Effects of Mother-Based Promotion of Exclusive Breastfeeding on Duration and Severity of Diarrhea and Pneumonia: A Cluster Randomized Controlled Trial, Midlands Province, Zimbabwe, 2013

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Dissertation Submitted in Partial Fulfillment of Master in Public Health Degree University of Zimbabwe

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Declaration

I certify that this dissertation is the product of my own work and submitted for the Master in Public Health Programme. It has not been submitted in part or in full to any university and/or any publication.

Student:

Signature______________________________Date________________________

Meggie Gabida

I; having supervised and read this dissertation, I am satisfied that this is the original work of the author in whose name it is being presented. I confirm that the work has been completed satisfactorily for presentation in the examination.

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Abstract

Effects of Mother-Based Promotion of Exclusive Breastfeeding on Duration and Severity of Diarrhoea and Pneumonia: A Cluster Randomized Controlled Trial, Midlands Province, Zimbabwe, 2013

Introduction:

Exclusive breastfeeding rates remain very low in most countries in sub Sahara Africa. We assessed the effects of a mother based intervention on duration of diarrhoea and pneumonia in communities that were trained and not trained in community infant and young child feeding (cIYCF) in the two districts in Midlands Province.

Methods:

We evaluated communities trained in cIYCF and or not trained and a mother based promotion of exclusive breastfeeding intervention (Newsletter) using a two-by-two factorial cluster randomized controlled trial. Consenting mother infant pairs identified within 72 hours of delivery were followed up at 14 and 20 weeks. Primary outcomes were duration of diarrhoea and pneumonia as well as severity of diarrhoea. Clusters were facility catchment areas assigned by an independent statistician using randomization generated by a computer in Stata 10. All admitting facilities and facilities at borders were excluded as buffer zones and eight clusters were analyzed: cIYCF- Newsletter (2 clusters, 90 mother infant pairs), cIYCF (88 mother infant pairs), Newsletter (92) and Control (87).

Results:

A total of 357 mother infant pairs (excluding twins) were available for analysis in all the clusters. The interaction between community infant and young child feeding training and the newsletter was statistically significant at 14 weeks (p = 0.022). The mean duration of diarrhoea was 2.9 days (SD = 0.9) among infants of mothers who resided in communities trained and received a newsletter compared to 5.2 days (SD = 1.1) in communities that received neither. The protective efficacy of the cIYCF plus newsletter was 76% during the first 20 weeks of life. In the two way ANOVA, the newsletter was more effective on duration of pneumonia (p = 0.010) at 14 weeks and remained significantly effective at 20 weeks (p <0.0001) while the preventive efficacy of the newsletter on pneumonia at 20 weeks was 74%.

Conclusion: A combined community and mother-based promotion of exclusive breastfeeding reduces duration of diarrhoea at 14 weeks and at 20 weeks the newsletter worked better for both duration of diarrhoea and pneumonia compared to cIYCF training

Key words: cIYCF, exclusive breastfeeding, promotion, mother-based
Acknowledgements

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*Secondary un = Secondary uncompleted, Secondary co = Secondary completed

**Bookmark not defined.**

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Abbreviations

BF  Breast feeding
BFHI  Baby Friendly Hospital Initiative
CDC  Center for Disease Control and Prevention
cIYCF  Community Infant and Young Child Feeding
EBF  Exclusive breastfeeding
HIV  Human Immune Deficiency Virus
HSO  Health Studies Office
MDG  Millennium Development Goal
MOH &CW  Ministry of Health and Child Welfare
MRCZ  Medical Research Council of Zimbabwe
MTCT  Mother-to-child transmission of HIV
UNICEF  United Nations children’s Emergency Fund
WHO  World Health Organization
ZDHS  Zimbabwe Demographic Health Survey
CHAPTER 1

INTRODUCTION

1.1 Background Information

Exclusive breastfeeding has been estimated to reduce infant mortality rate by 13% during the first six months of the baby’s life\(^1\). Exclusive breastfeeding means that an infant receives only breast milk with no additional foods or liquids and not even water for the first six months of life; vitamin supplements, minerals and medicines are also not given unless medically indicated\(^2\). Breast milk provides all the energy and nutrients that the infant requires for the first six months of life. It continues to provide one third of the child’s nutritional needs during the second year of life\(^3\). United Nations Children’s Emergency Fund (UNICEF) reiterates that despite compelling evidence that exclusive breastfeeding (EBF) prevents diarrhea and pneumonia, global rates remains stagnant in the developing world growing from 32% in 1995 to 39% in 2010\(^2\).

Exclusive breastfeeding (EBF) also provides health benefits for mothers\(^3\). Breastfeeding contributes to maternal health in the immediate postpartum period by helping the uterus to contract rapidly, thereby reducing blood loss. In the short term, breastfeeding delays a woman’s return to fertility and in the long term it reduces the risk of cancers of the breast and ovary\(^4\).

Globally, it is estimated from 94 countries reported under WHO Nutrition Data Bank that out of the 65% of the world’s infant population, (<12 months) 35% are exclusively breastfed between 0 – 4 months of age\(^5\). Therefore one in every three children is exclusively breastfed
in the developing world. World Health Organization (WHO) and UNICEF thus set several
global strategies aiming to improve breastfeeding. These include; the global strategy for
infant and young child feeding (IYCF), the baby friendly hospital initiative (BFHI) and the
international code of marketing of breast milk substitutes.

The global strategy on infant and young child feeding emphasizes on optimal infant and child
feeding practices where infants should be exclusively breastfed for the first six months of life
and continue to breastfeed from six months with timely, adequate complementary foods up to
two years or beyond\textsuperscript{1,6,7}. EBF plays a critical role in child survival and health. Even though
breastfeeding is a natural act, it is also a learned behaviour and an estimated 13% of under-
five deaths could be prevented by optimal breastfeeding during the first year of life\textsuperscript{6}.

The Baby-Friendly Hospital Initiative (BFHI) is the translational tool developed by WHO
and UNICEF to promote breast-feeding (BF) in maternity wards worldwide. It implements
the ten steps to successful breastfeeding which are the corner stone to child survival. BFHI
recommends early initiation of breastfeeding within the first hour of birth, where early
initiation is putting the baby to the breast within one hour of delivery\textsuperscript{7}. On the other hand,
international code of marketing of breast milk substitutes in a country bans the advertisement
of breast milk substitutes\textsuperscript{8}. It protects mothers and caregivers from pressures of commercial
foods advertisements idealizing breast milk substitutes thereby encouraging mothers to
breastfeed their children.

Among the global initiatives is the commemoration of the world breastfeeding week (WBW)
that takes place every first week of August. Various activities are carried out in the world
according to the theme for that year, educating communities while promoting, protecting and supporting breastfeeding.

In the recent years, the major challenge to EBF is the Human Immune Deficiency Virus (HIV) epidemic and there are large disparities between continents with the developed world almost eliminating mother to child transmission of HIV. WHO’s recent guidelines on infant feeding and HIV recommends that mothers infected or uninfected with HIV or with unknown status should practice exclusive breastfeeding for the first six months, introducing appropriate complimentary foods thereafter and continuing to breastfeed up to 24 months or beyond\(^9\). Breastfeeding can only stop after a nutritionally adequate diet without breast milk can be provided\(^7\), otherwise the mother should continue breastfeeding up to 24 months.

In sub-Saharan Africa the enormous benefits of exclusive breastfeeding include improved nutrition and reductions in infant morbidity, mortality and mother to child transmission of HIV (MTCT)\(^10\). Exclusive breastfeeding seems to have a protective effect on HIV-1 transmission compared to mixed feeding\(^10, 11\). Both the HIV-1-positive women in resource-poor settings and the overall population might therefore benefit from this practice\(^5, 10\). Women living with HIV can reduce vertical HIV transmission to their children through practicing exclusive breastfeeding for the first six months of the baby’s life.

Zimbabwe adopted and launched the baby friendly hospital initiative (BFHI) in 1991. BFHI is a global strategy of World Health Organization (WHO) and UNICEF that aims to give every baby the best start in life by promoting, protecting and supporting successful breastfeeding as the normal practice behaviour. Most maternity services have been baby friendly accredited in the early 2000 and have since not taken the initiative to renew their
accreditation after five years of implementation. Early initiation of breastfeeding determines the successful establishment and duration of breastfeeding. The Ministry of Health and Child Welfare (MOH & CW) promotes rooming – in of all infants in maternity wards. The Ministry of Health in its commitment to promoting exclusive breastfeeding have drafted a breastfeeding policy that is also the building block for BFHI.

Major causes of under-five mortality in Zimbabwe are HIV/AIDS, pneumonia and diarrhoea. The nation is significantly below target to meet millennium development goals (MDGs) 4 and 5.

Countrywide, exclusive breastfeeding rates have remained almost stagnant. According to the Zimbabwe Demographic Health Survey 2010-11, the rates have risen slightly from 22% in 1999 to 31% in 2010. The low exclusive breastfeeding rates strongly correlate with stunting levels, under-five mortality and infant mortality. Against this background, Zimbabwe is not on track to achieve MDG 4. Table 1 below shows progress towards selected health related goals against the MDGs targets.

Table 1: Progress towards health related millennium development goals in Zimbabwe

<table>
<thead>
<tr>
<th>Variable</th>
<th>1999</th>
<th>2005</th>
<th>2009</th>
<th>2010</th>
<th>MDG targets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exclusive breastfeeding</td>
<td>27%</td>
<td>22%</td>
<td>26%</td>
<td>31%</td>
<td>70%</td>
</tr>
<tr>
<td>Stunting in &lt;5 years</td>
<td>27%</td>
<td>29%</td>
<td>35%</td>
<td>33.8%</td>
<td>7%</td>
</tr>
<tr>
<td>Under 5 mortality</td>
<td>102</td>
<td>82</td>
<td>86</td>
<td>84</td>
<td>34</td>
</tr>
<tr>
<td>Infant mortality</td>
<td>65</td>
<td>65</td>
<td>60</td>
<td>57</td>
<td>22</td>
</tr>
</tbody>
</table>

[Data adapted from ZDHS 2010-11]
Midlands province has a total population of 1,602,733. Of these, 241,051 (15%) are children under five years. And of the under five years (<5 years), 48,563 (20.1%) are under one year (< 1 year) who had a median duration of exclusive breastfeeding of only 1.2 months three years preceding the 2010-11 ZDHS. Most of the districts in the province have stunting levels above 30%\textsuperscript{11,13}. The province hosted the world breastfeeding week (WBW) in 2010 which is commemorated during the first week of August worldwide. Since then, the province embarked on extensive scale up of community infant and young child feeding trainings (cIYCF) in a bid to increase community participation in improving infant feeding practices, particularly exclusive breastfeeding.

Gweru and Kwekwe are neighbouring districts that share boundaries. Gweru has a total population of 246,475 which is 15.4% of the provincial total while Kwekwe has a population of 312,587 (20%). Children under -five in the two districts constitutes about 13% and 14% respectively of the total population. The prevalence of diarrhoea in under-fives is 13.2% in the province\textsuperscript{10} and the largest population in the two districts resides in rural communities. Most (98%) of the children, below the age of six months receive some breast milk but not exclusively. Some reasons cited for failure to exclusively breastfeed include; health systems practices where mothers and their babies are separated. There is also delayed initiation of breastfeeding in health facility set ups and provision of prelacteal feeds. The other reasons are community beliefs that delay initiation of breastfeeding and lack of social support for women in resolving breastfeeding difficulties. Also, many are the times when mothers believe they have inadequate milk and that children cry excessively because they will be hungry\textsuperscript{10}. 
Breastfeeding can be promoted by a change in hospital routine (e.g. not separating mothers and their children after delivery or delaying some of the procedures and initiate breastfeeding within an hour after delivery) and by giving information and support to mothers.

1.2 Problem Statement

Nationally it is of great concern that only 5.8% of Zimbabwean children were exclusively breastfed as of 2010. During the same year in Midlands Province, only about 6% of children were exclusively breastfed whereas Gweru, Kwekwe and Gokwe South districts recorded 0% exclusive breastfeeding rates. The MDGs target for exclusive breastfeeding is at least 70%. Against this background, about 94% and 100% of children in Midlands province and Gweru district respectively; had they been exclusively breastfed could have been protected from infectious diseases such as pneumonia and diarrhoea (ranked number one and two causes of under-five morbidity and mortality) respectively.

1.3 Justification

This study intends to assess the effects of a mother-based promotion of exclusive breastfeeding on duration of diarrhoea and pneumonia. The findings of the study will complement the Ministry of Health and Child Welfare in their efforts to promote and increase exclusive breastfeeding rates. Even though there have been trials on community-based promotion interventions regionally and locally, there has been little research in Zimbabwe on sustainable mother-based interventions to promote exclusive breastfeeding. Also the findings of the study may revitalize the efforts of Zimbabwe to meet MDG4.

We decided to test the use of a newsletter as a direct intervention targeting the mothers of children aged 0-24 months and using the mother as the agent of change. The idea of a newsletter was borrowed from Japan, Hokkaido in Obihiro where it was being used in
promoting healthy life styles under the theme “Healthy Obihiro 21”. Citizens were well informed and motivated to take action. We therefore wanted to explore the same strategy to promote exclusive breastfeeding by mothers in midlands province since exclusive breastfeeding has been proven by many studies to have a protective effect against infectious diseases including diarrhoea, pneumonia and HIV infection.

