained to those expectant mothers by trained field researchers. Signed informed consents were obtained from those who agreed to participate in the study. A total of 60 expectant mothers were willing to be involved in our study. With 39 pregnant mothers who came first, data saturation was reached, and additional inclusion was stopped. Inclusion criteria for the study consisted of being pregnant in the last trimester of pregnancy with no serious obstetrical conditions. Women who did not plan to live in the study area with the baby during the first 12 months of the child’s life were excluded from the study.

Data collection and measurement
Data collection was conducted by the first author, assisted by a trained field assistant. The field
assistant was recruited in a competitive process and had received two weeks intensive training in addition to having some experience in qualitative data collection. Data were collected by means of qualitative in-depth interviews. After recruitment, pregnant mothers were asked to complete a structured quantitative questionnaire on basic sociodemographic characteristics comprising information about marital status, ability to read and write, education level of the mother, main occupation and number of children. At subsequent visits, in the home of participants, within the first week after birth, at 4th, 6th, 9th and 12th months postpartum, in depth interviews were used to explore the current feeding practices, reasons for adopting particular feeding practices and factors that influence infant feeding. Between the first interview during pregnancy and the fifth interview at 9 months, 2 of the 39 mother-infant pairs recruited were lost during follow-up (1 refusal, and 1 moved). Thus, a total of 37 women were interviewed at 9 months. From 9 months to 12 months, 1 mother-child pair was lost again during follow up (moved). Data for a total of 36 mother-infant pairs who completed all six moments follow-up until 12 months of child’s age were analysed.

The interview guides were developed by the research team and were piloted with mothers of young children attending nutrition rehabilitation at health centers and adjustments were made accordingly. The interview guide comprised questions about the initiation of breastfeeding, EB since birth until 6 months and continued breastfeeding until one year. From 6 months of age, the interview guide captured aspects of complementary feeding, including dietary diversity and the frequency of feeding. Questions included the kind of foods that were given to the child and the number of times the child was fed semi solid, solid or soft foods other than liquids during the day and night in the previous day of the interview. To capture the factors that influence the ease or difficulties mothers faced in feeding their children in general, questions were included about factors that impeded or facilitated feeding practices and how mothers dealt with these factors. Table 1 summarizes the content of the interview guides.

Table 1: Content of the interview guides (Located at the end of the document)

Data analysis

Descriptive analysis of the quantitative information about sociodemographic characteristic and infant
feeding patterns over the first 12 months of child’s life was conducted using SPSS to generate frequencies. Mothers were classified as practicing EB if they fed their infant only breastmilk from birth (apart from prescribed oral medicines and oral rehydration solutions) until 6 months of child’s life. Timely introduction of complementary food was considered as the provision of liquid, semi solid foods or soft foods in addition to breastmilk from the age of 6 months. Qualitative data collected by use of in-depth interviews was transcribed verbatim and some of the interviews have been translated into English to ensure correct coding by English speaking authors. First, we identified the major challenges faced by participants (n=36) for appropriate breastfeeding and complementary feeding practices. Results have been published elsewhere [14, 18]. In order to identify the coping strategies and the factors that facilitated coping for appropriate breastfeeding and complementary feeding practices, in this part of the study we focused attention to mothers who followed the recommended IYCF practices from birth until 1 year of child’s life. A total of seventeen (n=17) mothers complied with the IYCF recommendations.

Data were analyzed using Atlas.ti software (version 7.5.10). Thematic data analysis was applied following Braun and Clarke’s protocol [19]. The analysis process started with reading the transcripts several times to ensure the accuracy of the transcription and to gain an overview of the content. This was followed by the coding stage. The codes identified features of the data considered pertinent to the research questions, i.e. with a focus on coping strategies and factors facilitating coping.

Furthermore, attention was given to searching, reviewing and defining major themes from the findings. The first author, who is bilingual, applied the codes and then grouped the codes into major themes in English for all the Kinyarwanda transcripts. Following the first author’s coding in English of the Kinyarwanda transcripts, a colleague from my university with experience in qualitative research co-coded a few of the transcripts independently, followed by a discussion and agreement on the different codes. Quotations were tagged by “W-1 to W-36” representing women codes (1 to 36 women who completed the study) and by “month” indicating the specific month the interview was conducted during the first 12 months of child’s life.

