"Promoting Quality Education for All"

THE STUNTING CHILD OF TODAY MEANS A STUNTED ECONOMY OF TOMORROW

REPORT ON THE STUDY OF

The Link between Child Development – Health, Nutrition, Development and Education

Abbreviations

CBO	*Community Based Organisation*
CSO	*Civil Society Organisation*
CSO-SUN	*Civil Society Organisations- Scaling Up Nutrition*
CGP	*Child Growth Promoters*
CSTZ	*Children Sentinel Trust Zambia*
DEBS	*District Education Board Secretary*
DMO	*District Medical Officer*
DSWO	*District Social Welfare Officer*
ECCDE	*Early Childhood Care, Development and Education*
ECCE	*Early Childhood Care and Education*
ECCD	*Early Childhood Care and Development*
ECD	*Early Childhood Development*
EFA	*Education For All*
ESB	*Education Statistical Bulletin*
FBO	*Faith Based Organisation*
GRZ	*Government of the Republic of Zambia*
HAZ	*height-for-Age Z-score*
HDI	*Human Development Index*
INCAP	*Institute of Nutrition of Central America and Panama*
LCMS	*Living Conditions Monitoring Survey*
MCDSW	*Ministry of Community Development and Social Welfare*
MCH	*Maternal Child Health*
MDG	*Millennium Development Goals*
MDGi	*Millennium Development Goal Initiative*
MOGE	*Ministry of General Education*
MOH	*Ministry of Health*
MUAC	*Mid-Upper Arm Circumference*
NGO	*Non-Governmental Organisation*
NICHD	*National Institute of Child Health and Human Development*
OVC	*Orphan and Vulnerable Children*
PIF	*Policy Implementation Framework*
SCI	*Save the Children International*
SD	*Standard Deviation*
SDG	*Sustainable Development Goals*
UDHR	*Universal Declaration of Human Rights*
UNESCO	*United Nations Education, Scientific Cooperation*
UNICEF	*United Nations Children's Fund*
UPE	*Universal Primary Education*
USA	*United States of America*
WHO	*World Health Organisation*
ZANEC	*Zambia National Education Coalition*
ZHDS	*Zambia Demographic Health Survey*

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Chapter One

Executive Summary

1. Introduction

Zambia National Education Coalition (ZANEC) has been advocating for the provision of a comprehensive Early Childhood Care, Development and Education (ECCDE) programme in Zambia as opposed to promoting Early Childhood Education (ECE) only. This obligation impelled the coalition to flag-off this study in October of 2016 to provide evidence on the impact of Nutrition, Health and education on Child Development. The intent of the findings is to consolidate the relationship between nutrition, health and education in the process of child development. Children Sentinel Trust Zambia (CSTZ) was tasked to undertake this assignment and the findings are the contents in this report. The conclusions and recommendations are meant to refine on-going platforms and develop strategies that ensure sustainable program impacts and results for ECCDE in Zambia.

1.1. Purposes

This report reviews the confirmation on the hypothesis that nutrition, health and education has important communal impacts on Child Development. In reviewing the evidence, we highlight those studies that have attempted to identify fundamental impacts with robust appraisal techniques. We have also described evidence that demonstrates the extent of the descriptive correlation of nutrition, health, education and Child Development. As well as reviewing the evidence on the overall effect of nutrition, health, education on child development, we have studied the evidence on potential mechanisms to this effect, in a wide range of different personal and social contexts.

The study generates evidence for advocacy about the importance of Early Childhood Care, Development and Education (ECCDE) programs and data-driven decision making at various levels from community to National policy making. The findings of the study will also be used for informing and improving the ZANEC ECCDE program by designing and implementing appropriate interventions that will enhance the learning outcomes and development of young children in Zambia. The purpose of the Research study is twofold:

1.1.1. To generate credible evidence from a Zambian perspective to support the delivery of comprehensive ECCDE services as opposed to focusing on Early Childhood Education alone and

1.1.2. To contribute to scientific knowledge and link between Child Development, Health, Nutrition and Education.

1.3. Overview of the structure of the report

In **Chapter 2** of the report we have the introduction and the general conceptual outline that sets out the definitions and hypothesised mechanisms for the effective implementation of ECCDE; We set out the methodological criteria for our review of the evidence in **Chapter 3**; In **chapter 4** this framework creates a structure within which evidence and theory from diverse strands of the literature can be linked coherently. It also enables us to include within the review, evidence that does not investigate the direct impact of nutrition, health, and education on Child Development but rather investigates the relationship between nutrition, health and education and a potential mechanism or mediator of impacts on Child Development; we summarise the findings of this review. The implications of these findings are discussed in relation to the development of indicators and in terms of general policy conclusions with presentation of a detailed review of the evidence in **Chapter 5**. **Chapter 6** provides the conclusion and recommendations for the study. We also include **appendices** as attached information and **references.**

1.4. Sources of Data

This study drew on publicly available cohorts of the international longitudinal studies of children, growing up in Guatemala, United States of America (USA) Costa Rica, Egypt, Kenya, Zanzibar and Zambia. These are internationally and nationally representative samples of cohorts of children at infancy, early childhood and middle childhood. Each work collected data on a range of individual, family and primary care-giver characteristics as well child responses at different levels of development in respect to parenting, nutrition, health and education's impact on Child development through to adulthood. Zambia's local studies on Nutrition done by Civil Society Organisation- Scaling Up Nutrition (CSO-SUN) and health are also consulted. The ZDHS and other Central Statistics Office documents are quoted and referred to.

The cross-sectional data of each of the studies and age ranges was examined separately for the 0-36 months, 36-59 month olds, three year olds, and 11 to 15 year olds. This data allowed us to examine the factors associated with the uptake of nutrition, health and education's impact on child development as well examined the types of childcare supports, and the influences on children's physical, socio-emotional and cognitive outcomes at three distinct stages of childhood.

We also sourced information from two districts that is Lusaka and Chibombo from Chawama, Kanyama, Chaisa, George and Chipata communities and Mungule, Kayosha, Muwanjuni, and Shifwankula communities in Lusaka and Chibombo districts respectively; We garnered some evidence from children, parents and guardians, health practitioners, educationists, social workers and civil society workers and the general public. All these are part of the purpose for this report. This information collected locally triangulates the longitudinal studies in that from a layman's view they are able to state what happens to a child when hungry or malnourished, sick in terms of growth and development.

1.5. Limitation of the Study

The main constraint, which had a bearing on the research include:

1.5.1. The limitation of informants from the targeted community populations and the limited communities to sample in the field due to unforeseen circumstances beyond our reach as opposed to the survey conception in the inception report.

1.5.2. The District Medical Office in Lusaka couldn't allow us to visit their facilities due to certain procedural accomplishments they wanted us to undertake which were practically impossible to attain within the given time frame.

1.5.3. The other factor was the limitation of time and distance from the children's schools to their homes to accord the researchers an opportunity to interact with children below 6 years old in their homes and observe them feeding and at play. Ideally, a research of such significance should have been based on a wider coverage of informants from various age groups and backgrounds.

1.5.4. Failure to interview heads of local and international NGOs operating in the area of ECCDE due to their busy schedules.

However, the exercise was intended to be an appraisal of the impact of Nutrition, Health and Education on Child Development. The researchers had limited time to physically compare different ECCDE project interventions and cross-checking and triangulation of information, including with independent experts and observers. Hence, this report is primarily an analytical and pinpointing document that is hypothetical, general with highlights of being empirical, and may suffer from the top-down approach that it will sometimes receive critics.

1.6. Main findings

Overall, we find considerable local and international evidence that nutrition, health and education is strongly linked to child development and to determinants of cognitive, social-emotional, physical, creative and behaviour developments, risky contexts and preventative service use. Moreover, we find that a significant component of this effect is underlying.

1.6.1. Undernutrition is most common and severe during periods of greatest vulnerability the first 2–3 years of life (Martorell 1997; UNICEF 1998).

1.6.2. Nutrition in early childhood has a lasting impact on health and well-being in adulthood. Children with deficient growth before age 2 are at an increased risk of chronic disease as adults if they gain weight rapidly in later stages of childhood. (Alderman et al. 2001b; Alderman, Hoddinott, and Kinsey 2006; Behrman 1996; Behrman, Cheng, and Todd 2004; Glewwe, Jacoby, and King 2000; Glewwe and

King 2001; Grantham-McGregor et al. 1997; Grantham-McGregor et al. 1999a, 1999b; Johnston et al. 1987; Lasky et al. 1981).

1.6.3. Adequate nutrition is necessary for young children to achieve their potential level of cognitive functioning and overall well-being (Engle et al. 2007; Grantham-McGregor et al. 2007; Shonkoff and Phillips 2000).

1.6.4. Early childhood health and nutrition interventions have the potential to make a major contribution to achieving Education for All.

1.6.5. Mental development is affected by both a deficiency in maternal thyroid activity (maternal hypothyroidism), which affects development of the fetal brain during the third trimester, and hypothyroidism in the new-born which affects postnatal brain development.

1.6.6. Iron deficiency anaemia affects social and emotional development. Children who experience this are more anxious and depressed, have more attention problems, social problems and behavioral problems overall. They are also more likely to repeat grades at school and to be referred for special service.

1.6.7. Nutrition, Health and education operate as automatic switches in turning on or off the rhythm of life progression determinants in the process of Child Development.

1.6.8. Undernourished children score lower than do better-nourished children on tests of cognitive functioning, have poorer psychomotor development and fine motor skills, have lower activity levels, interact with others less frequently, fail to acquire skills at normal rates, have lower enrollment rates, and complete fewer grades of schooling (Alderman et al. 2001b; Alderman, Hoddinott, and Kinsey 2006; Behrman 1996; Behrman, Cheng, and Todd 2004; Glewwe, Jacoby, and King 2000; Glewwe and King 2001; Grantham-McGregor et al. 1997; Grantham-McGregor et al. 1999a, 1999b; Johnston et al. 1987; Lasky et al. 1981). It is believed that these effects reflect, in part, biological pathways by which under nutrition affects neurological development.

1.6.9. Zambia's malnutrition problem is significant, with 40% of children under five stunted (low height for age) and 15 % underweight (low weight-for-age)[1]. The absolute number of children who are stunted has increased, from 685,000 in 1992 to 1.14 million in 2013[2]. Children from the poorest quintile are 1.7 times as likely to be stunted as children from the wealthiest quintile[3]. Children in rural areas (42%) are more likely to be stunted than those in urban areas (36%). At the provincial level,

[1] *Central Statistical Office (CSO) [Zambia]; Ministry of Health (MOH) [Zambia], and ICF International; 2014 Zambia Demographic and Health Survey 2013-14. Rockville, Maryland, USA: Central Statistical Office, Ministry of Health, and ICF International*

[2] *Zambia DHS 1992, 1996, 2002, 2007, 2013-14*

[3] *Malnutrition in Zambia: Harnessing social protection for the most vulnerable (2016) Report by Save the Children*

Northern has the highest proportion of stunted children (49%), while Copperbelt, Lusaka, and Western have the lowest proportions (36%each).

1.6.10. Any chronic problem, either physical or mental (especially of the mother or primary caregiver), such as intimate-partner violence (Anda et al., 2006; Fettelli et al., 1998), maternal depression (Patel, DeSouza, & Rodrigues, 2003; Shonkoff & Phillips, 2000), and chronic illness, can have a damaging effect on child development.

1.6.11. In 2015 there were 1526 ECE centres annexed to primary schools serving 70, 000 children of which 52.4% were girls[4]. Access to early learning ECE services in Zambia is still very low. For instance, 84.5% of the children that enrolled in grade one in 2015 had no access to early learning ECE services in Zambia[5].

1.6.12. In Zambia, around 60% (7.9 million) of the entire population lives in poverty and 40% (5.5 million) are extremely poor. In 2010, rural poverty was estimated at 77.9%, compared to urban poverty levels of 27.5%[6]. Similarly, more than half of the rural population (approximately 58%) was afflicted by extreme levels of poverty whereas, in urban areas, the extreme poor remained at approximately 13%[7]. The situation is particularly dire for children, with an estimated 65% (4.6 million) children and adolescents living in poverty. Child poverty is also predominantly rural: 85% (3.89 million) of poor children live in rural areas. However, there is growing urban poverty for those living in informal settlements and urban poor areas[8].

1.6.13. According to FAO 2009, 60% of Zambian households cannot afford 3 meals a day. This translates in the higher levels of under five year olds malnutrition. The Zambian child nutrition profile shows that 60% of households cannot afford three meals per day[9], which leads to inadequate nutrient intake and malnutrition. The same research shows that in the 2000–02 periods, the dietary energy supply was only 1,905kcal per capita/day (ibid.). This indicates that households' actual calorie intake is lower than the estimated necessary requirement of 2,056kcal per capita/day. Carbohydrates such as cereals and starchy roots are the main source of energy which account for 80% of the total energy intake (ibid.). This suggests that the intake of other essential nutrients as well as protein and lipids is generally insufficient

1.6.14. 42% of the respondents practice exclusive breastfeeding while 58% introduced other foods between 3 and 5 months. This is the common practice despite the understanding that Breast milk alone is the best possible food for the baby for about the first six months. In these early months, breast milk helps to protect against

[4] *MoGE DODE report 2014*
[5] *MoGE, Education Statistical Bulletin, 2015*
[6] *The World Bank- Mapping Sub-national poverty in Zambia pages 5 -9*
[7] *Urban Child Poverty: A case for Copperbelt and Lusaka provinces 2015 by Economist Frank Kakungu funded by UNICEF through Save The Children Zambia Office*
[8] *The World Bank report 2014*
[9] *(FAO 2009*)

diarrhea and other common infections. Breast milk actually changes to cope with the changing nutritional needs of a growing baby.

1.6.15. All respondents (100%) indicated that a hungry child cannot learn because they cannot concentrate and do not have the needed energy to do anything.

1.6.16. 60% of respondents from peri-urban and rural areas indicated that early stimulation like singing to children, playing with children and watching children at play are important for cognitive and emotional development while all including those from urban areas indicated buying play things, reading stories to children were very important to the development of the children.

1.6.17. All respondents demonstrated a level of understanding on diet, nutrition and child feeding but attributed their failure to comply practically with lack of resources both material and financial especially for the female headed homes. The 2008 National Nutrition Surveillance Survey found that on average, only 4 out of 13 food groups were consumed in a day by households. Commonly consumed food groups included cereals and cereal products (98.9%), dark leafy vegetables (80.0%), oil and fats (60.6%), sugary foods (48.8%) and legumes, nuts and oil seeds (40.7%). Only 1% of the dietary energy supply (DES) is provided by fruit and vegetables. The low supply (5%) of foods of animal origin (meat and offal, milk and eggs, and fish) contribute to iron and protein deficiency. Study results show that 27% to 65% of the population cannot afford a minimum cost of a nutritionally adequate diet.

1.6.18. All parents were aware of how to take care of sick children but attributed their failure to comply practically with lack of resources both material and financial especially for the female headed homes. According to the Living Conditions Monitoring Survey (LCMS) undertaken in 2010, over sixty percent of Zambia's populations live below the poverty datum line, with rural poverty levels at 77.9% while life-threatening poverty stood at 42% of the total population. Income distribution remained highly unequal, resulting in worsening human deprivation as demonstrated by the decline in the country's Human Development Index (HDI). This has translated into very low record of life expectancy at birth. In Zambia, it is evident that poverty by and large continues to carry a female face. For example, extreme poverty is higher in female headed households (60.4 %) compared to male headed households (57.1 %).

1.6.19. 100% respondents did indicate that Malaria, Diarrhea and Coughs were the most common illnesses in the communities. However, none of the health practitioners mentioned Malaria as a common illness and this therefore can be attributed to the notion held by most community members that any high temperature illness is Malaria. 100 % health practioners mentioned Diarrhoea and Respiratory tract Infection while 33.3% mentioned Pneumonia and fever.

1.6.20. Our findings indicate that currently Zambia has the following policies that look at children. The National Child Policy of 2006 that is been reviewed, the National Child Health Policy regulates the provision of health services to children; the National

Policy on Education currently being reviewed, Early Childhood Education Policy has been in draft since 2008 and is awaiting adoption, School Health and Nutrition Policy, the National Disability Policy of 2012, National Social Protection Policy that deals with the child protection and social welfare, and the National Nutrition Policy. These policies targeting children lie in different government Ministries.

1.6.21. Total number of children with disability in Zambia is at 1.6% of the total population of Zambia.[10] This translates to about 195,698 children are disabled in Zambia. They may have one or more of these impairments; Visual impairment; Hearing impairment; Physical impairment; Communication impairment; and Intellectual impairment.

1.6.22. There's low funding towards early childhood programmes in Zambia most of the programmes are donor supported. ECE received 0.5% of the total education budget in 2016; budget allocated to nutrition-specific and nutrition-sensitive programmes represents approximately 0.1% of the national budget 2014[11].

1.7. Recommendations

1.7.1. This therefore is our first recommendation, ZANEC should ensure that Zambia muster the required level of political commitment to the upholding of and implementation of the ECCDE Policies. The executive arms and the legislature in all the tiers of Government should be sensitized to the importance of the policies so they can support it through increase in funding and appropriate legislation. Every Zambian Child should by Law receive and attend a standard ECCDE Centre activity from the age of 2 years before transiting to Nursery and Kindergarten, then Primary School. The present terminology is Basic Education which I am recommending should be obligatory and begin from the age of two years.

1.7.2. Early Childhood Care Development and Education (ECCDE) are dynamic and NO single government ministry can handle it because of its multifaceted nature. It requires organised concerted efforts in order for experts in Child Development; Psychology; Paedriatics Doctors; Nutritionists, Midwives, Child Counselors, Early Childhood Teachers, ECCDE experts and Private sector operate under one roof and Director governed by a Board. There is need for the provision of a comprehensive ECCDE programme to all children in Zambia. This entails the integration of health education and services, nutrition education and supplementary feeding, clean water and sanitation, child protection, centre construction and provision of play materials and parenting skills development and other crosscutting issues which are a necessity to a comprehensive child development intervention. Just like the government is trying to establish one stop facilities for other service provision in other areas of development; it's imperative for ECCDE. We strongly feel an establishment of a ***National Council on Early childhood Development (NCECD)*** *would be the best that can be done.*

[10] *2010 Census of Population and Housing, Key Findings, available at www.zamstats.gov.zm (accessed 9 September 2014).*
[11] *CSO-SUN 2014*

1.7.3. ZANEC should advocate for the adoption and implementation of all policies being reviewed and those that are operational.

1.7.4. Efforts should be intensified to mobilise support for enrolment of children into ECCDE programmes both in urban and rural parts of the Country. This should be done without prejudice to gender, religion, physical attributes, economic circumstances and other factors which normally lead to exclusion such as disability. Providing one good meal a day at school may help in such mobilization efforts. This will in addition bond the child/baby with being Zambian and lay the foundation for the development of patriotism.

1.7.5. Contextualized curriculum in ECCDE can be able to help develop children with the cultural and traditional value context that is important for identity and patriotism which we are lacking now as a nation. A value system that determines who we are is carried on through the mode and language of communication. Language carries culture and our being Zambian is determined by it. ECCDE curriculum cannot be centralized but can be guided and left to be implemented with each cultural connotation.

1.7.6. The Universities and other tertiary institutes should develop curriculum specialized in ***Child Healthcare and Support*** *for increased specialization on early identification and support to children below 3 years or just sub-divide ECCDE teacher training to have those specialized for the 3-6 and others for the 0-3. It is an important factor that will require urgent action.*

1.7.7. ZANEC should demonstrate a low cost model ECCDE centre that will show case the ideal and be able to indicate the costs and the advantages of such an arrangement. Almost everyone desires for an integrated approach to ECCDE that can be practically done for evidence based advocacy. ZANEC should therefore, develop a concept paper conceptualizing the integrated approach. This is meant to demonstrate how the gap between policy and policy implementation can be reduced

1.8. Conclusion

For children playing is learning and learning is playing. Play develops the child's skills for moving, thinking, remembering and learning how to get along with others. The child learns just by living and exploring. Because everything is new he is not easily bored. As he picks things up he drops them because it's fun. He puts them to his mouth to understand them better. He tries different ways to make things work. When playing and learning children like to be near adults and older children; when exploring and experimenting a child wants to discover things by himself; The best way to join in the fun is to let the child be the leader. Creativity means being able to have new ideas and to use old ideas in different and imaginative ways. Creativity in children should be allowed and encouraged. When a child is relaxed and not worried about being judged by others, creativity is more likely to be expressed. Children also need experience in order to gain the skills needed for creativity. They must learn how to hold a paint brush before they can paint.

Every child yearns for such a lifestyle and development but children whose mothers had poor nutrition have a high probability of developing physical problems, learning disabilities, or

behavioral difficulties. Examples include low birth weight infants and premature infants. The early identification and intervention of at-risk infants is critical. While researchers have not been able to agree on a single theory embracing the complexity of young children's development, a number of core concepts have emerged to help organize what is known about infants and families and to identify what is not yet clearly understood.

Poverty puts children in a situation that makes them extremely vulnerable to various health disadvantages. The environment in which they live, the quality of care received, and a lack of important resources are all aspects of a child's life in poverty that ultimately can be detrimental to their health. Poverty and health are inextricably linked. The more a child suffers from poverty, the more prone the child is to illness, disease and malnutrition. As children and their families become more susceptible to health problems, their ability to earn an income to survive is diminished. It is a vicious and unmerciful cycle. Physical health effects can include, and are not limited to, asthma, malnutrition, inhibited growth, birth defects, lack of proper medical attention, susceptibility to disease, illness, and injury, as well as greater incidence of abuse and neglect. Additionally, mental effects may include those on brain development, mental disabilities, emotional relationships, social skills, self-esteem, and self-efficacy issues.

Malnutrition is another serious health effect to children living in poverty and is defined as the insufficient, excessive, or imbalanced consumption of nutrients. Many children suffering from malnutrition experience chronic hunger, which can cause underdevelopment of the body. This is characterized by being underweight, poor physical stamina, a weak immune system, and lower life expectancy. Malnourishment during the first critical years of life is especially harmful to physical and mental health and growth. These first years are a period of substantial language and motor acquisition skills, as well as brain and body development, which is largely impacted by nutrition to the body. Furthermore, malnutrition increases the susceptibility to disease and dehydration. Prevention programs make a very important and valuable impact on addressing nutrition deficits through early intervention. Early intervention programs are so important because the benefits to children are significantly diminished if nutrition programs wait until children have already become malnourished.