1.4 Research Question

What is the effect of mother-based promotion of exclusive breastfeeding on diarrhoea duration, severity and incidence of pneumonia in Gweru and Kwekwe districts?
CHAPTER 2

LITERATURE REVIEW

2.1 Introduction

This review explores the major strides that have been taken by the international, regional and local communities in promoting exclusive breastfeeding, current evidence and factors associated with exclusive breastfeeding failures. While mother based promotion of exclusive breastfeeding and its effects on diarrhoea and pneumonia illnesses is the major theme of this study, this literature review is expanded to cover all aspects of breastfeeding and infant nutrition.

It is reported that worldwide, about four million babies die annually in the first four weeks of life and the majority of these neonatal deaths take place at home and they mainly occur in the developing world\textsuperscript{14}. Of concern is that these deaths are mainly from preventable causes\textsuperscript{6}. A further analysis of these neonatal deaths showed that infections (sepsis, pneumonia, tetanus and diarrhea) caused 36% of deaths globally while preterm births caused an additional 27% deaths\textsuperscript{15}. The effects of both can be prevented by early initiation and exclusive breastfeeding\textsuperscript{6}.

In developing countries, breastfeeding is common but exclusive breastfeeding is far from being a reality and thus rarely practiced\textsuperscript{7}. This means that even in the era of HIV elimination in children, the major huddle remains to be infant feeding practices.
The benefits of exclusive breastfeeding on child survival, growth, and development are well documented. Breastfeeding was found by various studies to have a protective effect against diarrheal illnesses compared with other forms of feeding\textsuperscript{16}. Yet, less than 40% of children are exclusively breastfed worldwide\textsuperscript{16,17}. Two strategies have been successful in the promotion of exclusive breastfeeding: the Baby Friendly Hospital Initiative (BFHI) and the use of peer counselors in settings where most babies are delivered at home. In a study conducted in Belarus, the BFHI was reported to increase the likelihood of exclusive breastfeeding where most births took place in health facilities\textsuperscript{17}. However, the second approach that was tested in the same setting which was based on the recruitment of workers dedicated to a single intervention cannot be replicated in health systems that are resource constrained\textsuperscript{14}.

### 2.2 Exclusive Breast Feeding and the Global Strategy

The Global Strategy on Infant and Young Child Feeding (IYCF) compounded by World Health Organization (WHO) – United Nations Children’s Emergency Fund (UNICEF) (WHO-UNICEF 2003) had an overall goal to protect, promote and support optimal infant and young child feeding practices\textsuperscript{18}. WHO-UNICEF, defined optimal infant and young child feeding where the mother is supported to initiate breastfeeding within one hour of birth, give the baby only mother’s milk from birth to six months and continue to breastfeed for two years or beyond while giving the baby nutritionally adequate, safe, age appropriate and responsive complementary feeding starting at six months\textsuperscript{19}. This was expected to result in improved child’s nutritional status and survival of infants and young children\textsuperscript{19,20}. Despite the recommendations, many studies have shown that though feasible, majority of women only breastfeed exclusively during the first two months of life\textsuperscript{20,21}. 
While exclusive breastfeeding is a perfect food for the baby during the first six months of life, it is much more than food; breastfed infants are much less likely to die from acute respiratory infections and other diseases (Lancet 2008)\(^22\). The study by Boccolini et al., confirmed that breastfeeding reduced the risk of pneumonia hospitalization during infancy at the municipal level in Brazil\(^23\), while Bhandari et al., found that an educational intervention through the use of peer led counselors resulted in higher exclusive breastfeeding rates in the intervention groups compared to control group\(^24\).

It was estimated by WHO that reaching over 90% of infants with a package of interventions to protect, promote and support optimal infant and young child feeding practices can contribute to reducing overall child mortality by close to one fifth. EBF up to six months has the single greatest impact on child survival, with the potential to prevent 1.4 million under five deaths in the developing world\(^25\). WHO further reiterates that over 220 000 child lives can be saved every year with promotion of optimal infant feeding and provision of necessary supplements in food insecure populations\(^26,37\).

The Global strategy renewed commitment to continuing joint action consistent with the Baby-friendly Hospital Initiative, the international Code of Marketing of Breast milk substitutes and the Innocenti Declaration on the Protection, Promotion and Support of Breastfeeding. For a hospital to be designated 'baby-friendly' it should not accept free or low-cost breast milk substitutes, feeding bottles or teats, and has to implement ten steps to support successful breastfeeding\(^27\). This helps to ensure that health workers are not influenced by manufacturing companies and hence will not misinform mothers, will not idealize breast milk substitutes thereby protecting breastfeeding. Tremendous successes were reported in Haiti, where it was proven that promotion of exclusive breastfeeding is possible even in
emergences’. The baby tents strategy in Haiti, where exclusive breastfeeding was previously reported to be 41% during the 2005-2006 demographic health survey (DHS), resulted in a remarkable increase in exclusive breastfeeding rates to 70%28. The major take home message here is that women can exclusively breastfeed even in difficult circumstances if a breastfeeding environment is created; they are supported through various ways including counseling and provision of accurate information. Also, community participation and active follow up have the potential to increase exclusive breastfeeding.

Most countries where exclusive breastfeeding has been successfully initiated within one hour of birth report encouraging results in reducing diarrhoea and pneumonia morbidity33. However a lot still needs to be done especially in sub Saharan Africa where the benefits of breastfeeding are now being undermined by the HIV epidemic. This is because the epidemic came with a lot of revisions on the infant and young child feeding training coupled by the ever changing WHO recommendations resulted in many settings teaching conflicting messages. Nevertheless, the benefits of exclusive breastfeeding outstrip the epidemic and remains the most protective way in resource limited constrained countries (Zimbabwe included). Thus exclusive breastfeeding remains a priority public health concern.

Community participation is one component that is critical for the successful optimal infant and young child feeding. It is thus imperative to explore various avenues aimed at successfully involving the community to protect, promote and support breastfeeding. Thus, the road to EBF is not without challenges and pit falls. These, however were learning processes where several interventions, strategies or initiatives were implemented in several countries with the ultimate goal for mothers to practice EBF as a norm.
2.3 Outcomes

The goal of exclusive breastfeeding is not only to improve health status of infants or prevent pneumonia and diarrhea; it does play an important role in reducing mother-to-child transmission of HIV through breast milk during breastfeeding. However, it is important to note that because of failure to breastfeed exclusively, most children in developing countries are vulnerable to largely irreversible outcomes such as stunting and significantly increased risk of diseases such as pneumonia and diarrhea\textsuperscript{29}.

Studies elsewhere have shown that breast milk has in it some oligosaccharides which exist in the natural immunological mechanism that has been reported to protect infants against diarrhoeal morbidity\textsuperscript{30}. As such, breastfeeding prevents exposure to contaminated foods and beverages that exacerbate vulnerability to infection. Breastfeeding thus contributes to ensure safe and adequate nutrition for infants while providing non specific immunity\textsuperscript{31,37}.

The risk of providing suboptimal infant and young child feeding practices results in higher incidence of diarrhoea, increased diarrhoeal hospitalization and diarrhoea mortality compared to optimal infant and young child feeding\textsuperscript{32}. Looking at the available evidence, it is imperative to further explore strategies that empower communities and mothers to adhere to optimal infant and young child feeding practices.

2.4 Factors that contribute to EBF Failures

Since the HIV epidemic took its toll in the late 90s, EBF became a stigmatized practice that was associated with being HIV positive. This then resulted in a majority of women abandoning the practice.
Many studies have shown that various factors have been associated with EBF failures and they ranged from socio-demographic, social or environmental factors that include breastfeeding support, cultural beliefs and norms towards breastfeeding. In addition, some studies have identified modifiable risk factors for breastfeeding failures.\(^{33,34}\)

Presently, many studies have shown that scaling up nutrition and breastfeeding support beyond hospitals and into the community contributes to an increase in EBF. In all these studies; a study by Boccolini et al., documented that both exclusive breastfeeding among infants less than six months of age and continued breastfeeding to 12 months of age are associated with a reduction in the risk of hospitalization especially for children with pneumonia among children less than one year.\(^{35}\) This study further found that the maximum benefit for children hospitalized with pneumonia can only be realized when both exclusive breastfeeding is practiced and adequate breastfeeding duration is achieved.

In another study conducted in India by Bhandari et al., hospital visits for which treatment was sought for diarrhoea was significantly lower in the intervention group compared to the control group.\(^{24}\) However, contrary to this study, a randomized trial in Kenya (2001) concluded that, infants assigned to be formula fed or breastfed had similar mortality rates and incidence of diarrhea and pneumonia during the first 2 years of life. However, HIV-1-free survival at 2 years was reported to be significantly higher in the formula arm.\(^{36}\)

The impacts of peer-led counseling on exclusive breastfeeding rates and reduced infant illness were shown by three cluster randomized controlled trials that were conducted Mexico, Bangladesh and India.\(^{37}\) When the follow-up was conducted at three months after birth the results showed that 67% and 50% of the intensive and less intensive counseling intervention
groups respectively were still exclusively breastfeeding, compared to 12% of the control group, and both intervention groups had less diarrhoea than control infants in Mexico city\textsuperscript{16,37}. However, the results in Mexico did not compare the differences in diarrhoea prevalence between the two interventions which leave room to conclude that the less intensive counseling on EBF has similar effects with intensive counseling on prevalence of diarrhoea.

In a prospective observational study of mothers and babies followed up for 24 months after birth, the study revealed that breast feeding babies for 13 weeks or more significantly lowers gastrointestinal illness in infants compared to those that are bottle fed from birth at ages 0-13 weeks\textsuperscript{38}.

In a similar cluster randomized trial carried out in sub-Saharan Africa, including three countries Burkina Faso, Uganda and South Africa, the prevalence of EBF at 12 weeks of age in the intervention group was about twice that of the control group based on both the 24-hour and 7-day recalls. In this trial, EBF rates were much lower in South Africa than in the other two countries, and the intervention resulted in a small absolute increase in the prevalence of EBF. The authors attributed this to the South African Department of Health’s history of not abiding to the international code of marketing of breast milk substitutes (CODE) and promoting infant formula for the prevention of mother-to-child transmission of HIV, including provision of free formula to HIV-infected mothers\textsuperscript{39}. Thus in countries where the international code of marketing of breast milk substitutes is observed, it contributes substantially to protecting breastfeeding.
In study conducted in Italy, the use of professional health workers to give early support for exclusive breastfeeding was reported to be ineffective. However, other studies have shown that provision of extra support to mothers by professionals in breastfeeding led to an increase in the number of mothers exclusively breastfeeding up to two months\textsuperscript{40}.

A study by Haider et al., found that 83\% and 70\% of women in the intervention areas were exclusively breastfeeding at three and five months respectively, compared with 18\% and 6\% in control areas. In these interventions, the counselors were being paid but a similar study in Haryana State, India; volunteer counselors were used, resulted in 79\% of infants in the intervention areas being exclusively breastfed compared to 48\% in the control areas. In Haryana state, monthly community meetings and opportunistic visits by community-based health workers and traditional birth attendants were also used to reach mothers in the community. Follow up at six months found that at least 42\% of women in intervention areas were still exclusively breastfeeding compared to 4\% in control areas\textsuperscript{42}.

However, all these studies address the following challenges;

- Lack of breastfeeding counseling and support
- Increased access to verbal breastfeeding information
- Sweeping away some of the breastfeeding cultural beliefs
- The benefits of home visits to breastfeeding mothers

With the wealth of evidence gathered, it shows that there is still more need to explore other avenues to promote exclusive breastfeeding in order to reach universal EBF and creating an environment where every child receives exclusive breastfeeding during the first six months of life. Community participation at varying levels can thus help overcome some of the breastfeeding challenges, but due to lack of follow up on most of the trained peer counselors,
the initiatives have often not yielded expected results. Thus further initiatives probably including those that target the mother as the agent of change may augment the efforts being done locally and regionally.

In a systematic review of breastfeeding peer counseling, where twenty six peer-reviewed publications were included, the efficacy of peer counseling on EBF rates was proven to be effective. In one study where the intervention group received three breastfeeding peer counselor contacts plus advice for diarrhoea management showed a significant increase in the proportion of mothers exclusively breastfeeding compared to the controls. Some limitations were however highlighted for this study. Since the very people who delivered the intervention were involved in ascertaining the outcome, there was a potential bias. Thus, evidence is still needed as to how many peer counselor visits actually lead to positive or an increase in exclusive breastfeeding to ensure replicability and probably standardization of this evidence to realize similar effects during implementation in different contexts.

According to the CDC guide to breastfeeding interventions; maternity care practices, peer support, educating mothers, professional support, media and social marketing were reported as evidence based interventions. Lets us take a closer look at peer support, it has its positives and negatives. Not to mention the cost effectiveness and the fact that women learn best from one of their own in communities, it can impact negatively on infant and young child feeding practices.

Locally, an extension of the approach where peer counselors, volunteers or village health workers are being trained in community infant and young child feeding was shown to be
effective. However, the use of paid peer counselors was shown to be more effective compared to volunteer counselors who are being used in many settings Zimbabwe included.