Results
Characteristics of the study participants at the beginning of the study

Table 2 shows the characteristics of the complete sample of study participants and the characteristics of the participants of the sub-sample concerning the current analysis. Among the 17 participants of the current analysis, the majority were aged above 30 years (n=12), living with partners (n=16), had the ability to read and write (n=15) and completed primary school education (n=9).

Table 2: Socio-demographic characteristics of women interviewed

Overview of the results

Data analysis revealed that mothers who followed the recommendations during the first year of child’s life used various problem-focused coping strategies to manage the everyday IYCF challenges. Coping strategies included mothers’ effort to improve their own diet to improve breastmilk production, balancing work and child feeding, prioritizing childcare, preparing child’s food in advance, active uptake of the recommendations and persistence in overcoming barriers. Data analysis also indicated personal and social factors that facilitated coping. Personal factors (intrapersonal factors that facilitated coping with challenges) included beliefs about benefits of breast feeding, self-efficacy, and religious belief while social factors (contextual factors in the form of social support on which participants relied to cope with challenging situations) consisted of support from family members, other mothers in the community and advice of CHWs and health professionals. Below we describe the different coping strategies and facilitating factors. To illustrate themes, typical quotations from participants were translated from Kinyarwanda (mother tongue) into English.

Coping strategies for appropriate breastfeeding and complementary feeding practices

Make effort to improve their own diet for adequate breastmilk production

The majority of participant mothers perceived their own diet to be linked to the quality and quantity of breast milk. In the first week, most mothers perceived their diet to be appropriate to support adequate breastmilk production. From 4 months to 6 months, those who managed to exclusively breastfeed reported to try their best to improve their diet to support the production of adequate breastmilk to satisfy the infant.
“I try my best to get porridge and to eat a balanced diet so that by the time the baby will breastfeed he will get adequate breastmilk.” (W-26, month 4)

**Balancing work and child feeding and prioritizing child feeding**

Some mothers described the way they deal with their heavy workload by trying to balance work and child feeding and by reducing the time they spend to other tasks and by prioritizing childcare first, including breastfeeding and complementary feeding, between 4 months and 12 months.

“Tasks never end; I only mix them with caring for the child. No rural mother can find time to care for a child exclusively, people are always busy even during dry seasons, so I try to find a way to do the work and take care of the child.” (W-34, month 4)

“Workload is not a big challenge. In my case, I reduce it and fulfil my responsibility of childcare first including feeding.” (W-8, month 12).

Mothers reported to be active and resourceful in the face of poverty and financial constraint challenges. Most of the participants reported to engage in income earning coping strategies and non-income earning coping strategies. It is worth noting that most mothers do not use a single strategy but a combination of strategies. The major reported income earning coping strategy included home production of food (farming) and sometimes selling agricultural produce to earn money and buy other food items from the market.

“I do not have a job from which I can get a salary. I grow crops, but our harvest depends on the weather. When it is favorable, we get a good harvest, but if I produce sweet potatoes or beans, I have to take some to market so that I can buy something else that children need like fruit or rice.” (W-24, month 12)

In addition, most of the respondents reported to engage in short-term income earning coping strategy by casual labor work such as cultivating, planting, weeding and harvesting in the plots of well-off neighborhood. This coping strategy was predominantly reported from 4 months until 12 months.

“I, personally, I am very poor, fortunately it happens that I work in the plots of well-off people in the neighborhood and I get money or food for the child.” (W-18, month 9)

Respondents also cited small animal rearing and selling as income earning coping strategy in case of
food shortage as well as looking for small business opportunities such as making and selling handcrafted mats and baskets, selling avocados or bananas to earn money and buy food items.

“I also keep a hen and I can sell eggs or chickens and I can buy flour for porridge or baby’s foods in case of food shortage.” (W-24, month 9)

“Sometimes I buy avocados or tomatoes and resell them and I use the interest to buy the infant’s food like fruits and keep the capital for further investment. For instance, if I make 1000 Rwandan francs (Frw) I can use 500 Frw and save the remaining.” (W-18, month 12)

Reported non income earning strategies included borrowing money from mothers saving and lending groups, eating less preferred food by other family members and favoring children for certain foods.

“As for complementary feeding, sometimes it becomes not easy to get food, however one has to try and get food for the infant. For instance, we are belonging to women’s saving groups, in case of food shortage; I borrow money and buy food for the infant. Nothing cannot preclude me to care for my infant.” (W-13, month 12)

“When I have got a little money, I buy a half kilo of rice and prepare some grains for the child when I can’t find it for the entire family. I cannot let my child suffer from hunger; I prepare a few spoons for the child and keep another portion for his next meals.” (W-32, month 12).

