

University of Kentucky

UKnowledge

Theses and Dissertations--Public Health (M.P.H.
& Dr.P.H.)

College of Public Health

2015

Assessment of Breastfeeding Policies in a Sample of Inner city Child-Care Centers in North-Central Kentucky

Ana Maria Machado
University of Kentucky

Follow this and additional works at: https://uknowledge.uky.edu/cph_etds



Part of the [Public Health Commons](#)

[Right click to open a feedback form in a new tab to let us know how this document benefits you.](#)

Recommended Citation

Machado, Ana Maria, "Assessment of Breastfeeding Policies in a Sample of Inner city Child-Care Centers in North-Central Kentucky" (2015). *Theses and Dissertations--Public Health (M.P.H. & Dr.P.H.)*. 55.
https://uknowledge.uky.edu/cph_etds/55

This Graduate Capstone Project is brought to you for free and open access by the College of Public Health at UKnowledge. It has been accepted for inclusion in Theses and Dissertations--Public Health (M.P.H. & Dr.P.H.) by an authorized administrator of UKnowledge. For more information, please contact UKnowledge@lsv.uky.edu.

STUDENT AGREEMENT:

I represent that my capstone and abstract are my original work. Proper attribution has been given to all outside sources. I understand that I am solely responsible for obtaining any needed copyright permissions. I have obtained needed written permission statement(s) from the owner(s) of each third-party copyrighted matter to be included in my work, allowing electronic distribution (if such use is not permitted by the fair use doctrine) which will be submitted to UKnowledge as Additional File.

I hereby grant to The University of Kentucky and its agents the irrevocable, non-exclusive, and royalty-free license to archive and make accessible my work in whole or in part in all forms of media, now or hereafter known. I agree that the document mentioned above may be made available immediately for worldwide access unless an embargo applies.

I retain all other ownership rights to the copyright of my work. I also retain the right to use in future works (such as articles or books) all or part of my work. I understand that I am free to register the copyright to my work.

REVIEW, APPROVAL AND ACCEPTANCE

The document mentioned above has been reviewed and accepted by the student's advisor, on behalf of the advisory committee, and by the Director of Graduate Studies (DGS), on behalf of the program; we verify that this is the final, approved version of the student's capstone including all changes required by the advisory committee. The undersigned agree to abide by the statements above.

Ana Maria Machado, Student

Sarah Wackerbarth, PhD, Committee Chair

Linda Alexander, EdD, Director of Graduate Studies

**Assessment of Breastfeeding Policies in a Sample of Inner city Child-Care Centers in
North-Central Kentucky**

CAPSTONE PROJECT PAPER

**This paper is submitted as a portion of the requirements to complete a degree of
Masters of Public Health with a concentration in Health Management and Policy
from the University of Kentucky**

By

Ana Maria Machado, BS Marketing

University of Kentucky

Lexington, Kentucky

April 23, 2015

Sarah Wackerbarth, PhD. Committee Chair

Tyrone Borders, Ph.D. Committee Member

Ana Maria Linares, Ph.D. Topical Chair

Abstract

Protection, promotion, and support of breastfeeding (BF) are critical public health needs.¹

Breastfeeding has been proven to provide the healthiest start in life and has been shown to have a myriad of health benefits for infants, mothers and society at large.² Exclusive and long term breastfeeding has been found to have protective function against the prevalence of obesity as well as many other adverse health outcomes.³ Higher levels of breastfeeding support in the child-care setting have been associated with higher likelihood of duration of breastfeeding for mothers and infants.⁴ The primary objective of this study was to assess the current prevalence of written breastfeeding policies in a sample of child-care centers in north-central Kentucky, and to examine the relationship between the directors' years of experience, level of education and the centers' accreditation status, to the likelihood of having a *written breastfeeding policy* (outcome variable). The study, incorporated a descriptive exploratory survey to collect information about practices and policies of 35 child-care centers (N=35) in Kentucky. Descriptive statistics were used to characterize the participant child-care centers and directors. Bivariate analysis with chi-square statistics were conducted to examine the association between the independent variables (i.e., director's years of experience, level of education and accreditation status of the center and having a written breastfeeding policy). The results revealed that while a larger proportion of child-care centers which had a written breastfeeding policy were accredited (74%) compared to those centers who did not have a written breastfeeding policy (67%), this difference was not statistically significant (95% CI: .30-6.99; P=.638). Analysis of results also found no significant association between having a written breastfeeding policy and the variables in this particular model which included: Director' years of experience (95% CI: .09-1.64; P=.192), level of education (95% CI:.54-2.05; P=.890) and center's accreditation (95% CI: .30-6.99; P=.638).The findings of non-significant associations between the variables analyzed in this study suggests a

lack of education about the benefits of breastfeeding over formula feeding in the formal education system amongst child-care professionals and highlight the importance and need for further federal or state support of breastfeeding in the child-care setting by means of policy in order to help breastfeeding become a cultural norm and not simply a life style choice that parents make.

Table of Contents

I. Introduction	1
<i>Benefits of Breastfeeding</i>	2
<i>Breastfeeding Barriers</i>	3
<i>Breastfeeding Support in the Child-Care Setting</i>	4
<i>Breastfeeding Laws, Policies and Standards for Child-Care Centers</i>	5
<i>Purpose of Capstone</i>	7
II. Methods	8
III. Measures	9
IV. Analytic Plan	11
V. Results	11
<i>Child-Care Director Characteristics</i>	11
<i>Child-Care Characteristics</i>	12
<i>Bivariate Analysis</i>	12
<i>Multivariate Analysis</i>	13
VI. Discussion	13
VII. Limitations	16
VIII. Conclusions	17
<i>Future Research</i>	17
IX. Acknowledgments	19
X. Figures and Tables	20
Figure 1	20
<i>Kentucky and National Breastfeeding Rates Compared to Healthy People 2020 Goals</i>	20
Figure 2	21
<i>Nemours Project Targeted Counties for Study and Convenient Sample</i>	21
Figure 3	22
<i>Kentucky Breastfeeding Rates by County</i>	22
Figure 4	23
<i>Conceptual Model</i>	23
Table 1	24
<i>Demographic Characteristics of Childcare Centers and Center Directors</i>	24

Table 2	25
<i>Characteristics of Child-Care Centers</i>	25
Table 3	26
<i>Bivariate Analysis</i>	26
Table 4	27
<i>Logistic Regression Model</i>	27
XI. References	28

