Complexity of Breastfeeding Health Policy in Tanzania, Africa

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Theresa Thompson

Wright State University
Acknowledgements

The completion of my culminating experience would not be possible without the love, support, and encouragement of my other half Latoya Price. Latoya is and has always been my best-friend and continues to bring out the best in me. I dedicate my work to her for all these reasons and more. I do not have the words to adequately describe my gratitude and love for Latoya but I hope to show her in the coming years.
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Abstract

Background: The purpose of this study was to investigate Tanzanian health policy regarding the protection and promotion of breastfeeding.

Country Profile: Tanzania is a United Republic composed of the mainland and also the islands of Zanzibar. Tanzania is located in east Africa with a population of approximately 46 million. About 1.6 million babies are born each year in Tanzania, however only approximately 140,000 are registered annually. Tanzania’s infant mortality rate is 68 infant deaths per 1000 live births. Tanzania makes up for approximately 0.5% of the world population but 2% of the global infant death.

Approaches: In this study, the assessment of current legislation and health policy currently in place protecting breastfeeding practices was performed primarily. Secondary was the exploration of current breastfeeding interventions and practices performed in Tanzania, Africa.

Conclusion: For Tanzania, pressing factors influencing low prevalence of exclusive breastfeeding consists of lack of trained healthcare workforce; lack of enforcement of training; and cultural beliefs and norms. Thus projecting future policy that takes cultural norms into consideration is highly important for Tanzania. Recommendations for Tanzania include-assessment of the informal organizational structure of the Ministry of Health and Social Welfare; examination of information flows and breakdowns within the Ministry of Health’s pyramid structure; development of future Health Policy based more on the current state of health systems infrastructure; incorporation of cultural norms, values, and beliefs regarding exclusive breastfeeding into policy constructing.

Keywords: Infant feeding, nursing, intricacy, East Africa, infant health outcomes
Complexity of Breastfeeding Policy in Tanzania, Africa

Country Profile

Formally called Tanganyika, Tanzania is a United Republic that is composed of the mainland Tanzania and of the island Zanzibar the state located in east Africa directly below the horn of Africa. Colonization under the British was diplomatically ended in 1961 from then the country was independent. And so it is important to note that Tanzania is a young country of only 50 years to date and has made monumental strides making the country what it is today. The population of Tanzania is approximately 46 million and the age structure of the Tanzania is young as 45% of the population is 15 years old and younger. Tanzania is a low income country where the annual income per capita is approximately $350 US dollars. Still, Tanzania has a fast growing economy namely due to their larger sectors of agriculture and trade (Ministry of Health and Social Welfare, 2008; National Bureau of Statistics, 2005).

In Tanzania the health care services are carried out by the local governments via a decentralized system. The regional administrator and local governments are official aspects of the Tanzanian government under the Prime Minister’s office. The Ministry of Health and Social Welfare is in charge of multiple duties (Table 1) that require internal partnering with the Prime Minister’s office, local government agents, and many others seen in Figure 1 (Kwesigabo et al., 2012; Musau et al., 2011).
Table 1

Ministry of Health and Social Welfare Duties List

1. Policy formulation, regulation, control, quality assurance; and monitoring and auditing;
2. Resource mobilization and allocation, coordination, and inter-sectorial linkages;
3. Management support to level-three hospitals, including national, referral, and special hospitals;
4. Public health-related interventions;
5. Health and social welfare research;
6. Management of executive agencies;
7. Supervision of preventive and curative health services delivery;
8. Training key professional health cadres and monitoring the quality of training offered by private institutions.

Note: List is verbatim from Musau et al., 2011

Figure 1. Health system in overall government context.

Source: Musau et al., 2011
The delivery for health services coordinated and performed within the Ministry of Health and Social Welfare is organized in a top down pyramid style (Figure 2) where they is the national level that then delegates as the levels descend to all coverage areas within the nation. The organizational level scheme is as follows- Specialized/University Hospitals, Regional Health Services, District Health Services, Urban/Rural Health Services, Community Dispensaries, and Village Health Posts respectively (Kwesigaboa et al., 2012; Ministry of Health and Social Welfare, 2008; Musau et al., 2011).

![Pyramid delivery organization of the Tanzanian Ministry of Health.](source)

**Figure 2.** Pyramid delivery organization of the Tanzanian Ministry of Health.

Source: Kwesigaboa et al., 2012

**Breastfeeding and Tanzania**

Breastfeeding benefits a population’s overall health in multiple ways - the promoting better health outcomes for its mothers and infants which decreases maternal and infant mortality, lowers the economic burden of medical care costs, and also decreasing waste from infant formula products aiding the environment. Breastfeeding is regarded as one of the best primary interventions in ensuring appropriate infant health and child survival. In the same way,
breastfeeding initiated one hour after birth also provides protection against postpartum hemorrhage in mothers which is the leading cause of maternal mortality. While the knowledge of breast (breast milk) being the best nutrition for infants is known around world, research conveys that women experience barriers whether social, cultural, or societal that lead to their inability to either initiate breastfeeding or continue through duration of at least 6 months per World Health Organization recommendations (WHO, 2014). United Nations Children’s Fund and the World Health Organization officially recommend initiation of breastfeeding within the first hour after the birth and then continued exclusive breastfeeding for the first six months followed up by continued breastfeeding for two or more years. Complementary feeding can be combined with safe, nutritionally family foods in the sixth month (UNICEF, 2008). WHO and UNICEF maintain that virtually all mothers can breastfeed, provided they have accurate information and skills; access to supportive health care and health systems; and also the support of their family and society at large. In locations like Tanzania where infectious diseases are high and access to potable water is low particularly in the rural regions, infant formula feeding poses the practical threat of sanitation as adequately cleaned utensils such as bottles cannot be assured. Correct dilution of formula as well as mixing formula with clean water cannot be sustained nor ensured either. Breastfeeding has been recommended and is being promoted as a primary intervention in Tanzania and also world-wide by leading health organizations to prevent maternal and infant mortality as well as decrease inferred financial and health care cost associated with infant supplemental feeding (UNICEF, 2008; WHO, 2009).