Therefore the wealth of available literature shows that EBF is feasible and can be achieved through use of peer counselors with more than three and above peer counseling visits yielding more positive results.

2.5 EBF in Zimbabwe

The main objective of the Ministry of Health and Child Welfare in Zimbabwe is to improve the health status of Zimbabweans through providing preventive, curative and rehabilitative health care services that are equitable and accessible to all. Thus guidelines to promote optimal infant and young child feeding were formulated guided by the Global Strategy on infant and young child feeding.

Zimbabwe also adopted and launched the BFHI, where around the year 2000, the majority of hospitals throughout the country were trained in a 20 hour session of the BFHI course with the aim to ensure success and probably sustainability of the initiative. Furthermore, majority of health workers were also trained in infant and young child feeding (IYCF) which is a 48 hour course. The course covers messages to impart to pregnant and lactating women, in the bid to protect, promote and support breastfeeding at health institutions.

Every hospital in Zimbabwe is mandated to have a breastfeeding policy and hospitals are supposed to be BFHI accredited after very three to five years. However, the initiative was met with varying success. Thus through the Scale up Nutrition (SUN) the BFHI approach
was reinvigorated through the implementation of community infant and young child feeding (cIYCF). The trainings targeted health workers down to the community health workers so as to scale up breastfeeding beyond hospitals. This aimed to ensure that breastfeeding continuum of care was maintained from discharge at the facility to the community.

2.6 EBF in Midlands and targets

According to the National Nutrition Survey 2010, in Midlands Province, 77.1%, 95% CI [75.7%, 78.5%] of the children were put to the breast within one hour of birth and only 5% were exclusively breastfed. Some urban communities and rural communities had village health workers trained in cIYCF following evidence from research that the use of peer counselors increases the likelihood of exclusive breastfeeding. However, in Midlands the rates of EBF are very low despite the efforts by Zvitambo in some parts of midlands where a variety of initiatives including promotion of EBF through edutainment where road shows were conducted at various level with the messages to promote, protect and support EBF.

2.7 Relevancy of the study

Exclusive breastfeeding is the single intervention that was proven to have the greatest impact on child survival. In addition, it was shown to be very applicable in any setting, demonstrated to be feasible and sustainable. In some instances it was described as being cost effective. The current global HIV epidemic have pressured the WHO to seek for alternatives to effective interventions targeting the window of opportunity to improve the survival of children under five years.
The Ministry of Health and Child Welfare (MOH &CW) introduced several initiatives and interventions that are endorsed by WHO and UNICEF. The successes of some of the interventions were not assessed in midlands province and recent reports have shown that the exclusive breastfeeding rates continue to fall. Thus the results of the study will provide the information necessary to strengthen the protection, promotion and support of EBF. This study is aimed at influencing the improvement of breastfeeding and thus has an influence in diarrhoea duration and severity as well as pneumonia. This may result in an increase in EBF, reduction in diarrhoea and pneumonia incidence and thus reduced child mortality in the long term.
CHAPTER 3

OBJECTIVES AND HYPOTHESES

3.1 Introduction

The chapter will explore the aim of the study, broad and specific objectives as well as the null and alternative hypotheses. Zimbabwe, being one of the countries battling the burden of malnutrition in sub Saharan Africa has at its heights to implement strategies that curb malnutrition. According to World Health Organization and UNICEF, exclusive breastfeeding remains the only effective intervention that ensures optimal infant and young child feeding, which reduces vulnerability of infant to diarrhoeal and other infections that exacerbates progression to malnutrition. Promoting EBF therefore has a positive impact on reducing infant mortality and can greatly contribute to the achievement of the millennium development goal 4.

3.2 Aim of the study

The aim of the present study was to assess if there was an interaction between mother-based and community based promotion of exclusive breastfeeding on duration of diarrhoea and pneumonia as well as diarrhoea severity. Our intention was to use the trial to see the effect at population level. Therefore, to minimize contamination, the unit of randomization was the clinic and its catchment population. The main outcomes were at mother infant pairs’, level.

3.3 Broad Objective

To assess the effects of a newsletter to the mother in promoting exclusive breastfeeding on, diarrhea duration, diarrheal severity, prevalence of EBF and pneumonia incidence.
3.4 Specific objectives

1. To assess the effects of a newsletter on duration of diarrhoea in Gweru and Kwekwe districts, 2012

2. To assess the effects of a cIYCF training on duration of diarrhea in Gweru and Kwekwe districts, 2012

3. To evaluate the interaction between a newsletter and cIYCF training on duration of diarrhoea

4. To assess the effects of a newsletter duration of pneumonia in Gweru and Kwekwe districts, 2012

5. To assess the effects of a cIYCF training on duration of pneumonia in Gweru and Kwekwe districts, 2012

6. To evaluate the interaction between a newsletter and cIYCF training on duration of pneumonia

7. To assess the effects of mother based promotion of EBF on severity of diarrhea in Gweru and Kwekwe districts, 2012

8. To compare the effects of the intervention on the incidence of pneumonia among infants of mothers who received intervention and those who did not

9. To compare the prevalence rate of EBF between children of mothers who received intervention and children of mothers who did not.

3.5 The hypotheses

- The newsletter has an effect on diarrhoea duration and incidence of pneumonia

- Community infant and young child feeding training (cIYCF) has an effect on diarrhoea duration and incidence of pneumonia

- There is an interaction between residing in communities trained in cIYCF and receiving a newsletter on duration of diarrhoea and pneumonia
CHAPTER 4

METHODS AND MATERIALS

4.1 Introduction

This chapter will explore the research methods used in this study and will look at study
design, study setting, study population, sample size and sampling plan and or randomization,
the trial profile, data collection instruments, permission to conduct the study and ethical
considerations as well as data capturing and statistical analysis.

4.2 Study design

A cluster randomized control trial (RCT) was conducted where the clusters were health
facilities (clinics) serving an average catchment area of 10 000 people in the rural and urban
communities of Gweru and Kwekwe districts. The cluster design was chosen because the unit
of randomization was a group rather than an individual to minimize contamination. A 2 by 2
factorial design was used to further randomize clusters into one of four trial arms so as to
assess if there was an interaction between the independent variables. The trial arms included
communities/ clusters trained in cIYCF (A), clusters with mother infant pairs that received a
newsletter (B), clusters trained in cIYCF and clusters with mother infant pairs that received a
newsletter (AB) and clusters with infant mother pairs receiving routine services only.

4.3 Study setting

All rural health facilities and urban clinics in Gweru and Kwekwe districts were included in
the study. Seventy nine health facilities were identified and eligible for randomization. Three
(admitting general and private hospitals) and clinics at the borders of clusters were excluded as buffer zones between the intervention and control communities.

4.4 Study population

Mother infant pairs identified within 72 hours of delivery residing within 10km radius of the nearest health facility were recruited into the study.

4.4.1 Target Group and Inclusion Criteria

The target population was communities living 10 kilometres to nearest health facility. Clusters of clinics and polyclinics in Gweru and Kwekwe district were included. Only mother infant pairs identified within 72 hours of delivery, mothers have chosen to breastfeed their children, are able to read and permanently reside within 10 kilometers (Kms) of the nearest facility radius were included. Infants with mothers or fathers who give written consent were included into the study. The mother infant pairs were followed up at 14 and 20 weeks.

4.4.2 Exclusion Criteria

Admitting hospitals, Clay bank, Kwekwe General and Gweru provincial hospital were excluded as buffer zones. Infants with mothers (parents) who failed to produce written consent, chosen not to breastfeed, cannot read and stay more than 10kms from nearest facility, and or they were visitors were not included in the study.

4.5 Intervention Activities
At the control sites, routine services were provided according to the Zimbabwe Ministry of Health and Child Welfare (MOHCW) national policy. According to the policy, health workers are required to counsel mothers on EBF for the first six months of life at every given opportunity and more so as mothers come for routine immunizations. They are supposed to attend to mothers with breastfeeding difficulties and arrange for follow up if necessary. Where there are breastfeeding support groups mothers should be referred to these groups in the communities where they stay. Also mothers continue to be counseled and supported on prevention of mother to child transmission of HIV. HIV testing was provided for mothers not tested, those tested more than three months and babies exposed to HIV receive an HIV test within the first 6 weeks. Family planning is also discussed. In addition, under the scale up nutrition activities by UNICEF, some parts of the districts were trained in community infant and child feeding (cIYCF). In these trainings, village health workers and community health workers in rural and village facilitators in urban were trained. These cadres were trained to provide nutrition counseling and breastfeeding support to mothers in an effort to take the promotion of breastfeeding beyond hospitals communities. In addition, the village health workers identifies pregnant women in their community, follow them up until delivery while discussing issues to do with breastfeeding.

At the intervention sites, mothers received the routine services provided according to the Zimbabwe Ministry of Health and Child Welfare national policy as outlined in the control group. In addition the communities that were trained or not trained in community infant and young child feeding (cIYCF) were given a newsletter in one group (A) while the other group received a newsletter plus an incentive and or no newsletter. The incentive was in the form of t-shirts with breastfeeding messages that are given to study participants (mothers). The
incentive was attached as a way to encourage mothers to read and internalize the contents of the newsletter.

The newsletter was provided to mothers at enrollment. The newsletter had messages on breastfeeding exclusively, most asked questions and answers and dates for immunizations and advertized exclusive breastfeeding with a portion on the draw promotion without any incentive attached. The draw was done at 10 weeks and was used as feedback information to develop lessons learnt for the newsletter to be given at 14 weeks. In the second group that received a newsletter plus an incentive, they received the same newsletter at enrolment but the draw highlighted some prizes to be won at 14 weeks. All participants however received t-shirts at 14 weeks.

The newsletter sought to empower the mother to take full control of her child’s health issues. The intervention was mother-based because it articulates the mother as the agent of change and this was achieved through the newsletter to the mother and some incentives. The newsletter compliments routine services. The newsletter also empowers the mother to demand for services and is a piece of reference material for mothers. The newsletter in the other hand also acts as a vehicle for follow up (mothers brought children to access services) at the stipulated dates. Not only does it impact on the mother but also on the service delivery side. It can act as a reminder for service providers in this case nurses (as they issue out the newsletter), to counsel, promote and support mothers on exclusive breastfeeding at 14 weeks when mothers bring children for immunizations and also at 24 weeks as they come for vitamin A supplementation. They were given a follow up newsletter at six months with information on how to sustain breastfeeding up to two years or beyond.
Contents of the newsletter included dates for the immunizations according to the new child health card. Messages on feeding only breast milk for the first six months, frequency and duration of breastfeeding as well as most asked questions. The messages to impart included immediate breastfeeding after birth, feeding only breast milk for the first 6 months of life, and breastfeeding the infant day and night, at least eight times in 24 hours. We also targeted the communications strategy at specific foods and fluids given to non-exclusively breastfed infants, such as water, gripe water and muti (herbal mixtures) to explain their lack of benefit and possible adverse effects. Lessons learnt as well as learning experiences from breastfeeding mothers were shared at 14 weeks.

The effect of a newsletter may not only benefit the breastfeeding behaviour, it may improve knowledge on and help to sensitize mothers on maternal mortality issues. There was a column for feedback to enrich the newsletter at 14 weeks and the newsletter was in two languages (English and Shona).
Figure 1: Trial profile

79 health facilities assessed for eligibility

46 excluded as buffer zones
4 excluded for security reasons

32 clinics and polyclinics
randomized into 8 clusters (340 mother infant pairs)

cIYCF training: 4 clusters
170 mother infant pairs

No cIYCF training: 4 clusters
170 mother infant pairs

Received newsletter (2 clusters)
A1

No newsletter (2 clusters)
Control
A2

Received newsletter (2 clusters)
B1

No newsletter (2 clusters)
Control
B2
4.6 Operational definitions

- Exclusively breastfed infant was defined as an infant who received only breast milk for the first six months of life and not even water but drops of supplements may be given if medically prescribed.
- Any infant who received solids before the age of six months was classified as mixed breastfed.
- Any infant who received liquids in addition to breast milk before the aged of six months was predominantly breastfed.
- Diarrhoea was the passage of frequent liquid stools more than three times a day while diarrhoea severity was any infant who presented with signs of dehydration. The signs of dehydration included, dry sunken eyes, very dry mouth, skin and mucous membranes, extreme thirst and little or no urination.
- Pneumonia was any infant who presented with cough, fever and had difficulty in breathing

4.7 Study variables

4.7.1 Outcome variable

The purpose of this study was to evaluate the effect of mother based promotion of exclusive breastfeeding and community infant and young child feeding training on the primary outcomes which were duration and severity of diarrhoea and incidence of pneumonia at 14 and 20 weeks. At 14 and 20 weeks mother infant pairs were followed up, and a standardized questionnaire was used to assess diarrhoea duration, severity and incidence and duration of pneumonia illness. Primary outcomes were chosen because they are measurable and their ability to measure the effectiveness of an intervention on duration of diarrhoea.
Our secondary outcomes were exclusive breastfeeding prevalence at 14 and 20 weeks, two weeks diarrhoea prevalence at 14 and 20 weeks, prevalence of exclusive breastfeeding and vaccination uptake. Also, HIV status of HIV exposed babies, frequency of breastfeeding and exclusive breastfeeding rates at 14 and 20 weeks.