Background

Breastfeeding and Public Health

The Center for Disease Control and Prevention (CDC) clearly asserts that the protection, promotion, and support of breastfeeding are critical public health needs.¹ Healthy People 2020 set objectives to combat the barriers to breastfeeding across all populations in the United States (US) and to increase the proportion of infants who are breastfed (Figure 1).⁶ The World Health Organization/UNICEF and the United States Breastfeeding Committee (USBC) recommend breastfeeding for a *minimum of six months post birth*, followed by continued breastfeeding for a minimum of one year as complementary foods are introduced.⁷ The American Academy of Pediatrics (AAP) reaffirms this recommendation and states that infant nutrition should be considered a public health issue and not simply a lifestyle choice.⁸

I. Introduction

Breastfeeding has been proven to provide the healthiest start in life and has been shown to have a myriad of health benefits for infants, mothers and society at large.² Exclusive and long term breastfeeding has been found to have protective function against the prevalence of overweight and obesity as well as many other adverse health outcomes.³ The CDC recommends increasing initiation, duration, and exclusivity of breastfeeding as a priority strategy to decrease the rate of childhood obesity throughout the US.⁹ The American Academy of Pediatrics (AAP) has issued statements directing health care professionals to encourage, protect and promote societal support of breastfeeding in order to shift current cultural norms and states that interventions should focus on child populations as the first line of defense against the obesity epidemic in America.^{10, 11} As such, AAP has also released a policy statement on breastfeeding in which it encourages child-

care providers to support breastfeeding and the use of expressed human milk.¹² However, little is known about breastfeeding support in child-care centers in the US, and even less has been researched about breastfeeding policy adoption and prevalence in such settings.

The CDC states that all Early Care and Education Programs (ECE) should have a 1) posted breastfeeding policy that allows mothers to breastfeed on site, 2) delineates procedures for handling and storing breast milk, 3) and trains staff on such procedures.¹ In Kentucky, no studies have been undertaken to assess breastfeeding support and/or to examine the prevalence of breastfeeding policies in the child-care settings. This is of utmost importance given the fact that Kentucky has one highest prevalence for pediatric obesity¹³ and still lags behind the rest of the nation in achieving the Healthy People 2020 goals for breastfeeding (Figure 1).⁹ In fact, a 2014 report from CDC states that Kentucky has one of the lowest rates of breastfeeding in the country, with 61.3% of mothers initiating (compared to 79% nationally), 31.5% continuing at six months (49% national average), and only 22.8% continuing breastfeeding at one year (27% national average; Figure 1).⁹ These high rates of obesity coupled with the low rates of breastfeeding highlight the importance of encouraging and supporting breastfeeding in Kentucky and suggest that policy and practice in the context of in the out-of-home care could better promote, support and protect breastfeeding as a means to reduce obesity.

Benefits of Breastfeeding

Breastfeeding is the gold standard for infant feeding; it is known to optimally support infant growth and development over the child's lifetime. Research has shown that some of the health benefits of breastfeeding to the infant include a decreased risk for infectious and cardiovascular disease, fewer ear, respiratory and gastrointestinal tract infections, a reduced risk for asthma and

a reduced risk of infant death syndrome among others.^{2, 8, 14, 15} Additionally, breastfeeding has also been found to play a pivotal role in the prevention of overweight and obesity throughout the life course of an individual. In fact, epidemiological data has demonstrated that breastfeeding significantly reduces blood pressure and cholesterol related disorders, type 1 and type 2 diabetes, as well as obesity in early child, adolescent and adult populations.^{3, 16, 17} Moreover, empirical data has also shown that the effects of breastfeeding are dose response specific¹⁸, indicating that duration of breastfeeding is paramount for receiving the health benefits associated with it and that protecting duration of breastfeeding is a public health imperative.

Breastfeeding also offers many health benefits for mothers and society as a whole.² Women who breastfeed for a period of at least six months have increased weight loss¹⁹; a lower risk for coronary heart disease, breast and uterine cancer, osteoporosis, type 2 diabetes, and are less likely to develop post-partum depression.^{2, 20, 21, 22, 23 24} Furthermore, if 90% of families in the US breastfed exclusively for at least six months, it has been estimated that one thousand (1000) infant deaths would be prevented and thirteen billion dollars in health care costs could be saved.^{25, 26, 27}

Breastfeeding Barriers

Although the benefits for breastfeeding have been well established, many mothers encounter significant barriers that decrease their chances to initiate, and/or hinder their decision to continue breastfeeding for the time recommended or intended. One of the most commonly cited barriers to initiation and duration of breastfeeding is the mother's return to work as well as lack of breastfeeding support for the working mother.²⁸ Many new mothers with limited maternity leave never initiate breastfeeding because they anticipate returning to work as a significant barrier.²⁹ Of those mothers who do initiate breastfeeding and anticipate continuing after going back to

work, many cease before intending to because of stressors and an overall lack of societal support.³⁰

In addition to the barriers faced by working mothers at their place of employment, many require out-of-home care for their infants, such as child-care, once they return to work. It is estimated that 12 million out of 19 million US children under the age of five are in some form of child-care.³¹ Out-of-home care for infants has been associated with further decreased rates of breastfeeding initiation and duration as well as higher risk of obesity among toddlers.^{32, 33} The increased need for out-of-home-care highlights the crucial position of child-care centers in providing working mothers with breastfeeding support through practical means, policy and promotion in order to decrease breastfeeding barriers for both mothers and infants.⁹

Breastfeeding Support in the Child-Care Setting

Although little is known about the promotion and support of breastfeeding by means of policy in the out-of-home care setting in the US, some studies have been conducted in order to assess the breastfeeding attitudes, knowledge, behavior and training needs of child-care providers. In the US, Clark and colleagues were the first to publish findings about knowledge and attitudes of child-care providers relating to breastfeeding.^{31, 32} Their study revealed that although most child-care providers had favorable attitudes towards breastfeeding they possessed a low knowledge base on how to adequately store and handle breast milk as well as an overall lack of training and information about the benefits of breastfeeding over formula feeding.³² Similarly, another study conducted by Lucas and colleagues in Baton Rouge, Louisiana found a knowledge deficit amongst child-care providers on breastfeeding, an unawareness of the role breastfeeding plays in obesity prevention, as well as low attitudinal support of breastfeeding and breastfeeding promotion by the staff²⁸. In addition to these findings, other studies conducted in Australia and

New Zealand found that although many child-care providers are supportive of breastfeeding, they do not perceive the pro-active promotion of breastfeeding as part of their role or service to mothers and infants.^{34, 35, 36, 37}

These findings are especially important given the fact that higher levels of breastfeeding support in the child-care setting have been associated with higher likelihood of duration of breastfeeding for mothers and infants⁴. Batan et al, found that mothers who had at least 5 levels of breastfeeding support at their child-care center were 3 times as likely to maintain breastfeeding at six months⁴. These levels of support at the child care setting included: 1) allowing mothers to breastfeed at child-care site before and after work and 2) during lunch breaks, 3) allowing mothers to store breast milk at site, 4) staff thawing and preparing pumped milk and 5) staff feeding expressed breast milk to the infant⁴. These findings indicate a need for implementation of strategies and policies that include these five levels of support for mothers and infants as means to reduce barriers and increase extended duration of breastfeeding. Overall, these studies suggest that the child-care setting is a potential setting for breastfeeding support and promotion. However, there seems to be a lack of knowledge surrounding breastfeeding at the child-care setting environment and a need for further support of in these settings by means of policy.