**Mothers’ anticipatory behaviors**

Participants also talked about taking prior actions such as preparing baby's cereal in advance and taking it to the farm as baby food provision or preparing much food to keep a reserve for the next feeding. Those strategies were said to facilitate mothers to feed their babies on time during the complementary feeding period.

“Sometimes I prepare baby’s cereal in advance, early in the morning and take it to the farm. For instance, if I breastfeed the bay at 6:30 in the morning, I give her the cereal around 9:00 because she gets hungry at this time instead of waiting until my return back home to prepare lunch meals.” (W-34, month 9)

**Active uptake of the recommendations**

Participants reported to actively implement the recommended practices based on the advice they
receive from their trusted source of information including health professionals and CHWs.

“We receive the advice and teachings from health center professional that we have to introduce other foods to our babies from six months, in addition to breastmilk and that foods should be pureed. Therefore, we try to put into practice what we hear from them for the well-being of our babies”. (W-26, month 6)

**Persistence in overcoming challenges to achieve their EB goal**

Despite difficult circumstances, some mothers expressed their EB related goal and their persistency in overcoming challenges. This was mainly reported between 4 months and 6 months when mothers faced challenges including the child’s interest to food while seeing others eating, pressure from family members to introduce some liquids or food before 6 months as well as mother or child’s ill-health. Those mothers reported to be more persistent and to stick to their goal and actively seeking for problem solving strategies. For instance, one mother said:

*My goal is to exclusively breastfeed my baby for his first 6 months from birth. However, as he grows up he expresses envy to eat as he observes others eating. I usually respond to that challenge by isolating the baby whenever I or other siblings are going to eat but what happens is that he sometimes refuses. What I started doing hence forth was not to let the baby stay in own room while we all go and take our meal but rather I used to stay with him and not eat until his siblings are finished to eat and join him to keep his company.* (W-15, month 6).

Many of the mothers reported not to give up and to stand up against the wrong recommendations.

*“The challenge was that since last time you visited our home I have been sick of malaria. My husband and mother- in law advised me to give cow’s milk to baby and I said no, I cannot give it to the baby before he turns 6 months.”* (W-1, month 6)

*“I do not give up; I try to find a solution whatever the problem is because if I gave up it would affect the child’s health.”* (W-34, month 6)

**Changes in coping strategies overtime**

Mothers’ coping strategies changed depending on children’s needs. The analysis of the different points in time provided a view of how the mothers’ ways of coping strategies changed over time
depending on the needs of children during the first year of life. For instance, during the first six months, mothers tried to improve their own diet and eat more food for increased adequate breastmilk production, while after six months during the complementary feeding period, they made sure infants get the best food out of what was available.

Factors facilitating coping of the mothers

Personal factors

Awareness and belief about the benefits of breastmilk

Most mothers were aware of the benefits of breastfeeding. They mentioned that breastfeeding allows for the bonding between the child and the mother and that it promotes good growth. Specific to EB, mothers were aware that EB for the first 6 months reduces the child’s risk of diarrheal disease.

“It is that mother's affection and love, even when I feel weak I have to make an effort and I breastfed her even while lying on the bed and put her closer to me so that she could feel me and recognize me as her mother.” (W-34, week1)

Maternal self-efficacy

Most mothers who EB for six months expressed their feeling of confidence in the ability to breastfeed exclusively right after birth:

“The first one is my knowledge that the baby should depend on mother's milk only and I have my own breasts, I don't have to pay for them. The second is the will. I think there is no obstacle, therefore, I will succeed in breastfeeding her, except in the case of force majeure but I don't expect it, I trust in God.” (W-34, week 1)

Related to maternal self-efficacy was that some mothers reported their previous successful EB experience as a powerful source of their self-efficacy.

“Within the first hour after birth, I breastfed the baby with confidence that she was going to accept it eagerly as it used to be for the older siblings.” (W- 36, week 1)

“The baby will be exclusively breastfed until 6 months, because this is not new as I also managed to exclusively breastfeed the older siblings.” (W-01, month 4)

Religion
Participants stated that praying was one of their coping strategies for IYCF challenges including not having enough food for themselves and their children. Belief in God supported them to persist and take active steps towards coping such as working hard. For other participants, they believed that once they channeled their worries to God, they felt relaxed and believed that God would intervene to solve their problems, including not having access to enough food for the family among others.