What Is Policy?

In An Introduction to Policy Process (2005) author Thomas Birkland conveys how there is a lack of consensus on what a (public) policy is and its definition. Birkland explains how
policy is an expression of the current actions, decisions, and regulations of the government.

According to Merriam-Webster’s Dictionary (2014), a policy is defined as – “a high level overall plan embracing the general goals and procedural methods of a given conditions to guide and determine present and future decisions of a governmental body”. According Birkland and policy definition it can be inferred that policy is formulated from the confines of a country’s legal framework. Policy consists of government activity and the intentions which determine that activity. The creation, revision, and or removal of policies are done by the administration of an organization and or committee as opposed to the governing body of a court system which deals with law.

One the core differences between a law and a policy how it is created and who has the authority and or can enforce it (Birkland, 2005). Within the legal system and political affairs law can be defined as a set of rules or regulations which order, bar, or allow privileges, rights, and or specific relationships for people or institutions, provide procedure for ensuring implementation, and grant for punishment of those in violation of the of the established rules. There are many areas of law which work together to govern a complex system. Public law -in a similar manner to public policy yet differentiating on administration – is an area presiding over individuals (persons and institutions) and relationships between them along with the state. Governing subdivisions within public law are – criminal, clerical, and constitutional law. Private law is a sector of law that overlaps with various areas of public law causing for complexity. Public law broadly is organized of different branches of state institutions and management and settles disputes among private citizens and other governing bodies within its region (American University College of Law, 2012).
Through public law the legal system organized and controlled while public policy operates within the legal system; shaping and conveying governmental objectives for the achievement of societal goals. As a result an interdependent relationship is formed between policy and law. In different situations laws of public order also known as public statutes are not permitted to be broken by private citizens and avoidance (circumvention) of such laws have no legal validity alongside public policy (Collins, 2005).

Health policy is defined as the proceedings and determinations embarked on in order to accomplish specific healthcare goals for a population (WHO, 2014). A health policy that is clear can accomplish the establishment of future short and long term goals that outline leading health priorities and even potential expectation of population groups. Health policy ultimately develops agreement and informs the public. As indicated by American University College of Law, health law or healthcare law concentrates on the administrative and legal set of regulations and rules that oversee the sector of healthcare—which encompassing health information systems, equipment manufacturers, health facilities and all practitioners. All of these units combine to form a functioning entity that operates among an immense network of laws and regulations which reflects the complexity of the health care system (American University College of Law, 2012; WHO, 2014). The ideal relationship between law and health policy would be for good health policy to influence the generation of good laws which perpetuate this cycle. However because of the complex nature of the legal system bad law also adversely affects health policy; intentions and expected outcomes. The goal of public health policy is to present the objectives of a government or institution as to how they are going to provide the necessary health care services to their citizens within their structural framework-their system. Systems thinking is
necessary to understand how this system works so to better understand what to fix if the system is presented with a problem.

**What is Systems Thinking?**

In order to oversee, simplify, and possibly predict outcomes of complex systems such as health care systems, relationships between the various interaction types must be examined. Realizing how separate parts influence a greater whole is a central theme of system thinking. Author Phillip Tetlock (2005) discusses predominate types of individuals when it comes to system thinking in his book, *Expert Political Judgment: How good is it? How can we know?* Tetlock explains that good system thinking consists of two notions—correspondence and coherence. Meaning how well is a thinker’s viewpoint in touch with the public they’re serving and also how well that viewpoint is connected to concrete evidence. Furthermore Tetlock discusses how thinkers contemplate is more important still than what makes up their thinking. Tetlock presents two types of thinkers—the fox and the hedgehog.

As described by Tetlock (2005), hedgehogs see themselves as realistic and work outwards from a single organizing notion. Collecting data is also a part of the personality of the hedgehog but at the same time they also ignore different pieces of data that don’t fit within their universal ideal. Hedgehogs construct their system thinking in terms of what they understand and already know to be true. Foxes are resourceful and adaptive and thus better at predicting than their fellow hedgehog. Tetlock explains how foxes are very open minded take hold of a vast amount of experiences without fitting them into single ideal which can seem pragmatic to a thinker like the hedgehog. So when thinking about systems, hedgehogs represent an older style of thinking where everything within their system ideals revolves around one central vision (Tetlock, 2005; Martinez-Garcia & Hernandez-Lemus 2013). Hedgehogs with their central
vision are good at pin-pointing the “big” answer however hedgehogs get stuck in thinking identifying system problems this automatically leads to the answers of how to make the system work. This one-traditional thinking evokes what could be considered weak laws and thereby producing adverse health policy and tradition framework models. A good example of a traditional model with one direction arrows can be seen in Figure 3.

Figure 3. Better Health Through Research, a traditional framework model with one direction arrows.

Note: Reproduced from McKeon, 2013

This model is from an article written by Simon McKeon, the chairman of the federal government’s health and medical research review. This model is not flawed; however it becomes pragmatic when being used to portray the complexity of systems. The fox’s outlook represents newer system’s thinking pattern regarding constructs of the system where more factors are taken into account regardless of the complexity it poses to the organizational model. An example can be seen below. Foxes push system limitations or margins and requiring a more
adaptive approach in developing more progressive laws and hence health policy and health system models.

The model seen as Figure 4 is introduced in an article by Pearson (2010). The model shows connections between individuals within and outside the epistemic community in order to understand the influence policymaking had on these relationships. While foxes have a much more progressive perspective there are drawbacks that still exist when illustrating system dynamics and its connections to complexity (Tetlock, 2005; Sterman, 2000).