4.7.2 Independent variables
The main independent variables were community infant and young child feeding and the newsletter. Other variables of interest included sex of child, employment status of mother, birth place of child, place of residence, education level of mother, mother’s age and parity

4.8 Sample size
The sample size was calculated on the basis of methods appropriate for cluster randomized controlled trials. A sample size of 85 participants per intervention group was expected with 80% power, a two-sided 5% significance level, assuming an attrition rate of 10%, a design effect of 1 and an intracluster correlation coefficient \( k = 0.25 \) (giving a total of 1.25 to carters for between and within group variation) borrowed from a study in India to detect a 19% difference in the percentage increase of children who are exclusively breastfed up to six months of age after exposure to intervention.

4.9 Sampling
Administratively, Gweru district is divided into three constituencies, Gweru urban, Chiundura and Lower Gweru. On the other hand Kwekwe district is also geopolitically divided. We selected clinics at the centre of clusters leaving a buffer zone around them. The clinics and polyclinics were randomized separately into 8 clusters. From the 8 clusters 4 were trained in community infant and young child feeding intervention while the other 4 clusters were controls (not trained in cIYCF). Using a 2 x 2 factorial design, each of the 4
clusters that were trained in cIYCF and those that were not trained, were randomized a second time and allocated to one of four groups (A, A+B, B and C); 2 clusters trained in community infant and young child feeding (cIYCF) (A), 2 clusters receiving newsletter and incentive plus community infant and young child feeding training (A+B), 2 clusters receiving newsletter (B), and 2 clusters receiving routine advice only (C).

To allocate one of the two clusters to either of four groups, random numbers were generated from Stata 10 by an independent statistician. All infants delivered during the recruitment period in each cluster were eligible for randomization. Participants were randomized within blocks i.e. within their clusters as the recruitment process was from the 30th December 2012 to 22nd February 2013. Informed and written consent was sought from mothers/parents of infants during recruitment. Because of the nature of our study, recruitment was conducted at cluster level by nurses and village health workers (VHWs) who were not aware of the hypothesis being tested. However, study participants were not blinded to their allocation but every effort was made to ensure that another research assistant assessing diarrhoea duration, and incidence of pneumonia was unaware of the group assignments, was unaware of the hypothesis being tested and analysis of primary and secondary outcomes was only done after 20 weeks.

4.10 Data collection instruments

Follow up of mother infant pairs was done after 14 weeks of delivery and 20 weeks. Baseline information was collected for all mother infant pairs including; education level of the mother, place of residence, mother’s HIV status, gender of child, employment status of parents and parity.
At 14 weeks and 20 weeks, the assistant researcher collected data using the pretested interviewer administered questionnaire asking if the child had diarrhoea in the past 7 days, and or two weeks then about duration and severity of diarrhoea. Incidence of pneumonia and prevalence of exclusive breastfeeding was recorded during the same periods. Mothers tested more than three previous months were counseled to be tested again at 14 weeks and 20 weeks to ascertain the proportion that contracted HIV during the breastfeeding period.

All quantitative data that were collected was linked to the unique ID from each cluster given to mother infant pairs. After cross checking and data entry, the questionnaires were archived in a lockable cabinet for future reference. Mothers that did not turn-up during scheduled follow up visits at 14 weeks and 20 weeks were followed up to their homes.

4.10 Permission to proceed and ethical considerations

Ethical approval was sought from the Joint Parirenyatwa Hospital and College of Health Sciences Research Ethics Committee (JREC) and Medical Research Council of Zimbabwe (MRCZ). Permission to carry out the study was sought from the District Medical Officer Gweru and Kwekwe, Director Health Services Kwekwe and Gweru City and the Health Studies Office through the Provincial Medical Director’s office. Informed written consent was sought from all mothers and they were assured of confidentiality. The benefits of the study to participants were also explained. There was no monetary gain for participants and they were free to refrain from participating if they so wished. There were no stopping rules as the data was only analyzed once at the end of the study. The control groups also benefited from the study as they were bound to receive the same standard quality of care.

4.11 Data Capturing and Analysis
Epi Info version 7 was used for data capturing while SPSS version 16 and Stata 11 were used to analyse data. Since randomization was by clinic, we adjusted for cluster randomization. Two-way factorial ANOVA was used to assess the relationship between two independent variables and the dependent variable. For the exclusive breastfeeding, diarrhoea, pneumonia and HIV infection among HIV exposed babies’ outcomes; we calculated proportions, adjusted odds ratios, relative risks and their 95% confidence interval. A p-value of less than 0.05 (<0.05) was judged as significant. All analysis was by intention to treat.
CHAPTER 5

RESULTS

Introduction

The results will be reported starting with the trial flow of cluster participants, demographic characteristics of the study participants, and the primary outcomes including duration of diarrhea and pneumonia. The secondary outcomes including prevalence of exclusive breastfeeding, frequency of breastfeeding, incidence of diarrhea and pneumonia, vaccination uptake and mother to child transmission of HIV will also be reported.

Participants’ flow chart

Figure 2 shows the trial profile of the randomized trial. All the 8 clusters received their allocated intervention. The 371 infants born between December 2012 and February 2013 were identified; 186 from the intervention communities that were trained in cIYCF and 185 from the control communities that were not trained in cIYCF. All the groups were presumed to be having similar characteristics and the dropout rate was 3.2%. The major reasons for loss to follow up were neonatal death and change of place of residence in urban settings. There was no significant difference in the distribution between males and females. There was also no association between independent variables (receiving a newsletter or residing in communities trained) and gender of children. 357 mother infant pairs (excluding twins) were available for analysis in all the clusters.
Figure 2: Participants’ Flow Chart

Enrolment

8 clusters randomized
371 mother infant pairs
living within 10km radius
of facility randomized

Allocation

4 clusters trained in
cIYCF (186 mother
infant pairs)

4 clusters not trained in
cIYCF (185 mother
infant pairs)

91 mother infant
pairs received
newsletter

95 mother infant
pairs received no
newsletter

92 mother infant
pairs received
newsletter

93 mother infant
pairs received no
newsletter

Follow up

Clusters randomized to receiving
newsletter from those trained in cIYCF
or no training (184 mother infant pairs)

1 infant and 1 mother died

182 mother infant pairs assessed at 14
weeks

182 mother infant pairs assessed at 20
weeks

Clusters randomized to receiving no
newsletter from those trained and not
trained in cIYCF (188 mother infant pairs)

4 infants died, 6 mother infant pairs lost
to follow up and 1 travelled

175 mother infant pairs assessed at 14
weeks

175 mother infant pairs assessed at 20
weeks

Analysis

182 mother infant pairs analyzed

175 mother infant pairs analyzed
**Demographic characteristics of mother infant pairs**

In midlands province, 71.1% of women can read and only 4% cannot read\(^\text{11}\). All women that were enrolled into the study could read. The common occupations for men both in the rural and urban settings was informal employment mostly gold panning while majority of women were unemployed. Majority (>90%) of infants were delivered at institutions and breastfeeding was initiated within an hour of delivery (Table 2).

The mean age of mothers ranged from 26.6 years to 27.0 years and the majority of mothers had completed secondary school (range from 60.1% to 70.9%) followed by those who reached but did not complete secondary level (10% to 24.7%). Above 80% of mothers (84.6% to 95.6%) were married.
Table 2: Socio-demographic characteristics of mother infant pairs, 2013

<table>
<thead>
<tr>
<th>Variable</th>
<th>Characteristic</th>
<th>cIYCF (n=178)</th>
<th>No cIYCF (n=179)</th>
<th>Newsletter (n=182)</th>
<th>No Newsletter (n=175)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sex</td>
<td>Girl</td>
<td>89 (50.0)</td>
<td>98 (54.7)</td>
<td>88 (48.3)</td>
<td>99 (56.6)</td>
</tr>
<tr>
<td></td>
<td>Boy</td>
<td>89 (50.0)</td>
<td>81 (45.3)</td>
<td>94 (51.6)</td>
<td>76 (43.4)</td>
</tr>
<tr>
<td>Birth place</td>
<td>Facility</td>
<td>163 (91.6)</td>
<td>163 (91.1)</td>
<td>165 (90.6)</td>
<td>161 (92.0)</td>
</tr>
<tr>
<td></td>
<td>Home</td>
<td>15 (8.4)</td>
<td>16 (9.9)</td>
<td>17 (9.4)</td>
<td>14 (8.0)</td>
</tr>
<tr>
<td>B/F initiation</td>
<td>&lt;1 hour</td>
<td>64 (67.4)</td>
<td>70 (75.3)</td>
<td>48 (57.8)</td>
<td>50 (60.2)</td>
</tr>
<tr>
<td></td>
<td>&gt;1 hour</td>
<td>31 (32.6)</td>
<td>23 (24.7)</td>
<td>35 (42.2)</td>
<td>33 (39.2)</td>
</tr>
<tr>
<td>Mother’s age</td>
<td>Mean yrs (SD)</td>
<td>26.6 (6.4)</td>
<td>27.0 (6.5)</td>
<td>26.9 (5.9)</td>
<td>26.8 (6.9)</td>
</tr>
<tr>
<td>Education level</td>
<td>Primary</td>
<td>23 (12.9)</td>
<td>21 (11.7)</td>
<td>15 (8.2)</td>
<td>29 (16.6)</td>
</tr>
<tr>
<td></td>
<td>*Secondary un</td>
<td>44 (24.7)</td>
<td>18 (10.0)</td>
<td>35 (19.2)</td>
<td>27 (15.4)</td>
</tr>
<tr>
<td></td>
<td>*Secondary co</td>
<td>107 (60.1)</td>
<td>127 (70.9)</td>
<td>127 (69.8)</td>
<td>107 (61.1)</td>
</tr>
<tr>
<td></td>
<td>Tertiary</td>
<td>4 (2.2)</td>
<td>13 (7.3)</td>
<td>5 (2.7)</td>
<td>12 (6.8)</td>
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<tr>
<td>Marital status</td>
<td>Married</td>
<td>162 (91.0)</td>
<td>160 (89.4)</td>
<td>174 (95.6)</td>
<td>148 (84.6)</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>16 (6.2)</td>
<td>19 (2.1)</td>
<td>8 (4.4)</td>
<td>27 (15.4)</td>
</tr>
<tr>
<td>Residence</td>
<td>Rural</td>
<td>97 (54.5)</td>
<td>98 (54.7)</td>
<td>81 (44.5)</td>
<td>81 (46.3)</td>
</tr>
<tr>
<td></td>
<td>Urban</td>
<td>81 (45.5)</td>
<td>81 (45.3)</td>
<td>101 (55.5)</td>
<td>94 (53.7)</td>
</tr>
<tr>
<td>Employment</td>
<td>Formal/informal</td>
<td>46 (25.9)</td>
<td>44 (24.6)</td>
<td>34 (18.7)</td>
<td>56 (31.9)</td>
</tr>
<tr>
<td></td>
<td>Unemployed</td>
<td>132 (74.1)</td>
<td>135 (75.4)</td>
<td>148 (81.3)</td>
<td>119 (68)</td>
</tr>
<tr>
<td>HIV status</td>
<td>Negative</td>
<td>146 (81.9)</td>
<td>146 (81.6)</td>
<td>149 (85.5)</td>
<td>143 (81.7)</td>
</tr>
<tr>
<td></td>
<td>Positive</td>
<td>32 (18.1)</td>
<td>33 (18.1)</td>
<td>33 (18.1)</td>
<td>32 (18.3)</td>
</tr>
</tbody>
</table>

*Secondary un = Secondary uncompleted, Secondary co = Secondary completed
Effect of intervention on duration of diarrhoea

A two-way ANOVA was conducted to examine the effect of community infant and young child feeding and the newsletter to the mother on duration of diarrhoea at 14 and 20 weeks. At 14 weeks, an interaction between cIYCF training and the newsletter was statistically significant (p = 0.026). The mean duration of diarrhoea for infants with mothers who resided in communities trained in cIYCF and received a newsletter was 2.9 days (SD = 0.94), while those that resided in communities not trained but received a newsletter was 3.6 days (SD = 1.19) compared to 5.2 days (SD = 1.15), in infants of mothers who neither resided in communities trained nor received a newsletter. At 20 weeks, there was no statistically significant interaction (p = 0.783) but the newsletter worked better than the cIYCF training in reducing mean duration of diarrhoea (p = 0.020) (Table 3).