Allow me to live you with a question, given the above scenario can such children be stimulated to learn and develop appropriately? Can they be great performers and achievers in life? Examine this and agree with me that Nutrition, Health and Education have a BIG impact on Child Development.

Chapter Two

Introduction

Early Childhood Care, Development and Education (ECCDE) plays a pivotal role in early detection and alleviating disability as well as preparing and rehabilitating those affected. ECCDE is, "an integrated holistic approach within a rights based perspective, to ensure proper childcare leading to the survival, maximum development, participation and protection of the young child through child-friendly, family focused and community based programmes. It combines health, nutrition, hygiene, and cognitive and psychosocial development"[12].

The prevailing attitude and orientation in Zambia is inconsistent with and intolerant of cultural diversity and is contrary to evidence *"that alternative patterns of care based on different moral and practical considerations can constitute normal patterns of development that had not been imagined in developmental theories*"[13]. There is increasing recognition that local practices are often as good as (and sometimes better than) what might be introduced from outside. To build on local strengths it is important to create an interactive process that shifts some of the power and control from us the program developer to the local population. Rather than imposing new ideas about development, programs for communities should be developed with communities through a dialogue that *"respects different views and allows different voices to be heard—valuing diversity and with an openness to creating new knowledge and new ideas*"[14].

An African world view is holistic, pro-natalist, and theocentric. It imputes a sacred value on childbearing and childrearing. The marital pair of mature man and woman in a family of extended kin is the institution for the "gift of children" and, as the hub of sociogenic values and norms; it is the foundation for childcare[15]. Zimba (2002, p. 94) refers to the "indigenous network of support" reserved for new-borns and their mothers in Southern Africa. Similarly, in both West and East Africa, there is a "deep and comforting sense of tradition and community" that sustains new-borns[16]. New-borns in both West and East Africa are treated as "precious treasures … nurtured, and enjoyed by the whole family"[17].

Although post-colonialism has eroded elements of the landscape portrayed by the above-cited evidence, African attitudes to childcare remain positive. Other lines of research[18] portray positive African attitudes to children and shared care-giving, even under conditions of hardship. In the indigenous cultures of Sub-Sahara Africa, educational ideas and practices are embedded in family traditions, daily routines, and social and community life. Relationship, beginning with the family, is the socio-affective base from which individuals develop a sense of selfhood and personal identity.

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[12] *LeVine 2004, 163*
[13] *Ball and Pence 2006*
[14] *Arnold 1998, 1*
[15] *Nsamenang 1996*
[16] *Serpell 1992; Nsamenang 1992b, p. 427*
[17] *Harkness and Super 1992*
[18] *Harkness 1987; Kaye 1962; LeVine 2004; Nsamenang 1992a; Ohuche and Otaala 1981; Uka 1966; Wober 1975*

It is from the caring and generative role of the family that children begin to learn about moral life, participative skills, social values, and ways of the world. The sense of community and spirit of mutuality make childcare a social enterprise in which caregiving functions are shared with others[19], including parents, families, friends, neighbours and older siblings[20].

Early Childhood Care, Development and Education therefore, refer to the processes through which a young child less than eight years develops his/her optimal physical health, mental alertness, emotional confidence, social competence and readiness to learn. The objective is to tackle the Early Childhood challenge of providing early education on one hand and breaking the vicious cycle of undernourishment, disease, reduced learning capacity and death, on the other.

UNESCO is continually voicing about the right to education. The Universal Declaration of Human Rights (UDHR) (Article 26) states that 'everyone has the right to education'. Also the Convention on the Rights of the Child (UNCRC) in 1989 (Articles 28 and 29), has set that primary education should be made 'compulsory and available free to all', and that it should allow children to reach their fullest potential. The two major frameworks signed by the international community, the Education for All (EFA) and the Millennium Development Goal (MDG) were vocal in favour of Universal Primary Education (UPE) and expansion of Early Childhood Care and Education.

Nowadays it is universally realized that, Early Childhood Care, Development and Education (ECCDE) is the most critical element in empowering persons with skills and knowledge and giving them access to productive occupation in the future. Generally, Early Childhood is defined as the period after birth till age eight. Also definitions of Early Childhood include pre-natal development because the structure of the brain is determined biologically and develops even before birth[21]. The early years of experience by a child can set directions in health (both physical and mental), behaviour, and learning that last throughout the life cycle because early years are very sensitive periods in which the neural pathways that are important in brain function connecting the different parts of the brain and the body develops[22]. *'Experiences for children from two through five years of age provide the child with the foundations for later learning and for formal education, as well as with baseline social skills. The experiences of a child in transition into the primary school (ages six through eight) are critical if what is learned prior to school is to be sustained, and if the child is to do well in school and in later life.'* [23]

2.1. Terminologies commonly used interchangeably

There are different terminologies used by different institutions addressing **Early Childhood**. For example, UNICEF, WHO and World Bank use Early Childhood Development (ECD) and the Consultative Group on Early Childhood Care and Development uses Early Childhood Care for Development (ECCD), Zambia National Education Coalition (ZANEC) uses Early Childhood Care, Development and Education (ECCDE), Ministry of General Education (MoGE) and

[19] *Harkness and Super 1992*
[20] *Nsamenang 1992b, 2004*
[21] *Evans et al. 2000: 2*
[22] *Mustard 2007*
[23] *Evans et al 2000: 2*

Ministry of Health in Zambia use Early Childhood Education (ECE) and Early Childhood Development (ECD) respectively. But all of them recognize the importance of these integrated and holistic interventions in the early age of a child.

While tossing the concept of Early Childhood Care and Education (ECCE) by UNESCO, it has been believed that combination of 'care' and 'education' is needed for good quality provisions for the children. As defined by UNESCO, *'Early Childhood Care and Education supports children's survival growth, development and learning – including health, nutrition and hygiene, and cognitive, social, physical and emotional development – from birth to entry into primary school in formal, informal and non-formal settings…ECCE represents a continuum of interconnected arrangements involving diverse actors: family, friends, neighbours; family day care for a group of children in a provider's home; centre-based programmes; classes/programmes in schools; and programmes for parents'*[24]. As defined by **Evans et.al. 2000: 2**, *'Early Childhood Care for Development includes all the support necessary for every child to realize his/her right to survival, to protection, and to care that will ensure optimal development from birth to age eight'.*

But Early Childhood learning may also be formalized by government or private initiatives. ECE mostly refers to the 'learning by playing' kind of arrangements in which children learn the basics in a homely atmosphere. As mentioned by **Smith 2003: 1**, 'Early Childhood Education (ECE) consists of organized supervised programs with social and educational goals for children (of up to school entry age) in the temporary absence of their parents'. These days, it is well understood that education can help to build a strong foundation for the children and thus emphasis has been given to ECE.

2.2. Historical Perspective of ECCDE in Zambia

Historically, Early Childhood Care Development and Education (ECCDE) has not been a major responsibility of government in Zambia. This has been the case for both pre- and post-independence governments. In colonial times, Sub O education was offered for one year and included learning to write letters of the alphabet, on the ground, for African children. This was the closest the system then came to offering ECCDE. Later, the colonial government came up with Day Nursery Act of 1957 to benefit local children. After independence, the government established nurseries and pre-schools through the Ministry of Local Government and Housing. These were mainly located in welfare halls. The level of participation though remained low and by the middle 1980s this provision had fizzled off.

For a long time, the provision of ECCDE was not the responsibility of the Ministry of Education although the Education Reforms of 1977, Focus on Learning of 1992 and Educating our Future of 1996 policy documents all have recognised the critical role that ECCDE plays as a foundation for all later learning. Since the provision of ECCDE has never been fully supported by government, the operations of pre-schools are dependent on fees that the learners pay. Therefore, the majority of the children that access ECCDE are from higher income households. This has also influenced the distribution and location of ECCDE centres as most of them are located in urban areas.

In 2004, an EFA baseline survey showed that 32,460 learners (13,981 males and 18,479 females) were enrolled in a total of 2,668 ECE facilities countrywide, making an average enrolment of 12

[24] *UNESCO 2006a: 15*

learners per facility. Given a national population of children aged between 3 and 6 years totaling 1,477,785 (737,952 males and 739,833 females), the participation rates in Early Childhood Education are still modest standing at 2 per cent for boys, 3 per cent for girls. Disaggregated according to location, 34 per cent of boys, compared to 33 per cent of girls who attended some form of ECCDE services were in rural areas, while 66 per cent of boys and 67 per cent of children were in urban areas. In rural areas, 52 per cent of those who attended ECE were girls compared to 48 per cent for boys. In urban areas 53 percent of the children who attended ECE were girls as compared to 47 per cent for boys.

2.3. Early Childhood Care, Development and Education Initiatives

Due to several reasons like poverty, under nutrition, micronutrient deficiencies, and poor learning environments about 200 million children less than five years old in the developing world are unable to perform their potential for development or failing to expand critical thinking and learning skills. This constraint in early development contributes negatively to later performances (both cognitive and non-cognitive) and limits their success in future. For underprivileged children, this early deficit has a multiplying effect, e.g. children from low income families complete far less education than children from middle income families, due in part to their lowered ability to learn in school. Therefore, it is better to provide an equal start at the early age when children's brains are developing most rapidly, and the basis for their cognitive, social and emotional development is being formed. The loss of human potential can be triumph over by cost-effective investments on early childhood development by most governments, civil society and families and communities[25].

There might be different strategies for developing a holistic approach to ECCDE; such as building a communication strategy, keeping the focus on integrated child development including health & nutrition, cognitive development and protection and more. Building programmes based on local strengths and realities, making scientific knowledge about ECCDE accessible to all, looking for opportunities to link services or add components to existing interventions for a more holistic approach may prove to be a successful intervention in child development. It might be difficult initially to develop and implement programmes for ECCDE and it may take time, but if adapted to local conditions, ECCDE is worth the investment. 'There is no blueprint for a holistic approach to Early Childhood Care, Development and Education. The challenge for Zambia is to determine priorities for a given context and how they can be met, and where impact can be multiplied through collaboration, coordination, convergence or integration.'[26] In terms of gains made in participation rates, the population of new entrants at Grade 1 with an ECCDE learning opportunity increased from about 9% in 2004 to 15.5% in 2015.

In Zambia, ECCDE is offered to children at three levels: Day Care, Nursery (kindergarten or baby class), middle class (Playgroup) and pre-school / reception. The provision of quality ECCDE is of vital importance as it gives children experiences that help them to develop their social, physical, mental and emotional capabilities as well as help them prepare to adapt to the formal learning atmosphere in primary school.[27] Research indicates that ECCDE can be a powerful instrument for helping to break the cycle of poverty. ECCDE also is widely recognized as a significant pathway

[25] *UNESCO 2008*
[26] *UNICEF 2006: 9*
[27] *MoE; Educating the Nation; Lusaka: Ministry of Education, 2005. p.22*

to inclusiveness and social equity in education, provided that the programmes are accessible to all sections of a society. In 2013, for the first time the MoGE recruited 1000 ECE teachers. This was a great step in the right direction. In 2014, the MoGE began annexing ECE centres to Primary schools. In 2015 there were 1526 ECE centres annexed to primary schools serving 70, 000 children of which 52.4% were girls[28]. Access to early learning ECE services in Zambia is still very low. For instance, 84.5% of the children that enrolled in grade one in 2015 had no access to early learning ECE services in Zambia[29]. In addition, most early learning centres are predominantly offering pre-schooling and not holistic early learning programmes.

Table 1: DATABASE FOR EARLY CHILDHOOD EDUCATION IN PROVINCES

NATIONAL 2014 DATABASE FOR EARLY CHILDHOOD EDUCATION IN PROVINCES		
S/NO	**PROVINCES**	**NO. OF ECE CENTRES**
1	EASTERN	167
2	MUCHINGA	77
3	WESTERN	129
4	CENTRAL	222
5	NORTHERN	151
6	SOUTHERN	441
7	LUSAKA	66
8	LUAPULA	73
9	COPPERBELT	147
10	NORTH WESTERN	53
	GRAND TOTAL	**1526**
	NO. OF LEARNERS	**70,000**

SOURCE DODE DATA BASE 2014

The Ministry of Health (MOH) in Zambia has also come up with an ECD intervention with support from UNICEF and WHO under a project called MDGi that is currently running in 10 districts of Copperbelt and Lusaka provinces. The intervention aims at educating the masses on the importance of child feeding, stimulating and survival supports for children less than 3 years.

[28] *MoGE DODE report 2014*
[29] *MoGE, Education Statistical Bulletin, 2015*

The initial Master Training was conducted in Kitwe in the month of August. The initial Master Trainers workshop took place in Tanzania.

All these interventions are meant to support ECCDE in Zambia. Currently, there are four ways through which ECCDE services are delivered, i.e. Day Care Centres, Home-based, Pre-School Centre Based and Health Centres Based. An effort of public, private and NGO-managed centre based ECCDE programme is there evidently. A number of Civil Society Organisations (CSOs) in Zambia are providing ECCDE service interventions with different models and in various places.

2.4. ECCDE Models

There are a number of ECCDE models that are been implemented by different stakeholders. ECCDE includes working with parents to strengthen parenting skills, working with siblings and other family members to recognize the specific developmental needs of younger children, working to provide or strengthen day care options, developing pre-schools and others. All these models require supplementary feeding, health check-ups and stimulation from the environments and the adults that are with children.

There are a number of ECCDE programs but we choose to only discuss the following;

2.4.1. Centre Based ECE- Formal and informal Model within the Primary School

2.4.1.1. Formal

It is seen as a preparation class for primary school education but becomes part of the system; the process of learning is formalised especially for the 5+ to 6+ years. It is meant to make the children compare, sort, and match, recognise, distinguish, group objects by variety of criteria.

2.4.1.2. Informal

Children can be allowed to accompany older siblings to school just for play with other siblings. These can be added to the Playgroup or open air arrangements.

2.4.1.3. Centre based Cluster Model

This model entails establishing more than one ECE centres around the available primary school. If one centre accommodates 50 children then establishing 5 to 6 centres will mean catering for 250 to 300 children. The centres can be supervised by the primary school management but managed by community volunteers. There is need for technical support to be provided for the community caregivers who can be assigned to handle the other clustered centres. Incorporating parenting education and home visiting makes it even more exciting. It works in any community urban or rural. A lot of community mobilisation and meetings is needed.

2.4.2. Home Based / Neighborhood Programme ECCDE Model?

This is where communities decide to establish an ECE programme within the neighborhood and agree to take turns caring and supporting children's learning. They can select to employ and support a caregiver to care for children. They don't need to build a centre because they agree to alternate the learning home from one place to the other within their neighborhood. It works so well in peri urban and rural areas. It can still be applied in urban areas.

2.4.3. Market Model

Market Model- Created for women who sell goods in the market. Mothers agree to come with their children to the market but establish a place where their children can be taken care of as they do their business. Mothers contribute food for feeding programmes and take turns to prepare the food. A caregiver or ECE teacher is employed and paid by the marketeers.

2.4.4. Play Group or Open –air Model?

ECE programs are sometimes, quite literally, offered in the open air. They take place under a tree, in a courtyard, under a make-shift shelter, etc. The major objective for this intervention is to create social interactions with, for and among children 3+ to 4+. Allowing the children to interact with different materials appropriate for age can support their growth and development. As children play with soil and nature their inquisitive scientific minds get the concepts of science, they acquire the literacy and language skills, the mathematical concepts and so on. They develop their holistic selves when they are carried away into their own world of research and fact finding through play. It's cheaper and accommodates more children because at this age children will only be guided and encouraged to be involved in different activities. PLAY is the KEY word.

2.4.5. Distance Learning or IRI Model?

The use of media—radio, videos, cassettes, and even radiophones—these are professionally packaged learning experiences that can be provided to ECE programmes of various types i.e. Market Model, Centre, Home based and even open air. Reaches a number of children with the same kind of output

2.4.6. Work/Place - Employer Sponsored Model?

At the workplace it is seen as benefit for employees without particular regard to family needs. This can be advocated for factory workers. Establish an ECE programme at the workplace.

2.4.7. Parenting Education Activities

Strengthening existing parenting skills or teaching new ones is a key objective of the parenting support interventions, generally in pursuit of more overarching aims that have to do with improving parent-child relationships, increasing parenting effectiveness, and reducing child behaviour problems.

Chapter Three

Methodology

3.1. Research Process

This report recapitulates the findings of an assessment of literature and interviews on the Link between Health, Nutrition, Development and Education and Child Development, carried out by Children Sentinel Trust Zambia in October/ November 2016. The report also includes data and information from other local and international sources, and incorporates lessons learned in other communities and countries. It is intended to promote further action by the Zambia National Education Coalition (ZANEC), Government of the Republic of Zambia (GRZ) and other stakeholders in Zambia, and to inform the provision of technical assistance in planning services for ECCDE activities for all children including those that are orphaned, disabled and vulnerable. It is also hoped that it will be of use as a resource to other agencies.

As a contribution to better child service delivery, ZANEC comprehends the need to include in their activities an ECCDE programme that can take root and be implemented with an informed decision.

3.2. Purpose of the Research

This report reviews the confirmation on the hypothesis that nutrition, health and education has important communal impacts on Child Development. In reviewing the evidence, we highlight those studies that have attempted to identify fundamental impacts with robust appraisal techniques. We have also described evidence that demonstrates the extent of the descriptive correlation of nutrition, health, education and Child Development. As well as reviewing the evidence on the overall effect of nutrition, health, education on child development, we have studied the evidence on potential mechanisms to this effect, in a wide range of different personal and social contexts.

The study generates evidence for advocacy about the importance of Early Childhood Care, Development and Education (ECCDE) programs and data-driven decision making at various levels from community to National policy making. The findings of the study will also be used for informing and improving the ZANEC ECCDE program by designing and implementing appropriate interventions that will enhance the learning outcomes and development of young children in Zambia. The purpose of the Research study is twofold:

3.2.1. To generate credible evidence from a Zambian perspective to support the delivery of comprehensive ECCDE services as opposed to focusing on Early Childhood Education alone and

3.2.2. To contribute to scientific knowledge and link between Child Development, Health, Nutrition and Education.

Based on the above, this Research survey aims to respond to the study objectives that are outlined below.

3.3. Study Objectives

3.3.1. To gather information and identify programmes, structures and resources for care and support that exist internationally and in the communities of Zambia

3.3.2. To gather information on what line ministries and other organizations are providing in Early Childhood Care and Development, Education (ECCDE) in Zambia

3.3.3. To establish the NGOs, CBOs, FBOs and communities' understanding and appreciation of Nutrition, health and Education and its impact on Child development..

3.3.4. To identify and analyse government policy, programmes and the institutional framework supporting Early Childhood Care and Development, Education.

3.3.5. To make recommendations based on the study findings.

3.4. Scope of the Study

The study was designed to cover the following areas:

3.4.1. Conduct a desk review on the different components that make up ECCDE and how they support child growth especially in line with impacting on future school performance;

3.4.2. Conduct interviews with relevant target groups on the key components of child development i.e., health, nutrition, development, education and any other component the consultant will deem relevant;

3.4.3. Identify parameters that define quality delivery of education services from Early Childhood Care and Development perspective;

3.4.4. Disseminate findings of the report to a stakeholder meeting organised in liaison with the ZANEC Secretariat;

3.4.5. Develop a four paged Policy Brief from the key findings and recommendations of the study.

3.5. Study Questions

The study is responding to the following questions;

3.5.1. What is the importance of ECCDE?

3.5.2. What is the impact of Nutrition on Child Development?

3.5.3. What is the impact of Health on Child Development?

3.5.4. How much should be invested into ECCDE?

3.5.5. What kind of interventions should we create for ECCDE?

3.6. Study Design and Methodologies

This study was basically a qualitative and investigative one in which a combination of methods was applied to generate simple statistics to support and validate the findings on what influences and impacts on child development. However, you will note that a variety of methods were employed to help give out a complete picture of the situation on the impact of nutrition, health and education on child development. This study approach follows the views of Denzin and Yvonna (1994, p.12)[30], that "no single method can give the subtle variations in ongoing human experience". This is also expected to increase the validity of the results. The study involved; transact walks, focus group discussions and in-depth interviews with key informants. The study follows the theoretical assumption that: *"the conditions under which human beings live have a powerful effect on how they develop"*[31]. We should not forget that this study was instituted to investigate the current situation of Early Childhood Care and Development in the selected communities.

3.7. Sampling procedures

The target communities for the study are; Mungule, Kayosha, Muwanjuni and Shifwankula in Chibombo District and Chawama, Chaisa, Chipata, George and Kanyama communities in Lusaka District respectively. The criterion for selecting these communities attributed to purposive sampling. We interviewed 347 respondents including teachers, parents and children in both MoGE schools, private and CSO sponsored centres as well as health facilities.

The study findings have been generalized as information to cater even for the other un-sampled areas. The areas sampled are mainly rural, peri-urban and just a bit of urban with relatively high density of population, visible evidence of availability and non-availability of ECCDE formal services, vulnerability, especially children and prone to be high risk areas for OVC childhood malnutrition and illnesses and with an established need for support in Education and Health programmes.

Table 2: Selected Sample

Type of facility	Total Number of Centres	Number of Interviewees			Number of Teachers/ Health Personnel
		Male (% of Total)	Female (% of Total)	Total	
ECCDE/ Schools	12	50%	50%	120	30
Health Centres	6	50%	50%	180	15
GRZ Officials	10	50%	50%	10	10

Table 3: Actual Sampled

Type of facility	Total Number of Centres/ Org	Number of Interviewees			Number of Teachers/ Health Personnel
		Male (% of Total)	Female (% of Total)	Total	
ECCDE/ Schools	9	25%	75%	160	14
Health Centres	3	16.6%	83.3%	170	8
GRZ / NGO Officials	9	37.5%	62.5%	17	17

3.8. The Sample

[30] *Denzin and Yvonna (1994, p.12)*
[31] *Bronfenbrenner 1988, pg.x*

The choice of the facilities and schools/ centres was driven mainly by the pragmatic concerns. We highly assume that the systematic random sampling of respondents was representative of the general view of the sampled areas in the district thereby contribute to the relevant information required in the study.