Breastfeeding Laws, Policies and Standards for Child-Care Centers

Research has shown the potential for policy to change and promote healthy environments.³⁸ By creating guidelines that delineate action and procedure, policy promotes environmental system change and makes the healthy choice the easy choice for individuals to make. In the realm of child-care, infant feeding policies and the inclusion of breastfeeding policies, specifically, aim to

create environmental change by making breastfeeding the norm and decreasing the barriers that mother and infant face.

Currently, federal law requires employer support of breastfeeding in the workplace.³⁹ However, no federal laws exist that mandates the support of breastfeeding in child-care facilities or set requirements for the implementation of infant feeding policies that support breastfeeding mothers. As such, the burden of implementing supportive breastfeeding regulations in the out-of-home care settings falls on each individual state. If no state regulation is present, then the burden falls on each independent child-care center and the director's willingness to develop, adopt and implement internal policies. Nationally, only seven states have breastfeeding policies for child-care centers⁴⁰; Kentucky is not one of them.⁹ Although Kentucky does have a breastfeeding state law which allows women to breastfeed or express milk in any location, public or private it does not include any regulations or requirements concerning breastfeeding support in child-care facilities or accreditation.⁴¹

Nevertheless, there exist guidelines and resources which intend to breach the policy gap and provide out-of-home care providers and facilities with resources and information about optimal infant feeding guidelines and best-practice standards. The Surgeon General Call to Action to Support Breastfeeding, urges all out-of-home child-care to follow the guidelines delineated in *Caring for Our Children--National Health and Safety Performance: Guidelines for Out-of-Home Childcare programs* (CFOC).²⁹ CFOC guidelines delineate procedures for handling and storing breast milk and prompt facilities to encourage, provide arrangements for, and support breastfeeding by: 1) providing infant feeding training to all staff; 2) providing a private space (other than a bathroom) for mothers to breastfeed or pump milk; 3) informing families about the

importance of breastfeeding; 4) developing breastfeeding-friendly plans with each family; and 5) updating and revising information about breastfeeding support and making it available to families.⁸ Although such guidelines encourage child-care centers to follow these standards, without policy, there is no assurance that they in fact do.

In addition to following CFOC standards, in states with no accreditation mandates, child-care facilities may also voluntarily seek accreditation through state or national organizations. Such accreditations seek to ensure that child-care centers follow standards that consist of best practices for the field. Although some centers may seek accreditation on their own, having a federal or state requirement would not only increase the chances of such facilities seeking accreditation but also assure their adherence to best practice standards as well as improve quality of care.⁴²

Currently, the state of Kentucky has no breastfeeding policy requirements for child-care centers, and has yet to institute any regulations related to the support of breastfeeding in early care settings as well as any accreditation requirements for such institutions.^{9, 43, 44} As such, the responsibility of adoption of breastfeeding policies in Kentucky falls on each individual child-center capacity and willingness to adopt such policies. In Kentucky, only one study, has been undertaken to assess the needs and characteristics of the child-care workforce. However, the study did not include or inspect infant feeding practices or the existence of breastfeeding supportive policies in these settings.⁴⁵

Purpose of Capstone

The purpose of this capstone project was to conduct an exploratory study to assess the current prevalence of breastfeeding policies in child-care centers in a sample of north-central Kentucky, and to evaluate factors that may influence the adoption of such policies in these settings.

Although some evidence exists to show that specific factors such as an individual's skills, experience and participation in networks (such as accreditation organizations) influence the adoption and adaption on health policies, no studies have been undertaken to assess the influence of these factors in the adoption of written infant feeding polices that support breastfeeding in the early care and education setting.⁴⁶

This study aimed to inform future research, policy and regulation of child-care centers in order to encourage the overall support of breastfeeding and reduce the barriers faced by breastfeeding mothers and infants in the Kentucky by answering the following four key questions:

- 1) What is the current prevalence of written breastfeeding policies in child-care centers in north-central Kentucky?
- 2) Is accreditation correlated to having a written breastfeeding policy?
- 3) Is the director's level of education correlated to having a written breastfeeding policy?
- 4) Is the director's experience (in years) correlated to having a written breastfeeding policy?

No hypothesis were propositioned in regards to these variables as there is little evidence in the literature in which to base them.

II. Methods

This exploratory quantitative capstone project was part of a larger study entitled "Assessing Infant Feeding Practices in Child Care Centers" conducted by the College of Nursing and IRB approved by the University of Kentucky under the direction of Dr. Ana Maria Linares (PI). The study was conducted in partnership with the Kentucky Department for Public Health (KY-DPH) under the umbrella of the *Taking Steps to Health Success, Nemours Project*.⁴⁷ The Nemours

Project is a CDC funded collaborative project aimed at reducing childhood obesity by promoting targeted health policies and practices and providing training to the child-care, Head Start and pre-K communities.⁴⁸

This study incorporated a descriptive exploratory survey to collect information about practices and policies of child-care centers in KY. The KY-DPH Nemours project offered the study survey during the first sessions of the “Taking Steps to Health Success” to a sample of centers in north-central Kentucky (Figure 2). The KY-DPH targeted a confined population of sixty four (64) Type I** child-care centers in counties with high breastfeeding rates compared to the rest of the state (Figure 3). The counties targeted included: Jefferson, Fayette, Boone, Kenton and Campbell (Figure 2). Out of this convenience sample, 55 percent (N=35) of the child-care centers met the inclusion criteria, which included any Child-care/ Daycare facilities participating in the Nemours Project who care for infants. Our study defined “infants” according to Kentucky regulation 922 KAR 2:120 (Child-Care Center Health and Safety Standards), which defined the term as any child who is less than twelve (12) months of age⁴⁹.