**Figure 4.** Linkages and strengths of relationships between epistemic community members and other policy actors.

Note: Reproduced from Pearson, 2010

**Systemic Factors and System Complexity**

The healthcare sector is dynamic in nature as the summation of its components constitutes a complex arrangement which seeks to delineate the system. Sterman (2000) in his book *Business Dynamics System Thinking and Modeling for a Complex World* defines system dynamics as a method to enhance learning in complex systems which consists of feedback
control that allows for design of more successful policies and thereby more efficient law. In Tanzania’s, National Road Map Strategic (Ministry of Health and Social Welfare, 2008), major health system factors are outlined and can summarized as equipment, health professionals, and human resources. Also within the document None-system factors are discussed and fall into the categories of health outcomes and the process of implementation and evaluation of health services.

Dr. Avedis Donabedian is a health services researcher from University of Michigan who developed the Donabedian Model in 1966 (Donabedian, 2005). Since then, Dr. Donabedian’s model has become a leading archetype for assessing health services and quality of care structure. The Donabedian model can be successfully applied to the Tanzanian systemic health care factors with the advantage of simplistic illustration denoting the intersectionalities that construct and define the health system’s complexities. A figure of his model is seen in Figure 5.

![Figure 5. Dimensions of care framework model.](image)

Note: Reproduced from Donabedian, 2005

In Dr. Donabedian’s model structure illustrates the environmental factors in which care is given-facilities, equipment, health workforce professionals, human resource management of
health care and it’s professionals. Process represents the communication and contact throughout the delivery of the health industry between practitioners and patients. Outcome reflects and depicts the effects of Process and Structure on the relationship of improved health status and quality of life within the population; linking all three constructs in the model (Donabedian, 2005).

In modeling the dynamics of a system, a necessary aspect of the paradigm is representing the feedback forces which work together with the looping system dynamics (Sterman, 2000). Sterman discussed and explained the process of feedback, particularly negative feedback and its relationship in system components. Sterman explains negative feedback as the opposing loop or looping (to the streaming loop between components) that is self-correcting when a system comes out of balance. Positive feedback can be understood as the reinforcing structure; self reinforcement which can be seen in the forward linking of system factors. When examining the Donabedian model, reinforcing and negative feedback can be seen in the relationship lines drawn between system components. These lines can be seen moving two succeeding circles; one reinforcing system components and the other displaying an opposing loop-negative feedback. Again through Donabedian’s framework a non-elaborate, straightforward illustration is afforded to better understand the interactions of health system complexities.

In a World Health Organization Bulletin, Policy and Practice, (Lubben et al., 2002) researchers discussed the relationship between health policy in the reproductive health and the subsequent programs that change due to the health policy reform in lower income countries and then put forward a model. This model is shown in Figure 6.
Figure 6. Determinants of reproductive health status framework model.

Note: Reproduced Lubben et al., 2002

The constructed model portrays affected components of the reproductive health industry, key health determinants, and health policy. A major focus of the model framework was to recognize the links between health policy and the changes being made within the reproductive health industry which serve as a foundation for evidence based policy making. Upon examination of the model, it should be noted that the framework consist of an ecological model at its center and the outer, supporting framework makes pathways all ending up pointing back to the center ecological model. The WHO Determinants of reproductive health status model is a good example of framework constructed without the feedback mechanisms previously mentioned as discussed by Sterman. Although this WHO model is current it reflects the “fox” way of system thinking which includes multiple driving pathways however it still lacks appropriate driving in a cyclic direction found in the Donabedian model allowing for a self-correcting feedback. This negative feedback mechanism aspect lacking from the WHO is what is needed to
progress the framework to the next level of adaption and system thinking. Such a construct would produce a system model that possesses all components of a complex system that is self-maintaining and self-correcting as it regulates an ever evolving system of health care (Martinez-Garcia & Hernandez-Lemus, 2013; Sterman, 2000; Tetlock, 2005).

Statement of Purpose

For the purpose of this policy examination the primary problem has been defined as the lack of consistent exclusive breastfeeding found in Tanzania. Breastfeeding heavily influences leading health indicators of infant and maternal mortality particularly in lower income countries such as Tanzania. Within the majority breastfeeding culture of Tanzania, acceptance of breastfeeding is not at all an issue. In this investigation, the primary focus will be inspection of current legislation and health policy in place protecting and encouraging exclusive breastfeeding practices in order to discuss the system complexity. Secondary exploration of current breastfeeding approaches and practices performed in Tanzania, Africa will also be performed, and recommendations will be assembled.

Literature Review

Statement of Problem

Although public health research has promoted and represented breastfeeding as the best, most natural way to feed one’s infant, UNICEF reports exclusive breastfeeding duration throughout the developed nations around the world to only be approximately 38% for infants six months and younger and 39% for continued breastfeeding for infants and children six months and older (UNICEF, 2008). According to UNICEF (2008), each year it’s estimated that approximately 11 million children (five and under die) and roughly a little over four million of these children are infants. The majority of the global infant deaths occur in sub Saharan Africa.
Collectively, Tanzania is one of ten countries that make up approximately 66% of the world’s infant deaths. Separately, in Tanzania, about 1.6 million babies are born each year yet only approximately 140,000 are annually registered. The infant mortality rate in Tanzania is 68 infant deaths per 1000 live births. This information conveys Tanzania makes up for approximately half a 1% of the world population but 2% of the global infant deaths (Ministry of Health and Welfare, 2008). Among low and middle income nations, exclusive (ideal) breastfeeding holds the highest potential as a primary intervention over all others for children under two impacting child survival possessing the possibility of preventing an estimated 1.4 million child (5 and under) deaths annually (Black et al., 2003).