The main target groups are:

3.8.1. The District Education Board Secretary's /District Medical Officer's office, other relevant Government ministries and departments.
3.8.2. Non- Governmental Organisations
3.8.3. Children and their parents/ guardians
3.8.4. Teachers and School Managers/ MCH Nurses and Clinical Officers
3.8.5. Community Based Organisations and Faith Based Organisations
3.8.6. Local leadership (Ward Committees)
3.8.7. Community members

Table 4: Populations for Sampled Communities

Source: Zambia National Descriptive Population Tables 2012 Central Statistical Office

District/ Community	Male	Female	Total	% Male	% Female	Housing Units
Mungule	12,812	12,801	25,613	50.02	49.98	4,840
Chibombo	**12,812**	**12,801**	**25,613**	**50.02**	**49.98**	**4,840**
Chaisa	9,981	9,877	19,858	50.26	49.74	4,445
Chawama	34,898	35,283	70,181	49.72	50.28	14,799
Chipata	47,780	47,261	95,041	50.27	49.73	18,667
George	20,032	20,953	40,985	48.87	51.13	7,975
Kanyama	84,714	84,539	169,253	50.05	49.95	35,682
Total Lusaka	**197,405**	**197,913**	**395,318**	**49.93**	**50.07**	**81,568**

The study population of our survey was 347 of 420,931population representing a sample of 0.8% of the total population of the study areas. The information collection guides and transect walks were administered to the seven (7) communities at the health facilities and ECE centres in the catchment areas.

Table 5: Informants a collection of persons from different walks of life

Area	Male	Female	Total	Dist. Officers	NGO	Children	Adults	Teachers/ Education	Social Workers	Health Workers
National	**1**	**1**	**2**	**-**	**-**	**-**	**2**	**1**		**1**
CSOs	2	2	**4**	-	4	-	-	-	-	-
Chaisa	-	-	**-**	-	-	-	-	-	-	-
Chawama	15	16	**31**			20	8	3		
Chipata	6	15	**21**			18	10	3		
George	10	26	**36**			12	20	4		
Kanyama	27	43	**70**			40	30			
Kayosha	24	41	**65**			42	18	2		3
Mungule	22	39	**61**			8	50	1		2
Muwanjuni	-	-		-	-	-	-	-	-	-
Shifwankula	6	33	**39**			6	33	-		2
Chibombo	2	2	**8**	4				-	2	2

Lusaka	2	3	**10**	5				2	2	1
Total	**126**	**221**	**347**	**9**	**4**	**146**	**171**	**16**	**4**	**11**

Total Adult Respondents are 171 leaving a total of 146 child respondents. Children catered for 42.1% compared to 57.9% adults.

3.9. Data collection instruments

This involved development of six (6) data collection instruments that were employed in the activity targeting different categories of respondents as shown in sampling procedures. Different methodologies for data collection were employed as discussed below:

3.10. Transect Walks

The team visited locations that were purposefully sampled to have a visual impression of the communities being discussed. General observations undertaken during the visits are part of this report**.**

3.11. Personal and in-depth Interviews

Twenty (20) personal in-depth interviews were held with key informants from district leadership and government officials that deal with child development issues i.e. 1 Official at Lusaka DEBS office, 2 officials at DMO (Chibombo and Lusaka) and 2 Officials at MCDSW (Chibombo and Lusaka) 4 NGO/ FBO/ CBO, 3 facility in-charge and 3 MCH nurses in Chibombo, 2 Community School Head Teachers and 3 Community ECE school Teachers were also interviewed in systematic random samples to determine their opinion about ECCDE programmes, Nutrition, Health and Education and as well their attitude to community work and team projects.

3.12. Focused Group discussions

Eight (8) Focus Group Discussions were held with 138 adult community members and leadership, 146 children aged between 3 to 6 and 13 teachers. This was to assess their understanding of nutrition, health and education and how they relate it to child development. The discussions were also meant to also bring out community expectations and understanding of ECCDE. It determined how local groups were receptive to new programmes with the health and education ministries and to assess their willingness to be involved in the growth and development of their children. This was determined the ideal model for early childhood care and development programmes. These focused group discussions helped in identifying the community potential in supporting child development.

3.13. Data Analysis Procedures

3.13.1. Qualitative data analysis involved classification of field notes, grouping relevant information and similar issues together according to the questions. During the data analysis, the large interview statements were condensed to make the briefs more succinct and meaningful, without distorting the respondents' ideas. This is

in line with the principles of Creswell (1994, pg. 153.)[32].

3.13.2. Calculations of the descriptive statistics to provide simple summaries and frequency distributions were undertaken. The responses from respondents for each information collection tool was compiled and summarised. The information from the Focus Group discussions and general observations were analysed using simple descriptive statistics and content analysis for an in-depth understanding of the interactional relationships within the home, community and society.

3.13.3. Quantitative data analysis was generated from interviews and questionnaire using simple word and Excel.

3.13.4. The literature review, theoretical framework, findings and their interpretation, recommendations/suggestions constitute the body of this report.

3.14. Limitations of the study

The main constraint, which had a bearing on the research include:

3.14.1. The limitation of informants from the targeted community populations and the limited communities to sample in the field due to budgetary oversight as opposed to the survey conception in the inception report.

3.14.2. The District Medical Office in Lusaka couldn't allow us to visit their facilities due to procedural undertakings they wanted us to undertake which were practically impossible to attain within the given timeframe. This could have given us a lot of information for this study.

3.14.3. The other factor was the limitation of time and distance from the children's school to their homes to accord the researchers an opportunity to interact with children below 6 years old in their homes and observe them feeding and at play. Ideally, a research of such significance should have been based on a wider coverage of informants from various age groups and backgrounds.

3.14.4. Failure to interview local and international NGOs operating in the area of ECCDE due to their busy schedules.

However, the exercise was intended to be an appraisal of the impact of Nutrition, Health and Education on Child Development. The researchers had limited time to physically compare different ECCDE project interventions and cross-checking and triangulation of information, including with independent experts and observers. Hence, this report is primarily an analytical and pinpointing

[32] *Creswell (1994, pg. 153)*

document that is hypothetical, general with than highlights of being empirical, and may suffer from the top-down approach that it will sometimes receive critics.

Description of methods used, including justification

Chapter Four

Literature Review on the impact of Nutrition, Health and Education on Child Development and Empirical Research Evidence

A review of Zambian and international literature on ECCDE over the past several years reveals the form of service and policy guidelines that are provided for. In recent years a number of political forces and philosophical actions have placed significant pressure on relevant authorities in the ply to protect, increase survival and participation of children on issues that affect them. In relation to the study being undertaken, legal structures are seen to be a hindrance to program implementation. The lack of policy guidelines can misdirect intended outcomes. Our reviews of literature therefore, include issues of legislature, policy background and levels of implementation from relevant documents done within the same spheres has been propagated by the study.

Zambia signed the convention on the rights of the child in 1990 and ratified it in 1991 without any reservations. According to, the "initial and first Periodic Report on the implementation of the convention,[33]the convention has only been partially incorporated into domestic law. International instruments ratified or acceded to are not self-executing but require enabling legislation to become enforceable. Zambia has put in place provisions addressing the rights of children.

The current Education Act of 2011 revised 2012 makes mention of ECCDE, while the MoGE Policy, Educating our Future of 1996 currently under revision, states that the provision and funding of the early childhood and preschool education will be responsibility of Councils, local communities, NGOs, private individuals and families. This is in line with the Day nurseries Act of 1957 that placed ECCDE in the Ministry of Local government and Housing. It seems very clearly that between 2000 and 2004 the Government of the Republic of Zambia has placed the issue of ECCDE in the hands of MCDSS and MoE respectively without establishing a legal framework that would support the move because the Nurseries Act has not been amended to support the change.

The Day Nurseries Act Chapter 313 of the laws of Zambia regulates Early Childhood Care and Development. Broadly stated, this Act provides for the registration and regulation of day nurseries by the Local Authorities. The Act is an old piece of legislation that was enacted on 1st May 1957. In terms of ECCDE, it lacks detailed provision reflecting the holistic needs of the pre-school child, which necessarily goes beyond exposure to the 3 Rs- Reading, Writing and Arithmetic.

The National Child Policy of 2006 clearly identifies various common forms of child abuse and neglect in Zambia but does not clearly articulate the best strategies of ensuring child protection. Above all, it does not specifically and clearly provide for ECCD. There is an urgent need to establish

[33] *(GRZ, 2002)*

and adopt a self-regulating policy Early Childhood Care, Development and Education for in Zambia**.**

Currently Zambia has the following policies on children. The National Child Policy of 2006 that is been reviewed, the National Child Health Policy regulates the provision of health services to children; the National Policy on Education currently being reviewed, Early Childhood Education Policy has been in draft since 2008 and is awaiting adoption, School Health and Nutrition Policy, the National Disability Policy of 2012, National Social Protection Policy that deals with the child protection and social welfare, and the National Nutrition Policy. These policies lie in different government Ministries.

4.1. Significance of Early Childhood

The early childhood years are very significant to human development. A lot of evidence attests to this. The prerequisites for educational quality, equity and efficiency are set in the early childhood years, making responsiveness to early childhood care, development and education essential to the achievement of primary educational goals and adulthood sense of responsibility. It is during these critical early years that we should develop a package of all foundation programmes, approaches, activities and support to be given to a child from conception or birth to the time the child enrols into the first grade of school. ECCDE therefore encompasses the necessary care, development and early education activities that prepare a child for life. Early Childhood learning is mainly through play, exploration or discovery with both the social and natural environments. It forms the basis for later development and education and life skills improvement. We shall review literatures that discuss factors that impact on child development with greater detail in the subsequent writings.

4.2. Child Development

The outset of the whole child is based on the acknowledged principle that all areas of human growth and development are interconnected. It is only for the purpose of reviewing one area or another in greater understanding that taxonomies have been generated. In actuality, however, one must be continuously reminded that all areas of growth and development are intimately related and jointly supportive. No aspect of development develops self-reliantly and each skill, whether simple or complex, reflects a blending of other skills. Growth and development are complementary processes. Although the terms are often used interchangeably, they do not mean the same thing. Child development refers to the ordered emergence of interdependent skills of sensorimotor, cognitive– language, and social–emotional functioning, which depend on the child's physical well-being, the family context, and the larger social network.

Young children are born learners. Although individual differences are present at birth, most set out to explore their world with unbridled eagerness and curiosity. Perhaps, more than any other time of life, early childhood is a period of never ending possibilities.[34]

[34] *Copple & Bredekamp, 2008*

Growth refers to specific physical changes and increases in size. For example, additional numbers of cells, as well as the enlargement of existing cells, accounts for the changes observed in height, weight, and head circumference, length of arms and legs and body shape. These changes in size can be reliably measured. The process of growth continues throughout life as the body repairs and replaces its cells. Rapid periods of growth occur in infancy or the first two to three years of life when rapid brain development takes place and in adolescence. By contrast, growth slows down during the preschool years i.e. five to six years of age.

Development, on the other hand, is well-defined as an increase in complexity or a change from simple to more complex and detailed. It is an orderly process, along a continuous path, in which a child gains more refined knowledge, behaviors and skills. While the sequence or pattern of change is basically the same for all children, the rate of development may vary from child to child. A child's rate and quality of development is related to the physiological maturity of the nervous, muscular and skeletal systems. The child's unique heredity and environmental factors also influence the rate and quality of a child's development. Together these factors account for the tremendous range of differences in children's development.

Child growth and development is a function of the interplay of three main factors, none of which operates independently of the other: ***genetics, environmental influences*** (including culture), and ***the child's own activities***. In many Zambian communities, spiritual and ancestral forces are also considered to have a significant influence on how children develop[35]. In our context (African Zambian), children play a critical role in their own development, and have a responsibility for their own 'self-education.' Indigenous education permits toddlers and youngsters to learn in participatory processes in the home, community, religious service, peer culture, and other activity settings through 'work-play' activities, with little to no explicit moralistic support. They are expected to demonstrate competence and learning at key points of life, but often without direct instruction. Since all growth and development or learning begins at home, parents *(mother and father)* and families are the primary care providers for the upbringing of their young children. But due to the changing demographics and economic pattern of the families, this concept is no longer true in many communities in Zambia. Meanwhile, in current nuclear families, the traditional organisation that of children being cared for by the extended family members is no longer true. Mostly we have children that are being brought up in child-headed households, single parents and on the streets. We are all aware that Nutrition, Health and Education assume the role of greater influences on the dance of life between the genetic blue print called genes and the environment that fine tunes the activity levels in the processes of growing up a human being.

Nutrition, Health and education operate as automatic switches in turning on or off the rhythm of life progression determinants. The better the micronutrient intake levels, health stability and education integrated stimulation of the body systems, the brighter and better responsible human life developed. In the interrelatedness of the functionality of the body systems, **nutrition** provides the vehicle that drives the mental, physical, social, emotional and creative faculties into a frenzy of hyper connectivity that generates into the acumen of inter cell dialogues, with support by health

[35] *Reynolds, 1997*

living that fights any intrusion into the system that may cause the interconnections to dysfunction: while the education or integrated stimulations cause the excitement in motivating the will power for man's existence to be conscientiously in a driving speed gear. Put together these three companions contribute to the effective Child development.

The need for some alternative arrangement is thus essential especially in families where either both the parents work for their better livelihood or they are forced to do so because of their poor economic condition being experienced. In many cases, children are being neglected if there is no proper care for them. Early Childhood Education centres may, up to certain extent, help the parents by providing support and care for the children. With this backdrop, it could be said that there is a need for providing comprehensive child care services by the government in our country Zambia that will help to develop a solid foundation for the children in terms of nutrition, health and education. The ensuing sections are going to review existing literatures on Neuroscience and poverty demonstrating how they influence the impact of Nutrition, Health and Education on Child Development.

4.3. Parenting how important

If only babies came with an instruction manual, how easy parenting would be to raise them; we would know exactly what to do and say to ensure that our children mature into productive, respectful, caring adults. But parenting is not that easy. No parent knows everything about children or is a "perfect parent." An understanding of parenting strategies and child development helps parents understand what to expect and how to provide what children need during each developmental phase. All parents, and those who work with children, can benefit from increasing their knowledge and understanding of child development.

The literature reviewed indicates that a lack of skills and knowledge along with our uncertainties and fears make parenting a process of trial and error. We live in a society that is overwhelmed with violence and aggression, sexual promiscuity and disrespect for authority, making parenting even more challenging. How can parents in our modern world, filled with negative influences, raise children who are respectful, responsible, compassionate and capable of making moral choices? The Parenting Program will teach parents how to develop specific qualities, skills and methods to help their children attain positive characters despite negative environmental influences.

Parents differ in the degree to which they respond to children's signals and control their behaviours. High quality caregiving, characterized by a sensitive, cognitively stimulating, and moderately controlling approach, is crucial for children's development and safety. Indeed, many of the skills children acquire during the early years are fundamentally dependent on the quality of their interactions with their parents. For instance, parents play an important role in fostering children's early learning (language and problem-solving abilities) and in shaping their social-emotional skills (emotion regulation, reactivity to stress, and self-esteem). Furthermore, parents have an influence on the development, maintenance, or cessation of children's positive and/or negative behaviours. The quality of parenting children receive during the early years affects three key determinants of later success in school: their cognitive potential, their social skills, and their behavioural functioning.

Considering the fact that parenting skills can be acquired and passed on from one generation to another, continuous efforts to improve the quality of caregiving are important.

4.3.1. Just What Makes A Successful Parent?

Factually, thousands of authors, behavioural analysts, psychologists and psychiatrists offer a variety of suggestions and insights as to what makes a successful parent. Many of these sources are primarily child focused in that they give helpful techniques for changing the child's behaviour. The Parenting Program has an interactive focus on both parent and child. Emphasis is placed on teaching adults how to maintain positive behaviour such as respect, responsibility and self-control in their lives so they can easily model these behaviours for their children. Parents are taught how to create a suitable learning environment for their children as well as how to monitor the influences that threaten the development of a positive character. The child is then given the best opportunity to develop behavioural patterns and social skills to form moral traits. Therefore, successful parents are those who provide the best opportunities for their children to develop positive, moral character by first practicing and making these traits an integral part of their own self-concept and interactions and then setting the stage where those who associate with the child can mirror these same values[36].

4.4. Neuroscience

Neuroscience, by definition, is the scientific study of the nervous system, a field that deals with its structure, function, development, genetics, biochemistry, physiology, pharmacology, and pathology. It has many branches including social neuroscience (study of the relationship between biological neural and social processes[37] and cognitive neuroscience (study of the relationship between biological neural and behavioural processes[38].

Early childhood is the most rapid period of development in human life cycle. Recent findings from Developmental neuroscience tell us that the brain structures undergo its most dramatic development during the first years of life[39]. Brain development starts much before and at faster rate than the rest of the body. 'The brain weight of the new-born is about 10% of body weight, while in the adult it is only 2%. By the age of 1 year, the child will be about 15% of the final body weight but the brain will be already about 70% of that of a young adult. By 2 years of age the brain will be about 77% of its final weight while the body is about 20% of the adult level. It is clear that the very rapid growth rate of the human brain in the last third of pregnancy, and the first 2 years of life, inevitably places great demands on the diet to provide the basis for healthy growth. In fact, the brain is susceptible to nutritional influences from the earliest stages of pregnancy. Brain development begins with the forming and closure of the neural tube that in turn develops from the neural plate, a process that is complete from 21 to 28 days after conception.'[40]

[36] *McKenry, P .C. and Price, S.J. (2005) Families and Change: Coping with Stressful Events and Transitions, (Third Edition). Sage Publications: Thousand Oaks, CA.*
[37] *Cacioppo et al., 2003:650*
[38] *Bruer, 2006:106*
[39] *Benton 2010, Johnson 2001*
[40] *Benton 2010: 458*

When well nurtured and cared for in their earliest years, children are more likely to survive, to grow in a healthy way, to have less disease and fewer illnesses, and to develop thinking, language, emotional and social skills. This poses a challenge for most children under five in Zambia because they do not receive the appropriate care and support to become physically healthy, mentally alert and emotionally secure. The ZDHS 2013-2014 statistics communicate to this situation. The first eight years of a child's development are in many ways the most crucial. The health, nutrition, physiological, psychological and even ethical foundations for future learning ability are largely determined by the time the child reaches the age of formal schooling. A young child's mental and physical developments are most rapid in the early years. It is at that time that a child learns to move, coordinate, communicate, interpret and cope with its environment.

During the first years of life, the trajectory of a child's future begins to be set. This includes not only whether or not the child will survive, but also the child's eventual height, learning ability, willingness to trust people, self-esteem and risk of disease later in life. Poverty, frequent illness, unsanitary and polluted environments, poor nutrition and violence steal a child's potential. Overburdened families may not have the information, time, or safe places to support the stimulating play and learning opportunities that are necessary for their children to learn and develop. Young girls may miss out on opportunities to learn and not have the time to play that boys do.

4.5. Impact of Child poverty on Nutrition, health and Child Development

Poverty is a dynamic process, with some families cycling in and out of it in a relatively short time, resulting in recurrent rather than persistent poverty. Most of those who are presently poor were not born poor; they have fallen into poverty within their lifetimes, and their descents offset the success stories of those that have managed to climb out of poverty. Poverty puts children in a condition that makes them very vulnerable to numerous health difficulties. The situation in which they live, the quality of care received, and a lack of important resources are all aspects of a child's life in poverty that ultimately can be detrimental to their health. A definition provided by UNICEF of childhood poverty reads,

"Children living in poverty are those who experience deprivation of the material, spiritual, and emotional resources needed to survive, develop and thrive, leaving them unable to enjoy their rights, achieve their full potential or participate as full and equal members of society"[41].

This definition provides a wide-ranging viewpoint of how poverty daunts children's quality of life and puts them at a great difficulty as they move through critical stages of development. Living a life in poverty threateningly impedes a child's ability to reach their full potential, and is something that is likely to harmfully affect a child for the rest of their life. Often the biggest obstacle that these children face is the many physical and mental health deficiencies to which they are vulnerable.

[41] *Donahue, 2009*

Zambia has failed to meaningfully lessen poverty and attain tangible progresses in the social living conditions of majority of its citizens. According to the Living Conditions Monitoring Survey (LCMS) undertaken in 2010, over sixty percent of Zambia's population live below the poverty datum line, with rural poverty levels at 77.9% while life-threatening poverty stood at 42% of the total population. Income distribution remained highly unequal, resulting in worsening human deprivation as demonstrated by the decline in the country's Human Development Index (HDI). This has translated into very low record of life expectancy at birth. In Zambia, it is evident that poverty by and large continues to carry a female face. For example, extreme poverty is higher in female headed households (60.4 %) compared to male headed households (57.1 %).

Poverty and health are inseparably linked. The more a child suffers from poverty, the more prone the child is to illness, disease and malnutrition. As children and their families become more disposed to health problems, their ability to earn an income to survive is diminished. It is a vicious and unmerciful cycle.

The undesirable health effects of poverty-related circumstances can be empirically examined as evidence of how poverty notably increases the likelihood of resulting mental and physical health effects to children. Physical health effects can include, and are not limited to, asthma, malnutrition, inhibited growth, birth defects, lack of proper medical attention, vulnerability to disease, illness, and injury, as well as greater incidence of abuse and neglect. Additionally, mental effects may include those on brain development, mental disabilities, emotional relationships, social skills, self-esteem, and self-efficacy issues. Many national and locally based non-profit and government-related organizations exist to help support these crucial health needs of children living in poverty. The value of their support in meeting these needs is incomparable. Therefore, a high priority needs to remain on the continual development of these organizations in their mission to equally serve the nation's children and its future.

4.6. Nutrition for Children

Under nutrition is a term which describes the various health conditions caused by the body not receiving enough energy or nutrients which are obtained by eating many different foods and food groups. Under nutrition can affect children and adults in a variety of ways, they can become too short for their age, dangerously thin and deficient in vitamins and minerals, although in reality someone may suffer from several types of under nutrition at the same time[42]. Malnourished children have substantially lower chances of survival than children who are well nourished. They are much more likely to suffer from a serious infection and die from common childhood diseases such as diarrhoea, pneumonia, measles, and malaria[43]. Undernutrition arises from complex, multiple and interactive causes. The immediate causes include inadequate dietary intake and disease. Underlying these are causes operating at household and community levels: household food insecurity, inadequate care for women and children, unhealthy household environments and lack of health

[42] *(Glewwe P, 2007)*
[43] *(Glewwe P, 2007)*

services, with income poverty underpinning all three. Undernutrition among children depends on complex interactions of various factors like, social-demographic, environmental, reproductive, institutional, cultural, political and regional factors, which lead children's being malnourished[44].