“Sometimes I face food related challenges. But, once I deeply pray, it helps me a lot as I believe that there is God’s plan for me. I don’t give up instead I keep on working very hard because I know that God will intervene at the right time.” (W-24, month 12).

“When I pray and join praying groups, I convey to God all my worries including not having access to sufficient food, I feel relaxed because I believe God will provide.” (W-10, month 12)

Social factors
Social support
Mothers reported to experience the influences from significant others that were both favorable and unfavorable to EB. Most mothers who managed to exclusively breastfeed under 6 months considered the support provided by significant others (partners, grandmothers and other mothers) as very important for their successful breastfeeding. The support provided by partners comprised practical, financial and emotional support such as stepping in to help in performing some household daily duties such as cooking, creating a good environment by providing what is needed by the mother, extra food provision as well as providing money to buy food items.

“Also, my husband is helping me in cooking and doing other household duties in these early days after delivery.” (W-11, week 01)

“When my partner gets a casual labour, I tell him what is needed for the infant. He doesn’t reject my request; he provides me money and buys the infant’s food item we don’t grow.” (W-20, month 9)

The support provided by grandmothers included performing household daily duties such as cooking and care of other children, especially within the first weeks postpartum. At 6 months, some mothers who practiced EB reported that their family members (maternal mothers) encouraged them to continue breastfeeding. Other mothers (peers) support consisted of the provision of informational
assistance to one another through sharing breastfeeding experiences which supported EB for 6 months.

For instance, one mother said:

“By the time I met with other mothers at the health center for child’s vaccination at 3 months and a half, EB for 6 months was the focus of our conversation. One mother expressed her concern that her baby wants foods and I said that mine also wants foods. Then another mother encouraged us to make more effort to keep going and delay the introduction until 6 months. Now I managed to do so.” (W-17, month 6).

Mothers also reported to start complementary foods by some specific foods such as porridge and fruits at 6 months because they had seen it being practiced by other mothers.

**Advice from health care professionals and CHWs**

Most mothers reported to receive IYCF information and advice from health care professionals, nurses, during prenatal education and postnatal period like during the child’s vaccination periods.

“When we visit the health center for vaccination, we get some teachings by nurses that we should not give anything else to the baby except breastmilk only for the first 6 months and thereafter give the infant other food rich in nutrients and prepared hygienically.”(W-21, month 4)

Furthermore, they reported to receive IYCF information and advice from Community Health Workers (CHWs) during the growth monitoring sessions and village kitchen cooking demonstration sessions on how best to feed their children. The mother below narrates:

“We are educated by CHWs when we meet during village kitchen activities. They tell us that under 6 months infants should only be breastfeed and that the mother should eat a balanced diet so that the baby gets adequate breastmilk. In addition, we bring different food items and learn together at that moment how to prepare a balanced diet for our children using locally available food items.” (W-17, month 4)

**Discussion**

The findings from this study confirm some aspects we found in previous studies: mothers face challenges to appropriately breastfeed their children such as poverty, food insecurity and heavy
workload [14, 18]. However, our mothers also showed the ability to cope with those challenges by using different coping strategies. Furthermore, a number of personal and social factors facilitated coping and maintenance of the recommended IYCF practices. Coping strategies included mothers’ effort to improve their diet to increase breastmilk production, balancing work and child feeding, prioritizing childcare affairs, preparing child’s food in advance, active uptake of the recommendations and persistence in overcoming barriers.

This research has brought forth a number of major lessons. First, mothers do not use a single coping strategy but a combination of short-term and long-term coping strategies. Among short-term coping strategies, for instance, reprioritizing duties by reducing the time mothers spend on other work and prioritizing child affairs including breastfeeding and complementary feeding helped mothers to deal with their daily heavy workload. Similarly, the importance of reprioritizing duties and prioritize child affairs first has been pointed out by previous studies as a coping strategy to deal with high levels of daily stressors including heavy workload (22, 23). Additionally, preparing children’s food in advance was used by mothers as a way of coping with time scarcity and to allow for a comfortable daily routine, as also indicated by another study (21). Long-term coping strategies involved mothers’ engagement in various forms of agricultural activities, such as home food production and selling of agricultural produce to get food or money to buy other food items.