Foot Note

** Type I child-care: refers to any non-dwelling facility who cares for four or more children or a dwelling space who cares for more 13 children. Requirements include: director must be 21 years or older, and at least have a high school diploma or GED plus a certificate in child development services, or 3 or more years’ experience. Available from: <http://chfs.ky.gov/os/oig/drcc.htm>

III. Measures

The infant feeding survey included a total of 21 items. The survey was adapted from “Infant Feeding Practices in Colorado Child Care Centers” with the permission of the primary

investigator.³² The questions inquired about personal characteristics of the director of the child-care center taking the survey such as gender, time working in child-care facilities, and education. We also collected data about the number of infants served, as well as infant feeding policies and practices established by the centers. The study examined the prevalence of written breastfeeding policies and the associations between a center having written breastfeeding policy and a) the education level of the center's director, b) the director's level of experience (in years) working in daycare centers, and c) whether the center was accredited through an accrediting institution (Figure 4).

Participants were asked to rate their level of education in one of four categories (GED or high school, two year degree/ certificate, four year degree, more than a four year degree). The experience level (years working in child-care) of the director was gathered as a continuous variable and later categorized in two categories for ease of analysis (≤ 10 years, ≥ 11 years). All participants were assessed on accreditation and infant feeding policies using yes or no response questions. The survey asked whether the center was accredited by the state (STARS for Kids Now), nationally accredited through the National Accreditation Commission for Early Care and Education Programs (NAC) or the National Association for the Education of Young Children (NAEYC), or if it had no accreditation. The survey also asked whether or not the center accepted infants who were breastfed; if they had a written infant feeding policy and if they had a written breastfeeding policy. Other questions evaluated the respondent's level of satisfaction with the center's current feeding policies and their desire for assistance changing or implementing a breastfeeding-friendly policy in their center.

IV. Analytic Plan

The primary objectives of this study were to 1) assess the prevalence of written breastfeeding policies in child-cares in north-central Kentucky, and 2) to examine the relationship between the directors' years of experience, level of education and the centers' accreditation status to the likelihood of having a *written breastfeeding policy* (outcome variable).

Descriptive statistics were used to characterize the participant child-care centers and directors. In order to examine the association between the independent variables \and having a written breastfeeding policy; separate bivariate analysis with chi-square statistics and a logistic regression were conducted. All analyses were conducted at an alpha level of .05 using SPSS statistical software.⁵

V. Results

Child-Care Director Characteristics

The characteristics of the directors of 35 child-care centers analyzed in our study are summarized in Table 1. Our results showed that all of the respondents in our sample (N=35) were female and a majority had some sort of higher education or formal training in the area of early education and out-of-home care; with a majority of directors reporting to have a two year degree/child-care certificate (43%), followed by a four year degree (11%) or more than four year degree (28%; Table 1). Our results also found that the directors experience in the child-care field was evenly distributed between the categories; with seventeen directors reporting having ten or less years of experience in the field (49%) and eighteen reporting having eleven years or more (51%; Table 1).

Child-Care Characteristics

As shown on Table 2, almost all of the child-care centers in our sample (94%) reported accepting infants who breastfeed and most (86%) reported the average age of the infants in their daycare being six months of age or younger. Indicating that a majority of the centers in our sample both accept infants who breastfeed and/or care for infants who are in a critical time to receive the benefits of breastfeeding. Yet, only 77% of our respondents specified having a written infant feeding policy at their center and even less indicated having written breastfeeding policy (66%). In addition to this, although a majority of centers reported having at least one type of accreditation (71%), only 14% of those indicated having a national accreditation (NAC or NAEYC). By the same token, although some centers (71%) reported offering infant feeding trainings to their employees, nearly a third (29%) did not offer any feeding trainings to their staff at all. On the other hand, there seem to be an interests in including breastfeeding policies in these setting as most of the centers surveyed (83%) indicated being very to somewhat interested in receiving assistance to change or implement a breastfeeding policy at their center.

Bivariate Analysis

A bivariate analysis was conducted to assess the relationship between accreditation status of the centers and having a written breastfeeding policy as shown on Table 3. While a larger proportion of centers that had a written breastfeeding policy were accredited (74%) compared to those centers who did not have a written breastfeeding policy (67%), this difference was not statistically significant. Similarly, there was not a statistically significant difference in years of director experience between those centers with a written breastfeeding policy (57% had directors with 11 or more years of experience) and those with no written policy (43% of directors had 11

or more years of experience; Table 3). Finally, this study found no significant association between director's level of education and having a written breastfeeding policy (Table 3).

Multivariate Analysis

Our analysis found no significant association between having a written breastfeeding policy and the variables in this particular model which included: director's years of experience (95% CI: .09-1.64; P=.192), director's level of education (95% CI:.54-2.05; P=.890) and center's accreditation (95% CI: .30-6.99; P=.638). (Table 4).

VI. Discussion

Whereas the importance of promotion of breastfeeding has been recognized by many governmental and non-governmental entities around the world and in the United States, the use out-of-home care as a means to actively promote breastfeeding has been poorly researched. In Kentucky, the low rates of breastfeeding and high rates of childhood obesity highlight a need for strategies that will support the promotion of breastfeeding as a means to reduce obesity in the population.^{9, 13} Child-care facilities are in an ideal position to offer health promotion and child health through breastfeeding support to the working mother (such as providing a physical space and support feeding expressed milk to infants) and dissemination of breastfeeding information as well as resources.^{4, 32, 35} Assurance of health promotion through policy in these settings is paramount in providing organizations with a framework for decision making that allows employees to understand their roles and responsibilities in supporting mothers to initiate and/or continue breastfeeding as well as encouraging the overall use of human milk as the best form of nutrition for infants.^{34, 36, 37}

In order to understand the current status of breastfeeding support and capacity for promotion in the out-of-home child-care context in Kentucky our study provided a first look at the current prevalence of written infant feeding and breastfeeding policies as well as factors that may influence the adoption of breastfeeding policies. The findings specific to the directors' demographics and accreditation status of centers reported in this paper are consistent with the findings in the Child Care Workforce Study, which contained a representative sample of child-care centers in Kentucky.⁴⁵ However, this capstone project adds further evidence concerning the status on written breastfeeding and infant feeding policies and possible factors that may be correlated with their existence in these venues.