Nutrition is the food we eat which nourishes, promotes growth, strengthens and repairs our bodies. All human beings, adults or children, need to eat nutritious foods. Having, a variety of foods to eat throughout the day helps, to cover all nutritional needs for a healthy mind and body. It is important to have a balanced diet to ensure good health. Balanced nourishment contains some of all the basic nutrients. These are body- building, protective and energy giving foods. Other components needed are mineral salts, water and roughage to ease digestion. It is therefore important that children be fed on a balanced food supply to maintain a healthy young community. Basically, nutrient needs of the body keep on changing depending on many factors. However, for a child this is mainly determined by age and the healthy state of the child. This document confines its discussion to factors related to child nutrition in this aspect will be discussed according to age groups.

Malnutrition contributes to an estimated 200 million children globally failing to attain their full development potential. Stunting is estimated to reduce a country's gross domestic product by as much as 3%[45], and eliminating anaemia could increase adult productivity by 5-17%[46].

"Nutrients are important ingredients for organs; they fuel bodily processes including the development of a strong immune system and healthy functioning brain. Without adequate nutrition in the first thousand days of life, from conception to a child's second birthday, the growth of some vital organs can be seriously impaired, leaving them vulnerable to illness, compromised cognitive ability and at worst death. Today, without the internal protection that nutrients bring, malnutrition has devastating impacts on a child's life, irreversibly limiting their physical development and reducing IQ by up to 10%. On average, the ability of children suffering from chronic forms of malnutrition to read is impaired by 20% and they are more likely to suffer from health problems. Furthermore, their earning potential over a lifetime is reduced by at least 10%. [47]*"*

Available data highlight deficiencies in terms of both dietary frequency but most importantly quality and diversity. Central Statistical Office data (CSO 2004) show that 51% of households can only afford 2 meals per day, 11% afford 1 meal per day and only 36% can afford 3 meals per day. The Zambian diet has an over-reliance on maize, so is not only insufficient to fulfil energy needs but is also insufficiently diverse to provide adequate quantity and quality of protein, and is highly deficient in micronutrients, all of which have serious implications for nutritional wellbeing.[48]

The 2008 National Nutrition Surveillance Survey found that on average, only 4 out of 13 food groups were consumed in a day by households. Commonly consumed food groups included cereals

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[44] *(Morris S, 2008)*

[45] *International Bank for Reconstruction and Development, World Bank: Repositioning nutrition as central to development: a strategy for large scale action. 2006. https://openknowledge.worldbank.org/ handle/10986/7409*

[46] *World Health Organization; Comprehensive implementation plan on maternal, infant and young child nutrition: 2014. http://apps.who.int/iris/ bitstream/10665/113048/1/WHO_NMH_NHD_14.1_ eng.pdf?ua=1.*

[47] *Nutrition matter: Opportunities to scale up nutrition in Zambia CSO- SUN 2014*

[48] *FAO- Food Insecurity and Vulnerability Information and Mapping Systems; Animal– Nutrition and Consumer Protection Division, FAO, 2009 26 DES 22*

and cereal products (98.9%), dark leafy vegetables (80.0%), oil and fats (60.6%), sugary foods (48.8%) and legumes, nuts and oil seeds (40.7%). Only 1% of the dietary energy supply (DES) is provided by fruit and vegetables. The low supply (5%) of foods of animal origin (meat and offal, milk and eggs, and fish) contribute to iron and protein deficiency. Study results showed that 27% to 65% of the population cannot afford a minimum cost of a nutritionally adequate diet[49].

There is a huge variation among households in terms of nutrition intake and provisions. Although Zambia is making some progress in reducing malnutrition, it remains a serious public health concern. The government faces a significant challenge as national rates and scales of malnutrition in 2013 and 2014 are concerning.

4.6.1. Child Nutrition situation in Zambia

Current statistics from the Zambia Demographic Health Survey (ZDHS) 2013/2014 findings show that added to stunting rates in under-five children of 40%, a further 6% are acutely malnourished while statistics for underweight are now standing at 15%. Currently malnutrition stands at 52% of all under-five deaths. The rates of micronutrient deficiencies are also high, with 53% Vitamin A deficiency and 46% Iron deficiency anaemia while 4% of school aged children are at risk of mild to severe iodine disorders deficiency. Also notable about the case of Zambia, 10% of women aged 15-49 years old are underweight while 23% are ore overweight. The problems of malnutrition are strongly interwoven in other sectors. For instance the incidence of stunting is linked to the mother's education level. The incidence of stunting is 25% lower in children of mothers with completed secondary education as compared to mothers who did not complete primary school. "**The stunting children of today mean a stunted economy of tomorrow!!"**

Malnutrition re-enforces the cycles of poverty, it imposes high economic and social costs on society at all income levels, trapping individuals into vicious cycles of ill health and poverty continued across generations. Malnutrition devalues Zambia's human capital therefore benefits of investing in nutrition should not be ignored as they also present significant economic returns. Investments in nutrition are associated with better health and education outcomes, and increased productivity. Consequently, nutrition is not just an outcome of development but must also be viewed as an input into development, making it essential to tie nutrition to our child development agenda.

What does this mean therefore? The nutritional literature available emphasizes that undernutrition is most common and severe during periods of greatest vulnerability[50]. One such period is the first 2–3 years of life. Young children have high nutritional requirements, in part because they are growing so fast. The diets commonly offered to young children in Zambia, especially in rural and peri-urban areas, to complement breast milk are of low quality (they are monotonous and have low energy and nutrient density), and as a result, multiple nutrient deficiencies are common. Young children are also very susceptible to infections because their immune systems (which are both developmentally immature and compromised by poor nutrition) fail to protect them adequately. Foods and liquids are often contaminated with bacteria or waste matter and are thus key sources

[49] *WFP/DSM(2010) Cost of Diet analysis in Zambia*
[50] *Martorell 1997; UNICEF 1998*

of frequent infections. Infections both reduce appetites and increase metabolic demands. Furthermore, in many societies, suboptimal traditional remedies for childhood infections, including withholding of foods and breast milk, are common. Thus infection and undernutrition reinforce each other.

4.6.2. Empirical Evidence

Malnutrition is among the gravest risks to ECCDE[51]. A large body of research shows that adequate nutrition is necessary for young children to achieve their potential level of cognitive functioning and overall well-being[52]. Realising the full potential of children, demands that the first few years of life are accorded priority attention.

A child's development is shaped by a complex interaction of factors in its environment. Just as a child's active interface with its environment is crucial for development so is the active engagement of others in their environment. Nutrition can play a part in this too. In Egypt and in Kenya maternal behavior towards toddlers was found to be influenced by the nutritional intake of the child more than that of the mother[53], with poorly nourished children more likely to be carried by their mother and in general stay closer to their mother than adequately nourished children[54].

Considerable literature we are reviewing confirms that nutrition has a direct effect on neurotransmitters which are important in sending messages from the body to the brain. Specific dietary components were shown to have negative effects on this system, many of which are common place in early childhood to school-aged children's daily eating. A body of literature, some of it outside economics, has explored the relationship between preschool nutritional status and the education of school-age children and adolescents. Undernourished children score lower than do better-nourished children on tests of cognitive functioning, have poorer psychomotor development and fine motor skills, have lower activity levels, interact with others less frequently, fail to acquire skills at normal rates, have lower enrollment rates, and complete fewer grades of schooling[55].

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In a background paper for UNESCO prepared for the Education for All Global Monitoring Report 2007 on early childhood health, nutrition and education prepared by Matthew Jukes 2006 highlighted that early childhood health and nutrition interventions had the potential to make a major contribution to achieving Education for All. The report highlights that Iodine is required for the synthesis of thyroid hormones. These hormones, in turn, are required for brain development, which occurs during fetal and early postnatal life[56]. Mental development is affected by both a deficiency in maternal thyroid activity (maternal hypothyroidism), which affects development of the fetal brain during the third trimester, and hypothyroidism in the new-born which affects

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51 *Hudson 2009*

52 *Engle et al. 2007; Grantham-McGregor et al. 2007; Shonkoff and Phillips 2000*

53 *Wachs et al., 1992*

54 *Grantham McGregor, Schofield, & Haggard, 1989*

55 *Alderman et al. 2001b; Alderman, Hoddinott, and Kinsey 2006; Behrman 1996; Behrman, Cheng, and Todd 2004; Glewwe, Jacoby, and King 2000; Glewwe and King 2001; Grantham-McGregor et al. 1997; Grantham-McGregor et al. 1999a, 1999b; Johnston et al. 1987; Lasky et al. 1981*

56 *Delange, 2000*

postnatal brain development. In either case, a spectrum of neurological disorder can ensue, from severe mental retardation associated with cretinism to more subtle neurological impairments.

There is clear established evidence from a study done by Lozoff et al., in Costa Rica. The evidence is that iron deficiency anaemia affects social and emotional development. In Costa Rica Lozoff et al., 1987, infants with iron-deficiency anaemia were found to maintain closer contact with caregivers; to show less pleasure and delight; to be more wary, hesitant, and easily tired; to make fewer attempts at test items; to be less attentive to instructions and demonstrations; and to be less playful. When these infant were followed up at age 11-12 years[57], the formerly anaemic group was more likely to have a number of behavioral problems. They were more anxious and depressed, had more attention problems, social problems and behavioral problems overall. They were also more likely to repeat grades at school and to be referred for special service.

Iron supplementation is found to have a substantial impact on the motor development of infants and also a significant effect on older preschool children. One study in Indonesia gave iron supplementation (iron sulphate) or placebo to iron deficient children aged 12-18 months and scores on the Psychomotor Development Index of the Bayley Scales of Infant Development rose by 23.5 points (1.6 SD). Most studies find cognitive or motor impacts of around 0.2-0.4 SD but this study in Indonesia shows that iron supplementation can have truly substantial effects on development.

A study with older (6-59 months) preschool children in Zanzibar[58] found that 12 months of iron supplementation and deworming treatment improved pre-schoolers' motor outcomes by 0.18 SD respectively. Such effects found with children of enrollment age persist into the school-age years. In Costa Rica, formerly anaemic infants performed poorly on motor tests at 5 years of age [59] and again aged 11-12 years[60]. Anaemic infants in Chile[61] were also later found to perform poorly on a range of tests of motor function.

It is believed that these effects reflect, in part, biological pathways by which under nutrition affects neurological development. Controlled experiments with animals suggest that undernutrition results in irreversible damage to brain development such as that associated with the insulation of neural fibres[62]. The adverse effect of undernutrition on fine motor control suggests that physical tasks associated with attending school, such as learning to hold a pencil, are more difficult for the undernourished child. Nutrition in early childhood has a lasting impact on health and well-being in adulthood. Children with deficient growth before age 2 are at an increased risk of chronic disease as adults if they gain weight rapidly in later stages of childhood.[63]

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[57] *Lozoff et al., 2000*
[58] *Stoltzfus et al., 2001*
[59] *Lozoff et al., 1991*
[60] *Lozoff et al., 2000*
[61] *de Andraca Oyarzun et al., 1991*
[62] *Yaqub 2002*
[63] *Victora, Cesar G., et al., 'Maternal and Child Undernutrition: Consequences for adult health and human capital', The Lancet, vol. 371, no. 9609, 26 January 2008, pp. 340–357.*

In the study conducted in Guatemala from 1969–77 by the Institute of Nutrition of Central America and Panama (INCAP), on the sample of 2392 children aged 0-36 months born between 1962 and 1977, to investigate the long-term impact of a randomized, community- level nutritional intervention in rural Guatemala was meant to provide new evidence of the effect of an early childhood nutritional intervention on adult outcomes using data and methods well suited to address the concerns under discussion in this research. The study links information collected in the 1970s on individuals (and their families) exposed to the intervention when they were 0–15 years of age, with new data on these same individuals collected in 2002–04[64].

The principal hypothesis underlying the intervention was that ***improved early childhood nutrition would accelerate mental development.*** An examination of the effects on physical growth also was included to verify that the nutritional intervention had biological potency, which was demonstrated[65]. The results provide the first evidence of its kind from a prospective survey of the important role played by early childhood nutrition in subsequent educational attainments and thus underscore the value of a lifecycle approach to education that includes the early childhood period. They study suggests that programs that include nutritional supplements to very young children, or in other ways improve their nutritional intakes, may have substantial, long-term educational consequences.

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A study research was conducted in Chongwe district of Lusaka Province Zambia by Kazuya Masuda, Yuta Inoue, Ryo Inoue, Akiko Nakamura, Maureen Chitundu, Junko Murakami, Yumiko Ota and Junichiro Matsugami on the effectiveness of a food supplement called Spirulina (a food supplement produced from the USA). The following is an extract from their report.

> *"A total of 60 malnourished children under five years old, and aged 18–36 months, were selected from a sample of 295 children who were screened at Kanakantapa Rural Health Centre, in Chongwe District using the weight-for-age, height-for-age and mid-upper arm circumference (MUAC) indicators. The selected malnourished children comprised:*
>
> *A Treatment group, 30 children provided with spirulina; and a Control group, 30 children without spirulina.*
>
> *Porridge blends, a mix of 5kg of roller meal with 300g of spirulina, 0.8kg sugar and 0.1kg salt, was distributed monthly to the target group. Porridge ingredients were pre-mixed with spirulina so that participants could not just eat roller meal. Spirulina was procured from the USA through our partner, DIC Corporation, the largest spirulina producer in the world. The control group was provided with the same porridge blends but without spirulina. Mothers or caregivers of each child in both the control and target groups were told to feed porridge twice a day, in the morning and afternoon. The porridge blends were provided monthly from June 2012 to February 2013. Physical measurements of weight, height and MUAC were recorded for both groups every month by trained Child Growth Promoters (CGPs) at each health post. CGPs are community health workers who are trained by the Zambian government to evaluate child growth.*

[64] *Habicht and Martorell 1992; Martorell, Habicht, and Rivera 1995; Read and Habicht 1992*
[65] *(Martorell et al. 1995)*

Participating children whose mothers or caregivers did not attend growth-monitoring sessions were followed up by CGPs unless they had left the village due to economic factors or family issues.

In case of missing values, the child was omitted from the analysis. However, children who could not continue participating in the project for various reasons in the first two months were replaced. Thereafter, no replacement occurred.

The results indicated that there was a significant difference in the change in height-for-age z-score (HAZ) during the study period between the children in the treatment and control group at the 5 per cent significance level. If this difference was attributable to spirulina intake, it implies that this fortification helped the treatment group children to grow 0.29 points more than the control group on average. The statistical difference in HAZ implies that spirulina consumption can be an effective food intervention particularly in Zambia, where severe stunting is widespread".[66]

4.7. Conclusion

The indication of the effect of nutritional, anaemia and iron deficiency on the brain; on the behaviors of infants, pre-schoolers and their caregivers and the suggestion that the effect is a long-term one combine to make a persuasive case for early intervention to prevent iron deficiency in children from an early stage of life. We therefore can state here that nutrition has an impact on Child Development in all domains. This empirical evidence suggests therefore that we need to do much for children below 6 years if we were to develop productive and responsible adults for the country. The 2013/2014 ZDHS report gives a scenario of the situation for Zambia that is not good and with evidence confirming the impact of nutrition on child development; we need to double our efforts in the area of early childhood human development if the opposite of the current can be seen.

4.8. Health for Children

Zambia has a high burden of disease characterized by a high prevalence of communicable diseases. These are diseases that can be passed on from person to another or are transmitted by parasites. Examples of communicable diseases include malaria, HIV and AIDS, sexually transmitted infections and tuberculosis). According to the World Health Organisation, 764 out of 100 000 people die because of communicable diseases (WHO 2014); Non-communicable diseases or chronic diseases, such as diabetes, strokes, cancers, mental illnesses and asthma are an emerging problem in Zambia (MoH 2013:14). According the WHO 587 out of 100 000 people, 587 die from non-communicable diseases (WHO 2014).

This high burden of disease leads to poor health results such as: - Life expectancy at birth is 55 for men and 58 for women (2012). - Probability of dying before the age of 5 years is 89 for every 1,000 live births - Maternal mortality ratio (MMR) per 100 000 live births is 280 in Zambia. - Prevalence of HIV per 100 000 population is 7861 (2012). The regional average lies at 2774. - Incidence of

[66] *http://www.cmamforum.org/Pool/Resources/Spirulina-Zambia-2014.pdf*

malaria per 100 000 population is 26087 (2012), the regional average is 18579. - Out of 100 000 people, 388 persons are infected with tuberculosis in Zambia, higher than the regional average, which is 303.[67]

The earliest years of human life are crucial in many ways, including how they set us on paths leading toward—or away from—good health. Family income, education, and neighborhood resources and other social and economic factors affect health at every stage of life, but the effects on young children are particularly dramatic. While all parents want the best for their children, not all parents have the same resources to help their children grow up healthy. Parents' education and income levels can create—or limit—their opportunities to provide their children with nurturing and stimulating environments and to adopt healthy behaviors for their children to model. These opportunities and obstacles, along with their health impacts, accumulate over time and can be transmitted across generations as children grow up and become parents themselves.

4.8.1. Dimensions of child health and well-being

It's easy to distinguish a blossoming child: The cheerful eyes, energetic smile, buoyant body and socially involved conduct all point to ideal physical and mental health. Despite the clarity of these pointers, however, the task of improving in on the key predictors of child health and well-being remains a frightening one. Each child comes with a unique and intricate slate of situations adjoining genetic and medical history, prenatal and early childhood environments, and family and community support. As well, all children in the course of their upbringing are highly dependent on many multi-layered contexts of care, which include schooling, medical services, and the many policies, laws and regulations in place for their support and protection.

It is because child health rests squarely on these numerous and entwined factors, the faltering of any one context of care can have a direct and lasting negative impact on fundamentally the overall development of the child. Non-functional families, toxic schools, violence in the community, poverty, and lack of government regulation all pose a threat to children's health. Hence, it is not enough to simply tally the after-the-fact health or ill health outcomes for Zambia's children; also required is the monitoring of family, school, community and regulatory contexts that promote and sustain child health. If child health is multidimensional, an experientially-based agenda is needed to show the key points of contact between the child and the contexts of care experienced, and also among these contexts themselves. To help identify such a framework, this report investigates into a review of the literature in developmental psychology, resilience of vulnerable children, positive development, and social determinants of child health.

4.8.2. Defining health and well-being

The World Health Organisation (WHO) 1946 constitution defined health as a, "state of complete physical and social well-being and not merely the absence of disease or infirmity". This international

[67] *National Food and Nutrition Commission 1000 days reduce stunting strategy 2012-2015*

declaration summarised not only new concepts of health emerging from states, but also introduced a more holistic concept of health, encompassing social as well as physical health. It pre-dated the influential academic work of George Engel, a psychiatrist, who critiqued the traditional biomedical model of health and set out an alternative bio-psychosocial model[68]. This therefore, means that you may be free from diseases or infirmity but for as long as your, mental, social and physical attributes is not okay YOU ARE NOT HEALTHY.

This ideal was received by psychologists and social scientists because it highlighted the importance of psychological and social factors in the study of health and disease. Beliefs about health, coping strategies, and risky behaviours were identified as important to the promotion of health. These psychological and behavioural factors were influenced by social and demographic factors such as social class, employment status, work environment, social support, urbanisation, age, sex, and ethnicity[69].

Finding a starting point or consensus on the meaning of the terms 'health' and 'well-being' is an elusive exercise in itself. The World Health Organization definition then typically limits its list of child health indicators to incidences of childhood diseases. It is now generally acknowledged that this approach is limiting and in need of an update. In 1986, the Ottawa Charter for Health Promotion defined health as "...the extent to which an individual or group is able to develop aspirations and satisfy needs and to change or cope with the environment. Health is a resource for everyday life, not the objective of living. It is a positive concept emphasizing social and personal resources, as well as physical capacities".[70]

In keeping with the concept of health as a fundamental human right, the Ottawa Charter emphasizes certain pre-requisites for health that include peace, adequate economic resources, food and shelter, and a stable eco-system and sustainable resource use. Recognition of these pre-requisites highlights the inextricable links among social and economic conditions, the physical environment, individual lifestyles and health. These links provide the key to a holistic understanding of health and well-being. All people should have access to basic resources for health. A comprehensive understanding of health and well-being implies that all systems and structures that govern social and economic conditions and the physical environment should consider the implications of their activities with respect to their impact on individual and collective health and well-being.[71] The Ottawa Charter emphasized building healthy public policy, creating supportive environments, strengthening community action, developing personal skills and re-orienting health care services toward prevention of illness and promotion of health. This broad approach to promoting a population's health, however, has yet to be fully realized, particularly as it relates to child health and well-being outcomes.

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[68] *Engel, 1977*
[69] *Crossley, 2000*
[70] *Ottawa Charter for Health Promotion; WHO, Geneva, 1986 8 Health Promotion Glossary (1998)*
[71] *WHO http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf 9 Pollard, E. L. & Lee, P. D*

A systematic review of definitions, domains and measures of child well-being by Pollard and Lee[72] points to further variability in the meaning of 'health' and 'well- being'. Andrews et. al. define child health and well-being as, *"…healthy and successful individual functioning (involving physiological, psychological and behavioural levels of organization), positive social relationships (with family members, peers, adult caregivers, and community and societal institutions, for instance, school and faith and civic organizations), and a social ecology that provides safety (e.g. freedom from interpersonal violence, war and crime), human and civil rights, social justice and participation in civil society".*[73] This definition also recognizes the many dimensions of children's lives and underscores the importance of children's relationships and their formal and informal supports.

The Living Condition Monitoring Survey Report of 2010 reports that only 43% of populations have access to sanitation to facilities while access to safe drinking water stands at 63%. According to the World Bank Country Water Resources Strategy, Zambia faces significant water resources challenges related to climatic variability, recurring droughts and floods and continued under investment in water infrastructure. In addition, the sector faces the challenge of low levels of service delivery occasioned by a rapid growth in demand due to huge increase in population. An estimated 6.5 million Zambians lack access to sanitation facilities and thirty seven percent (37%) lack access to safe drinking water[74]. Furthermore, the Sector suffers from water resources management challenges which have resulted in ground water contamination, inadequate drainage continue to cause widespread outbreaks of waterborne diseases.