Effect of intervention on severity of diarrhoea

The information obtained during follow up at 14 and 20 weeks showed no effect for the newsletter (p = 0.182) and cIYCF training (0.315) on severity of diarrhoea. However, the infants of mothers who received a newsletter were less likely to have diarrhoea at 20 weeks compared to infants of mothers who did not (RR=0.24, 95% CI; 0.15-0.38). On the other hand, the infants of mothers who resided in communities trained in cIYCF were also less likely to have diarrhoea but the association was not statistically significant (RR= 0.78, 95% CI; 0.48-1.10).
Table 3: Mean duration of diarrhoea among infants of mothers who received cIYCF plus Newsletter, cIYCF training, Newsletter only and or Routine services only, Midlands Province, December 2012 to July 2013

<table>
<thead>
<tr>
<th>Trained in cIYCF</th>
<th>Newsletter</th>
<th>Diarrhoea n Days(%)</th>
<th>N=357</th>
<th>Mean (SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean duration of diarrhoea at 14 weeks (Days)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF trained</td>
<td>Newsletter</td>
<td>11(6.2)</td>
<td>178</td>
<td>2.9(0.94)</td>
<td>&lt;0.0001</td>
</tr>
<tr>
<td></td>
<td>No newsletter</td>
<td>10(5.6)</td>
<td>179</td>
<td>3.1 (0.88)</td>
<td></td>
</tr>
<tr>
<td>Not trained</td>
<td>Newsletter</td>
<td>13(7.1)</td>
<td>182</td>
<td>3.6 (1.19)</td>
<td>0.005</td>
</tr>
<tr>
<td></td>
<td>No newsletter</td>
<td>20(11.4)</td>
<td>175</td>
<td>5.2 (1.15)</td>
<td></td>
</tr>
<tr>
<td>cIYCF*Not trained</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.026</td>
</tr>
</tbody>
</table>

Mean duration of diarrhoea at 20 weeks (Days)

| cIYCF trained    | Newsletter | 5(2.8)             | 178   | 4.8 (0.8) | 0.361   |
|                  | No newsletter | 36(20.1)            | 179   | 5.7 (1.4) |         |
| Not trained      | Newsletter | 14(7.7)             | 182   | 5.1 (1.2) | 0.022   |
|                  | No newsletter | 38(21.7)            | 175   | 6.0 (1.8) |         |
| cIYCF*Not trained |            |                     |       |           | 0.764   |

Effect of intervention on incidence of diarrhoea

Compared to infants of mothers who received routine services only, infants of mothers who received a newsletter were less likely to have diarrhoea at 20 weeks (RR = 0.24, 95% CI; 0.15-0.38) (Table 4). In addition the protective efficacy of the newsletter was 76% during the first 20 weeks of life. In summary in the two way ANOVA, the newsletter showed a significant effect on the incidence of diarrhoea at 20 weeks (p = 0.021).
Table 4: Effect of intervention on incidence of diarrhoea in the first 20 weeks of life, Midlands Province, 2013

<table>
<thead>
<tr>
<th>Group</th>
<th>Diarrhoea</th>
<th>N</th>
<th>Relative risk</th>
<th>95% CI</th>
<th>Preventive Fraction (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Yes</td>
<td>No</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Trained</td>
<td>41</td>
<td>137</td>
<td>178</td>
<td>0.78</td>
<td>0.55-1.10</td>
</tr>
<tr>
<td>Not trained</td>
<td>52</td>
<td>127</td>
<td>179</td>
<td>1.09</td>
<td>0.96-1.24</td>
</tr>
<tr>
<td>Newsletter</td>
<td>19</td>
<td>163</td>
<td>182</td>
<td>0.24</td>
<td><strong>0.15-0.38</strong> 76%</td>
</tr>
<tr>
<td>No newsletter</td>
<td>75</td>
<td>100</td>
<td>175</td>
<td>1.57</td>
<td>1.37-1.81</td>
</tr>
</tbody>
</table>

Effects of intervention on duration of pneumonia

At 14 weeks, the newsletter was more effective on duration of pneumonia (p = 0.010) and, receiving a newsletter was more effective irrespective of whether the mother resided in communities trained in cIYCF or not. Furthermore, the mean duration of pneumonia among infants of mothers who received newsletter was 3.8 days (SD = 1.79), compared to 6.7 days (SD = 3.65) among infants of mothers who did not receive the newsletter. In addition, the effect of the newsletter was statistically significant at 20 weeks (P < 0.0001) (Table 5).
Table 5: Mean duration of pneumonia among infants of mothers who received cIYCF and Newsletter, cIYCF training, Newsletter only, and or Routine services only, Midlands Province, December 2012 to July 2013

<table>
<thead>
<tr>
<th>Trained in</th>
<th>Newsletter</th>
<th>Pneumonia</th>
<th>N=</th>
<th>Mean(SD)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>cIYCF</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Newsletter</td>
<td>n(%) Days</td>
<td>357</td>
<td>Days</td>
<td></td>
</tr>
<tr>
<td>Mean duration of pneumonia at 14 weeks (Days)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF trained</td>
<td>Newsletter</td>
<td>29(16.3)</td>
<td>178</td>
<td>4.5 (1.88)</td>
<td>0.236</td>
</tr>
<tr>
<td>No newsletter</td>
<td>37(20.7)</td>
<td>179</td>
<td>5.0 (1.81)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not trained</td>
<td>Newsletter</td>
<td>25(13.7)</td>
<td>182</td>
<td>4.6 (1.60)</td>
<td><strong>0.015</strong></td>
</tr>
<tr>
<td>No newsletter</td>
<td>37(21.1)</td>
<td>175</td>
<td>5.7 (1.93)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF*Not trained</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.479</td>
</tr>
<tr>
<td>Mean duration of pneumonia at 20 weeks (Days)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF</td>
<td>Newsletter</td>
<td>17(9.5)</td>
<td>178</td>
<td>3.8 (1.79)</td>
<td>0.798</td>
</tr>
<tr>
<td>No newsletter</td>
<td>44(24.6)</td>
<td>179</td>
<td>6.4 (3.0)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Not trained</td>
<td>Newsletter</td>
<td>20(11.0)</td>
<td>182</td>
<td>3.8 (1.64)</td>
<td><strong>&lt;0.0001</strong></td>
</tr>
<tr>
<td>No newsletter</td>
<td>46(26.3)</td>
<td>175</td>
<td>6.9 (3.65)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF*Not trained</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>0.845</td>
</tr>
</tbody>
</table>

In addition, infants of mothers who received a newsletter (RR= 0.26, 95% CI; 0.15-0.46) and infants of mothers who resided in communities trained in cIYCF (RR =0. 48, 95% CI; 0.30-0.78) were less likely to suffer from pneumonia compared to infants of mothers who did not at 20 weeks (Table 6). The preventive efficacy of the newsletter at 20 weeks was 74%.
Table 6: Effect of intervention on incidence of pneumonia, Midlands Province, December 2012-July 2013

<table>
<thead>
<tr>
<th></th>
<th>Pneumonia</th>
<th>Total</th>
<th>Relative Risk</th>
<th>Preventive Fraction (%)</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At 14 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF Yes</td>
<td>26</td>
<td>152</td>
<td>178</td>
<td>0.71</td>
<td>29%</td>
</tr>
<tr>
<td>No cIYCF</td>
<td>37</td>
<td>142</td>
<td>179</td>
<td>1.08</td>
<td></td>
</tr>
<tr>
<td>Newsletter</td>
<td>20</td>
<td>162</td>
<td>182</td>
<td>0.45</td>
<td>55%</td>
</tr>
<tr>
<td>No newsletter</td>
<td>43</td>
<td>132</td>
<td>175</td>
<td>1.18</td>
<td></td>
</tr>
<tr>
<td><strong>At 20 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF Yes</td>
<td>21</td>
<td>157</td>
<td>178</td>
<td>0.48</td>
<td>52%</td>
</tr>
<tr>
<td>No cIYCF</td>
<td>44</td>
<td>135</td>
<td>179</td>
<td>1.17</td>
<td></td>
</tr>
<tr>
<td>Newsletter</td>
<td>14</td>
<td>168</td>
<td>172</td>
<td>0.26</td>
<td>74%</td>
</tr>
<tr>
<td>No newsletter</td>
<td>51</td>
<td>124</td>
<td>175</td>
<td>1.18</td>
<td></td>
</tr>
</tbody>
</table>

**Effect of intervention on exclusive breastfeeding**

Both the newsletter (p < 0.0001) and cIYCF training (p < 0.0001) had positive effects on exclusive breastfeeding. More infants were exclusively breastfed in the groups that received intervention (Table 7). The exclusive breastfeeding rates were higher, 147 (81.6%) in the group that received a newsletter and mothers resided in communities that were trained in cIYCF compared to 67 (38.3%) in the group that received routine services only at 14 weeks (p <0.001). Furthermore, infants of mothers who received the newsletter (RR = 2.12, 95% CI; 1.73-2.58) and infants of mothers who resided in communities trained in cIYCF (RR= 1.31, 95% CI; 1.10-1.55) were more likely to be exclusively breastfed compared to their
counterparts at 14 weeks. However, at 20 weeks infants of mothers who received a newsletter were 3.1 (95% CI; 2.31-4.07) times more likely to be exclusively breastfed.

In the linear regression model, both the cIYCF training and newsletter were independent predictors of exclusive breastfeeding at 14 weeks (p < 0.0001). There was also a significant interaction between the newsletter and cIYCF training on the mean frequency of breastfeeding (p =0.013). However, at 20 weeks only the newsletter remained a significant predictor of EBF and worked better in increasing EBF compared to cIYCF (p < 0.0001).
Furthermore, 67% of infants who were not exclusively breastfed might have been exclusively breastfed if their mothers had received the newsletter. Also drops of cooking oil, water and porridge (solids) were less likely to be given to infants in the intervention groups compared to infants in the control group (p<0.0001).
Table 7: Effect of intervention on exclusive breastfeeding, Midlands Province, December 2012-July 2013

<table>
<thead>
<tr>
<th></th>
<th>Exclusive breastfeeding</th>
<th>Total</th>
<th>Relative Risk</th>
<th>95% CI</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>At 14 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF Yes</td>
<td>118 (66.7)</td>
<td>59 (33.3)</td>
<td>177</td>
<td>1.30</td>
</tr>
<tr>
<td>No cIYCF</td>
<td>91 (50.8)</td>
<td>87 (49.2)</td>
<td>179</td>
<td>0.66</td>
</tr>
<tr>
<td>Newsletter</td>
<td>146 (81.0)</td>
<td>35 (19.0)</td>
<td>181</td>
<td>2.23</td>
</tr>
<tr>
<td>No newsletter</td>
<td>63 (36.0)</td>
<td>111 (64.0)</td>
<td>175</td>
<td>0.30</td>
</tr>
<tr>
<td><strong>At 20 weeks</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cIYCF Yes</td>
<td>90 (50.8)</td>
<td>87 (49.2)</td>
<td>177</td>
<td>1.20</td>
</tr>
<tr>
<td>No cIYCF</td>
<td>76 (42.4)</td>
<td>103 (57.6)</td>
<td>179</td>
<td>0.85</td>
</tr>
<tr>
<td>Newsletter</td>
<td>129 (71.3)</td>
<td>52 (28.7)</td>
<td>181</td>
<td>3.37</td>
</tr>
<tr>
<td>No newsletter</td>
<td>37 (21.1)</td>
<td>130 (78.9)</td>
<td>175</td>
<td>0.37</td>
</tr>
</tbody>
</table>

**Effect of intervention on uptake of immunization (pentavalent 3)**

The main effect of the newsletter on uptake of pentavalent 3 at 14 weeks was statistically significant (p = 0.037). Infants of mothers who received the newsletter (RR = 1.21, 95% CI; 1.05-1.38) were more likely to receive age specific immunization than infant of mothers who received no newsletter (RR = 0.88, 95% CI; 0.77-1.00). In addition, at 20 weeks both the newsletter (p = 0.026) and cIYCF (p = 0.037) had positive effects.
Mother to child HIV transmission could not be assessed because of the 155 infants tested for HIV, 30 (19.3%) received their test results.
CHAPTER 6

DISCUSSION

Our findings indicate that a combined community infant and young child feeding training and a newsletter reduced the mean duration of diarrhoea by 2.3 days at 14 weeks compared to control areas. The findings also showed that 76% of infants who had diarrhoea might have been prevented if their mothers had received both interventions at 14 weeks. No other study has measured the effect of mother-based promotion of exclusive breastfeeding intervention in Zimbabwe using a factorial design.

On the other hand, our study demonstrates that providing timely and accurate information to mothers is effective, fundamental and promotes exclusive breastfeeding. Additionally, mother based promotion of exclusive breastfeeding resulted in an increase in exclusive breastfeeding rates, reduced duration of diarrhoea and pneumonia as well as significant increase in age specific immunization through the use of a newsletter.

The findings of this study are however unique in that the cue to action was achieved through an approach that is potentially replicable, sustainable and was delivered through existing routine health services in primary health care settings. The result that the newsletter works better than community infant and young child feeding training is not in accord with any previous studies as we did not find a similar approach in literature. We are also not aware of other published studies that have evaluated the effects of mother-based promotion of exclusive breastfeeding, but the approach may be similar to other studies where letters were used to increase adherence to tetanus booster vaccination among adults\textsuperscript{37} and letters that were used in improving immunization coverage\textsuperscript{41}. In Zimbabwe, a study by Madzima et al., have
shown that the use of letters was effective in improving male participation in the PMTCT programme\textsuperscript{39}. Nevertheless, the design or even the context was not similar to our study.

Thus, relative to no intervention, the use of both the newsletter and community infant and young child feeding training for village health workers resulted in a more than double absolute mean decrease in the duration of diarrhoea. The possible explanations for this is that; village health workers trained in cIYCF track mothers soon after delivery to record them in their registers, so during this period they are more likely to counsel mothers for exclusive breastfeeding. On the other hand, firstly, the newsletter is a marketing tool that ensures that women receive complete, accurate, timely, and consistent information on breastfeeding which is fundamental for any program promoting exclusive breastfeeding\textsuperscript{45}. It demonstrates the feasibility of disseminating breastfeeding messages directly to the intended users in the developing world. Thus if the media and various communications target optimal breastfeeding, it is possible to achieve universal exclusive breastfeeding in Zimbabwe.