The results of this survey suggest that the infants being cared for in the centers in our sample are in a critical time to receive the benefits of breastfeeding and that these facilities are in an ideal position to encourage the extended duration of it. Nevertheless, only 77% of our respondents indicated having a written infant feeding policy and even less indicated having written breastfeeding policy (66%) which suggests that prevalence of such policies is suboptimal and that inclusion of infant feeding policies in the out of home care setting is still necessary. Such policies should be inclusive of the 5 levels of support which have been demonstrated to increase the odds of duration of breastfeeding in the out-of-home care setting.⁴ It is also important to point out that our sample was gathered from counties with high breastfeeding rates compared to the rest of the state. Hence, it is possible to assume that compared to the rest of the state these child-care centers are likely to have written breastfeeding policies and or accept more children who breastfeed. These findings are congruent with other studies which have found a low prevalence of breastfeeding policies in regions with high breastfeeding rates and concluded that

child-care support of breastfeeding reflects communities' attitudes surrounding breastfeeding and that child-care facilities continue to play a passive role in encouraging a cultural shifts in regards to breastfeeding promotion.^{36,37} In addition, the fact that nearly a third of the center in our sample reported not offering infant feeding trainings to their staff, highlights the need for implementation of policies requiring staff training that delineates support and management of breastfeeding infants and mothers. Overall, our findings suggest that there is a gap in the adherence to best-practice standards surrounding breastfeeding support in the out-of-home care setting.

Congruent with the above mentioned, the findings of non-association between the directors level of education and having a breastfeeding policy may suggest that the benefits of breastfeeding are not emphasized in the formal education system in Kentucky. Similarly, the findings on non-association between director's years of experience and having a written breastfeeding policy may suggest that, culturally, Kentucky continues to view breastfeeding promotion as a non-priority. Lastly, the findings of no significance between the centers accreditation and the existence of a breastfeeding policy suggests that accreditation organizations could better encourage the promotion of breastfeeding in the out of home care setting by requiring the inclusion , as well as assisting in the development of written breastfeeding policies as part of their accreditation process. These ideas are reaffirmed by the lack of implementation of state-wide standards or policies that promote and support breastfeeding in these settings.

On the other hand, this study did find that a high percentage (83%) of our sample centers were interested in improving or implementing a breastfeeding policy at their center at their center, which suggests that there is a need among child-care providers to receive assistance in

implement or improve policies that give specifics recommendations about management of breastfeeding infants and delineates procedure for promotion of breastfeeding.

VII. Limitations

There were limitations to this study which may impact the generalizability of these findings, and support that further research of this topic is needed.

The use of a convenient sample as well as the sample size limits the generalizability of our findings. This particular sample was gathered from counties with higher rates of breastfeeding compared to the rest of the state, meaning that our sample could be more supportive of breastfeeding compared to other counties in the state. Furthermore, we recognize the potential bias in the sample as centers that are supportive of breastfeeding might have been more willing to participate in the *Taking Steps for Health Success* program conducted by the KY-DPH Nemours project. In addition, we also believe that some response bias may have also occurred due to nature of self-report and social desirability. For these reasons, we suspect that our findings may be overestimating the prevalence of written breastfeeding policies. In addition, this study did not include an analysis of informal breastfeeding policies individual analyses of the written breastfeeding policy documents for those centers that reported having one. Finally, our study sample only included Type I child-care centers which further limits the generalizability of our study. Despite these limitations, this capstone project is the first to look at the prevalence of breastfeeding policies in child-care centers in Kentucky and has been conducted with the specific aim to provide new information to educate future research, policy and practice.

VIII. Conclusions

The high rates of obesity coupled with the low rates of breastfeeding highlight the importance of encouraging and supporting breastfeeding in Kentucky. The literature and the results of this study suggests that child-care centers are in an ideal position to offer health promotion through breastfeeding support. Furthermore, the finding of this study also suggest that the prevalence of written breastfeeding policies in Kentucky is suboptimal and that formal breastfeeding promotion continues to be a non-priority in the state. However, there also seems to be an opportunity and a desire among child-care providers to receive assistance in implementing or improving breastfeeding policies and breastfeeding support. Assurance of health promotion through policy in these setting is paramount in providing organizations with a framework for decision making that allows employees to understand their roles and responsibilities in supporting women to initiate and continue breastfeeding as well as encouraging the overall use of human milk as the best form of nutrition for infants.

Future Research

Breastfeeding has been found to have a myriad of benefits for mother, infants and society as a whole. In particular, breastfeeding has been found to reduce childhood obesity. This emphasizes the unique opportunity that child-care centers have in supporting breastfeeding as a means for prevention of childhood obesity and its consequent adverse health effects in Kentucky. As such, and while having in mind the limitations of this study, we believe that further public health research and practice in the context of this topic should focus on:

1. Further formative research to assess the current knowledge, attitudes and behaviors of child-care professionals surrounding breastfeeding support and policy.

2. Assessment of both formal and informal breastfeeding policies in child-care center regarding management of human milk and breastfeeding support in the state.
3. Assessment of other environmental, political, organizational, economic and personal factors that influence breastfeeding support and policy development.
4. Development of evidence-based breastfeeding policies that are efficacious, implementable, and cost effective for child-care centers and are supportive of breastfeeding mothers and infants.
5. Effective interventions that will lead to and propagate the implementations of breastfeeding policies in child-care settings.

IX. Acknowledgments

I would like to express my most sincere appreciation to Dr. Ana Maria Linares from the Department of Nursing for providing me the opportunity to work alongside her and her team during the last 3 years of my journey as MPH student and allowing me access to the data necessary to make this project a reality. Without her guidance, support and mentorship during my years at the University of Kentucky and particularly during the development of this capstone, this project would have not been possible. I would also like to thank Dr. Sarah Wackerbarth for her support and guidance during the development of this project and her invaluable contributions. Special thanks to Dr. Tyrone Borders for being part of this committee and to Dr. Corinne Williams, Dr. Kate Eddens and Dr. Alex Howard for lending me a hand when I need it the most. I would also like to take this opportunity to express gratitude to all of the department faculty and staff members as well as classmates for their help and support, and to all of those who directly or indirectly, have lend me their hand in this venture.

Finally, I would also like to give infinite thanks to God, my family and friends but especially to my parents and my partner who provided me with unlimited emotional support and encouragement even when I doubted myself.

X. Figures and Tables

Figure 1

Kentucky and National Breastfeeding Rates Compared to Healthy People 2020 Goals.

	KY 2013	US 2013	HP2020 goal
Initiation	61.3%	79.2%	81.9%
Bf at 6 months	40.3%	49.4%	60.6%
Bf at 12 months	22.8%	26.7%	34.1%
Excl BF 3 months	37%	40.7%	46.2%
Excl BF 6 months	11.4%	18.8%	25.5%

Bf= breastfeeding

Excl= Exclusive Breastfeeding

2014 Breastfeeding Report Card; National Immunization Data (CDC, 2011 births)

Figure 2

Nemours Project Targeted Counties for Study and Convenient Sample.