4.8.3. Child Health situation in Zambia

Exposure to infectious diseases, malnutrition, poor hygiene and sanitation, and unhealthy environments compromises early childhood development. In addition, a mother's nutritional status during pregnancy and her general well-being impact the health of her child during pregnancy as well as after delivery.

Zambian children under age 5 face multiple obstacles with respect to their survival and development. The majority of neonatal deaths in Zambia are due to sepsis, prematurity, and asphyxia. Beyond the neonatal period, pneumonia, malaria, and diarrhoea are leading contributors to the high under-5 mortality rate (MoH, 2012a). A child's birth weight or size at birth is an important indicator of the child's vulnerability to the risk of childhood illnesses and chances of survival. Children whose birth weight is less than 2.5 kilograms, or children reported to be "very small" or "smaller than average," are considered to have a higher than average risk of early childhood death. Children of the youngest mothers (less than age 20) were more likely to be of low birth weight (13%) than children of mothers age 20-49 (8-9 %). Also, low birth weight is more common among children of birth order one than among children of higher birth orders[75].

4.8.3.1. Diarrhoea

[72] *Child well-being; as systematic review of the literature; Social Indicators Research 61:51-78, 2003*

[73] *Andrews, A., Ben-Arieh, A., Carlson, M., Damon, W., Dweck, C., Earls, F., et al. (2002) (Ecology Working Group); Ecology of Child well–being: advancing the science and the Science-Practice Link. Georgia: Centre for Child Well–Being.*

[74] *MDG progress report 2014*

[75] *ZDHS 2013-2014*

In 2013-2014 survey children under age 5, 16% had diarrhoea, and 3% had diarrhoea with blood. As there are seasonal variations in the prevalence of diarrhoea, the percentages may not reflect the situation throughout the year. The prevalence of diarrhoea may be understated. Children ages 6-23 months are most susceptible to diarrhoea (28%). The prevalence of diarrhoea is highest among children living in Copperbelt (20%). Differences by gender, source of drinking water, type of toilet facility, and mother's education and wealth are less obvious.[76]

4.8.3.2. Malaria and Fever

Malaria: Malaria continues to be one of the major causes of death in Zambia. In 2009, 3.2 million cases of malaria were reported countrywide resulting in approximately 4000 deaths. The occurrence is mainly related to rainfall distribution and geographical location. The worst affected areas are the hot, low-lying river valleys, lakes and wetlands. UNICEF provides the following statistics on the prevalence of malaria in Zambia; Of all people who die from malaria in Zambia, 50 percent or more are children under 5 years of age; 50 percent of under-5 hospital admissions are due to malaria; Malaria accounts for 20 percent of maternal deaths. Fever is a major manifestation of malaria and other acute infections in children. Malaria contributes to high levels of morbidity and mortality. While fever can occur year-round, malaria is more prevalent following the end of the rainy season. Twenty-one percent (21%) of children under age 5 were reported to have had a fever in the two weeks preceding the ZDHS 2013-2014 survey. Fever prevalence varied by the age of the child, with the highest percentage occurring among children age 12-23 months (27%). The prevalence of fever was highest among children in Northern (26%) and lowest among those in Lusaka (15%).

4.8.3.3. Acute Respiratory Infections (ARI)

Acute Respiratory Infections (ARI) is recognised by MoH as a major public health problem among children under age 5 (MoH, 2012b). The Integrated Management of Childhood Illnesses (IMCI) is an integrated package that addresses the management of diseases such as pneumonia, diarrhoea, malaria, and measles, as well as malnutrition, among children age 2 months to age 5.Children age 6-23 months were more likely to have symptoms of ARI (5%) than children in the other age groups. 4% of children under age 5 exhibited symptoms of ARI in the two weeks preceding the survey and the prevalence of ARI symptoms varied by the age of the child.[77]

4.9. Empirical Evidence:

In this segment we are going to review some of the empirical studies based on different ECCDE programmes in different countries. A wealth of research affirms that childhood experiences impact future health outcomes[78]. Family health conditions have a particularly strong impact on ECCDE. Any chronic problem, either physical or mental (especially of the mother or primary caregiver),

[76] *ZDHS 2013-2014*
[77] *ZDHS 2013-2014*
[78] *B.C Atlas of Child Development, British Cohort Study, Early Adversity Study (EAS).*

such as intimate-partner violence[79], maternal depression[80], and chronic illness, can have a damaging effect on child development. In situations involving maternal depression, extreme poverty, or high levels of family stress, important parent-child interactions may be impaired, resulting in fewer opportunities for learning experiences in the home[81]. The severity and chronicity of maternal depression are predictive of disturbances in child development[82].

Theories of child development have made recent strides in creating integrated models of children's healthy development that account for both child characteristics and the diverse family, peer, and community contexts that children experience. Progress has also been made in linking these models to policy and practice for child health[83].

Bronfenbrenner's theory of the Ecology of Human Development, published almost four decades ago, was among the first to postulate that some influences on child development are located in the child's experienced environment. The theory described the contexts surrounding the child as layered systems that have increasingly more direct or proximal influences on the child's development, moving from the outside of the circle— the macrosystem—to the inside—the microsystem. These contexts are seen as systems in the sense that they function independently as self-sustaining units that are also inter-connected and responsive to each other. For example, social policies that influence the safety of neighbourhoods can in turn influence the school and family resources, which directly affect a child's healthy development and well-being.

Variations in children's developmental trajectories are the inevitable result of inter-play among multiple, dynamic, organic systems, including, for example, individual, family and societal systems. Child development research shows that child health problems and healthy development result from changes in both the developing child and his or her evolving social contexts. Poor health and developmental outcomes can result from mismatches between a child's needs and the opportunities and challenges experienced as a result of the optimal or suboptimal functioning of the family, school, and community[84].

Lerner, Overton, and others expanded upon the Bronfenbrenner model by showing how these layered ecologies behave like interacting systems with mutual effects that are both stable and changing over time—how children's behaviors and health effect their family's behaviors and health and vice versa, for example. Understanding children's healthy development involves understanding the relations among diverse and active children as they interact with diverse and active, multi-layered environmentalisms. This also suggests that children's healthy development is not determined either by their nature (however this is understood—genetics, biological make up, temperament) or by their nurture (contextual or social determinants). Rather, the capacities to resist changes and respond to it create an essential and on-going "plasticity" or capacity to respond to

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[79] *Anda et al., 2006; Fettelli et al., 1998*

[80] *Patel, DeSouza, & Rodrigues, 2003; Shonkoff & Phillips, 2000*

[81] *Willms, 2003*

[82] *NICHD, 2002*

[83] *Lerner, R. M. Fisher, C./B. & Weinberg, R. A. (2000). Toward a science for and of the people: Promoting civil society through the application of developmental science; Child Development. 71, 11-20*

[84] *Lerner, R. M. & Overton, W. F. (2008); Exemplifying the integrations of the relational developmental system; Synthesizing theory, research, and application to promote positive development and social justice; Journal of Adolescent Research, 23, 3, 245-255*

worries and to maintain health at each life stage. It is this plasticity that can be influenced by efforts to improve on child health and well-being, either directly or through environmental supports. While it is well established that the need to initiate positive developmental courses begins in early childhood, it is less well understood what sustains these trajectories through adolescence to adulthood.

4.10. Conclusion

The health sector has a crucial role in addressing ill health which contributes to undernutrition. Specifically, malaria frequently causes iron deficiency and anaemia; measles and diarrhoeal infections increase the body's Vitamin A requirements and can trigger severe forms of deficiency such as blindness; parasitic infections, particularly hookworm cause iron deficiency and anaemia; and a wide range of infections often reduce appetite and decrease the amount of food that is consumed, leading to weight loss and micronutrient deficiencies. HIV positive individuals have lower resistance to fight other opportunistic infections and are more prone to be malnourished. HIV infection has also shown to increase the energy consumption needs of affected individuals, and ART adherence improves significantly when combined with food and nutrition support. Disease control interventions are estimated to contribute to a 3% reduction in stunting though not all possible interventions were included in this estimation. Health can conclusively be stated as a factor that impacts both positively and negatively in child development and therefore a lot of community awareness on childhood illnesses should be undertaken.

4.11. Education for children

The Ministry of General Education manages the Zambian Education System at the national level. At the lower levels the Provincial Education Offices (PEO) coordinates and supervises the District Education Board Secretariats (DEBS). The DEBS supervises the running of the schools in the respective District and is responsible for monitoring the objectives of the national education policy Educating Our Future (1996). The education system in Zambia is structured into different areas. The ministry provides Early Childhood Education (ECE) catering for children 3-6 years old in Zambia.

The age range that defines the critical period of Early Childhood Care and Development Education (ECCDE) is 0 to 6 years. ECCDE programs contribute to school preparedness and developmental readiness. ECCDE also has gender implications as its enables women to work and participate in development activities while the children are being cared for. ECCDE in Zambia has remained mainly in the hands of the private sector and with civil society organisations. The Zambian government is annexing and planning to put up Early Childhood Education Centres which caters for children aged 3 to 6 years.

4.11.1. Definition

Education *is basically defined as the…….. "Process of permanent behaviour change in relation to acceptable social norms"*

The following definitions illustrate additional connotations to what education is**:**

"The central task of education is to implant a will and facility for learning; it should produce not learned but learning people. The truly human society is a learning society, where grandparents, parents, and children are students together." ***~Eric Hoffer***

"No one has yet realized the wealth of sympathy, the kindness and generosity hidden in the soul of a child. The effort of every true education should be to unlock that treasure." ***~Emma Goldman***

"The only purpose of education is to teach a student how to live his life-by developing his mind and equipping him to deal with reality. The training he needs is theoretical, i.e., conceptual. He has to be taught to think, to understand, to integrate, to prove. He has to be taught the essentials of the knowledge discovered in the past-and he has to be equipped to acquire further knowledge by his own effort." ***~Ayn Rand***

"The aim of education should be to teach us rather how to think, than what to think— rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with the thoughts of other men." ***~Bill Beattie***

The above definitions provide a state of affairs for rethinking on the approaches to pedagogy in ECE centres in Zambia. The role of education in the development of children cannot be over-emphasised. The findings strongly suggest that when early life neglect is characterised by a low level of sensory input (for example, relative poverty of words, touch and social interaction) there will be underdevelopment of the brain[85]. It has been demonstrated that the development of the brain and its functions are actually compromised in an environment that is not appropriately stimulating[86]. From the studies it has been concluded that the longer children spend in unfavourable environments, the more pervasive and resistant to recovery are the detrimental effects.

4.11.2. **Beliefs about the self (self-concepts) in Education**

"Through play children learn what no one can teach them."[87]. Playful behaviour in childhood is the foundation for creativity in adulthood. Play is the mechanism by which children learn—how they experience their world, practice new skills, and internalize new ideas—and is therefore the essential "work of children"[88]. Through this continuous and expanding process, early skills give rise to new ones and new experiences are integrated with previous ones. Through play, children learn about the world and engage in activities that encourage their cognitive, emotional, and social development[89].

The early years, especially birth through three years of age, are extremely significant in shaping the brain since "hands on" experiences cause the child to develop increasing numbers of brain

[85] *Perry 2002:92*
[86] *(Bloch, 1991; Kotulak, 1998; Carnegie Task Force, 1994; Willer, 1990; Perry, 2000; Shonkoff & Phillips, 2000; Fancourt, 1999; Shore, 1997)*
[87] *Lawrence Frank*
[88] *(Paley 2004)*
[89] *(Elkind 2007*)

synapses, or connections that shape and pattern the growing brain. Play, in the context of secure attachments to adults, gives children the enrichment, stimulation, and physical activity they need to develop their brains for future learning.[90]

Young children's learning and growth ought to be focused on creating meaning, that is, on developing an understanding of different aspects of the world around them. Interactions between adults and children, child to child, are very important as they influence the development of a child. Children interact to learn and learn to experience through interaction with objects. They promote day today experiences; it is through interactions that children develop a sense of self, a sense of being a member of a community and the world around. A teacher has the responsibility to provide opportunities for children to engage in interactions, participate in activities as individual or as a group that will contribute to the development of new knowledge and functioning while promoting self- confidence and other developmental appropriate skills.

Self-concepts concern individuals' awareness of their own abilities and worth. These depend on indication existing to the individual and also the cognitive ability to process this information[91]. Self-concepts vary across different domains, for example, relating to academic capabilities, social capabilities, or general self-worth[92]. Psychologists have developed self-concept scales, which reflect domains of self- concept. These are: **physical ability** – based on perceptions of skills and interest in sports and games; **physical appearance, peer relations** – self perceptions of how easily the individual makes friends and their popularity; **parent relationships** – perceptions of how well the individual gets on with their parents and whether they feel that their parents accept and approve of them; **reading**, which encompasses interest and enjoyment as well as ability to read; **maths**; school, which refers to school subjects in general; and esteem**. Esteem** is the individual's self-perception of his- or herself as an effective, capable individual who has self-confidence and self-respect and is proud and satisfied with the way they are[93]. **Self-concept** develops in important ways whilst children are at ECCDE Centre. Amongst very young children, self-concept is consistently high, but with increasing life experience children learn their relative strengths and weaknesses. In general, their level of self- concept declines, becomes more differentiated with age, and becomes more highly correlated with external indicators of competence, such as skills, accomplishments, and the opinions of significant others[94]. Education at this level should project to impact on the process of Child Development in creating self-actualisation.

Self-esteem: It has been suggested that people who have very low self-worth tend to treat themselves badly and may invite bad treatment from others, but do not treat others badly[95]. The costs of low self-worth amongst young people include unhappiness, symptoms of depression, suicidal thoughts and suicidal attempts, eating disorders, victimisation, teenage pregnancy, and difficulties in forming and sustaining close relationships[96]. To the extent that use or abuse of illegal drugs, drinking to excess and smoking are acts of defiance on the part of adolescents, low self-

[90] *(Shore, l997)*
[91] *Markus and Wurf, 1987*
[92] *Shavelson, Hubner and Stanton, 1976*
[93] *Marsh, Craven and Debus, 1998*
[94] *Marsh, 1985 and 1990; Marsh et al., 1984; Shavelson, Hubner and Stanton, 1976*
[95] *Emler, 2001*
[96] *Emler, 2001*

worth may afford protection from these behaviours[97]. On the other hand, it is also plausible that teenagers who do not see drug taking as an act of defiance but are aware of the negative consequences will be less likely to use drugs to excess if they have high self- worth and believe that they are worth taking care of[98].

4.12. Empirical Evidence

An increasing body of evidence suggests that providing high-quality preschool experiences, combined with parent involvement and improvement of health status, can have significant effects on children's language and cognitive skills by age 5. Reports of intensive early intervention with disadvantaged children have shown effect sizes of progressing (0.5–0.75) for the High Scope Perry Preschool Project[99], the Abecedarian Project,[100] and the Chicago Child–Parent Centers.[101] The Perry Preschool Program and the Abecedarian trials are randomized controlled trials of early educational programs that targeted low-income children and showed benefits that extended beyond formal school years into adulthood. The Perry Scope Program began when children were ages 3 and 4 and provided intensive preschool education and home visits for children in poverty. The Abecedarian Project began during the first year of life and provided intensive services to poor and primarily African American mothers and children for 5 years. Both were intensive, high-quality efficacy studies. The Child–Parent Center Program in Chicago enrolled over 1500 low-income children and provided comprehensive services from kindergarten through third grade as an ongoing program.

Longitudinal follow-up has shown that children in the intervention were more likely to graduate from high school, attend college, have fulltime employment, and be enrolled in health insurance, and less likely to have felony arrests, convictions, arrests, or depressive symptoms. Although these findings are impressive, some caution is warranted because the children were not randomly assigned to the intervention, raising the possibility of selection bias.[102] However, positive effects have also been found for other state-funded and quality childcare programs, although the effect sizes are lower than for the efficacy trials.[103]

The Early Head Start program is another example of an early intervention program designed to promote school readiness and prevent the negative effects of poverty on educational attainment among children prior to age three. In 2004 Early Head Start served 63,000 low-income families across America through high-quality home visits, child care, case management, parent education, health care, and referrals. A recent evaluation of a randomized trial among 3001 families showed that by age 3, children who participated in Early Head Start were better prepared for preschool than control children, as defined by their cognitive and language development, emotional

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97 Emler, 2001

98 Modrein-Talbott et al., 1998

99 SCHWEINHART, L. et al. 2005. Lifetime Effects: The High/Scope Perry Preschool Study through Age 40. Monographs of the High/Scope Educational Research Foundation (No. 14); High Scope Press; Ypsilanti, MI

100 CAMPBELL,F. et al. 2002. Early Childhood Education: Young Adult Outcomes from the Abecedarian Project. Appl. Dev. Sci. 6: 42–57.

101 REYNOLDS, A.J. et al. 2007. Effects of a school-based, early childhood intervention on adult health and well-being: a 19-year follow-up of low-income families [see comment]. Arch; Pediatric. Adolescent; Med. 161: 730–739

102 OLDS, D. 2007. Improving preschool for low-income children with programmatic randomized controlled trials Arch; Pediatric; Adolescent; Med. 161: 807–809

103 VANDELL, D.L. et al. 2005. Activities, engagement, and emotion in after-school programs (and elsewhere) New Dir. Youth Dev. 121–129, 113–124

engagement of the parent, sustained attention with toys, and low rates of aggressive behavior.[104] In addition, parents of children who received the intervention were more emotionally supportive, more verbal, spent more time reading to their children, and were less likely to spank their children, compared to control parents. These findings highlight the importance of involving parents in the intervention and measuring the impact of the intervention on their behavior and parenting.

4.13. Conclusion

We can therefore conclude that the role of education in the early childhood should play an important role in the development of self-concepts. Education ideally provides children with external feedback about their competencies in academic, psychological and social areas. The child develops perceptions of her or himself from her or his academic successes and failures, and also from her or his relationships with peers and teachers. These can be managed in ways that may be supportive or damaging to emotional health and well-being. Self-concepts impact upon and are affected by each other and by the other factors discussed in this section: resilience and patience. If an individual has a high regard for her or himself generally and of her or his abilities in particular, she or he will be more likely to consider her or himself capable (self-efficacy) and be more inclined to persevere in the face of adversity (resilience). Through channels involving these psychosocial and intra- psychic factors, positive self-concepts promote positive health behaviours, protect mental health and help individuals to manage chronic health conditions[105]. Particularly important potential mediators of education effects on health are self-concepts of self-esteem and self-efficacy. Other aspects of self-concept such as body image may also be very important for some health and health behaviour outcomes but have less direct relationships to education and so are not the focuses here.

[104] *LOVE, J.M. et al. 2005: The effectiveness of early head start for 3-year-old children and their parents: lessons for policy and programs. Dev. Psychol. 41: 885–901*

[105] *Schuller et al., 2002; Hammond, 2004*

Chapter Five

Results and findings

5. Introduction

This chapter submits the findings based on the primary data of the sampled health centres, ECCDE centres, NGOs, District offices in two districts of Chibombo and Lusaka with a total number of 347 respondents. Qualitative information has also been provided, based on some subjective sources and field experiences, to sustain the findings. Based on this data analysis, the study will first try to investigate the factors influencing nutritional, health and educational impact on child development. Second, the study will focus on whether socio-economic, environmental, parental factors contribute to the downplaying of child development in Zambia as well influence early childhood activities and any extra benefit to the children in their performance and social skill.

The comparative analysis of the data generated in this study reveals three dominant and pervasive psychosocial processes related to the central problematic issue of the struggle for congruence in service of the children's best interests. While each process is subsidiary to the main theme, each could also be viewed as a core category in its own right in relation to the sub-problem within community and home life and work. The most general, or pervasive, psychosocial process identified pertains to:

5.1.1. Overall child development and operation of the community by creating an additional family living environment.

5.1.2. At the level of care work, the primary challenge was found to be responding to feeding styles and availability of food as well health and wellness-based behaviour.

5.1.3. At the level of children, a third basic psychosocial process was identified, namely developing a sense of normality and build up higher interactional programmes.

On the basis of a comparative analysis of the interpersonal interactions occurring within these communities as noted during the visits and discussed in interviews, eleven dynamics emerged as most pervasive and influential. The class of interactional dynamics identifies the most momentous modes of relation among persons within these joined communities. It can be generalized as the Zambian attitude. The interactional dynamics can be understood as the key relational ingredients of the communities under study. Briefly stated, the dynamics include the following:

a. Listening and responding with respect
b. Communicating a framework for understanding
c. Building rapport and relationship
d. Establishing structure, routine and expectations
e. Inspiring commitment

f. Offering emotional and development support
g. Challenging thinking and action
h. Sharing power and decision making
i. Respecting personal space and time
j. Discovering and uncovering potential; and
k. Providing resources.

These outlined above are great ingredients to a comprehensive approach to ECCDE. In order to collect data for this exercise, data collection guides for children, District Medical office (DMO), District Social Welfare Office (DSWO), District Education Board Secretary (DEBS) office, and Community members were administered. The data collection guides for children, parents and community members sought information that was philosophical, pedagogical and sociological and attitudinal in nature. The questionnaire for the DEBS office, DMO and DSWO and Civil Society contained ideas on structural, collaboration, status quo and responsibility.

5.2. Summary of Findings

5.2.1. According to FAO 2009, 60% of Zambian households cannot afford 3 meals a day. This translates in the higher levels of under five year olds malnutrition. The Zambian child nutrition profile shows that 60% of households cannot afford three meals per day[106], which leads to inadequate nutrient intake and malnutrition. The same research shows that in the 2000–02 periods, the dietary energy supply was only 1,905kcal per capita/day (ibid.). This indicates that households' actual calorie intake is lower than the estimated necessary requirement of 2,056kcal per capita/day. Carbohydrates such as cereals and starchy roots are the main source of energy which account for 80% of the total energy intake (ibid.). This suggests that the intake of other essential nutrients as well as protein and lipids is generally insufficient

5.2.2. 42% of the respondents practice exclusive breastfeeding while 58% introduced other foods between 3 and 5 months. This is the common practice despite the understanding that Breast milk alone is the best possible food for the baby for about the first six months. In these early months, breast milk helps to protect against diarrhea and other common infections. Breast milk actually changes to cope with the changing nutritional needs of a growing baby.