Mothers and families worldwide require adequate breastfeeding counseling and support in order to initiate and continue to maintain optimal breastfeeding practices. In the United States, just over four million babies are born each year and the infant mortality rate is around 6.05 infant deaths per 1000 live births; the American populations constitutes about 5% of the world population (Martin, 2013). For high income countries it is estimated that if every infant was breastfed to the optimum standards – within one hour after birth, given only breastmilk for the first six months of life, and continued up to two years of age – more than 200,000 infant and child lives could be saved year (UNICEF, 2008).

Exclusive breastfeeding (EBF) is defined as breastmilk being the sole substance for nourishment and food for an infant for the first six months of life. This is important as WHO has put forth a goal of raising the global EBF rate to 50% by 2025 (WHO, 2009). Currently the number of babies ever breastfeed worldwide is closer to 76% and the barriers interfering with mothers being able to breastfeed exclusively is the target for concern (UNICEF, 2008). In Tanzania, overwhelmingly the majority of infants are breastfed, approximately 94%, still
breastfeeding initiation (within one hour after birth) is only 60% but 54% of children are continually breastfed up to two years of age. However the establishment of exclusive breastfeeding (EBF) to six months is not as high, approximately 41%, as infants are often supplemented foods or water early in life (UNICEF, 2008; National Bureau of Statistics, 2005). Thus it can be seen in Tanzania, the existence of a breastfeeding culture as breastfeeding is widely practiced. Meaning that the cultural attitude towards breastfeeding is overwhelmingly in support of the behavior and it is seen as a norm of society and as a community value. Nevertheless research suggests that within Tanzania exclusivity of breastfeeding is not as widespread or common as the well accepted behavior itself. It is common belief in the many regions across Tanzania that infants need more than just breastmilk. In some different tribes the infants’ first meal should consist of a substance other than breastmilk as it is believed it will play into the development of the child’s character later on in life. Other situations where the decision to give infants are given supplemental liquids and or foods during the first six months involve extended family such as grandmothers, mother-in-laws, and so on. Mothers are not the sole individuals making decisions for their infants’ food or health needs (Hussein, 2005). Social and cultural factors like these play a vital role in understanding the types of barriers faced in Tanzania when approaching EBF education and EBF rates being raised across the nation.

The United States in comparison to Tanzania would not be perceived as a breastfeeding culture society but more so a breastfeeding tolerant society. Within mainstream society, breastfeeding is understood to be natural yet is not seen or observed as the cultural norm. There are campaigns and pockets of the population where breastfeeding facts and education is being made more accessible however a larger majority of mainstream America are observed using infant supplemental formula in conjunction with breastmilk or all on its own. Observing these
two nations in parallel, the various spectrum ends in how their social and contextual issues in breastfeeding practices come forward. In Tanzania, public health efforts are being focused on educating mothers that only their breastmilk is necessary for infant nutrition among other campaigns (Declercq, 2009). Because of Tanzania’s established breastfeeding culture, there is almost no need to education women on the essentialness of breastfeeding but rather giving women the education tools to empower them to only breastfeed for the first six months of life (Mabilia, 2003; Agnarsson et al., 2001).

Search for Evidence

Historically and currently in Tanzania, breastfeeding is widespread behavioral practice with approximately 94% of infants being breastfeed (National Bureau of Statistics, 2005). According to UNICEF (2008) while breastfeeding is a wide practice, many African mothers are unsuccessful to exclusively breastfeed. The EBF rate among infants is about 50% with early initiation of breastfeeding at 60%. The median age for total time breastfeeding a child was reported at 21 months of age and 54% of children are breastfed until age two. There are a multitude of factors affecting exclusive breastfeeding including social and cultural barriers. Research reported in Tanzania conveys early-within the first month of life- introduction of complementary foods such as ugali (porridge) and or animal milk (National Bureau of Statistics, 2006).

According to The National Road Map (Ministry of Health, 2003) there are two major challenges and factors delaying further progress in reducing Infant Mortality rates in the country. The first challenge lies in ‘health system factors’ and are conveyed as – weak health infrastructure, shortage of skilled health professionals, inadequate human resources and coordination between public and private facilities. This challenge category is conveying that
more sufficient health care facilities are still needed as well as to properly deliver and provide adequate access to health care for the population which includes mothers and their newborns. The second huge challenge has to do with ‘non-health system factors’ such as – inadequate community involvement, weak health services monitoring, gender inequality, some social cultural and belief practices, and poor health seeking behavior. This challenge has to do with health behavior before, while, and even after patients in the population are able to have health care services, if they are able to get it seeing factors such as time and far location of health facilities play a large role in access to health care (Ministry of Health and Social Welfare, 2008).

The Tanzanian government has incorporated breastfeeding provisions as well as several other health approaches in to existing laws or by adopting various international laws. Through these legislations Tanzania actively committed to the Millennium Development Goals to further decrease in the infant mortality trends by two-thirds by 2015. In 1974 Maternal and Child Health services was established and later the following year an expanded immunization program, Expanded Program of Immunization (EPI) was launched to provided additional services to delivery vaccines to prevent childhood diseases. By 1987 the Tanzanian government created the Reproductive and Child Health Section within the Ministry of Health and worked to cultivate a ‘National Reproductive and Child Health Strategy.’ During the 1990s, the Tanzanian government implemented various interventions specifically targeting infant mortality. In 1992 the Baby Friendly Hospital Initiative (BFHI), a breastfeeding and child birthing practices policy was adopted from UNICEF and followed up with the Code of Marketing Breastmilk Substitutes in 1994. The Integrated Management of Childhood Illness (IMCI) method for specifically reducing infant and child mortality as well as morbidity was also taken on in 1996 (Ministry of Health, 2005). During 2004 Tanzania refurbished its labor laws by compiling them under two
acts- Employment and Labor Institutions Acts. And most recent in 2005, the government of Tanzania created the National Strategy on Infant and Young Child Feeding and Nutrition program. (Ministry of Health and Social Welfare, 2008)

The National Health Policy and Current Legislation

National Health Policy (2003) United Republic of Tanzania

Tanzania’s Health Policy of 1990 highlighted the need for continuing increase in the health development and advancement in access to health care and health services. The 2003 Health Policy is the updated revision which links the 1990 Policy with recent proposals for reform of the health sector. The 2003 Health Policy (Table 2) identifies systemic and non-systemic factors creating barriers to the improvement of health service access and delivery while also speaking to the various measurements of current reforms within the public health sector.