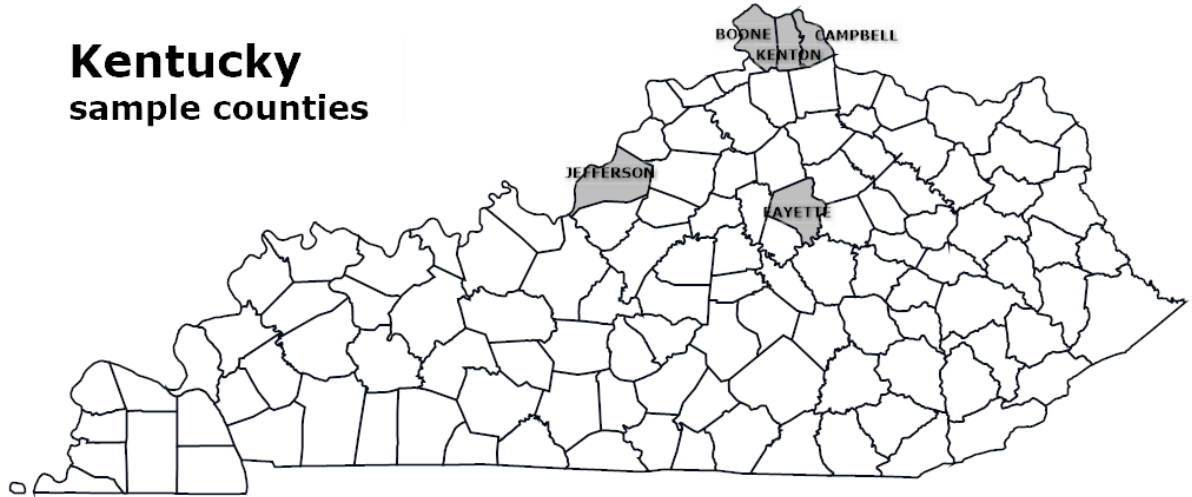
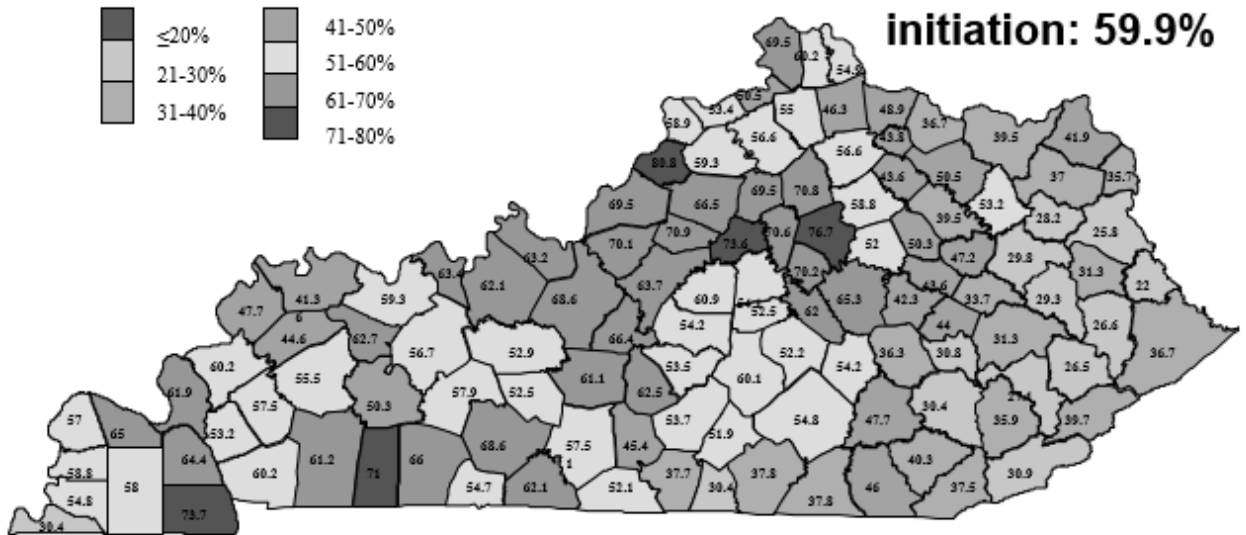


Figure 3

Kentucky Breastfeeding Rates by County, 2007.



Available From: <http://chfs.ky.gov/NR/rdonlyres/DADD158C-C181-4F5D-92D7-399696CB59FC/0/2007NewsletterIssue11.pdf>

Figure 4

Conceptual Model

Relationship between childcare facility directors' years of experience, level of education and the centers' accreditation status to the likelihood of having a *written breastfeeding policy*

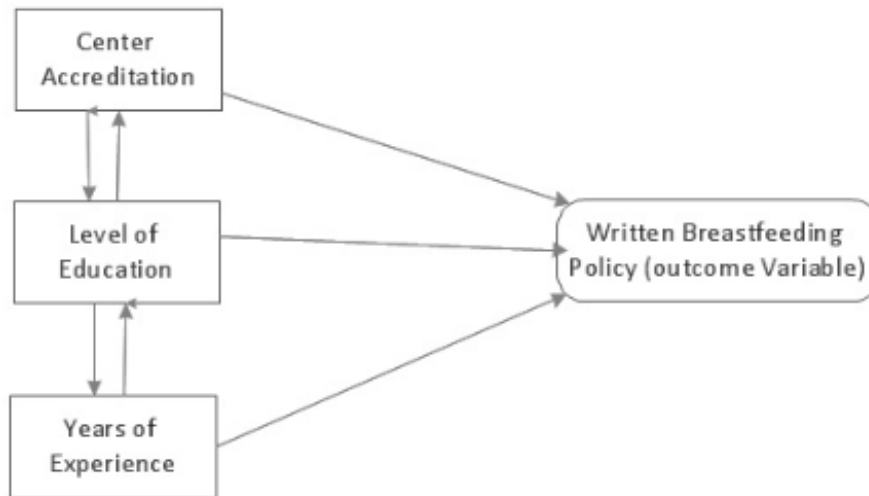


Table 1*Demographic Characteristics of Childcare Centers and Center Directors, N=35.*