5.2.3. 60% of respondents from peri-urban and rural areas indicated that early stimulation like singing to children, playing with children and watching children at play while all including those from urban areas indicated buying play things, reading stories to children were very important to the development of the children.

5.2.4. The respondents 100% demonstrated a level of understanding on diet, nutrition and child feeding but attributed their failure to comply practically with lack of resources both material and financial especially for the female

[106] *(FAO 2009*)

headed homes. The 2008 National Nutrition Surveillance Survey found that on average, only 4 out of 13 food groups were consumed in a day by households. Commonly consumed food groups included cereals and cereal products (98.9%), dark leafy vegetables (80.0%), oil and fats (60.6%), sugary foods (48.8%) and legumes, nuts and oil seeds (40.7%). Only 1% of the dietary energy supply (DES) is provided by fruit and vegetables. The low supply (5%) of foods of animal origin (meat and offal, milk and eggs, and fish) contribute to iron and protein deficiency. Study results show that 27% to 65% of 22the population cannot afford a minimum cost of a nutritionally adequate diet.

5.2.5. All parents were aware of how to take care of sick children but attributed their failure to comply practically with lack of resources both material and financial especially for the female headed homes. According to the Living Conditions Monitoring Survey (LCMS) undertaken in 2010, over sixty percent of Zambia's populations live below the poverty datum line, with rural poverty levels at 77.9% while life-threatening poverty stood at 42% of the total population. Income distribution remained highly unequal, resulting in worsening human deprivation as demonstrated by the decline in the country's Human Development Index (HDI). This has translated into very low record of life expectancy at birth. In Zambia, it is evident that poverty by and large continues to carry a female face. For example, extreme poverty is higher in female headed households (60.4 %) compared to male headed households (57.1 %).

5.2.6. 100% parent respondents did indicate that Malaria, Diarrhea and Coughs were the most common illnesses in the communities. However, none of the health practitioners mentioned Malaria as a common illness and this therefore can be attributed to the notion held by most community members that any high temperature illness is Malaria. 100 % health practioners mentioned Diarrhoea and Respiratory tract Infection while 33.3% mentioned Pneumonia and fever.

5.2.7. Currently Zambia has the following policies on children. The National Child Policy of 2006 that is been reviewed, the National Child Health Policy regulates the provision of health services to children; the National Policy on Education currently being reviewed, Early Childhood Education Policy has been in draft since 2008 and is awaiting adoption, the National Disability Policy of 2012, National Social Protection Policy that deals with the child protection and social welfare, and the National Nutrition Policy. These policies lie in different government Ministries.

5.2.8. Health, Nutrition and Education impact on child development

5.3. Parents/ Guardians and Children's responses

5.3.1. Exploratory Data Analysis on Feeding Practices

The study attempted to develop an understanding of feeding practices among children, parents and community members. First, we asked what parents feed their babies for the first six months. Table

4 and 5 shows that close to half (42%) of the parents breast-fed their infants for the first six months. It should be noted that these parents might have given water or other fluids to their infants during this period since the study failed to define exclusivity in terms of avoiding water and fluids. Some of those who reported breast-feeding only for six months may indeed be giving some solid food. The evidence for this is in Table 5 in which (58%) claimed to have begun feeding sometime between 3 to 5 months. These are focused group discussion responses that include some inconsistencies in terms of responses that required consistence. However, even with these inconsistencies, the responses do establish a general pattern of practices among Zambian mothers. This practice implies that parents do understand the importance of breast-feeding as a result of health advocacy activities of the public health sector. However the concept of exclusive breast-feeding (i.e. excluding all forms of other fluids and food except breast milk for the first six months) is ill-understood and is not generally practiced by parents. This is so despite the fact that in Zambia, exclusive breastfeeding rates have increased significantly from 40% in 2002 to 61% in 2007[107]. But this is still not enough. Without adequate vitamin A stores in the body, infants are at greater risk of developing vitamin A deficiency and dying during their first few years of life. Breast milk alone is the best possible food for the baby for about the first six months. In these early months, breast milk helps to protect against diarrhea and other common infections. Breast milk actually changes to cope with the changing nutritional needs of a growing baby.

On nutrition and malnutrition the analysis did indicate that all parents are aware of the good food that they need to feed the children and also understand the implication of undernourishment on the development of the child but blamed the situation on money poverty and scarcity of availability of affordable foods. When asked why they should feed their children with good food they responded by saying that that's when children can grow and develop well.

"Bana ngati bakudya bwino nipamene bakula bwino ndi maganizo yabwino" parents at Shifwankula Health Post*: "Na bana kabalya kabotu balakula chankusu akalango kambiko"* parents at Kayosha Health Centre, meaning "*if children are well fed that's when they grow, reason and develop better"*

In certain areas the respondents intimated the effects of environmental degradation on the production of grain foods and leaf foods as a contributing factor to the failure to provide nutritious foods. However, this writer interrogates this issue further and provides an assumption that the critical role nutrition plays to child development need to be addressed holistically through an integrated approach to childcare that brings players and stakeholders on child related concerns to put up concerted efforts towards child food security.

The Zambian child nutrition profile shows that 60% of households cannot afford three meals per day[108], which leads to inadequate nutrient intake and malnutrition. The same research shows that in the 2000–02 periods, the dietary energy supply was only 1,905kcal per capita/day (ibid.). This indicates that households' actual calorie intake is lower than the estimated necessary requirement of 2,056kcal per capita/day. Carbohydrates such as cereals and starchy roots are the main source of energy which account for 80% of the total energy intake (ibid.). This suggests that the intake of other essential nutrients as well as protein and lipids is generally insufficient.[109]

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[107] *CSO (2009), MOH, TDRC, UNZA and Macro Inc.; Zambia Demographic and Health Survey (ZDHS)-2007, Calverton, Maryland, USA*

[108] *(FAO 2009*)

[109] *Spirulina Zambia 2014*

Table 6: Parents' feeding practices in the first six months

	Total	%	Male	%	Female	%
Breastfeeding Only	*58*	*42%*	*15*	*10.9%*	*43*	*31%*
Breastfeeding only for three months	*80*	*100%*	*27*	*33.3%*	*53*	*66.7*
Other ways of feeding	-	-	-	-	-	-

Table 7: When parents begin feeding solid foods

	Total	%	Male	%	Female	%
Upon birth	*0*	*0*	*0*	*0*	*0*	*0*
After two months	*0*	*0*	*0*	*0*	*0*	*0*
After three months	*80*	*58%*	*27*	*22.75%*	*53*	*35.25%*
After six months	*58*	*42%*	*15*	*10.9%*	*43*	*31%*
Other	-	-	-	-	-	-

Table 8: Parents' understanding of child nutrition

	Total	%	Male	%	Female	%
Balanced diet	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Good food handling and preparation	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Food Hygiene	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Feeding	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Table 9: Parents' understanding of effects of malnutrition

	Total	%	Male	%	Female	%
Child looking skinny and sickly	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Child not able to play with friends	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Describe Marasmus	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Describe Kwashiorkor	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Agree it affects child development	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Table 10: Health and hygiene

	Total	%	Male	%	Female	%
Boiling drinking water	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Washing hands after using the toilet	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Washing fruits before eating	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Cleaning the surroundings	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Using the toilet other than the bush	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

5.3.2. Exploratory Data Analysis on Child Stimulation

The concept of stimulating or developing the senses is not clearly understood. Most parents and caregivers do not know about simple things that they can do to stimulate the child's senses. Talking to and singing to children (language) stimulate their cognitive development. All of child respondents did list these as activities they want done to them to stimulate their senses. When asked if they would feel good to be provided with play materials and other areas of supports as in Table 9 all the children affirmed being happy.

When parents were asked how they stimulate the senses, the answers varied. The activity for stimulating senses listed by most was giving toys and other colorful objects and storytelling but this

too was mentioned by all the children or all of the child respondents. The lack of common responses among parents demonstrates that stimulating or developing senses is not something that has received public attention as yet or is conceptually understood by the general public. The number of people who could not respond to the question also indicates that many had not previously thought about this issue. As the study demonstrates, stimulating the senses of children from infants and toddlers is extremely important to the growth of their emotional and cognitive potential. Most parents 60% especially from the peri-urban and rural set up listed very encouraging practices in this regard. These are, "telling stories or singing songs" and "playing with children". Such practices need to be encouraged. Taking care of children i.e. bathing them, feeding them, and by ensuring they get their immunisation was perceived important by all (100%) respondents who affirmed practicing it mainly because we met them at Health facilities.

Most of the early childhood education is based on the early stimulation for logical thinking and reasoning. These responses has an implied meaning that reflects in the data that states that children from poor families are more likely to repeat grades and fail to make it in adulthood. The early childhood education is meant to stimulate the minds of the children to reason, think and discover things. **Ayn Rand** puts it that *"The only purpose of education is to teach a student how to live his life-by developing his mind and equipping him to deal with reality. The training he needs is theoretical, i.e., conceptual. He has to be taught to think, to understand, to integrate, to prove. He has to be taught the essentials of the knowledge discovered in the past-and he has to be equipped to acquire further knowledge by his own effort."* The other researcher **Bill Beattie** postulates that *"The aim of education should be to teach us rather how to think, than what to think— rather to improve our minds, so as to enable us to think for ourselves, than to load the memory with the thoughts of other men."*

Table 11: How children want to be stimulated

	Total	%	Male	%	Female	%
Providing toys and colorful objects for them to develop senses	*146*	*100%*	*45*	*33.5*	*101*	*66.5*
Telling them stories/singing songs	*146*	*100%*	*45*	*33.5*	*101*	*66.5*
Teaching them to speak by talking to them	*146*	*100%*	*45*	*33.5*	*101*	*66.5*
Feeding them good food	*146*	*100%*	*45*	*33.5*	*101*	*66.5*
Helping them in what they do/or let them observe you while working	*146*	*100%*	*45*	*33.5*	*101*	*66.5*
Thanked and praised after accomplishing a task	*146*	*100%*	*45*	*33.5*	*101*	*66.5*

Table 12: Parents' practices in the first year of the child to ensure that the baby remains healthy

	Total	%	Male	%	Female	%
Immunization	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Provide healthy food and clean boiled water	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Visit the doctor when the child is sick	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Breast-feed	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Bathing regularly/keeping the baby clean	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Feeding regularly	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Weighing regularly	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Looking after with care	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Keeping the child's belongings clean	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Keeping the environment clean	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Table 13: Parents' practices for the three to six year old children remain healthy

	Total	%	Male	%	Female	%
Take the child to the medical facility	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Provide Oral Rehydration Salts (ORS)	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Give plenty liquids including lemonade	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Bath and keep the child clean	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Feed with good healthy foods	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Treat with traditional medicines	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Exploratory Data Analysis on Parental Routine Activities

Activities that parents and other caregivers carry out routinely with children less than six provide insight to the quality of the childcare practice. Therefore, the study asked what parents do for their children as part of the daily routine. The responses received are tabulated in Table 12 and 13. "Regular feeding of good food" and "keeping the child clean" are understandably the two most popular responses. Regular feeding of good food, keeping the child clean, and teaching them were ranked the top by the respondents in Female 69.6% with 30.4% support from the male counterparts. Playing with children, putting them to bed, taking them to school and spending time with the child came second at 73% female and 3.6% males. You will realise that most routine activities with children are undertaken by the female. This therefore calls for more efforts to ensure the men are involved in issues of childcare.

When all the responses are considered, both from Males and the Females, it is clear that the routine activities listed by caregivers relate to (1) providing basic needs (food and cleaning), and (2) teaching or providing education (teaching through play is not what's meant here), However, it is noted that 73% of females and 3.6% of males did mention playing with the child as a routine activity. The gender difference in this response shows that few fathers and other male caregivers spend time playing with their children.

Table 14: Routine things done for and with children under three

	Total	%	Male	%	Female	%
Feeding healthy food regularly	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Bathing and keeping them clean	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Putting them to bed	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Providing things they need	*96*	*73%*	*0*	*0%*	*96*	*73%*
Playing with the child	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Spending time with the child	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Breast-feeding them	*96*	*73%*	*0*	*0%*	*96*	*73%*
Taking them to school	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Teaching them	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*

Table 15: Routine things done for and with children three to six

	Total	%	Male	%	Female	%
Feeding healthy food regularly	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Bathing and keeping them clean	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*

Putting them to bed	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Providing things they need	*96*	*73%*	*0*	*0%*	*96*	*73%*
Playing with the child	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Spending time with the child	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Breast-feeding them	*96*	*73%*	*0*	*0%*	*96*	*73%*
Taking them to school	*101*	*76.6%*	*5*	*3.6%*	*96*	*73%*
Teaching them	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*

5.3.3. Exploratory Data Analysis on common Childhood illnesses and Care for sick children

The study asked from caregivers about what the most common childhood illnesses were and how they care for babies and toddlers who get sick. Table 14, 15 and 16 ranks the responses received to this question. The answers given reflect the communities' understanding of the different childhood illnesses and the importance of giving children care and support when they are sick. Among the supports outlined are plenty of liquids, temperature control, plenty rest, supplementary feeding, stimulation and seeking medical attention when a child is suffering from diarrhoea, malaria, coughs and many others. The responses also clearly demonstrate the effectiveness of government's effort to increase public awareness about the importance of using Oral Rehydration Salts (ORS) packets, boiled water, hygiene and health care support and common temperature control methods. No significant differences exist in the responses between Male' and the Females and between parents and caregivers.

Malaria, diarrhoea and chicken pox were severally mentioned scored the highest health threat at 100%. The impact of Malaria and diarrhoea on the developing child is that it causes iron deficiency and anaemia that affect brain development and the easy circulation of oxygen in the body. More so Malaria and diarrhoea reduces appetite in children that lead to dehydration and malnutrition. Despite the efforts health practitioners are putting in to sensitise the public on Malaria and diarrhoea control, the illnesses are still ravaging the fibre of child health. Diarrhoea is attributed to be caused by poor water sources and negligence on the part of the parents and guardians. It is a waterborne disease that can be controlled by adhering to hygiene principles. The respondents did indicate that water sources especially during the hot season are not very safe because of the scarcity of the water. See table 16.

Table 16: common childhood sicknesses

	Total	**%**	**Male**	**%**	**Female**	**%**
Malaria	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Diarrhoea	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Chicken Pox	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Coughs	*Coughs were mentioned in the side-lines of flu*					
Flu Fever	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Table 17: How parents care for children who are sick

	Total	**%**	**Male**	**%**	**Female**	**%**
Take the child to the medical facility	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Provide Oral Rehydration Salts (ORS)	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Give plenty liquids including lemonade	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Bath and keep the child clean	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*

Feed with good healthy foods	*138*	*100*	*42*	*30.5%*	*96*	*69.5%*
Treat with traditional medicines	*65*	*47.1%*	*15*	*10.9%*	*50*	*36.2%*

Table 18: Sources of water

	Total	**%**	**Male**	**%**	**Female**	**%**
Tap water	*50*	*36.2%*	*12*	*8.7%*	*38*	*27.5%*
Hand pump	*67*	*48.6%*	*20*	*14.6%*	*47*	*34%*
Well	*21*	*15.2%*	*10*	*7.2%*	*11*	*8%*

5.3.4. Exploratory Data Analysis on availability and ECCDE services

Early childhood services should be available for children close to their homes. Whilst the respondents were discussing formal settings it was clear also from observations that a lot of non-formal ECCDE arrangements existed in the communities. Where you could not see a formal ECE centre you still could observe children at play using all sorts of self-developed play materials. Tapping into this rich child resource definitely would enrich the childhood experiences.

The study wanted to establish the presence of formal facilities that support ECCDE in these communities. It was agreed by 100% respondents that there was one government health care facility in each of these communities under study. The facilities were confirmed by 100% respondents to provide immunisation, child growth monitoring, antenatal care for expectant mothers and neonatal and postnatal care for delivering mothers. The ECE centres were available in all the areas but the researcher could not establish the actual numbers. Child protection entities were mostly non available within the communities thereby affecting the child right approaches to service provision. With the high level of poverty and disease burden the need for community Social Workers cannot be over-emphasised. The tables below demonstrate the availability and services provided in these facilities. With the time available 50 ECE centres that are Govt., private, CSO and faith based run were visited. We couldn't talk to anyone at the government ECE centres because mostly it was exam time and the children were not available in schools.

Table 19: Availability of ECCDE services

	Total	**%**	**Govt.**	**%**	**Private**	**%**
ECE centres	*50*	*100%*	*2*	*4%*	*48*	*96%*
Health and nutrition Centres	*9*	*100%*	*9*	*100%*	*0*	*0*
Child Protection service centres	*0*	*0*	*0*	*0*	*0*	*0*
Adult Education Centres	*0*	*0*	*0*	*0*	*0*	*0*

Table 20: Services children receive at ECCDE centres

	Total	**%**	**Male**	**%**	**Female**	**%**
Play and interaction	*70*	*50.7%*	*25*	*18.1%*	*45*	*32.6%*
Reading and writing	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Supplementary feeding	*28*	*20.3%*	*11*	*8%*	*17*	*12.3%*
Immunisation	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Child health monitoring	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Antenatal services	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*
Neonatal and postnatal care	*138*	*100%*	*42*	*30.5%*	*96*	*69.5%*

5.4. Teachers and Health Workers

5.4.1. Exploratory Data Analysis on ECCDE Services

Service providers play an important role in the growth and development of children. Health workers monitor the children's health whilst teachers stimulate learning and experiences for children. The study wanted to establish the support services these workers need as well their thoughts on the best approach to childcare.

Through interactions we related to basic learning and teaching materials availability, teacher presence and innovativeness, pedagogy and interaction styles and community involvement. However, other factors that have influenced our findings is "whether children actually learn" or "access health services" -- from personal characteristics (of the children, parents, health workers and teachers), home and school environments, to issues of ECE access and equity – that are an important part of the picture. These factors were measured through a variety of interactions that included focus group discussions and one on one interview including transact walks.

Teachers in early childhood centres did indicate that they hold a partnership with the children's parents in ensuring that the best is made out the children. Teachers surveyed agreed that developing senses is crucial to child development. When asked about how caregivers assist in stimulating the senses of infants and toddlers, 66.7% of the teachers said that it is done by providing toys and colorful objects for children to play and 16.65% said that it is by teaching names of things. The other group 16.65% also said that helping children to identify different objects, people, places and sounds is also important in this respect. As discussed earlier on, parents too placed providing toys at the top but also considered telling stories and singing songs as important activities in developing senses.

The findings elaborated below serves two purposes. First, these findings help to triangulate the observations made in Part A, the section on parents. What teachers had to say, in most cases, are similar to what parents said and, therefore, validate the findings of this survey. The second purpose these findings serve is that they help to speculate the quality of pre-school teaching. No doubt, reflection on the findings included here will lead the reader to assume that pre-school teachers need further knowledge about early childhood care and development issues.

On the part of the Health workers this section will try and triangulate the observations made by parents especially on the common illnesses in childhood recorded at the health facilities. What the health practitioners had to say was in most cases similar to what the parents said. You will realise that among the health practitioners none mentioned Malaria because of the understanding of the level of control that has been in place. But for a common person any fever that makes the temperature to rise is referred to as Malaria. 100 % health practioners mentioned Diarrhoea and Respiratory tract Infection while 33.3% mentioned Pneumonia and fever.

100% teachers and health workers assumed that the integrated approach to ECCDE will bring out the best result and provide the best care for the children. By integrated they meant having health, nutrition and education services and activities placed in one place for easy access by children and parents. The same number spoke to collaborative arrangements where health and nutrition can be

delivered to ECCDE centres by health practitioners from both public and private including CSO providers.

100% attributed the inadequate provision of requisites like teaching and learning materials, outdoor and indoor materials, safe and secure infrastructure like buildings and provision of clean water and sanitation weakens the quality of the ECCDE service delivery. They also indicated that inadequate specialised health workers in childcare as well ECE teachers are a threat to the perceived development of ECCDE in Zambia. There is need therefore, for policy makers and administrators to react with positivity to the situation at hand. From the scores it appears to us like all areas are a are being treated as priority and so we just reported as expressed.

Table 21: How best the service to children should be done

	Total	%	Male	%	Female	%
Integrated services	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Collaborated services	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Individual service	*0*	*0*	*0*	*0*	*0*	*0*

Table 22: Infrastructure ECE centres should have

	Total	%	Male	%	Female	%
Indoor play materials	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Outdoor play materials	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Secure and safe buildings	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Garden for nutritional support	*33*	*100%*	*11*	*33.3*	*22*	*66.7*

Table 23: Staff development

	Total	%	Male	%	Female	%
Continuous Professional Development	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Regular refresher courses	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Specialised child health nurses training	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Nutritionists	*33*	*100%*	*11*	*33.3*	*22*	*66.7*

Table 24: Challenges in the provision of ECCDE

	Total	%	Male	%	Female	%
Inadequate learning and teaching materials	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Unqualified teachers	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Inadequate play materials and space	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Few child specialised medical nurses	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Few facilities for children with disabilities	*33*	*100%*	*11*	*33.3*	*22*	*66.7*
Inadequate nutritional supplement stocks	*33*	*100%*	*11*	*33.3*	*22*	*66.7*

Table 25: Common childhood illnesses

	Total	%	Male	%	Female	%
Diarrhoea	*6*	*100%*	*1*	*16.6%*	*5*	*83.4%*
Respiratory Tract Infections	*6*	*100%*	*1*	*16.6%*	*5*	*83.4%*
Pneumonia	*2*	*33.3%*	*1*	*16.65%*	*1*	*16.65%*
Fever	*2*	*33.3%*	*0*	*0%*	*2*	*33.3%*

5.5. Administrators (District and National) Health, Education and Social Welfare

5.5.1. Exploratory Data Analysis on Policy and monitoring of ECCDE

The purpose of engaging the administrators at District and National level is meant to triangulate the information garnered from the service providers at facility level and the parents, children and other community members. In terms of quality at the level of implementation they observed inadequacies in required materials for the provision of quality ECCDE services. Monitoring accentuates flexibility, openness and the chance to correct weaknesses--to learn from one's mistakes -- at every step, thus giving monitoring the true meaning it deserves. The administrators did indicate that they do monitor ECE/ ECD centres understand the situation existing on the ground that is attributed to inadequate funding for ECE/ ECD. Whilst there is an understanding of the importance of ECCDE services there is a gap in funding towards achieving the set targets.