Table 2

Tanzania’s 2003 National Health Policy

2.0 THE DEVELOPMENT VISION, MISSION AND OBJECTIVES OF THE HEALTH POLICY

2.1 The Government Development Vision and the Health Policy

The Health Sector is one of the priority sectors of the Tanzania Government as is reflected in the annual incremental increase in budgetary allocation to the sector. Presently the share of the budget for health is at 11% and which is set to rise to the target of 14%.

In addition, the Tanzania Development Vision 2025 also identifies Health as one of the priority sectors. Among its main objectives is achievement of high quality livelihood for all Tanzanians. This is expected to be attained through strategies, which will ensure realization of the following health service goals:

- 2.1.1 Access to quality primary health care for all;
- 2.1.2 Access to quality reproductive health service for all individuals of appropriate ages;
- 2.1.3 Reduction in infant and maternal mortality rates by three quarters of current levels;
- 2.1.4 Universal access to clean and safe water;
- 2.1.5 Life expectancy comparable to the level attained by typical middle-income countries.
- 2.1.6 Food self sufficiency and food security;
- 2.1.7 Gender equality and empowerment of women in all health parameters.

In line with the Government Development Vision 2025 goals, the Ministry of Health shall strive to raise and improve the health status and life expectancy of the people of Tanzania by ensuring delivery of effective, efficient and quality curative, preventive, promotive and rehabilitative health services at all levels.

Note: Taken verbatim from Ministry of Health, 2003.
Maternal and Child Related Legislation


In 2004, the Tanzanian government revamped all the employment and labor laws and enacted the Employment and Labor Relations Act (Employment Act) along with the Labor Institutions Act (Labor Institutions Act). The Labor Institutions Act formally establishes different governmental sections given the task of management and processing of labor laws. The Employment Act makes labor standards, duties, and rights available these are shown in Table 3 (United Republic of Tanzania, 2004).

The International Code of Marketing Breast-milk Substitutes

The international Code was created out of the recognition that poor child health and development worldwide was attributed to poor infant and child feeding practices. In 1981 the 34th World Health Assembly of the World Health Organization adopted the set of recommendations set to regulate the marketing of breast-milk substitutes, feeding bottles, and teats (Thiagarajah, 2004). The Code was put in place to protect the nutrition of infants and children and also promote and safeguard breastfeeding and also guarantee the proper use of breastmilk substitutes when necessary.
Table 3

Breastfeeding Legislation and Labor Laws in Tanzania

<table>
<thead>
<tr>
<th>Labor Law</th>
<th>Standards, Duties, and Rights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maternity Leave (Labor Act, Art. 33)</td>
<td>An employee is entitled to at least 84 days (12 weeks) of a paid maternity leave, or 100 days if an employee gives birth to multiple infants at one time. Maternity leave may begin as early as 4 weeks before expected date of delivery (or earlier if certified by medical professional) as necessary for health of employee and unborn baby. An employee may not work during the first 6 weeks after having given birth, unless a medical professional endorses that she is healthy and fit to return to work. Returning from maternity leave, an employee shall remain on the same terms and conditions of employment as before leaving. If an employee’s baby dies within one year after birth, the employee is entitled to additional paid maternity leave of 84 days within the leave cycle. Employers are required and obliged to grant an employee 4 terms of paid maternity leave over duration of employment and subject to terms of notice an employee must give employer.</td>
</tr>
<tr>
<td>Breastfeeding Leave (Labor Act, Art. 33)</td>
<td>An employer is obligated to allow a female employee to breastfeed her infant and or child during her allotted working time, for up to a maximum of 2 hours during her working days.</td>
</tr>
<tr>
<td>Leave Related to Family Responsibility (Labor Law, Art. 34)</td>
<td>Leave for sickness or death of a child: an employer is entitled to at least 4 days of paid leave for the sickness or death of his/her child.</td>
</tr>
<tr>
<td>Women’s Work-While Pregnant or Breastfeeding (Labor Act, Art 33 &amp; 20)</td>
<td>Employers shall not/are not permitted to have an employee who is pregnant or nursing carry out or complete task work which is hazardous to the health of her unborn or nursing child or her health. A pregnant employee shall not be required or permitted to work at night by her employer, for 2 months before her expected date of delivery, or before two months from a date in an official statement, from a medical professional, which states the employee is no longer fit or safe executing night work. After an employee gives birth to her newborn for 2 months, an employer shall not require or allow a mother to perform night work. Further after 2 months after giving birth, if the mother employee presents certified letter from a medical professional declaring that the mother is not yet ready to return to night work or the health of her baby does not permit her to return to night work, the employer cannot require the employee to work at night.</td>
</tr>
<tr>
<td>Nondiscrimination Law (Labor Act, Art 7 &amp; 37)</td>
<td>No discrimination against an employee (direct or indirect) shall be permitted by any employer on basis of her responsibility to her family or if an employee is pregnant. An employee may not be terminated for any reasons related to family responsibility or pregnancy which constitute discrimination under this Act.</td>
</tr>
</tbody>
</table>