Secondly, a newsletter has the properties that can help women to sort the myths surrounding breastfeeding. It also helps women to understand the benefits of breastfeeding without misinformation or mixed messages while ensuring that women receive accurate, complete and consistent messages to protect, promote and support breastfeeding\textsuperscript{45}.

Thirdly, the newsletter acted as a reference material that was used by mothers at home to solve common breastfeeding problems that were highlighted in some studies as a barrier to exclusive breastfeeding. Furthermore, since the newsletter contained information on most frequently asked questions and answers, how to overcome breastfeeding difficulties and information on correct positioning and attachment also aided in improving breastfeeding practices thereby impacting on diarrhoea and pneumonia duration.
Thus our findings are consistent with other studies that evaluated the effects of community based interventions on EBF\textsuperscript{24}. Unanimous evidence shows that interventions that increase exclusive breastfeeding have positive effects on reducing duration of diarrhoea and pneumonia. The reduction then impacts on severity of diarrhoea and the ultimate goal to reduce child/infant mortality can be achieved. Nevertheless, the findings of this study also probably indicate the less effectiveness of the cIYCF training beyond 14 weeks after delivery. The possible implication of our results is that with cIYCF alone, universal exclusive breastfeeding or reaching the target of 90% EBF up to six months will not be possible in Midlands Province.

There are several explanations to our findings; the effectiveness of cIYCF training depends on the full coverage of the trainings in all facilities and their communities and thus uses a dose response relationship. In our study setting, some clusters were trained but full coverage was not achieved. This might have impacted heavily on the village health worker: mother ratio with most mothers not receiving the benefits of the trainings.

A report in The Lancet of a randomized trial comparing the effects of hospital based system and community based system intervention providing ten postnatal home visits found that home visits significantly increased the chances of exclusive breastfeeding\textsuperscript{19}. Thus in our setting, it might be possible that home visits were only being conducted soon after delivery and probably up to three months while beyond 14 weeks the frequency became insignificant. This is of great concern and thus calls for other interventions that help to sustain EBF up to six months. Thus a newsletter bridges the gap as it is given directly to the mother. Providing consistent information is an enabling environment for sustainable EBF up to six months.
Another study have shown that the use of trained peer counselors was more effective compared to volunteers\textsuperscript{24,42,43}. The use of volunteers is the most likely scenario in our case and hence it is less effective. Several studies elsewhere suggested the implementation of cIYCF at scale, intensive follow up and supportive supervision, as well as routine monthly meetings or non financial incentives to peer counselors as improving the effectiveness of cIYCF trainings.

In this study, the lack of association with severity of diarrhoea can be explained by the fact that, though not exclusive, over 98% of infants in all groups were being breastfed. Given that continued breastfeeding reduces dehydration, few infants developed severe diarrhoea and thus probably the sample size was not adequate to determine meaningful differences. Similar findings were reported in an educational intervention where village and community health workers were trained in community infant and young child feeding showed an increase in exclusive breastfeeding but no association with severe diarrhoea\textsuperscript{24,37}.

Cluster randomized trials are also prone to bias. We noted some differences in employment status and knowledge on exclusive breastfeeding among infants of mothers as well as the incentive that was given to mothers in a community that received both interventions. Also in this cluster, an organization called Zvitambo was also following up breastfeeding mothers. However, we do not think that the highlighted factors can contribute to the differences noted in diarrhoea and pneumonia duration, but deserve further investigation.

It is also possible that receiving an incentive after receiving the newsletter and residing in communities trained in cIYCF reinforced the motive to read and understand the contents so that one stands a chance to win. In so doing, mothers understood the benefits and dangers of
not breastfeeding exclusively. In tandem with the Health Belief Model, a theory widely used in preventive health behavior; because of the perceived benefits, mothers were more likely to take action. Perceived benefits are a determinant of preventive health actions.

Nevertheless, even the newsletter alone can also achieve the desired outcomes without cIYCF training. As shown, the newsletter alone increased exclusive breastfeeding rates and sustained exclusive breastfeeding up to 20 weeks. It also had positive effects on both diarrhoea and pneumonia. It has the potential to increase the mean duration of exclusive breastfeeding. The newsletter also increased age specific immunizations where children received their doses at the right time especially pentavalent 3 at 14 weeks. Thus the newsletter and or newsletter combined with cIYCF may serve to increase the need for immunizations among multiple competing priorities that a parent faces.

Thus the use of a newsletter and a newsletter plus cIYCF can be generalized to other types of preventive care, since this approach was borrowed from the promotion of healthy lifestyles in Japan – Obihiro through the Healthy Obihiro 21. However it would be an important area for future research. It would also be useful to conduct a trial that included a newsletter versus community infant and young child feeding training with follow up.

**Study limitations**

Our study was liable to observation bias in reporting especially mothers of infants in the intervention communities tended to over report exclusive breastfeeding and under report illnesses. This however was overcome by the use of trained nutritionists in data collection and ascertainment of outcome and the nutritionists were not involved in recruitment and were not aware of the hypothesis being tested. Being a prospective study, the Hawthorne effect
might have also contributed to the observed differences in practices between intervention and control communities both at cluster and individual level.

On the other hand, it is also important to note that exclusive breastfeeding rates and illness were self reported and not observed. It is also possible that mothers of infants in intervention communities were having more contact with health workers compared to control areas which deviated from routine practices and may have affected prevalence and duration of diarrhoea and pneumonia. In addition, even though our results can be generalized in various context and settings, more benefit is realized in literate communities.

Also, the use of 24 hour recall was reported by some studies to be inadequate in assessing exclusive breastfeeding practices, however and 7 days recall was also employed to ascertain breastfeeding practice of a mother.
CHAPTER 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 Concluding remarks

There is sufficient evidence to conclude that the effect of a newsletter vs. no newsletter on duration of diarrhoea at 14 weeks is probably different for those residing in communities trained in community infant and young child feeding or not. At 20 weeks the newsletter worked better for both duration of diarrhoea and pneumonia compared to cIYCF training. In addition, both the newsletter and cIYCF training had positive effects on exclusive breastfeeding at 14 weeks, but the newsletter worked better at 20 weeks compared to cIYCF. Therefore both interventions can be implemented and up scaled in combination to realize the maximum benefits in promoting, protecting and supporting breastfeeding.

7.2. Recommendations

We recommend a combined community and mother-based intervention using a newsletter to be up scaled with adequate follow up of the trained cadres. This is because the combined cIYCF and the newsletter resulted in a remarkable 2.3 days mean reduction in the duration of diarrhoea. Thus the newsletter coupled with intensive follow up of the village health workers can reduce duration of diarrhoea at 14 weeks in an environment where promotion of exclusive breastfeeding is expected to revive the nation’s, efforts to reduce child mortality.

The Provincial Nutritionist with support from the Provincial Medical Director should upscale both cIYCF and the newsletter to mothers to promote EBF in Midlands Province since the newsletter was shown to have positive effects on EBF and thus reduced the duration of diarrhoea and pneumonia. The intervention will ultimately impact on child survival in the
long term. The newsletter only requires bond paper for reproducing and can reach every woman who delivers at an institution. The newsletter can also be given to village health workers to give to mothers and is relatively economic.

There is also need for the provincial nutritionist to upscale community infant and young child feeding trainings in all communities in Midlands Province as it was shown that communities that were trained yielded positive results in EBF compared to those that had not received any training. Beside up scaling the trainings, mechanisms for follow up, support and supervision also need to be put in place to ensure that the benefits of the trainings are realized.

The cIYCF trainings that have been conducted in midlands province require monitoring and evaluation so that weak areas can be addressed to ensure efficacy of the intervention. Therefore the Provincial Nutritionist with support from Provincial Medical Director should lobby for funding to ensure monitoring and evaluation is conducted.
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Appendices

Appendix 1: Questionnaire for mothers (Intervention and Control Groups) [Adapted from National Micronutrient Survey tools 24 hour recall (Uganda)].

Introduction

Good Morning/Afternoon. My name is Meggie Gabida. I am a Public Health Officer attached to the Provincial Medical Directorate Midlands Province. As part of my studies I am carrying out a study on; Effect of Mother-Based promotion of Exclusive Breastfeeding on Duration and Severity of Diarrhoea and Pneumonia. A Cluster Randomized Control Trial

I would greatly appreciate if you spare me some time to go through the questionnaire and this shall involve asking you a number of questions pertaining breastfeeding your baby, history of diarrhoea and cough, immunizations and any treatments sought for the child. All the data collected will be treated with strict confidentiality and anonymity. If you feel that you cannot continue participating in the study, you are free to withdraw at any stage of the interview. Your cooperation will be greatly appreciated as it will help towards the improvements in infant feeding practices in the district.
Questionnaire No: _____ ID Number (cluster) __________

Date of interview: _____/_____/____________

1. **Mother’s Personal information**

2. Cluster Name : _________________________________

3. Age : ____________years

4. Number of children : ______

5. Highest Level of education attained

   1. None [ ]
   2. Primary [ ]
   3. Secondary [ ]
   4. Tertiary [ ]

6. Marital status

   1. Single [ ]
   2. Married [ ]
   3. Separated/Divorced [ ]
   4. Widowed [ ]

7. Where do you stay?

   1. Rural/communal [ ]
   2. Resettlement area [ ]
   3. Urban [ ]

8. Do you own a house? Yes [ ] No [ ]

9. What is your employment status?

   1. Formal employment [ ]
   2. Informal employment [ ]
3. Unemployed [ ]

10. What is your partner’s employment status?
   1. Formal employment [ ]
   2. Informal employment [ ]
   3. Unemployed [ ]

11. Were you tested for HIV during ANC? Yes [ ] No [ ] HIV status of mother 0 [ ] 1 [ ] (see child health card). If yes were you tested with your spouse? Yes [ ] No [ ]

1.2 Infants’ demographics

12. Sex of child Male [ ] Female [ ]

13. Age of child _______ weeks

14. Where was [Name] born? Health facility [ ] Home [ ]
14.1 Birth registered Y [ ] seen Y [ ] not seen N [ ]
14.2 Was [Name] tested for HIV? [for HIV exposed babies] Yes [ ] No [ ]
   HIV Status 0 [ ] 1 [ ]

1.3 Infants’ Feeding Practices

15. How long after birth was [Name] put to the breast after delivery? Immediately [ ]
   Hours [ ] Days [ ] Don’t know [ ]

16. Is [Name] still breastfeeding? Yes [ ] No [ ]

17. How many times was [Name] breastfed yesterday during the day? Number of times [ ]

18. How many times was [Name] breastfed last night? Number of times [ ]

1.4 Exclusive breastfeeding (24 Hour and 7 day Recall)

19. Since this time yesterday, did [Name] receive any of the following liquids? Yes [ ]
   No [ ] If no for 24 hour ask the past 7 days

<table>
<thead>
<tr>
<th>Food Item</th>
<th>24 Hour Recall</th>
<th>7 day Recall</th>
</tr>
</thead>
</table>
Fresh milk or infant formula
Plain water
Drops of cooking oil
Sweetened water or juice
ORS or salt-sugar-solution
Tea
Maheu
Any muti
Other

20. Now I would like to ask you about other foods [Name] may have eaten yesterday or the past 7 days.

<table>
<thead>
<tr>
<th>Item</th>
<th>24 hour recall</th>
<th>7 day recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Any cereal based porridge</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any Sadza, rice, bread etc</td>
<td></td>
<td></td>
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<tr>
<td>Any irish or sweet potatoes,</td>
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<tr>
<td>Any vegetables</td>
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<td>Any fruits exotic or indigenous</td>
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<tr>
<td>Any meat</td>
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<tr>
<td>Any eggs</td>
<td></td>
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<tr>
<td>Any beans cowpeas or lentils</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Any peanut butter or nuts
Any yoghurt or milk products
Any chocolates, sweets or cakes
Other foods not mentioned

1.5 Two weeks recall on Diarrhoea

21. Did [Name] have diarrhoea in the last 7 days or last two (2) weeks? Yes [ ] No [ ]

22. For how many days did [Name] have diarrhoea? ------- Number of days [     ]

23. Did you seek treatment for the diarrhoea? Yes [ ] No [ ]

24. Where did you seek treatment? Clinic [ ] Faith healer [ ] Traditional healer [ ] Village health worker [ ] Pharmacy [ ] other -------------------------------

25. When [Name] had diarrhoea, did he develop dry eyes or sunken eyes? Yes [ ] No [ ]

26. Was [Name] put on a drip during the period he/she had diarrhoea? Yes [ ] No [ ]

27. Was [Name] given any of the following at any time since she/he had diarrhoea? a) breast milk [ ] b) ORS [ ] c) home-made salt-sugar- solution [ ] d) other -------------------------------

1.6 Two weeks recall on pneumonia

28. In the past 7 days or last two weeks has [Name] been ill with fever? Yes [ ] No [ ]

29. In the last two weeks has [Name] been ill with a cough? Yes [ ] No [ ]

30. When [Name] had a cough, was he having difficulties with breathing? Yes [ ] No [ ]
1.7 Vaccination Uptake

31. Did [Name] receive BCG at birth and Pentavalent 1 at 6 weeks? Yes [   ]
     No [   ] If yes, card seen. Yes [   ] No [   ]