Characteristics	n (%)
<i>Center Director characteristics</i>	
Gender	
Female	35 (100.0)
Education	
High school/ GED	6 (17.1)
2 year degree/ Certificate	15 (42.9)
4 year degree	4 (11.4)
More than 4 year degree	10 (28.6)
Years of Experience	
10 or less	17 (48.6)
11 or more	18 (51.4)

Table 2*Characteristics of Child-Care Centers, N=35*

Characteristics	n (%)
<i>Center characteristics</i>	
Accepts breastfeeding infants	
Yes	33 (94.3)
No	2 (5.7)
Average age of infant in center	
< 6 months	30 (85.7)
6-12 months	2 (5.7)
> 12 months	3 (8.6)
Accredited	25 (71.4)
National accreditation	5 (14.3)
Infant feeding policy	27 (77.1)
Breastfeeding Policy	23 (65.7)
Infant feeding training	25 (71.4)
Interest in assistance with policy	
Somewhat to very interested	28 (82.9)
Not interested	6 (17.1)

Table 3*Bivariate Analysis*

Directors' Level of Education, Years of Experience Working in Child-Care and Accreditation Status of the Center's with Likelihood of Having an Institutional Written Breastfeeding Policy (Alpha level .05).

Predictor variables	Written Breastfeeding Policy (outcome variable)		p value
	Yes (n=23)	No (n=12)	
<i>Director's Years of Experience</i>			.289
10 or less, n=17	57%	33%	
11 or more, n=18	43%	67%	
<i>Director's Education Level</i>			.914
High school/ GED, n=6	17%	17%	
2yr degree/ certification, n=15	44%	42%	
4-yr degree, n=4	9%	17%	
> 4-yr degree, n=10	30%	25%	
<i>Accreditation</i>			.706
Yes, n=25	74%	67%	
No, n=10	26%	33%	
<i>Written Infant feeding Policy</i>			.001
Yes, n=27	96%	42%	
No, n=8	4%	58%	

Table 4*Logistic Regression Model*Predicting Prevalence of a Writing Breastfeeding Policy, Controlling for all Other Variables
(n=35)

Variable	OR	<i>P value</i>	95% <i>CI</i>
Experience	.375	.192	.09-1.64
Education	1.048	.890	.54-2.05
Accreditation	1.457	.638	.30-6.99

XI. References

1. Centers for Disease Control and Prevention (CDC). Strategies to prevent obesity and other chronic diseases: The CDC guide to strategies to support breastfeeding mothers and babies. *Atlanta, GA: US Department of Health and Human Services*. 2013.
2. Ip, S., Chung, M., Raman, G., et al. Breastfeeding and Maternal and Infant Health Outcomes in Developed Countries. *Evidence report and technology assessment*. 2007;(153):1-186
3. Stolzer, J. M. Breastfeeding and obesity: a meta-analysis. *Open Journal of Preventive Medicine*. 2011;1(03), 88.
4. Batan, M., Li, R., Scanton, K., Association of Child Care Providers Breastfeeding Support with Breastfeeding Duration at 6 Months, *MaternChild Health J.*(2013) 17: 708-713
5. IBM Corp. Released 2013. IBM SPSS Statistics for Windows, Version 22.0. Armonk, NY: IBM Corp.
6. Healthy People 2020. Maternal, Infant, and Child Health. 2012. Available at: <http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicid=26>. Accessed November, 2014.
7. World Health Organization. Global Strategy for Infant and Young Child Feeding. World Health Organization, Geneva, 2003.
8. American Academy of Pediatrics, et al. Caring for our children: National health and safety performance standards: Guidelines for out-of-home child care. *Amer Academy of Pediatrics*, 2002.
9. Center for Disease Control and Prevention. Breastfeeding Report Card. 2014 Available at: <http://www.cdc.gov/breastfeeding/data/reportcard.htm>. Accessed January 13, 2015.
10. Miller, J., Rosenbloom, A. and Silverstein, J. Childhood obesity. *The Journal of Clinical Endocrinology & Metabolism*. 2014;89, 4211-4220. doi:10.1210/jc.2004-0284
11. American Academic of Pediatrics (2003) Policy Statement: The Prevention of pediatric Overweight and obesity. *Pediatrics*. 2003; 110, 496-507.
12. Eidelman, A. I. Breastfeeding and the use of human milk: an analysis of the American

- Academy of Pediatrics 2012 Breastfeeding Policy Statement. *Breastfeeding Medicine*. 2012;7(5), 323-324.
13. Pediatric nutrition surveillance; 2006 report Centers for Disease Control and Prevention 1600 Clifton Rd. Atlanta, GA 30333, USA
 14. Arenz S, et al. Breastfeeding and child obesity: a systematic review. *International Journal of Obesity related metabolism Disorders*. 2004;28(10):1247-56.
 15. Owen, CG., Martin, RM., Whincup, PH., Smith GD & Cook, DG. Effects of Infant Feeding Across the Life Course: A Quantitative Review of Published Evidence. *Pediatrics* 2005;115(5):1367-1377.
 16. Kramer, M. S. Do breast-feeding and delayed introduction of solid foods protect against subsequent obesity?. *The Journal of pediatrics*. 1981;98(6), 883-887.
 17. Lucas, A., Boyes, S., Bloom, R. and Aynsley-Green, A. Metabolic and endocrine responses to a milk feed in six-day-old term infants: Differences between breast and cow's milk formula feeding. *Acta Paediatrica Scandinavica*. 1981; 70, 195-200.
 18. Gillman, M. W., Rifas-Shiman, S. L., Camargo Jr, C. A., Berkey, C. S., Frazier, A. L., Rockett, H. R., ... & Colditz, G. A. Risk of overweight among adolescents who were breastfed as infants. *Jama*. 2001;285(19), 2461-2467.
 19. Dewey, KG., Heining, MJ & Nommsen, LA. Maternal Weight-loss Patterns During Prolonged Lactation. *American Journal of Clinical Nutrition*. 1993;58(2):162-166.
 20. Godfrey, J. R., & Lawrence, R. A. Toward optimal health: the maternal benefits of breastfeeding. *Journal of Women's Health*. 2010;19(9), 1597-1602.
 21. Faraz, A. Clinical Recommendations for Promoting Breastfeeding Among Hispanic Women. *Journal of the American Academy of Nurse Practitioner*. 2010; 22(6): 292-299.
 22. Stuebe, A. M., & Bonuck, K. What predicts intent to breastfeed exclusively? Breastfeeding knowledge, attitudes, and beliefs in a diverse urban population. *Breastfeeding Medicine*. 2011;6(6), 413-420.