Food Control of Quality and Marketing of Breastmilk Substitutes and Designated Products Regulations 1994

Much of the current Tanzanian government legislation safeguarding the health of babies and young children is through the primary intervention of breastfeeding and regulating the
marketing of breastmilk substitutes which is based on the International Code. Tanzanian laws include policies promoting breastfeeding as well as the education and training of the health care workforce. In order to give laws awareness and enforcement and monitoring Tanzanian government has also put in place organizations with this responsibility- the National Food Control Commission (NFCC) and Tanzanian Food and Nutrition Centre (TFNC). Specific requirements and bans put in place which follow the Code are shown in Table 4 from the International Baby Food Action Network (IBFAN) pamphlet on African country members one of which is Tanzania:

Table 4

*The International Code Regulations*

The Code applies to all products marketed as partial or total replacement for breastmilk, such as infant formula, follow-up or special formula, cereals, juices, vegetable mixes, and baby teas. It also applies to feeding bottles and teats.

**The Code:**

- **Bans** all advertising and promotion of products to the general public.
- **Bans** the use of samples and gifts to mothers and health workers.
- **Requires** that information materials contain specific information and warnings and not contain pictures of babies nor text that idealize the use of breastmilk substitutes
- **Bans** the use of the health care system to promote breastmilk substitutes.
- **Bans** free or low-cost supplies of breastmilk substitutes.
- **Allows** samples given to health workers, but only for research purposes.
- **Demands** that product information be factual and scientific.
- **Bans** sales incentives for breastmilk substitutes.
- **Requires** that labels inform fully about the correct use of the product and the risks of misuse.
- **Requires** that labels do not discourage breastfeeding.

Note: Taken verbatim from Thiagarajah, 2004.
Review and Rational of Legislation

Observing the current legislation, major focal points are seen in the work sector with labor laws; in health care delivery with Baby Friend Hospital Initiative; and also in food security with the International Code. Employment and place of birth are top systemic factors influencing duration of exclusive breastfeeding. Women having to return to work in order to support their families and or highly educated women balancing careers and having children are shown to stop exclusive breastfeeding at a higher percentage than women who are housewives and women who are married. Hence the effectiveness of labor laws would be expected to boost breastfeeding rates, particularly within Tanzania’s rapidly growing urban areas such as Dar es Salaam. In a study by Cohen & Mertek (1994), effectiveness of lactation programs on employed breastfeeding women in California. Programs consisted of lactation management upon returning to work as well as prenatal classes. The evaluation study found 75% mothers in the programs continued breastfeeding to at least six months at a time when only 10% of mothers were breastfeeding at six months nationally. The program’s average breastfeeding duration being 8.26 months. This study and similar ones have been used convey the successful benefits the impact of support of breastfeeding in the workplace makes in the lives of employed mothers and their babies (Cohen & Mertek, 1994).

In the same way, the Baby Friendly Hospital Initiative addresses breastfeeding promotion and child birthing practices in all institutions adopting and adhering to the Initiative’s requirements. In addition to practices and health promotion, health education for a facility’s entire medial staff on exclusive breastfeeding and WHO/UNICEF recommendations is also a part of the Baby Friendly curriculum to promote breastfeeding. This allows for staff to be highly knowledgeable and also less inconsistencies in information a facility’s staff is required to know.
Increased breastfeeding and child birthing practices knowledge at place of birth is another leading factor for the increase of exclusive breastfeeding mothers in Tanzania. Therefore the advance of Baby Friendly Hospital Initiative and more facilities being BFHI certified throughout Tanzania would be expected to again raise Tanzania’s breastfeeding (and exclusive breastfeeding) rates across the nation (Centers for Disease Control and Prevention [CDC], 2007; Shealy, Benton-Davis, & Grummer-Strawn, 2005).

Looking once more, infant and child nutrition are top public health priority in Tanzania as the nation has the goal to bring down infant and child-under-5 mortality down two thirds. In a study titled, ‘Commercial hospital discharge packs for breastfeeding women’ (a Cochrane review), nine random cross-controlled trials were conducted with a total 3,730 women from North American being involved (Donnelly, Renfew, & Woolridge, 2004). The studies investigated the impact of free samples of supplemental infant formula and also the distribution of promotional materials about supplemental infant formula to new mothers who had established breastfeeding already. The primary outcome of the study - there was a reduction of breastfeeding at all measured time intervals (0-6 and 6-13 weeks postpartum and at six months) when compared with no distribution of free samples or promotional materials. This and other similar case studies done on the distribution of infant formula as it influences breastfeeding promotion and duration is the bases of the rational for the creation and implementation of the International Code of Breastfeeding (Shealy et al., 2005). As a result, the International Code was adopted and put in action curbing the advertising of infant supplemental formulas and accessory items such as bottles until very few violations of the code remain. International Code laws regarding food security are centered less systemic factors affecting breastfeeding and more on health behaviors. With respect to the young country, one can argue that while the current
legislation is doing well, an increase in breastfeeding could be seen with the addition of some alternative projects and laws. These alternative laws would look to fill gaps within current legislation and possibly reach sections of the population not well met by current laws in place promoting breastfeeding.