32. Did name receive Pentavalent 3 at 14 weeks? Yes [   ] No [   ]
Appendix 2: Questionnaire for mothers - Shona version (local language)

NHANGANYAYA

Bepa Remibvunzo Yanaamai

Nhamba dzepepa remibvunzo: _______________   Nhamba dzakavanzika: ______________________________________

1. Zuva: _____/_____/____________

2.1 Zvakanangana Naamai

2. Zita rechikwata : ________________________________

3. Makore : ____________years

4. Mwana wechingani?: ______

5. Makasvika chidanho chipi chokudzidza?

   1. Hapana [ ]
   2. Puraimari [ ]
   3. Sekondari [ ]
   4. Koriji [ ]

6. Makawanikwa here?]  

   1. Handina murume [ ]
   2. Ndakaroorwa [ ]
   3. Takasiyana/kurambana [ ]
   4. Kufirwa [ ]

7. Munogara kupi

   1. Ruzevha [ ]
   2. Makombo [ ]
   3. Mudhorobha [ ]

8. Pamunogara imba yenyu here? Hongu [ ] Kwete [ ]

9. Munoshanda basa rei?

   1. Remuhofisi [ ]
   2. Rekubatabata [ ]
3. Handishandi

10. Murume wenyu anoshanda basa rei?
   1. Remuhofisi
   2. Rekubatabata
   3. Haashandi

11. Makaongororwa ropa maringe ne HIV pamakanyoresa musati mabatsirwa here?
    Hongu [ ] Kwete [ ] HIV status yaamai 0 [ ] 1 [ ] (Ona kadhi remwana). Raonekwa [ ] Harina kuonekwa [ ] Makaongororwa pamwe nemurume wenyu here? Hongu [ ] Kwete [ ]

2.2 Zvinoenderana Nemwana

12. Mwanai? Mukomana [ ] Musikana [ ]

13. Makore emwana masvondo_______

14. Zita akazvarirwa kupi? Kuchipatara [ ] Kumba [ ]

14.1 Mwana ane kadhi here?
    Hongu [ ] raonekwa Hongu [ ] harina kuonekwa Kwete [ ]

14.2 [Zita] akaongororwa ropa maringe neHIV here? (Kuvana vananamai vane utachiona hweHIV)
    Hongu [ ] Kwete [ ] HIV Status 0 [ ] 1[ ]

2.3 Kuchengetedzwa kwevana

15. Mwana akaiswa pazamu mushure menguva yakareba zvakadini azvarwa? ipapo ipapo [ ] maawa[ ] mazuva [ ] handizivi [ ]

16. Ko [ Zita][ achiri kuyamwa here? Hongu [ ] Kwete [ ]

17. [Zita] akanwa mukaka kangani zuva rose razuro? kaakanwa [ ]

18. [Zita] [akanwa mukaka wepazamu kangani usiku hwapfuura?] [ ]

Kupa mwana mukaka waamai bedzi pasina kumwe kudya kusvika avitsa mwedzi mitanhatu (24 Hour and 7 day Recall)

*Kana zvanzi kwete pazuva rapfuura bvunza mazuva manomwe apfuura*

**Mhando yechikafu**  
24 Hour Recall  
7 day Recall  

Mukaka mumbishi kana
wemumagaba
Mvura
Madonhwe emafuta
Mvura inotapira kana jusu
Mvura ine sauti nesugar
Tii
Maheu
Chero muti wechibhoyi
Other [Zvimwewo]

20. Ikozvino ndakuda kukubvunzai pamusoro pezvimwe zvekudya [Zita] akadya nezuro kana mazuva manomwe apfuura

**Zvidyiwa**  
24 hour recall  
7day recall

<table>
<thead>
<tr>
<th></th>
<th>Hongu</th>
<th>Kwete</th>
<th>Hongu</th>
<th>Kwete</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>

Poriji chero yemhando ipi
Sadza kana raisi chero chingwa
Magwiri chero mbambaira
Muriwo cher wemhando ipi
Michero chero yemusango
Nyama chero yemhuka ipi zvayo
Mazai
Beans kana nyemba nezvimwo
Dovi chero nzungu
Yogati chero zvinogadzirwa
nemukaka
Machokoreti, masiwitsi kana
makeke
Zvimwewo zvasina kudomwa)

2.4 Kuyeuka mazuva manomwe kana masvondo maviri emanyoka nehurebu
   apfuura? Hongu [ ] Kwete [ ]
22. Akaita mazuva mangani [Zita] ane manyoka? ------ Nhamba yemazuva [ ]
23. Makatsvaka kuti mwana arapwe here paarwara nemanyoka?  Hongu [ ] Kwete [ ]
   Mbuya utano [ ] Chitoro chemishonga [ ] Kumwewo ------------------------

2.5 Kuyeuka udzamu neuipi hwemanyoka
25. [Zita] paakaita manyoka maziso ake akanga asisina misodzi here kana kuwira mukati?
   Hongu [ ] Kwete [ ]
26. [Zita] akaiswa dhiripi here paarwara nemanyoka? Hongu [ ] Kwete [ ]
   Mvura ine sauti neshuga [ ] c) ORS [ ] d) Zvimwewo ------------------------
2.6 Kuyeuka mazuva manomwe kana masvondo maviri embayo


29. Pamasvondo maviri apfuura, [Zita] akambokosora here? Hongu [ ] Kwete [ ]

30. [Zita] paakakosora ainetseka kufema here? Hongu [ ] Kwete [ ]

2.7 Kubaisa Majekiseni

31. Mwana akabaiwa BCG here nePentavalent 1 paakasvitsa masvondo matanhatu?]

   Hongu [ ] Kwete [ ] Ndingaonewo kadhi remwana here?. Hongu [ ]

   Kwete [ ]

Appendix 3: Questionnaire for mothers (Intervention and Control Groups) at 20 weeks

Questionnaire No: ____                                    ID Number (cluster) ___________

1. Date of interview: _____/_____/_____________

3.1 Mother’s Personal information

2. Cluster Name               : ______________________________________

3. Age [Makore] : ____________years

4. If HIV negative during ANC, Were you tested during the breastfeeding period? Yes [ ]
   No [ ] Code  0 [ ] 1 [ ]

3.2 Infants’ demographics

5. Sex of child [mwanai?] Male [ ] Female [ ]

6. Age of child [makore emwana] ________ weeks

7. Was [Name] tested for HIV? [for HIV exposed babies] [Zita] akaongororwa ropa
   maringe neHIV here?] Yes [ ]            No [ ] HIV Status 0 [ ] 1[ ]

3.3 Infants’ Feeding Practices

8. Is [Name] still breastfeeding? Ko [Zita][ achiri kuyamwa here?] Yes [ ]            No [ ]
9. How many times was [Name] breastfed yesterday during the day? [Zita] *akanwa mukaka kangani zuva rose razuro?* Number of times [ ]

10. How many times was [Name] breastfed last night? [Zita] *akanwa mukaka wepazamu kangani usiku hwapfuura?* Number of times [ ]

### 3.4 Exclusive breastfeeding (24 Hour and 7 day Recall)

11. Since this time yesterday, did [Name] receive any of the following liquids? [Kubva zuro senguva ino [Zita] akambonwa zvinotevera here?]  Yes [ ]  No [ ] *If no for 24 hour ask the past 7 days*

<table>
<thead>
<tr>
<th>Food Item</th>
<th>24 Hour Recall</th>
<th>7 day Recall</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fresh milk or infant formula</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Mukaka mumbishi kana wemumagaba]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Plain water [Mvura]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drops of cooking oil</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Madonhwe emafuta]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sweetened water or juice</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Mvura inotapira kana jusu]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>ORS or salt-sugar-solution</td>
<td></td>
<td></td>
</tr>
<tr>
<td>[Mvura ine sauti nesugar]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tea [tii]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maheu</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any muti [chero muti wechihoyi]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other [Zvimwewo]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
12. Now I would like to ask you about other foods [Name] may have eaten yesterday or the past 7 days. [Ikozvino ndakuda kukubvunzai pamusoro pezvimwe zvekudy a [Zita] akadya nezuro kana mazuva manomwe apfuura]

<table>
<thead>
<tr>
<th>Item</th>
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<tbody>
<tr>
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<td></td>
<td></td>
</tr>
<tr>
<td>Any vegetables( muriwo cher wemhando ipi)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any fruits exotic or indigenous (michero chero yemusango)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any meat (Nyama chero yemhuka ipi zvayo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any eggs (Mazai)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any beans cowpeas or lentils (beans kana nyemba nezvimwo)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Any peanut butter or nuts (dovi chero nzungu)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Any yoghurt or milk products(yogati chero zvinogadzirwa nemukaka)

Any chocolates, sweets or cakes

Other foods not mentioned(zvimwewo zvasina kudomwa)

**Exclusive Breastfeeding**

Yes  No

**3.5 Seven day or two weeks recall on Diarrhoea**

13. Did [Name] have diarrhoea in the last 7 days of two (2) weeks? [Ko [Zita] akamboita manyoka here masvondo maviri apfuura?] Yes [ ] No [ ] **If no Skip to 28**

14. For how many days did [Name] have diarrhoea? [Akaita mazuva mangani [Zita] ane manyoka?],------ Number of days [ ]

15. Did you seek treatment for the diarrhoea? [Makatsvaka kuti mwana arapwe here paarwara nemanyoka?] Yes [ ] No [ ]

16. Where did you seek treatment? [Makamurapisa kupi?] Clinic [Kukirinika] [ ]

   Faith healer [Kumaporofita] [ ] Traditional healer [Kun’anga] [ ] Village health worker [ ] Pharmacy [Chitoro chemishonga] [ ] other ---------------------

3.6 Recall on severity of diarrhoea

17. When [Name] had diarrhoea, did he develop dry eyes or sunken eyes? [Zita] paakaita manyoka maziso ake akanga asisina misodzi here kana kwira mukati?] Yes [ ] No [ ]

18. Was [Name] put on a drip during the period he/she had diarrhoea? [Zita] akaiswa drip here paarwara?] Yes [ ] No [ ]

19. Was [Name] given any of the following at any time since she/he had diarrhoea? [Ko [Zita] akapiwa zvinotevera here kubva zvaaita manyoka?] a) breastmilk (mukaka waamai) [  ]
b) ORS [  ] c) home-made salt-sugar- solution [  ] d) other ------------------------------

3.7 Seven day or two weeks recall on pneumonia

20. In the past two weeks has [Name] been ill with fever? [pamasvondo mavirí apfuura, [Zita] akambodziya muviri here?] Yes [  ] No [  ]

21. In the last two weeks has [Name] been ill with a cough? [pamasvondo mavirí apfuura, [Zita] akambokosora here?] Yes [  ] No [  ]

22. When [Name] had a cough, was he having difficulties with breathing? [Zita] paakakosora ainetseka kufema here?] Yes [  ] No [  ] If yes, how many days? ___________

3.8 Vaccination Uptake

23. Did [Name] receive BCG at birth and Pentavalent 1 at 6 weeks? [Mwana akabaiwa BCG here nePentavalent 1 paakasvitsa masvondo matanhatu?] Yes [Hongu][  ] No [Kwete] [  ] If yes, card seen. Yes [  ] No [  ]

Appendix 4 Consent Form (English)

CONSENT FORM (English) (Adapted from the MRCZ Consent Form)

Page 1 [of 5] IRB No. _________

Effect of Mother-based Promotion of Exclusive Breastfeeding on Duration of Diarrhoeal Illness and Pneumonia: a Randomized Control Trial

Principal Investigator: Meggie Gabida (Provincial Medical Director’s Office, Gweru)

Telephone: 054 221227    Cell: 0774 526 076, 0716 183 248

What you should know about this research study:

- We give you this consent so that you may read about the purpose, risks, and benefits of this research study.
The main goal of this research is to gain knowledge that may help you and future breastfeeding mothers.

We cannot promise that this research will benefit you directly.

You have the right to refuse to take part, or agree to take part now and change your mind later.

Whatever you decide, it will not affect your regular care.

Please review this consent form carefully. Ask any questions before you make a decision.

Your participation is voluntary.

Purpose of the study

I am kindly asking you to participate in a research to study the effect of a newsletter to a breastfeeding mother in promoting exclusive breastfeeding. The purpose of the study is to find out whether there are any differences in duration of diarrhoea and pneumonia for mothers given a newsletter and those not given. We will be recruiting mothers and their infants identified within 3 days of delivery. We will then follow up the mothers and infants at 14 and 20 weeks as they come for immunizations. The risk anticipated in this study for you and your baby will be minimal. Guidelines by the Ministry of Health and Child Welfare on testing HIV exposed babies and breastfeeding mothers who have received the HIV test more than 3 months will be followed.

Benefits of the study

The information we obtain can be used to strengthen interventions on promoting exclusive breastfeeding in Zimbabwe.

Confidentiality
If you indicate your willingness to participate in this study by signing this document, all information you give us will remain between you and me and will not be disclosed to anyone. We will use unique IDs written on the questionnaire for the purposes of validating our data especially where we will need to verify whether the correct information is written for the participant and infant. The questionnaires will be kept under lock and key and will only be accessible to the investigators. Information obtained from you will only be used for the purposes of this study only. You are free to withdraw from the study if you feel like doing so at any time during the study period.