Second, coping strategies change over time depending on the need of children. This finding is in line with the coping theory that presumes that coping is a process indicating a dynamic interplay between the person (mother) and environment [16]. Successful coping involves an ability to adjust and change coping strategies according to the demands of different stressful situations [20] and in a way that facilitates positive outcomes [21]. In our study, mothers tried to improve their own diet for increased adequate breastmilk production during the first 6 months while after six months they made sure infants get the best food out of what was available. This finding indicates the ability of mothers to modify their coping strategies as the demands of different stressful situations unfold.

The particular coping strategy an individual chooses to use in a given situation depends on not only the perceived nature of the situation but also on key personal factors [22]. Personal factors including
breastfeeding self-efficacy, religious beliefs and beliefs about the benefits of breastfeeding facilitated the capacity of mothers to cope with IYCF challenges. Evidence shows that there is a strong positive association between maternal breastfeeding self-efficacy and EB duration [23]. In our study, by following mothers through the first twelve months postpartum period, we found that perceived breastfeeding self-efficacy was an important personal factor that facilitated mothers’ ability to cope with IYCF challenges and to maintain EB breastfeeding for 6 months. Self-efficacy drives one’s persistence in the face of obstacle [24]. In line with this assertion, most mothers who managed to follow the recommended practices also discussed their persistence to their EB goal by standing up against inappropriate advice of significant others. Setting a breastfeeding goal played an important role in the actualization of EB for six months. There is comprehensive support in the psychology literature that setting a specific goal is critical to goal achievement and that goal setting can be beneficial in health behavior change [25]. The theory of goal setting indicates that one of the mechanisms through which goals influence performance is by directing attention, effort and action toward goal relevant activities at the expenses of non-relevant actions [25, 26]. In our study, participants mentioned their religious belief as a helpful strategy that strengthened their coping ability under stressful IYCF challenges, including lack of enough food. Similar to our findings, belief in God has been reported in other studies as a resource used by people to shape their everyday lives and to overcome challenges [27, 28].

The majority of those who followed the recommended practices expressed the great appreciation for instrumental and informational support they received from significant others (partners, female family members, peers and other mothers in the study community, CHWs and health professionals.). The influence of significant others to adopt recommended IYCF has been reported in different cross sectional studies across different settings [29–31]. In our study, the role of significant others in enhancing coping and maintenance of the recommended IYCF practices was considered as important throughout the first year of child’s life. The partner’s support in childcare for the interviewees in this study appear to be important, with some partners performing household daily duties including cooking. This finding has not been expressed to this extent in the study community and seems to
highlight the father’s changing role in family tasks. Most participants reported to make well informed choice based on IYCF teachings and advices from health professionals and CHWs. Existing literature has also shown that access to health and nutrition education during the prenatal and postnatal periods by health professionals [32, 33] and CHWs [34–36] play an important role in promoting breastfeeding and complementary feeding practices. What our research adds to the literature in this area is that it is not only about receiving teachings and advice overtime that play role in adopting the recommended IYCF practices but it is also about doing something with the advice or the teachings, the active uptake or implementation of the advised recommended practices.

Another major lesson is that mothers try to be in control of their IYCF practices and situation within the sphere of influence. People feel in control if they experience a correspondence between a particular cause of action and its outcomes [37]. Once individuals feel that certain outcomes are under their personal control, there is an increased chance that one will persist in performing the behavior [37]. In this specific study, mothers felt some control by experiencing a correspondence between their efforts to cope with challenges and their consistent success in following the recommended IYCF recommendations. Therefore, empowering mothers to gain greater control of their IYCF practices may be important to ensure appropriate feeding of their children. At the same time, despite mothers try to be in control of their IYCF situation, they cannot do it alone because a lot of things are still beyond their control as mothers are living within the context of an inequitable physical, economic, health and social environment. Additional measures and efforts are needed to ensure mothers have access to sufficient income, education and sustainable livelihood living conditions.