23. Wiklund, P., Xu, L., Lyytikäinen, A., Saltevo, J., Wang, Q., Völgyi, E., ... & Cheng, S. Prolonged breast-feeding protects mothers from later-life obesity and related cardio-metabolic disorders. *Public health nutrition*, 2012; 15(01), 67-74.
24. Kendall-Tackett, K., Cong, Z & Hale, T. The Effect of Feeding Method on Sleep Duration, Maternal Well-being, and Postpartum Depression. *Clinical Lactation*. 2011; 2(2):22-26.
25. Health Resources Service Administration. The Businesscase for Breastfeeding: Steps for Creating a Breastfeeding Friendly worksite. 2008. Available at: <http://www.womenshealth.gov/government-programs/business-case-for-breastfeeding/index.cfm>. Accessed November 2014.
26. Chen, A. & Rogan, W. Breastfeeding and the Risk of Postneonatal Death in the United States. *Pediatrics*. 2004; 113(5):435-439.
27. Bartick, M., & Reinhold, A. The burden of suboptimal breastfeeding in the United States: a pediatric cost analysis. *Pediatrics*. 2010; 125(5), e1048-e1056
28. Lucas, A., McMahon, P. M., Brewer Asling, M., Knobloch, A., Kosh, E., & Sims, K. Assessing Child Care Providers' Knowledge and Attitudes Regarding Support of Breastfeeding in a Region with Low Breastfeeding Prevalence. *J Hum Lact* .2013;29:556.
29. US Department of Health and Human Services. The Surgeon General's call to action to support breastfeeding. 2011.
30. Collins, R. Championing Breastfeeding: One Physician's Perspective. *Paper presented at the 3rd Annual Kentucky Breastfeeding Summit*, Lexington, Kentucky. 2013
31. Clark, A., Anderson, J., Adams, E., Baker, S., & Barrett, K. Assessing an Infant Feeding Web Site as a Nutrition education Tool for Child Care Providers. *Journal of Nutrition Education And Behavior*. 2009.Vol 41, 1.
32. Clark, A., Anderson, J., Adams, E., & Baker, S. Assessing the Knowledge, Attitudes, Behaviors and Training Needs related to Infant Feeding, Specially Breastfeeding, of Child Care Providers. *Mental Child Health J*. 2008; 12:128-135.
33. Benjamin, SE., Rifas-Shiman, SL., Taveras, EM et al. Early Child Care and Adiposity at ages 1 and 3 Years. *Pediatrics*. 2009;124(2):555-562

34. Javanparast, S., Sweet, L., Newman, L & McIntyre, E. A Survey of Childcare Centers about Breastfeeding Support in Adelaide, South Africa. *Journal of Human Lactation*. 2013; 29(2): 230-235.
35. Manhire, KM., Horrocks, G & Tangiora, A. Breastfeeding Knowledge and Education Needs of Early Childhood Center Staff. *Community Practitioner*. 2012;85(9):30-33.
36. Javanparast, S., Newman, L., Sweet, L & McIntyre, E. Analysis of Breastfeeding Policies and Practices in Childcare Centers in Adelaide, South Australia. *Matern Child Health J*. 2012;16(6):1276-1283
37. Cameron, B., Javanprast S., Labbok, M., et al. Breastfeeding Support in Childcare: An International Comparison of Findings from Australia and the United States. *Breastfeeding Med*. 2012;7(3):163-166.
38. McPherson, M.E., Homer, C.J. Policies to Support Obesity Prevention for Children: A Focus on of Early Childhood Policies, *Pediatric Clin. N.Am* 58 (2011) 1521-1541.
39. Fair Labor Standards Act 1938
40. Benjamin, SE., Taveras, EM. Et al. State and Regional Variations in Regulations Related to Feeding Infants in Child Care. *Pediatrics*. 2009; 124(104): 105-111.
41. KRS 29A.100 item 4. (2007)
42. Apple, P. L. A developmental Approach to Early Childhood Program Quality Improvement: The Relationship Between State Regulation and NAEYC Accreditation. *Early Education and Development*. 2006; 17;4, 535-552.
43. Murtagh, L & Moulton, AD. Strategies to Protect Vulnerable Populations: Working Mothers, Breastfeeding, and the Law. *American Journal of Public Health*. 2011; 101(2): 217-223
44. Center for Disease Control and Prevention. Breastfeeding Report Card. 2014 Available at: <http://www.cdc.gov/breastfeeding/data/reportcard.htm>. Accessed January 13, 2015.
45. Hooks, K., Rous, B., Singleton, P., Booth, A., Clark, A., & Gross, T. Kentucky's 2013 Child Care Workforce Study- Licensed Child Care Directors. Human development Institute, University of Kentucky, Lexington KY. 2013.

46. Bowen, S., & Zwi, A. B. Pathways to “evidence-informed” policy and practice: a framework for action. *PLoS medicine*. 2005;2(7), e166.
47. Kentucky: Cabinet for Health and Family Services - Earlycaregrant14. (n.d.). Retrieved September 25, 2014, from <http://chfs.ky.gov/news/Earlycaregrant14.htm>
48. Manning, C. (2012, September 27). Nemours Leads National Initiative to Promote Healthy Lifestyles | Nemours. Retrieved September 25, 2014, from <http://www.nemours.org/about/mediaroom/press/florida/childcare.html>
49. 922 KAR 2:120. Child-care center health and safety standards. (n.d.). Retrieved May 25, 2014, from <http://www.lrc.ky.gov/kar/922/002/120.htm>

Bio Sketch

Ana Maria Machado was born in Medellin, Colombia on September 16, 1985. After 14 years of life in her native Colombia, Ana M. Machado immigrated to the United States alongside her family and resided in Lexington, KY where her parents worked with the University Of Kentucky College of Pharmacy. Ana M. Machado continued in the footsteps of her parents and became a University of Kentucky alumni in 2008, where she graduated with a Bachelor of Science with a Degree in Marketing. After Graduation, she worked for five years in non-profit as a legal advocate for women and families with Greenhouse17, in Lexington KY. In 2012, Ana M. Machado was hired at University Of Kentucky College of Nursing and started to work as a Research Coordinator under the direction of Dr. Ana Maria Linares, where she was involved in several research projects on topics of women and infant health. At the same time she joined the College of Public Health as a Masters student seeking a concentration in Health Service Management and Policy. During her years of graduate school, Ana M. Machado also worked on several radon and Air quality projects and interventions in Kentucky as a Graduate Research Student under the direction of Dr. Ellen Hahn and was also part of a research project involving the role of patient navigators on early pediatric hearing loss under the direction of Dr. Matt Bush.