Page 3 [of 5] IRB No __________

**Further information**

If you feel you have been ethically violated, you can send your complaints to:

Dr. M. Chemhuru (PMD Midlands Province) (054)-221227)

Professor M. Tshimanga (MPH Program Coordinator) (04)-2912897)

**Authorization**

You are making a decision whether or not to participate in this study. Your signature indicates that you have understood the purpose of the study and have decided to participate.

<table>
<thead>
<tr>
<th>Signature of research participant</th>
<th>Date</th>
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<tr>
<td>.........................................</td>
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<tr>
<th>Signature of interviewer</th>
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<table>
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<tr>
<th>Signature of witness</th>
<th>Date</th>
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</table>
Appendix 5: Consent Form (Shona Version)

TSAMBA YEMVUMO (Shona) [Adapted from the MRCZ Consent Form]

Peji yechina [pamashanu] IRB No __________

Zvingabuda pakukurudzira vanaamai kuyamwisa mukaka waamai bedzi maringe nehurebu hwemanyoka kana mabayo.

Chinangwa Chetsvakurudzo


Chinangwa ndechokuti paonekwe kana painsi musiyano unovapo pavana vanobatwa nemanyoka kana mabayo zvichitariswa nguva yavanotora kupora pakati paamai vapiwa tsamba nhau nevasina.

Tichange tichitoravanamai nevana vavo vanenge vachiri mumazuva matatu ekubva kupona.

Tichazenge tichitevera vana amai ava nevana vavo pamasvondo gumi nemana uye makumi
maviri pamunouya zobaisa vana. Tsvakurudzo iyi inotarisirwa kuti isaunze chingakukanganisai imi nemwana wenyu muchinge matora chikamu.

Zvakanakira Tsvakurudzo

Umbowo huchawanikwa mutsvakurudzo ino huchabatsira kuvandudza kurudziro yekuyamwiswa kwevana mudunhu rino nenyika yeZimbabwe

Kuchengetedzwa Kwezvakavanzika

Zvatichange tawirirana pakutora chikamu kwenyu nezvatichakurukuka zvicharamba zviri pakati pangu nemi pasina umwe anogona kuzviziva. Tichashanda nenhomboro

Peji yechishanu [pamashanu] IRB No ________

dzinozivikanwa nenzi nemi chete kuitira kana panezvatinozoda kuona kana zvirikuenderana. Izvi zvichireva kuti hatinyore zita renyu. Mapepa aya achachengeterwa panokiyiwa uye achangoshandiswa patsvakurudzo ino chete.

Kupinda kwenyu mutsvakurudzo iyi hakumanikidzwi, zvisoenderana nekusununguka kwenyu. Hapana mubairo wemari kana zvimwe zvinhu mukasarudza kutora chikamu mutsvakurudzo iyi.

Zvimwe Zvamungade Kuziva

Pamunenge maona kuti kodzero dzenyu dzachorwa, munokwanisa kuisa chicemo chenyu kunotevera:

Dr. M. Chemhuru (PMD Midlands Province) (054)-221227)

Professor M. Tshimanga (MPH Program Coordinator) (04)-2912897)

Kubvuma

Pakuisa siginecha yenyu kureva kuti mabvuma kutora chikamu uye manzwisisa chinangwa chetsvakurudzo iyi.

Siginecha ---------------------------------------------  Dheti --/--/---
Siginecha yemubvunzi ----------------------------- Dheti ---/-/-/---

Siginecha yemufakazi ----------------------------- Dheti ---/-/-/---
Appendix 6: Newsletter (English)
FOR THE FIRST 3 MONTHS AFTER DELIVERY

Dates to Remember
From birth to 6 months

1. First 3 days
2. 7-10 days
3. 6 weeks
4. 10 weeks
5. 14 weeks
6. 6 months

Our Mission
Mothers, let’s give our children the life saving food. Breast milk alone for the first 6 months of life is the only perfect food for our babies

DID YOU KNOW?
- Breast milk alone is enough food and drink for the baby until 6 months
- Every woman can produce enough milk for her baby
- Giving babies other foods or liquids before 6 months can cause diarrhoea
- Mothers should breastfeed their babies day and night, at least 8 times
- Babies cry, not because they are hungry, seek support from the nearest health worker
- Giving water, or gripe water and even muti before 6 months is a health hazard to your child
- 0-2 years is the window of opportunity for your child, give your baby breast milk only for 6 months, from 6 months give other foods while you continue to breastfeed up to 2 years or beyond

Why should I stay in hospital or come to the health facility within 3 days after delivery?
- Most mothers and babies develop complications during this period and chances of mother or baby dying is high

Why should I come to the facility with my child every month?
- It is very important for the baby to be weighed and receive all immunizations. Bring your child at 6, 10, 14 weeks for immunizations and at 6 months for Vitamin A supplementation.

Why should I bring my child at 6, 10 and 14 weeks?
Let’s share our experiences on giving our babies only mother’s milk.
Remember, Breast milk alone is the best food for your baby before 6 months.

Tips to breastfeed your baby successfully

Who is going to be our best mother at 14 weeks?

Oops! More to this in our next article at 14 weeks

Our first question
- Breastfeed your baby all the time when ever the baby wants. Breastfeed at night, more milk is produced at night
- Make sure the baby’s whole body is fully supported and the baby’s stomach is touching the mother’s stomach
- The baby should take much of the black part of the mother’s breast into his or her mouth, the baby’s mouth should be wide open and the chin should be touching the breast
- If only the nipple is in the baby’s mouth, the baby will not suckle effectively.

Most questions asked by mothers

**Question:** My baby cries often, because I do not produce enough milk. Should I give other foods?

**Answer:** No, do not give other foods before 6 months. Every woman produces enough milk for her baby. Breastfeed often, keeping the baby longer to empty the breast. Give one breast at a time. Remember breastfeeding during the night increases milk production.

**Question:** Do I need special food so that I produce more milk

**Answer:** You do not need special food. Just eat a balanced diet and drink plenty of fluids to keep your body healthy. Every woman produces milk even without eating special food.

**Points to Remember**

- Bring your child for immunizations.
  - At 6 weeks, 10 weeks and 14 weeks.
  - At 6 months for Vitamin A supplementation
- Give your baby mother’s milk alone for the first 6 months

If you have questions, please visits the health worker for more information

Get a T/shirt for you, your husband and baby. Remember, to win, just give your baby breast milk only for the first 6 months
Appendix 7: Newsletter (Shona)
Mazuva akakosha kuyeuka
kubva pakupona kusvika
pamwedzi mitanhatu

1. Mazuva matatu ekutanga (3 days)
2. Mazuva manomwe kuenda pagumi (7-10 days)
3. Masvondo matanhatu (6 weeks)
4. Masvondo gumi (10 weeks)
5. Masvondo gumi nemana (14 weeks)
6. Mwedzi mitanhatu(6months)yoga
yogakusvika Mwana ave nemakore mashanu

Manga Muchiviza Here Kuti;
- Mukaka waamai woga pamwedzi mitanhatu
- Amai vanofanirwa kuyama wavo
- Kupa vana kumwe kudya kana zvinwiwa vasati vasvitsa
- Amai vanofanirwa kuyama wavo
- Kupa vana kumwe kudya kana zvinwiwa vasati

Ndivanani vachawana mubairo wekutanga?

Ko ndinogarei muchipatara kana kuuya mukati memazuva matatu ndasununguka?
- Vana amai nevana vazhinji vanorasi kirwa neupenyu panguva iyi

Ngatisanganei muchikamu chinotevera
Nyevero yekubudirira pakuyamwisa mwana

- Yamwisai mwana mukaka nguva dzose pose paanodira kuyamwa. Yamwisai neusiku, mukaka unogadzirwa wakawanda panguva dzemauro.
- Kana muchiyamwisa, ivai nechokwadi chekuti muviri wose wemwana wakatsigirwa, uye dumbai remwana rakagumhana neramai
- Mwana ngaaise zamai raamai mumukanwa, kuburikidza nepakasvibira panotenderedza nyatso. Chirebvu chemwana chinofanira kunge chakaguma zamu raamai.
- Kana mwana achignonwa nyatso chete iri mumukanwa, haanyatso kweva mukaka zvakakwana

Mibvunzo inowanzo bvunzwa nanaamai

Mubvunzo: Mwana wangu anochema nguva zhinji, nokuti handibudise mukaka unomukwanira. Ndomupa chimwe chikafu here?


Mubvunzo: Ndinoda chikafu chemhando yepamusoro here kuti ndikwanise kubudisa mukaka wakawanda?

Mhinduro: Chikafu chemhando yepamusoro hachiwedzere kubudisa mukaka. Idyai chikafu chakaringana (balanced diet) monwa mvura yakawanda kuchengetedza utano hwenyu. Mukadzi mumwe nemumwe anogadzira mukaka mumuviri make zvisinei nekudya chikafu chemhando yepamusoro
Zvamunofanirwa kugara muchirangarira

- Huyai nevana vazobaiwa
  - Pa 6 weeks, 10 weeks ne 14 weeks
  - Pa 6 months vadonhedzerwe Vitamin A. Rangarirai kuramba muchiuya nemwana mushure memwedzi mitanhatu yoga yoga kusvikira Mwana asvitsa makore mashanu.
- Ipai mwana wenyu mukaka waamai chete kusvika asvitsa 6 months
Appendix 8: Ethical approval and permission to conduct the study by Joint
Parirenyatwa Research Council
Date: 2nd May 2013

Name of Researcher: Meggie Gabida
Address: University of Zimbabwe, Department of Community Medicine

Re: Title of Study: Effects Of Mother-Based Promotion Of Exclusive Breastfeeding On Duration Of Diarrhoeal Illness And Pneumonia, A Cluster Randomized Control Trial.

Thank you for your application for ethical review of the above mentioned research to the Joint Research Ethics Committee. Please be advised that the Joint Research Ethics Committee has reviewed and approved your application to conduct the above named study.

- APPROVAL NUMBER: JREC/32/13
- APPROVAL DATE: 2nd May 2013
- EXPIRATION DATE: 1st May 2014
- TYPE OF MEETING: Expedited Review

This approval is based on the review and approval of the following documents that were submitted to the Joint Ethics Committee:
- Completed application form
- Full Study Protocol Version number:
- Informed Consent in English and/or appropriate local language
- Data collection tool version:

After this date the study may only continue upon renewal. For purposes of renewal please submit a completed renewal form (obtainable from the JREC office) and the following documents before the expiry date:
- A Progress report
- A Summary of adverse events.
- A DSMB report

MODIFICATIONS:
Prior approval is required before implementing any changes in the protocol including changes in the informed consent.

TERMINATION OF STUDY:
On termination of the study you are required to submit a completed request for termination form and a summary of the research findings/results.

Yours Faithfully,

Professor MM Chidzonga
JREC Chairman
Appendix 9: Ethical approval and permission to conduct the study by Medical Research Council of Zimbabwe
Ref: MRCZ/B/496

Meggie Gabida
UZ College of Health Sciences
P.O Box A178
Avondale
Harare
Zimbabwe


Thank you for the above titled proposal that you submitted to the Medical Research Council of Zimbabwe (MRCZ) for review. Please be advised that the Medical Research Council of Zimbabwe has reviewed and approved your application to conduct the above titled study. This is based on the following documents that were submitted to the MRCZ for review:

- Research proposal and summary
- Parental Informed Consent Form (English and Shona)
- Questionnaire (English and Shona)
- Newsletter for participants (English and Shona).

**APPROVAL NUMBER**: MRCZ/B/496

This number should be used on all correspondence, consent forms and documents as appropriate.

- **APPROVAL DATE**: 30 May 2013
- **TYPE OF MEETING**: Expedited
- **EXPIRATION DATE**: 29 May 2014

After this date, this project may only continue upon renewal. For purposes of renewal, a progress report on a standard form obtainable from the MRCZ website or our website should be submitted three months before the expiration date for continuing review.

- **SERIOUS ADVERSE EVENT REPORTING**: All serious problems having to do with subject safety must be reported to the Institutional Ethical Review Committee (IERC) as well as the MRCZ within 3 working days using standard forms obtainable from the MRCZ website: www.mrcz.org.zw

- **MODIFICATIONS**: Prior MRCZ and IERC approval using standard forms obtainable from the MRCZ website is required before implementing any changes in the Protocol (including changes in the consent documents).

- **TERMINATION OF STUDY**: On termination of a study, a report has to be submitted to the MRCZ using standard forms obtainable from the MRCZ website.

- **QUESTIONS**: Please contact the MRCZ on Telephone No. (04) 791792, 791193 or by e-mail on mrc.zimbabwe@yahoo.com or mrcz@mrcz.org.zw.

**Other**:
- Please be reminded to send in copies of your final research results for our records as well as for the Health Research Database.
- You are also encouraged to submit electronic copies of your publications in peer-reviewed journals that may emanate from this study.

Yours Faithfully

[Signature]

MRCZ SECRETARIAT
FOR CHAIRPERSON
MEDICAL RESEARCH COUNCIL OF ZIMBABWE

PROMOTING THE ETHICAL CONDUCT OF HEALTH RESEARCH