The findings of this study have advanced the state of the art of the coping theory [16]. First, coping is often investigated in terms of its ability to reduce negative outcomes. The current study, however, investigated how coping can also play an important role in increasing positive outcomes. Second, the majority of existing studies on coping strategies are cross sectional and quantitative and do not adequately capture the variability in coping behaviors with time and experience [38]. In this study we were able to examine the variability in coping behaviors with time and experience and how coping supported mothers IYCF practices in a positive way, maintenance of the WHO recommended IYCF
practices. As premised by Lazarus and Folkman (1984), coping is an evolving process that changes in response to context, in effort to manage different internal and external demands [16]. The use of coping theory in this study allowed for further confirmation of this statement. In our study, mothers did not perceive IYCF practices as threatening, mothers tried to be in control and therefore mostly used problem-focused coping such as taking control of the challenges by finding strategies to overcome the challenges, gathering information, use of personal abilities as well as focus attention and action towards goal relevant activities (for instance, EB goal). The theory of coping postulates that when stressful situations (in this case IYCF challenges) are appraised by a person (the mother) as controllable by action, problem-focused coping predominates.

It is also important to discuss the limitations of our study. First, the study was qualitative in nature, limited to specific group, excluding generalizations of the findings to all mothers in the entire community and the wider populations. However, generalizability of the findings was not the main aim, as this study rather aimed to obtain detailed and in-depth accounts on coping strategies and factors facilitating mothers to cope, which would not have been achievable with a large sample. Second, our study provides a view of mothers visiting health center facilities for antenatal consultation. It does not provide information on mothers who do not attend antenatal consultations. According to RDHS 2014-2015, although 99% of Rwandan mothers received antenatal care, only 44% of women who had a live birth met the standard of at least four antenatal care visits in 2015 [10]. Third, participants were drawn from the rural Muhanga District. Therefore, the coping strategies and factors facilitating coping among mothers living in urban settings and with different socioeconomic status should be further studied. Another limitation was that respondents would have unknowingly changed their responses over time to better suit what they saw as the objective of the interviewers. However, the interviewers asked the same questions in different forms as much as possible to check for consistency in the responses. This study also had strengths, including its longitudinal nature to understand the coping strategies and factors facilitating coping, minimizing the recall bias that may be associated with cross-sectional studies. To our knowledge, this is the first qualitative longitudinal study providing insights into the dynamic nature of coping strategies as well as personal and social factors that
contribute to success in maintaining optimal IYCF practices.

In our study, we identified coping strategies and factors facilitating mothers to follow the recommended IYCF practices during the first year of a child’s life. It would be interesting for further research to gain added insights into these coping mechanisms in different populations, for instance in a group of mothers adhering to the recommended practices but also having children who are growing well despite the everyday challenges mothers face. Exploring this question will be relevant for informing the development of behavior change strategies for health and nutrition promotion to support mothers’ capability to direct their IYCF practices in a healthful direction.

Conclusions
Following mothers’ infant feeding practices longitudinally provided a powerful methodology to understand coping strategies and factors facilitating appropriate breastfeeding and complementary feeding practices in the first year of a child’s life. Our study found that the presence of challenges did not prevent mothers to make great efforts to adhere to the recommended IYCF practices. There was an interplay between coping strategies, personal and social factors in facilitating mothers to adhere to IYCF recommendations. Our study shows that mothers have some sense of control over the IYCF challenging situations and are able to develop a diverse set of strategies to deal with those challenges in order to adhere to the recommended practices.

Recommendations
From the insights obtained in our study, the following key messages for health programs can be formulated:
Integrating self-efficacy enhancing strategies in antenatal and postnatal education
Creating a supportive environment such as family and community-wide awareness to provide optimal support to mothers in order to practice the WHO recommended IYCF practices.
Strengthening mothers’ capability in gaining greater control of the strategies and factors facilitating appropriate IYCF practices

Abbreviations
CHWs
Community Health Workers
EB
Exclusive Breastfeeding
IRB
Ethical approval and consent to participate

Ethical approval to conduct this study was obtained from the Institutional review board of the College of Medicine and Health Sciences in Rwanda (Approval notice: No 058/CMHS IRB/2016). Informed written consent was obtained from every participant for the total 12-month study period prior to participation. Mothers were assured that their participation was voluntary, confidential and that they were free to withdraw from the study at any time.

Consent for publication

Not applicable

Availability of data and materials

The data generated and analysed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors’ contributions

JA designed the study protocol, conducted the in-depth interviews, coded and analyzed the data, and wrote the manuscript. IDB contributed to the design of the study protocol and guided the analysis. LV, IDB, MK guided the writing of the manuscript, reviewed the manuscript, and approved it for submission. All authors read and approved the final manuscript.
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**Tables**

Due to technical limitations, Tables 1 & 2 are only available for download from the Supplementary Files section.

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