**Discussion**

Within public health system thinking, the question—how can the system structure be changed in order to better produce the desirable health behaviors and outcomes—exists. And where should this change be implemented? Many public health policy interventions target health behaviors in an attempt to better understand cultural norms and beliefs so those interventions can be affected within a social context. Other public health policy interventions focus on the social environment as the environment an individual finds themselves in makes information available and provides for access and resources or not. John Sterman explains how in public health policy the short-term considerations of predictability of outcomes or challenges tend to be the major focus. And this type of system thinking should be changed as it tends to leave out the notion of complexity as it pertains to health system structure, health policy, and individuals within a population (Sterman, 2006). Because public health interventions usually target health concerns that require immediate attention, long-term outcome or barrier investigation affecting policy are not thoroughly researched. Time due to issues of mortality and morbidity is in short supply regarding important health concerns such as maternal and infant mortality. Nevertheless, Sterman argues that understanding the dynamic of complexity as it relates to the way in which health systems work is crucial as human involvement is present and interconnected to many different aspects. Specifically considering a mother’s decision to breastfeed her infant, more than one law or policy influences her decision to initiate and even
continue to breastfeed- home, work, and social environments all play a role in decision making and thus must be taken into account. As more aspects must be taken into account pertaining to the system of health and health policy, that system becomes complex (Sterman, 2000; Sterman, 2006).

As systems become more complex, predicting their future outcomes, challenges, and places of intervention becomes more difficult (Meadows, 1999). As a result, creating a system that can transcend its original generating paradigm when the need arises is necessary for the progressive sustainability of that system. In her article, ‘Leverage points: Places to intervene in a system’, author Donella Meadows which conveys and explains 12 leverage points through which can used to implement change. Meadows discusses how her 12 proposed leverage points are points of power which inferred can be defined as the overriding points in a system that understood and correctly operated have the ability to create sustaining change within that system. Leverage point 12 speaks to the individual elements of a system and what remains as constants of that system. Within the Tanzanian government structure, how the ministry of health is an integrated part of a bigger whole serves as a good example of this. The eleventh leverage point addresses buffers which can be simplified as methods used by the system that reduce costs in achieving the overall goal. Interventions for health behavior that are the intrapersonal level are an example of this, meaning that individual bar any special circumstances has the innate ability to perform the behavior such as walking or breastfeeding. Stock-and-Flow Structures is the tenth point and can be defined as the networking of the system and all of its actual connections and intersections. The ninth leverage point is delays which more simply conveys that time within the system changing dynamics takes as long as time takes. Number eight of the leverage points is balancing feedback loops which was discussed earlier in the paper as “negative feedback”
defined by Sterman as the correcting force that becomes active in order to bring the system back into balance. The next point, seven, is reinforcing feedback loops which was also defined by Sterman as “positive feedback” which is a driving force that remains active as the system continues to perform well and progress in a constructive direction for that system. Leverage point six, information flows, refers to how communication between collaborating parties must be optimal. Like in the case of the Tanzanian government structure that requires the Ministry of Health to work with multiple departments in order to deliver health services. If communication between departments is not at its peak, in this aspect of the system will ensue. The rules are the fifth point of leverage and are simply enforced regulations put in place to maintain the system. The fourth leverage point being self organization denotes a system’s ability to be sustainable. Goals or the rationale for the functioning of a system is leverage point three. Paradigms serve as the second leverage point and is modestly the original concept or archetype from which a system was constructed. And the number one point of Meadows leverage points is transcending paradigms, expressing the need to return back to the original framework of systems in order to move past it. Here, Meadows’ argument ties in and relates back to the thinking concepts Tetlock introduced.

Within Tetlock’s paradigm concepts, the hedgehog represent the traditional, central idea thinking whereas the fox exemplifies a more cogitative system thinking that expands the limits of the hedgehog mindset. Foxes therefore are more progressive when predicting unforeseen problems that will happen in the future as opposed to summarizing one big answer as the hedgehog does. Moving forward, Meadows’s transcending paradigm would suggest the convergence of Tetlock’s hedgehog and fox system thinking models. Conversely to my argument, Meadows would debunk all existing paradigms in order for the system to function in
complete freedom. Due to complexity that humans bring as their attachment to norms, values, ethics and influence of other people, ultimate detachment from paradigms in regard to system creating is impossible. Furthermore I would argue a surpassing paradigm is necessary within public health and policy. Using the original system framework as an ascending platform, the system should go beyond previous concepts and function more like a human organism which has the ability to adapt and evolve, heal, and change itself as necessary to meet demands of new challenges that arise over the course of time.

Time is a necessary factor in system thinking equations that has to be considered wanted or unwanted. Meadows gives an example of a bathtub that has running water into the tub as well as outflow through the drain. It is possible to sustain a balanced level within the tub if the inflow exceeds the outflow. Breastfeeding could be used as an illustration. Exclusive breastfeeding is the desired outcome or stock and the prevalence of mothers attaining exclusive breastfeeding of their infants 0-6 months would represent the inflow. Outflow would be represented by aspects that challenge the inflow such as cultural norms that involve colostrum dumbing. As Meadows points out the mechanism which brings balance is time.

In public health and systems thinking, time must be a factor in gaining desired health outcomes and balance to organism-functioning systems. Front line interventions are still necessary especially in public health issues where morbidity and mortality are concerned. Therefore it must be understood that obtaining sustainable, intrinsic population health takes time. In conjunction to complexity as it pertains to the health of a population and public health, time must also be proposed a top leverage point within systems thinking as it also relates to public health policy.
After the examination of Tanzanian health policy through the limited research of this paper the following recommendations have been made for the assessment of the organizational structure; examination of information flow and breakdowns; future policy projects changes; and incorporation of cultural context regarding breastfeeding.

By assessing of the formal and informal organizational structure of the Ministry of Health and the larger overall contextual government of Tanzania, gaps in communication can be found in regards to breastfeeding. It should be noted that with kind of assessment there can be back lash as it may require more bureaucracy to be added to the structure in order to correct information flow. Nevertheless once solid communication bridges are made, various governing organizations can come together to make more provisions for breastfeeding. For these organizations breastfeeding will most likely not be the top or only priority hence the goal of saliency is desired in this case. The purpose of saliency being for breastfeeding stakeholders to stay in communication with the governing organizations.