The Ministry of General Education committed to roll-out a preparatory three year school readiness programme through both school and community-based networks. 1526 primary schools across Zambia have already launched a pre-primary programme. Most teachers engaged with this have been trained and supervise large groups of children (average 1: 50) in unsuitable classrooms with insufficient materials. Water, sanitation and hygiene facilities have not been adapted to suit small children's needs and there is no provision for outdoor play activities in most instances. The policy environment for ECE is briefly covered in the Educate our Future 1996 Policy. The ECE policy with its Implementation Framework is still in draft awaiting adoption by cabinet. *"The consequence is that some of the key issues that are dependent on such policy guidance such as limited access to ECCDE, …….poor infrastructure for ECCDE, multiplicity of line Ministries playing a role in the provision of ECCDE services remain largely unresolved. The current Government's intention to decentralise governance and therefore the impeding devolution of ECCDE provision from the Ministry of Education to Local Councils requires guidance and coordination."* ZANEC Strategic Plan 2011-2015 p.14

Ministry of Health has two child Policies that regulate health service provision and nutrition provision. The Ministry of Community Development and Social Welfare has the social protection policy and draw their legal mandate from the Juveniles Act. These ministries are just but part of the ministries that all care for the safety, development, education and other needs of the child. Social welfare has the powers to close down a childcare institution that doesn't meet the standards set for children to be safe, Ministry of education provides the stimulation through learning activities, ministry of health provides health and health services to children including nutrition, ministry of local government provides the spaces for child programmes. When you look at this you understand the amount of duplicity of responsibility. All the respondents confirmed having policy on children. They all 100% however, lamented the low and sporadic funding towards child issues that mostly supported by donor funds.

50% respondents indicated that they do child assessment in ECE centres using the assessment tool that the MoGE developed recently. The tool doesn't encourage teachers to give children end of term tests as an assessment but to record on daily basis the progress each child is making towards the set age appropriate milestones. Health facilities are monitored and reports are submitted monthly by the facilities. This was confirmed by all staff we spoke to from the health facilities.

100% health staff confirmed that child growth monitoring was done very well in health facilities. They were also quick to note that community members stop bringing children for continuous growth monitoring the moment they complete their inoculations.

All the respondents when asked how the think workers can be upgraded responded that Continuous Professional Development is the best tool that can be employed to ensure children receive quality services. 50% spoke about short intensive courses while 35.7% intimated on workshops and seminars.

This scenario entails that there is need to explore the matter of staff shortfall if children are to receive quality services. There is already a big shortfall of nutritionists in the country that are an important component to child development.

Table 26: Quality assurance

	Total	%	Male	%	Female	%
Monitor ECE centres	*6*	*100%*	*2*	*33.3%*	*4*	*66.7%*
Monitor Health facilities	*8*	*100%*	*3*	*37.5%*	*5*	*62.5%*
Assess child development	*4*	*50%*	*1*	*12.5%*	*3*	*37.5%*
Child Growth Monitoring	*8*	*100%*	*3*	*37.5%*	*5*	*62.5%*

Table 27: Standards and quality

	Total	%	Male	%	Female	%
Up to date with the current trends and practices	*0*	*0*	*0*	*0*	*0*	*0*
Collaborated efforts on childcare	*6*	*42.9%*	*1*	*7.2%*	*5*	*35.7*
Assessment of Childcare facilities	*14*	*100%*	*4*	*28.6%*	*10*	*71.4%*
Use of Early Learning Standards	*0*	*0*	*0*	*0*	*0*	*0*

Table 28: Policy

	Total	%	Male	%	Female	%
Availability of Child Policy Guideline	*14*	*100%*	*4*	*28.6%*	*10*	*71.4%*
Good funding levels	*0*	*0%*	*0*	*0%*	*0*	*0%*
Low funding levels	*14*	*100%*	*4*	*28.6%*	*10*	*71.4%*

Table 29: Professional Development

	Total	%	Male	%	Female	%
Continuous Professional Development	*14*	*100%*	*4*	*28.6%*	*10*	*71.4%*
Intensive Short Courses	*4*	*50%*	*1*	*12.5%*	*3*	*37.5%*
Workshops and Seminars	*5*	*35.7%*	*2*	*14.3%*	*3*	*21.4%*

5.6. Civil Society Organisations

5.6.1. Exploratory Data Analysis on ECCDE knowledge and practice

The study wanted to establish how CSOs define and understand ECCDE. We shared questionnaires with 16 ECCDE CSOs and only 4 responded. We are calculating 100% from the 16 organisations thereby making the 4 CSO to be calculated at 25%. In response the 4 organisations gave powerful feedback some of which we quote in this narration. The first ECCDE definition stated or read as follows;

"It is a package of all preparatory programmes, approaches, activities and support given to a child from birth to the time the child enrolls into the first grade of school. ECCDE therefore encompasses the necessary care, development and early education activities that prepare a child for life. ECCDE learning is mainly through play, exploration or discovery with both the social and natural environments. It forms the basis for later development and education, which on average begins at age 7 up to adulthood covering primary, secondary, tertiary and/ or skills development";

While the other definition that we are quoting for triangulation as said by the respondent states that;

"Early Childhood entails the period that begins prenatally (0 year) up to the time when the child turns 8 years of age. Care means the basic needs that the child needs in order to grow, develop and survive such as food, clothes/warmth, immunizations, shelter and also love, protection from abuse and stimulation to activate the five senses while Development and Education is about how the child changes over times holistically in various domains of child development which include: physical, socio-emotional, cognitive and language development from simple to complex way of doing things as the child grows. In other words ECCDE entails programs and policies that support the growth, development, protection and survival of a child from conception up to 8 years of age".

Going by theses definitions and interactions 25% indicated a high level of knowledge in ECCDE. We further uphold the understanding and adage that says "the older the wine the better it tastes" just to indicate that the said establishments have been in the ECCDE circles for some time now in Zambia. The organisations 18.72% also demonstrated that they provided community based ECCDE centre services for the 3-6 year olds, home-based ECCDE care and support for the 0-3 year olds and Parenting Education run with and in collaboration with local community members. These approaches integrate health education and services, nutrition education and supplementary feeding, clean water and sanitation, child protection, centre construction and provision of play materials and parenting skills development and other crosscutting issues which are a necessity to a comprehensive child development intervention. 6.24% indicated that they are more into ensuring the provision of Child protection as they promote child rights. This organisation does not provide direct ECCDE services in terms of Centre based but do provide checks and balances in budget tracking and advocacy for increase in the budgetary allocation to ECCDE including policy development and implementation.

The study also wanted to establish how CSOs feel and think about Caregiver Motivation, ECCDE coordination, ECCDE approaches and the Policy environment. When requested to respond the provided the responses summarised below and others will be quoted as given. In terms of programming 25% preferred the integrated approach that outlines activities according to age/ developmental stages and provision at each age of the necessary support, care, activities and guidance that would ensure full development of the child's potential for growth, learning and development. Consideration of the knowledge of child psychology, health and nutrition should be made in designing and delivering ECCDE programs. The feeding programs should also have nutrition training and demonstrations for caregivers. To be included are a supply of a variety of affordable but highly nutrition locally available food stuffs for the centres. Food safety and hygiene be provided in the nutrition lessons for teachers, caregivers and the community at large. The organisations indicated that children cannot learn and participate actively when hungry or sick.

25% indicated been aware of the policies that deal with children in Zambia as listed here. National Child Policy (currently under review), National Child Health Policy, National Education Policy

1996 (currently under review), Early Childhood Education Policy (awaiting adoption), National Disability Policy, National Social Protection Policy and National Nutrition Policy. All these policy falls in different Government Ministries but all targeting the child. It will just be prudent to have matters to do with children dealt with in one stop shop arrangement. At the moment we deal with the child in a disintegrated manner. In the words of **Margaret Alva** a child rights and ECD advocate:

"…a child is born without barriers. Its needs are integrated and it is we who choose to compartmentalize them into health, nutrition or education. Yet the child itself cannot isolate its hunger for food, from its hunger for affection or its hunger for knowledge. This same unity extends to the child's perception of the world. The child's mind is free of class, religion, color or nationality barriers, unless we wish it otherwise. It is in this intrinsic strength in the unity of the child, that we need to exploit, for building a better world and a more integrated development process".

We need to put theory to practice if we are to achieve more in ECCDE in Zambia.

Table 30: Knowledge of ECCDE

	Total	%	Male	%	Female	%
High level	*4*	*25%*	*2*	*12.5%*	*2*	*12.5%*
Medium level	-	-	-	-	-	-
Low level	-	-	-	-	-	-
Other	-	-	-	-	-	-

Table 31: Type of ECCDE Programme

	Total	%	Male	%	Female	%
Centre based 3-6	*3*	*18.72%*	*1*	*6.24%*	*2*	*12.48%*
Home based 0-3	*3*	*18.72%*	*1*	*6.24%*	*2*	*12.48%*
Parenting Education	*3*	*18.72%*	*1*	*6.24%*	*2*	*12.48%*
Open Air/ Play group	-	-	-	-	-	-
Market Place	-	-	-	-	-	-
Special Community Rehab	-	-	-	-	-	-
Advocacy on ECCDE	*1*	*6.24%*	*1*	*6.24%*	-	-

Table 32: ECCDE Programming Approach

	Total	%	Male	%	Female	%
Integrated Approach	*4*	*25%*	*2*	*12.5%*	*2*	*12.5%*
Collaborated approach	*3*	*18.72%*	*2*	*12.48%*	*1*	*6.24%*
Individual Approach (Organisation)	*0*	*0*	*0*	*0*	*0*	*0*
Others	-	-	-	-	-	-

Table 33: Caregiver Motivation

	Total	%	Male	%	Female	%
Govt. support through CPD	*3*	*18.72%*	*1*	*6.24%*	*2*	*12.48%*
Caregiver Stipend	*4*	*25%*	*2*	*12.5%*	*2*	*12.5%*
Teaching and learning materials	*2*	*12.5%*	*1*	*6.25%*	*1*	*6.25%*

Table 34: ECCDE Coordination

	Total	%	Male	%	Female	%
National Child Council	*4*	*25%*	*2*	*12.5%*	*2*	*12.5%*
Inter-ministerial Committee	*0*	*0*	*0*	*0*	*0*	*0*
National Coordinating Committee	*2*	*12.5%*	*1*	*6.25%*	*1*	*6.25%*

5.7. Discussion of findings against objectives

Objective 1: To gather information and identify programmes, structures and resources for care and support that exist internationally and in the communities of Zambia

We have garnered research and empirical evidence to prove beyond any reasonable doubt the impact of nutrition, health and education on child development. This can be discussed as in brief as follows;

A. The indication of the effect of nutritional, anaemia and iron deficiency on the brain; on the behaviors of infants, pre-schoolers and their caregivers and the suggestion that the effect is a long-term one combine to make a persuasive case for early intervention to prevent iron deficiency in children from an early stage of life. We therefore can state here that nutrition has an impact on Child Development in all domains. This empirical evidence suggests therefore that we need to do much for children below 6 years if we were to develop productive and responsible adults for the country. The 2013/2014 ZDHS report gives a scenario of the situation for Zambia that is not good and with evidence confirming the impact of nutrition on child development; we need to double our efforts in the area of early childhood human development if the opposite of the current can be seen. We have homes, families, community arrangements, health centre and ECE facilities and CSO intervention project at least in almost all the communities that can help offset this.

B. The health sector has a crucial role in addressing ill health which contributes to undernutrition. Specifically, malaria frequently causes iron deficiency and anaemia; measles and diarrhoeal infections increase the body's Vitamin A requirements and can trigger severe forms of deficiency such as blindness; parasitic infections, particularly hookworm cause iron deficiency and anaemia; and a wide range of infections often reduce appetite and decrease the amount of food that is consumed, leading to weight loss and micronutrient deficiencies. HIV positive individuals have lower resistance to fight other opportunistic infections and are more prone to be malnourished. HIV infection has also shown to increase the energy consumption needs of affected individuals, and ART adherence improves significantly when combined with food and nutrition support. Disease control interventions are estimated to contribute to a 3% reduction in stunting though not all possible interventions were included in this estimation. Health can conclusively be stated as a factor that impacts both positively and negatively in child development and therefore a lot of community awareness on childhood illnesses should be undertaken. We have homes, families, community arrangements, health centre and ECE facilities and CSO intervention project at least in almost all the communities that can help offset this.

C. We can therefore conclude that the role of education in the early childhood should play an important role in the development of self-concepts. Education ideally provides children with external feedback about their competencies in academic, psychological and social areas. The child develops perceptions of her or himself from her or his academic successes

and failures, and also from her or his relationships with peers and teachers. These can be managed in ways that may be supportive or damaging to emotional health and well-being. Self-concepts impact upon and are affected by each other and by the other factors discussed in this section: resilience and patience. If an individual has a high regard for her or himself generally and of her or his abilities in particular, she or he will be more likely to consider her or himself capable (self-efficacy) and be more inclined to persevere in the face of adversity (resilience). Through channels involving these psychosocial and intra- psychic factors, positive self-concepts promote positive health behaviours, protect mental health and help individuals to manage chronic health conditions. Particularly important potential mediators of education effects on health are self-concepts of self-esteem and self-efficacy. Other aspects of self-concept such as body image may also be very important for some health and health behaviour outcomes but have less direct relationships to education and so are not the focuses here. We have homes, families, community arrangements, health centre and ECE facilities and CSO intervention project at least in almost all the communities that can help offset this.

Most countries and research are generally in support of a comprehensive approach to ECCDE than the one segment approach. By comprehensive we mean nutrition, health, education and parenting put together as way of fighting poverty and changing the outlook of child development.

Objective 2: To gather information on what line ministries and other organizations are providing in Early Childhood Care and Development, Education (ECCDE) in Zambia

A. Ministry of Health has two child Policies that regulate health service provision and nutrition provision. They provide immunisation, child growth monitoring, antennal, neonatal and postnatal care for mothers. They provide health education to mothers on how to care for the pregnancy and the born child. They generally promote child health. They also generally provide health and health services to children including nutrition.

B. The Ministry of Community Development and Social Welfare has the social protection policy and draw their legal mandate from the Juveniles Act. They protect children from abuse and support them with legal redress if they are found on the other side of the law. The ministry also has women clubs and child protection committees at community level.

C. Ministry of education provides the stimulation through learning activities and also under the School Health and Nutrition Policy educate children on hygiene and provide supplemental feeding with support from the donor communities. The ministry of local government provides the spaces for child programmes.

D. These ministries are just but part of the ministries that all care for the safety, development, education and other needs of the child. Social welfare has the powers to close down a childcare institution that doesn't meet the standards set for children to be safe. When you look at this you understand the amount of duplicity of responsibility.

E. The CSO, FBO, CBOs provide community based ECCDE centre services for the 3-6 year olds, home-based ECCDE care and support for the 0-3 year olds and Parenting Education run with and in collaboration with local community members. These approaches integrate health education and services, nutrition education and supplementary feeding, clean water and sanitation, child protection, centre construction and provision of play materials and parenting skills development and other crosscutting issues which are a necessity to a comprehensive child development intervention. The provide Child protection as they promote child rights and also provide checks and balances in budget tracking and advocacy for increase in the budgetary allocation to ECCDE including policy development and implementation

Objective 3: To establish the NGOs, CBOs, FBOs and communities' understanding and appreciation of Nutrition, health and Education and its impact on Child development.

A. On nutrition and malnutrition the analysis did indicate that all parents are aware of the good food that they need to feed the children and also understand the implication of undernourishment on the development of the child but blamed the situation on money poverty and scarcity of availability of affordable foods. When asked why they should feed their children with good food they responded by saying that that's when children can grow and develop well.

B. The study asked from caregivers about what the most common childhood illnesses were and how they care for babies and toddlers who get sick. Table 14, 15 and 16 ranks the responses received to this question. The answers given reflect the communities' understanding of the different childhood illnesses and the importance of giving children care and support when they are sick. Among the supports outlined are plenty of liquids, temperature control, plenty rest, supplementary feeding, stimulation and seeking medical attention when a child is suffering from diarrhoea, malaria, coughs and many others. The responses also clearly demonstrate the effectiveness of government's effort to increase public awareness about the importance of using Oral Rehydration Salts (ORS) packets, boiled water, hygiene and health care support and common temperature control methods. No significant differences exist in the responses between Male' and the Females and between parents and caregivers.

C. When parents were asked how they stimulate the senses, the answers varied. The activity for stimulating senses listed by most was giving toys and other colorful objects and storytelling but this too was mentioned by all the children or all of the child respondents. The lack of common responses among parents demonstrates that stimulating or developing senses is not something that has received public attention as yet or is conceptually understood by the general public. The number of people who could not respond to the question also indicates that many had not previously thought about this issue. As the study

demonstrates, stimulating the senses of children from infants and toddlers is extremely important to the growth of their emotional and cognitive potential. Most parents 60% especially from the peri-urban and rural set up listed very encouraging practices in this regard. These are, "telling stories or singing songs" and "playing with children". Such practices need to be encouraged. Taking care of children i.e. bathing them, feeding them, and by ensuring they get their immunisation was perceived important by all (100%) respondents who affirmed practicing it mainly because we met them at Health facilities

Objective 4: To identify and analyse government policy, programmes and the institutional framework supporting Early Childhood Care and Development, Education.

A. Zambia signed the convention on the rights of the child in 1990 and ratified it in 1991 without any reservations. According to, the "initial and first Periodic Report on the implementation of the convention,[110]the convention has only been partially incorporated into domestic law. International instruments ratified or acceded to are not self-executing but require enabling legislation to become enforceable. Zambia has put in place provisions addressing the rights of children.

B. The current Education Act of 2011 revised 2012 makes mention of ECCDE, while the MoGE Policy, Educating our Future of 1996 currently under revision, states that the provision and funding of the early childhood and preschool education will be responsibility of Councils, local communities, NGOs, private individuals and families. This is in line with the Day nurseries Act of 1957 that placed ECCDE in the Ministry of Local government and Housing. It seems very clearly that between 2000 and 2004 the Government of the Republic of Zambia has placed the issue of ECCDE in the hands of MCDSS and MoE respectively without establishing a legal framework that would support the move because the Nurseries Act has not been amended to support the change.

C. The Day Nurseries Act Chapter 313 of the laws of Zambia regulates Early Childhood Care and Development. Broadly stated, this Act provides for the registration and regulation of day nurseries by the Local Authorities. The Act is an old piece of legislation that was enacted on 1st May 1957. In terms of ECCDE, it lacks detailed provision reflecting the holistic needs of the pre-school child, which necessarily goes beyond exposure to the 3 Rs-Reading, Writing and Arithmetic.

D. The National Child Policy of 2006 clearly identifies various common forms of child abuse and neglect in Zambia but does not clearly articulate the best strategies of ensuring child protection. Above all, it does not specifically and clearly provide for ECCD. There is an urgent need to establish and adopt a self-regulating policy Early Childhood Care, Development and Education for in Zambia**.**

E. Currently Zambia has the following policies on children. The National Child Policy of 2006 that is been reviewed, the National Child Health Policy regulates the provision of health

[110] *(GRZ, 2002)*

services to children; the National Policy on Education currently being reviewed, Early Childhood Education Policy has been in draft since 2008 and is awaiting adoption, School Health and Nutrition Policy, the National Disability Policy of 2012, National Social Protection Policy that deals with the child protection and social welfare, and the National Nutrition Policy. These policies lie in different government Ministries.

Objective 5: To make recommendations based on the study findings

Recommendations have been developed as per findings.

Chapter Six

Conclusions and Recommendations

With the findings in this study on the impact of nutrition, health and education on child development from parents, teachers, DEBS office, Line Ministries, Health practitioners, and many others it would be gratifying for the stakeholders to go back to the sketch boards and see how they can help the children to fully develop their full potential by providing comprehensive ECCDE programs and activities. There can be no question that quality in ECCDE provision is paramount, both for the well-being of young children and if investments are to result in significant returns in the form of the well-prepared and productive future citizens. There is extensive evidence that investments in the nutritional, cognitive, and socio-emotional development of young children have high payoffs[111].

Approaches to Early Childhood Care, Development and Education (ECCDE) increasingly recognise that young children's survival, health, care and learning are impacted upon by multiple, interconnected factors from before the infant is born through to their early school years. The Lancet series on Early Childhood Development estimated that "200 million children under 5 years fail to reach their potential in cognitive development because of poverty, poor health and nutrition, and deficient care."[112] The factors and processes contributing to this loss of developmental potential and the evidence for effective prevention and intervention are reviewed in the Lancet series[113].

Neuroscience research is beginning to reveal the physical expressions of these processes in the growing and changing structure and function of the brain[114]. Toxic stress from early childhood adversity can lead to changes in learning, behavior and physiology. Physiological disruptions increase the chance of stress - related chronic disease which can further widen health disparities[115].

It is now generally accepted that it is the dynamic interaction of nature and nurture that brings about changes in children's brain growth, function and capacities. That is, children's environments and experiences mediate (either enhancing or diminishing) the potential with which children are born. In the past, it was commonly thought that intelligence was 80% genetic and 20% environmental. Current thinking reverses the balance, that is, it is now thought to be 20% genetic and 80% environmental[116], with genes and experience being interdependent. Shanker (cited in McCain et al., 2007:13) states that genes are part of fully co-actional developmental systems involving everything from a mother's nutrition and well-being to how caregivers interact with a baby or how a society supports child-rearing.

We can therefore, conclusively and in affirmation state that nutrition, health and early stimulation or education has a great impact on the process of child development. Both empirical evidence and

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[111] *(Alderman, 2011)*
[112] *(Grantham McGregor et al., 2007, p. 60)*
[113] *(Grantham McGregor et al, 2007; Engle et al., 2007; 2011; Walker et al., 2011)*
[114] *(Oates et al., 2012; Shonkoff and Phillips, 2000; Center on the Developing Child, 2011)*
[115] *(Shonkoff et al., 2012)*
[116] *(Westwell, 2009)*

deduced data from current and on-going research attest to these facts. The onus to bring up responsible adults and citizens falls on the decisions policy makers and other stakeholders will and should make on child related programmes and interventions. ECCDE is a child rights issue and not a privilege for a few elite families.