Inspecting information flow and breakdown is very similar to the assessment but specific to vertical and horizontal communication within a network and to evaluate wither this communication is reliable and sustainable. Due to Tanzanian’s extensive top down structure a conduit or bridge can be necessary to better broker information between individuals or various top and bottom levels within a governing system.

Using system thinking methods to extrapolate out what future policies can be put in place is a great strategy for projecting future policies. But it is important to keep the actual state of the population in mind when making changes that will feedback into the governing health infrastructure so that the policy is not too far ahead of the developmental state of health infrastructure. Similarly incorporating cultural beliefs, norms, and customs of the population
into policy creation is also important. Without population buy in, changes looking to be made by policy implementation will fail.

**Recommendations**

Recommendations associated with this research include:

- Assessment of the organizational structure of the Ministry of Health and Social Welfare within the Tanzanian government.

- Examination of information flows and breakdowns within the Ministry of Health’s pyramid structure of communication.

- Development of future Health Policy based more on the current state of health systems infrastructure and resources.

- Incorporation of cultural norms, values, and beliefs regarding exclusive breastfeeding into policy constructing and current breastfeeding education and interventions so the social context is being considered.
References


American University College of Law (2014). *What is health law?* Retrieved April 4, 2014 from American University College of Law Library:

http://www.wcl.american.edu/health/health_law_info.cfm


Appendix A – List of Competencies Met in CE

**Tier 1 Core Public Health Competencies**

<table>
<thead>
<tr>
<th>Domain #1: Analytic/Assessment</th>
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<tbody>
<tr>
<td>Identify the health status of populations and their related determinants of health and illness (e.g., factors contributing to health promotion and disease prevention, the quality, availability and use of health services)</td>
</tr>
<tr>
<td>Describe the characteristics of a population-based health problem (e.g., equity, social determinants, environment)</td>
</tr>
<tr>
<td>Use methods and instruments for collecting valid and reliable quantitative and qualitative data</td>
</tr>
<tr>
<td>Identify sources of public health data and information</td>
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<tr>
<td>Identify gaps in data sources</td>
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<tr>
<td>Describe how data are used to address scientific, political, ethical, and social public health issues</td>
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<tr>
<th>Domain #2: Policy Development and Program Planning</th>
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<tr>
<td>Gather information relevant to specific public health policy issues</td>
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<td>Describe how policy options can influence public health programs</td>
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<tr>
<td>Explain the expected outcomes of policy options (e.g., health, fiscal, administrative, legal, ethical, social, political)</td>
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<tr>
<td>Gather information that will inform policy decisions (e.g., health, fiscal, administrative, legal, ethical, social, political)</td>
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<tr>
<td>Describe the public health laws and regulations governing public health programs</td>
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<th>Domain #3: Communication</th>
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<tr>
<td>Identify the health literacy of populations served</td>
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<th>Domain #4: Cultural Competency</th>
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<tr>
<td>Incorporate strategies for interacting with persons from diverse backgrounds (e.g., cultural, socioeconomic, educational, racial, gender, age, ethnic, sexual orientation, professional, religious affiliation, mental and physical capabilities)</td>
</tr>
<tr>
<td>Recognize the role of cultural, social, and behavioral factors in the accessibility, availability, acceptability and delivery of public health services</td>
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<tr>
<td>Respond to diverse needs that are the result of cultural differences</td>
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<tr>
<td>Describe the dynamic forces that contribute to cultural diversity</td>
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<tr>
<td>Describe the need for a diverse public health workforce</td>
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<tr>
<td>Participate in the assessment of the cultural competence of the public health organization</td>
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<th>Domain #5: Community Dimensions of Practice</th>
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<tr>
<td>Recognize community linkages and relationships among multiple factors (or determinants) affecting health (e.g., The Socio-Ecological Model)</td>
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<tr>
<td>Identify stakeholders</td>
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<tr>
<td>Describe the role of governmental and non-governmental organizations in the delivery of community health services</td>
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<tr>
<td>Identify community assets and resources</td>
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<th>Domain #6: Public Health Sciences</th>
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<tr>
<td>Describe the scientific foundation of the field of public health</td>
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<tr>
<td>Identify the basic public health sciences (including, but not limited to biostatistics, epidemiology, environmental health sciences, health services administration, and social and behavioral health sciences)</td>
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<tr>
<td>Describe the scientific evidence related to a public health issue, concern, or, intervention</td>
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<tr>
<td>Retrieve scientific evidence from a variety of text and electronic sources</td>
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<tr>
<td>Discuss the limitations of research findings (e.g., limitations of data sources, importance of observations and interrelationships)</td>
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<th>Domain #7: Financial Planning and Management</th>
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<tbody>
<tr>
<td>Describe the local, state, and federal public health and health care systems</td>
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<tr>
<td>Describe the organizational structures, functions, and authorities of local, state, and federal public health agencies</td>
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**Domain #8: Leadership and Systems Thinking**

<table>
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<tr>
<th>Describe how public health operates within a larger system</th>
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<tr>
<td>Describe the impact of changes in the public health system, and larger social, political, economic environment on organizational practices</td>
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**Concentration Competencies**

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<tr>
<th>Global Health:</th>
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<tbody>
<tr>
<td>Identify strategies that strengthen community capabilities for overcoming barriers to health and well-being</td>
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<tr>
<td>Exhibit interpersonal skills that demonstrate willingness to collaborate, trust building abilities, and respect for other perspectives</td>
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<tr>
<td>Apply the health equity and social justice framework for the analysis of strategies to address health disparities across different populations</td>
</tr>
<tr>
<td>Conduct evaluation and research related to global health</td>
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<tr>
<td>Apply systems thinking to analyze a diverse range of complex and interrelated factors shaping health at local, national, and international levels</td>
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