6.2. Self-Criticism and Evaluation

In order to be self-critical and objective about this exploration, the writer would want in the first place to draw attention to certain factors that construed the work. One immediate criticism that can be made is to do with the number and quality of the measuring instruments and procedures selected. Some, such as the use of questionnaires for the different respondent categories, the number of questions in each data collection guide were selected on the basis of wishing a much-varied data. It was expected that a large enough quantity of data would be collected to reduce error margins and the range of uncertainty, and other things being equal, the more numerous or more precise the observations the greater the yield of information would be. It was hoped that the value of the study would be found in the interconnection of the numerous facts collected and the acceptability of the assumption that "processes found in one community will be found in others". Perhaps inevitably, with data collected, the researcher was confronted in due course with problems as to which subsets of data to analyse in depth. It now seems clear that it would have been wiser to use fewer instruments thus facilitating collecting richer and more intensive data.

The validity and reliability of the data and the conclusions in this study may be subject to uncertainty on various grounds and more specifically there were no test retest conditions to allow for calculation of reliability co-efficient. However, DEBS office, DMO's office, teachers, School managers, children, parents and community members' responses were crosschecked to some degree. Some triangulation was achieved to some gradation when some adult's and children's responses towards ECCDE and NGO and parents' concerns on the provision of services were expressed.

These weaknesses of the current investigations do not; in the writer's opinion nullify the value of the work. The study has drawn attention to some important features of the impact of nutrition, health, and education on child development from reviewed literature and empirical evidence and situations in sampled communities under study; features that will have to be addressed by Policy makers, service providers in Zambia, ZANEC and practitioners of ECCDE in order for activities in the "best interest of children" to be made effective and regress the impacts in child development.

6.3. Recommendations

With the afore outlined evidence from renowned researchers and academicians during this qualitative study and the interpretations made of it can be summed up as generally presenting a depiction of what is currently prevailing in terms of the impact of nutrition, health and early stimulation or education on child development. It's imperative that there is need to create a better strategic approach to help synergise the ideal ECCDE situation against the current piece meal implementation strategies for our country Zambia.

There are two possible sets of recommendations that then follow: one is to the effect that the existing situations, as in findings, should act as a starting point for better program implementation and the other would be concerned with methods of improving the existing implementation mechanisms.

For the purpose of this report, and because it is considered both economically and educationally preferable, the author has decided to adopt the second option that has to do with bettering the program implementation. In doing so he recognises that the recommendations below do not all follow logically. They are, rather, set against the broader perspective of the experiences and analysis of other practitioners and researchers, especially those whose work has already been cited in this report. Readers are reminded, therefore, that the contents and recommendations made here are not based solely upon findings and results of the research that was carried for the purposes of establishing the impact of nutrition, health and early stimulation or education on child development.

Common sense suggests that the early years -- when the brain matures, when we first learn to walk and talk, when self-control begins and when the first social relationships are formed – must be regarded as important. Common sense suggests that children whose basic health, nutritional and psycho-social needs are being met will develop and perform better than those who are not so fortunate. Common sense also suggests that a child who develops well physically, mentally, socially and emotionally during the early years will be more likely to be a good and productive member of society than one who does not.

This post-modern attitude to provision of quality ECCDE has a certain sensibleness and attractiveness. It is clear that people do have diverse opinions of what developmental and educational results should be and of how they can best be reached. It is common to hear, for instance, that parents place very heavy importance on learning to read early on, even at the preschool level whereas most early educators have been calmer about that. Whereas policy-makers and educational establishments who are accountable for making a system work are likely to think of resources and management criteria as essential elements of quality ECCDE whilst teachers are likely to give the greatest weight to various features of the learning process. As we have seen, even within the classification of researchers, very different views are evident, with some emphasizing cognitive learning and language and others concerned more about social and emotional development or if one compare research that begins from a behaviourist's view with that beginning from a constructivist's view. Diverse cultures may expect different kinds of children to develop from an early education experience and favour different strategies to obtain those goals. Summing up all this may suggest the following;

6.3.1. This therefore is our first recommendation, ZANEC should ensure that Zambia muster the required level of political commitment to the upholding of and implementation of the ECCDE Policies. The executive arms and the legislature in all the tiers of Government should be sensitized to the importance of the policies so they can support it through increase in funding and appropriate legislation. Every Zambian Child should by Law receive and attend a standard ECCDE Centre activity from the age of 2 years before transiting to Nursery and

Kindergarten, then Primary School. The present terminology is Basic Education which I am recommending should be obligatory and begin from the age of two years.

6.3.2. *Early Childhood Care Development and Education (ECCDE) are dynamic and NO single government ministry can handle it because of its multifaceted nature. It requires organised concerted efforts in order for experts in Child Development; Psychology; Paedriatics Doctors; Nutritionists, Midwives, Child Counselors, Early Childhood Teachers, ECCDE experts and Private sector operate under one roof and Director governed by a Board. There is need for the provision of a comprehensive ECCDE programme to all children in Zambia. This entails the integration of health education and services, nutrition education and supplementary feeding, clean water and sanitation, child protection, centre construction and provision of play materials and parenting skills development and other crosscutting issues which are a necessity to a comprehensive child development intervention. Just like the government is trying to establish one stop facilities for other service provision in other areas of development; it's imperative for ECCDE. We strongly feel an establishment of a* ***National Council on Early childhood Development (NCECD)*** *would be the best that can be done.*

6.3.3. *Efforts should be intensified to mobilise support for enrolment of children into ECCDE programmes both in urban and rural parts of the Country. This should be done without prejudice to gender, religion, physical attributes, economic circumstances and other factors which normally lead to exclusion such as disability. Providing one good meal a day at school may help in such mobilization efforts. This will in addition bond the child/baby with being Zambian and lay the foundation for the development of patriotism.*

6.3.4. *Contextualized curriculum in ECCDE can be able to help develop children with the cultural and traditional value context that is important for identity and patriotism which we are lacking now as a nation. A value system that determines who we are is carried on through the mode and language of communication. Language carries culture and our being Zambian is determined by it. ECCDE curriculum cannot be centralized but can be guided and left to be implemented with each cultural connotation.*

6.3.5. *The Universities and other tertiary institutes should develop curriculum specialized in* ***Child Healthcare and Support*** *for increased specialization on early identification and support to children below 3 years or just sub-divide ECCDE teacher training to have those specialized for the 3-6 and others for the 0-3. It is an important factor that will require urgent action.*

6.3.6. *ZANEC should demonstrate a low cost model ECCDE centre that will show case the ideal and be able to indicate the costs and the advantages of such an arrangement. Almost everyone desires for an integrated approach to ECCDE that can be practically done for evidence based advocacy. ZANEC should therefore, develop a concept paper conceptualizing the integrated approach. This is meant to demonstrate how the gap between policy and policy implementation can be reduced*

6.7. Conclusion

For children playing is learning and learning is playing. Play develops the child's skills for moving, thinking, remembering and learning how to get along with others. The child learns just by living and exploring. Because everything is new he is not easily bored. As he picks things up he drops them because it's fun. He puts them to his mouth to understand them better. He tries different ways to make things work. When playing and learning children like to be near adults and older children; when exploring and experimenting a child wants to discover things by himself; The best way to join in the fun is to let the child be the leader. Creativity means being able to have new ideas and to use old ideas in different and imaginative ways. Creativity in children should be allowed and encouraged. When a child is relaxed and not worried about being judged by others, creativity is more likely to be expressed. Children also need experience in order to gain the skills needed for creativity. They must learn how to hold a paint brush before they can paint.

Every child yearns for such a lifestyle and development but children whose mothers had poor nutrition have a high probability of developing physical problems, learning disabilities, or behavioral difficulties. Examples include low birth weight infants and premature infants. The early identification and intervention of at-risk infants is critical. While researchers have not been able to agree on a single theory embracing the complexity of young children's development, a number of core concepts have emerged to help organize what is known about infants and families and to identify what is not yet clearly understood.

Poverty puts children in a situation that makes them extremely vulnerable to various health disadvantages. The environment in which they live, the quality of care received, and a lack of important resources are all aspects of a child's life in poverty that ultimately can be detrimental to their health. Poverty and health are inextricably linked. The more a child suffers from poverty, the more prone the child is to illness, disease and malnutrition. As children and their families become more susceptible to health problems, their ability to earn an income to survive is diminished. It is a vicious and unmerciful cycle. Physical health effects can include, and are not limited to, asthma, malnutrition, inhibited growth, birth defects, lack of proper medical attention, susceptibility to disease, illness, and injury, as well as greater incidence of abuse and neglect. Additionally, mental effects may include those on brain development, mental disabilities, emotional relationships, social skills, self-esteem, and self-efficacy issues.

Malnutrition is another serious health effect to children living in poverty and is defined as the insufficient, excessive, or imbalanced consumption of nutrients. Many children suffering from malnutrition experience chronic hunger, which can cause underdevelopment of the body. This is characterized by being underweight, poor physical stamina, a weak immune system, and lower life expectancy. Malnourishment during the first critical years of life is especially harmful to physical and mental health and growth. These first years are a period of substantial language and motor acquisition skills, as well as brain and body development, which is largely impacted by nutrition to the body. Furthermore, malnutrition increases the susceptibility to disease and dehydration. Prevention programs make a very important and valuable impact on addressing nutrition deficits through early intervention. Early intervention programs are so important because the benefits to

children are significantly diminished if nutrition programs wait until children have already become malnourished**.**

Allow me to live you with a question, given the above scenario can such children be stimulated to learn and develop appropriately? Can they be great performers and achievers in life? Examine this and agree with me that Nutrition, Health and Education have a BIG impact on Child Development.

7. Appendices

7.1. Minors Consent Form

**Note: Parents, legal guardians, or a legally authorized official MUST sign consent forms permitting minors to participate in this research project. Depending on the age of the minor, you may wish to have the minor sign an informed consent document. The form signed by the minor is more for informational purposes and to make the minor feel more involved in the study. It CANNOT substitute for the adult authorization form, but merely supplement it.*

GUARDIAN AUTHORIZATION:

Your child/ children is/are invited to participate in a research study conducted by the Zambia National education Coalition (ZANEC), from the Lusaka Zambia. Your child/ children was/ were selected as a possible participant in this study because of their age and participation in Early Childhood programmes.

If you decide to allow your child/ children to participate, it will only take 20 to 40 minutes of their time and it will be done at their centre. In a few occasions they may be audio or videotaped. However, I cannot guarantee that your child/ children personally will receive any benefits from this research but their contribution and participation may bring about accrued benefits to service delivery.

Any information that is obtained in connection with this study and that can be identified with your child/ children will remain confidential and will be disclosed only with your permission or as required by law. Subject identities will be kept confidential by applying information in codes rather than names of children.

Your child's participation is voluntary. Your decision whether or not to allow your child/ children to participate will not affect your or your child's relationship with ZANEC. If you decide to allow your child/ children to participate, you and/or your child are free to withdraw your consent and discontinue participation at any time without penalty.

If you have any questions about the study, please feel free to contact…….Your signature indicates that you have read and understand the information provided above, that you willingly agree to allow your child/ children to participate, that you and/or your child may withdraw your

consent at any time and dis continue participation without penalty and that you are not waiving any legal claims.

Signature of Parent/ Guardian/ School Manager……

Date: …….

Adult Consent Form

"Promoting Quality Education for All"

October……, 2016

The DEBS/ DMO/ DSWO
P. O. Box…….
……..

Dear Sir/ Madam,

Re: Consent to participate in a survey interview

You are invited to participate in a study on the Link between Child Development – Health, Nutrition, Development and Education. I hope to learn more on your implementation contributions as an institution towards this study. You were selected as a possible participant in this study because of your responsibility at the District.

If you decide to participate, please complete the enclosed survey. Your return of this survey is implied consent. The survey is designed to generate credible evidence from a Zambian perspective to support the delivery of comprehensive ECCDE services as opposed to focusing on Early Childhood Education alone. It will take about 20 to 30 minutes. No benefits accrue to you for answering the survey, but your responses will be used for stakeholders to appreciate their roles and responsibilities in holistically delivering a well-developed child who would ultimately produce the desirable learner outcomes. Any discomfort or inconvenience to you derives only from the amount of time taken to complete the survey.

Any information that is obtained in connection with this study and that can be identified with you will remain confidential and will not be disclosed. Your decision whether or not to participate will not prejudice your future relationships with Zambia National Education Coalition (ZANEC). If you decide to participate, you are free to discontinue participation at any time without prejudice. If you have any questions, please ask. If you have additional questions later, contact ……

Thank you for your time.

Sincerely,

Zambia National education Coalition (ZANEC)

References

2010 CENSUS OF POPULATION AND HOUSING VOLUME 11 NATIONAL DESCRIPTIVE TABLES: CSO Lusaka Zambia; November 2012

A case for early childhood development in sub-Saharan Africa: By Alan Pence and Bame Nsamenang

Anda et al., 2006; Fettelli et al., 1998

Andrews, A., Ben-Arieh, A., Carlson, M., Damon, W., Dweck, C., Earls, F., et al. (2002) (Ecology Working Group); Ecology of Child well–being: advancing the science and the Science-Practice Link. Georgia: Centre for Child Well–Being.

Bantista, F. d. Angeles: (2004) 'Early Childhood Care and Education in South-East Asia: Working for access, quality and inclusion in Thailand, the Philippines and Viet Nam'. Bangkok: UNESCO.

Bautista, F & Myers, R (2000) Early Childhood: the Foundations; Sources: UNESCO, Paris

B.C Atlas of Child Development, British Cohort Study, Early Adversity Study (EAS).

Beatrice Matafwali, University of Zambia Sadaf Shallwani, Firelight Foundation and Zanele Sibanda, Firelight Foundation: The Zambia Child Assessment Test (Zam-CAT): Development and Use in Three African Countries;

Begley, S. —How to Build a Baby's Brain.‖ Newsweek. Special Edition 1997, 28-32. Carnegie Corporation of New York, Starting Points – Meeting the Needs of Our Youngest Children, New York, NY, 1994

Benton, D. (2010) 'The Influence of Dietary Status on the Cognitive Performance of Children', Molecular nutrition & food research 54(4): 457-470.

Berlinski, S., S. Galiani & P. Gertler (2006) 'The Effect of Pre-Primary Education on Primary School Performance', William Davidson Institute Working Paper Number 838. Michigan: The University of Michigan.

Bloch, 1991; Kotulak, 1998; Carnegie Task Force, 1994; Willer, 1990; Perry, 2000; Shonkoff & Phillips, 2000; Fancourt, 1999; Shore, 1997)

CAMPBELL,F. et al. 2002. Early Childhood Education: Young Adult Outcomes from the Abecedarian Project. Appl. Dev. Sci. 6: 42–57.

Central Statistics Office; Zambia Health Demographic Survey 2007Footnotes/references/cross-references

Child well-being; as systematic review of the literature; Social Indicators Research 61:51-78, 2003

Contributions of play and toys to child development; Key studies, Prepared by Jeffrey Goldstein, Ph.D

Constitution of the people of the Republic of Zambia

Constructing a theoretical Framework and Responding to Critiques of Grounded Theory Method, James P Anglin PhD, p 6; Paper presented at a conference on IQA at Victoria University 2003.

CSO (2009), MOH, TDRC, UNZA and Macro Inc.; Zambia Demographic and Health Survey (ZDHS)-2007, Calverton, Maryland, USA

CSO; Living Conditions Monitoring Survey (LCMS: 2004)

Draft National Implementation Framework (NIF) III 2011

Evans Judith L., Robert G. Myers and Ellen M. Ilfeld (2000) Early Childhood Counts: A Programming Guide on Early Childhood Care and Development. Washington D.C.: The World Bank

Early Childhood Care and Development in the Twenty-first Century: The challenges we face; Judith L Evans

Families and Work Institute 1996; Rethinking the Brain: New Insights into Early Development. Executive Summary of the Conference on Brain Development in Young Children: New Frontiers for Research, Policy, and Practice, University of Chicago, June. Handcock L. and P. Wingert. —The New Preschool.‖ Newsweek. Special Edition 1997, 36-37.

FAO- Food Insecurity and Vulnerability Information and Mapping Systems; Animal– Nutrition and Consumer Protection Division, FAO, 2009 26 DES 22

Feeding Behaviour of Infants and Young Children and Its Impact on Child Psychosocial and Emotional Development Yi Hui Liu, MD MPH, Martin T. Stein, MD: University of California San Diego, USA September 2013, , 2nd ed.

Grantham McGregor et al., 2007, p. 60; Engle et al., 2007; 2011; Walker et al., 2011

Handbook of African Educational Theories and Practices A Generative Teacher Education Curriculum: A. Bame Nsamenang and Therese M.S. Tchombe

Healy, Ph.D., Jane M. You're Child's Growing Mind, Doubleday, New York, NY, 1987, 1984. Jensen, Eric. Teaching with the Brain in Mind. ASCD, Alexandria, VA, 1998

http://www.cmamforum.org/Pool/Resources/Spirulina-Zambia-2014.pdf

International Bank for Reconstruction and Development, World Bank: Repositioning nutrition as central to development: a strategy for large scale action. 2006. https://openknowledge.worldbank.org/handle/10986/7409

Holly E Brisbane; The Developing Child; Understanding Children and Parenting 5th Edition; Glencoe Bennett and McKnight

Lerner, R. M. Fisher, C. /B. & Weinberg, R. A. (2000) "Toward a science for and of the people: Promoting civil society through the application of developmental science; Child Development. 71, 11-20"

Lerner, R. M. & Overton, W. F. (2008); Exemplifying the integrations of the relational developmental system; Synthesizing theory, research, and application to promote positive development and social justice; Journal of Adolescent Research, 23, 3, 245-255

LOVE, J.M. et al. 2005: The effectiveness of early head start for 3-year-old children and their parents: lessons for policy and programs. Dev. Psychol. 41: 885–901

McKenry, P .C. and Price, S.J. (2005) Families and Change: Coping with Stressful Events and Transitions, (Third Edition). Sage Publications: Thousand Oaks, CA.
Millennium Development Goals (MDG) progress report 2014

MoE; Educating the Nation; Lusaka: Ministry of Education, 2005. p.22

MoGE, Education Statistical Bulletin, 2015

MoGE DODE report 2014

Nash, M. —Fertile Minds.‖ Time, February 1997, 48-56

National Food and Nutrition Commission 1000 days reduce stunting strategy 2012-2015
National Institute of Child Health and Human Development (NICHD), 2002

Nutrition matter: Opportunities to scale - up nutrition in Zambia CSO- SUN 2014

Oates et al., 2012; Shonkoff and Phillips, 2000; Center on the Developing Child, 2011

OLDS, D. 2007. Improving preschool for low-income children with programmatic randomized controlled trials Arch; Pediatric; Adolescent; Med. 161: 807–809

Ottawa Charter for Health Promotion; WHO, Geneva, 1986 8 Health Promotion Glossary (1998)

RESEARCH-BASED RECOMMENDATIONS TO IMPROVE CHILD NUTRITION IN SCHOOLS AND OUT-OF-SCHOOL TIME PROGRAM: Laura D. Wandner, B.A., and Elizabeth Hair, Ph.D.

REYNOLDS, A.J. et al. 2007. Effects of a school-based, early childhood intervention on adult health and well-being: a 19-year follow-up of low-income families [see comment]. Arch; Pediatric. Adolescent; Med. 161: 730–739

Schiller, Pam. Start Smart: Building Brain Power in The Early Years, Gryphon House, Beltsville, MD, Spring, 1999. (1-800-638-0928)

Schiller, P. —Turning Knowledge Into Practice,‖ March/April 1999 issue, Child Care Information Exchange.

Schiller, P. —The Thinking Brain,‖ May, 1998 issue, Child Care Information Exchange. Schiller, P. —Brain Development Research: Support and Challenges,‖ September, 1997 issue, Child Care Information Exchange.

SCHWEINHART, L. et al. 2005. Lifetime Effects: The High/Scope Perry Preschool Study through Age 40. Monographs of the High/Scope Educational Research Foundation (No. 14); High Scope Press; Ypsilanti, MI

Shonkoff, J.P. and D.A. Phillips (eds) (2000) From Neurons to Neighborhood: The Science of Early Childhood Development. Washington DC: National Academy Press.

Shore, R. (1997) Rethinking the Brain: New Insights into Early Development. New York: Families and Work Institute.

Sousa, Dr. David A. How the Brain Learns, National Association of Secondary School Principals, Reston, VA, 1995.

Sylwester, Robert, A Celebration of Neurons: An Educator's Guide to the Human Brain, Association for Supervision and Curriculum Development, Alexandria, VA, 1995.

The Meaning of Education ©2001-2002 Judith Lloyd Yero

UNESCO (2011) 'UNESCO and Education, Everyone has the Right to Education'. Paris: United Nations Educational, Scientific and Cultural Organization.

UNESCO (2006a) 'EFA Global Monitoring Report 2007' Paris: United Nations Educational, Scientific and Cultural Organization.

UNESCO (2004) 'Education for All: THE QUALITY IMPERATIVES', EFA Global Monitoring Report 2005. Paris, France: United Nations Educational, Scientific and Cultural Organization.

UNICEF (2006) 'Programming Experiences in Early Child Development'. New York, USA: United Nations Children's Fund.

UNICEF (2001) 'The State of the World's Children' < http://www.unicef.org/sowc01/pdf/SOWC3.pdf> accessed 12 June 2012.

UNICEF (2006), State of the World's Children: 9

VANDELL, D.L. et al. 2005. Activities, engagement, and emotion in after-school programs (and elsewhere) New Dir. Youth Dev. 121–129, 113–124

Victora, Cesar G., et al., 'Maternal and Child Undernutrition: Consequences for adult health and human capital', The Lancet, vol. 371, no. 9609, 26 January 2008, pp. 340–357.

WHO http://www.who.int/hpr/NPH/docs/hp_glossary_en.pdf 9 Pollard, E. L. & Lee, P. D

World Food Programme (WFP)/DSM (2010) Cost of Diet analysis in Zambia

World Health Organization; Comprehensive implementation plan on maternal, infant and young child nutrition: 2014. http://apps.who.int/iris/ bitstream/10665/113048/1/WHO_NMH_NHD_14.1_ eng.pdf?ua=1.

Your Child Birth to Three.‖ Newsweek. Special Edition 2000; Ramey, Craig T and Sharon; Right from Birth Goddard Press, NY, 1999

Zambia Demographic Health Survey (ZDHS) Central Statistics Office Lusaka Zambia 2013-2014

"Zambia Initial and First Periodic Report on the Implementation of UN convention on the Rights of a child (2003)"

Zambia National Child Policy 2006