Journal of Education and e-Learning Research
ISSN: 2410-9991
Vol. 1, No. 1, 5-16, 2014
http://asianonlinejournals.com/index.php/JEELR

An Assessment of Nutritional Patterns in Early Childhood Centres in Zimbabwe: A Quest for Dietary Quality

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Abstract

The study explored the experiences of ECD centres in Masvingo district in terms of the quality of meals with regards to diversity and size of portions and WASH provisions. One school was purposively sampled. The research adopted a qualitative paradigm and used one ECD centre in Masvingo district as a case study. Data were gathered through observations, interviews and document analysis. There is a growing realisation globally that pre-schooling is critical to the future educational achievements of children. Abundant evidence is available that the first five years of life to a child are crucial to a good start in life. Even though pre-school education has been a feature of Zimbabwe's education system, the concept of Early Childhood Development Centres (ECD) which cater for the 0-5 year olds is relatively new. From a nutritional perspective, the feeding patterns of infants and toddlers are an avenue worth unlocking. The study explored the extent to which ECD centres adhere to meal diversity, size of portions and frequency, hygiene practices and the regulatory framework governing the provision of correct quantities and quality of food for preschool children. Major research findings were that ECD centres provided meals which had nutrient inadequacy, all ECD centres did not meet expected nutritional and health standards and they all faced challenges in providing balanced meals. The research recommends the mounting of massive awareness drives for the programme as well as the investment of critical resources in the programme for the benefit of society today and tomorrow.

Keywords: Nutritional assessment, Caregiver, Feeding patterns, Meal diversity.

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1. Contextual Background

1.1. Introduction

Promoting children's health is an important aspect of good quality child care. It is important that children in ECD centres are offered nutritious meals and enjoy positive meal time experiences. Research has shown that some children in care may not get enough of some important dietary nutrients. Regardless of whether food is provided; all child care services have a responsibility to promote good nutrition for children in their care. Hence, child care centres and all staff should be familiar with hygiene standards, nutrition principles for children and food safety laws. Therefore, the research attempted to assess the dynamics of feeding programmes in ECD centres in Masvingo District. The prospectus sought to assess whether ECD centres are able to provide a variety of quality food stuffs in correct amounts as well as their adherence to recommended hygienic practices.

1.2. Background of the Study

The recent history of ECD in Zimbabwe reveals that in 2004 the provision of two years of pre-primary education in Zimbabwe named (ECD A and B) was instituted as a policy directed at all primary schools. This was done in order to insert at least two ECD classes for children in 3-5 years of age group. The basis for the formulation of the 2004 policy was a recommendation of the commission of inquiry into education undertaken in 1999 by Nziramasanga (UNICEF, 2008). The commission found that many children in rural and poor communities did not have access to early childhood services.

According to UNICEF (2008) the main aim of the 2004 policy framework was to make official the ECD programme under the Ministry of Education, Sports and Culture. The UNICEF (2006) goes on to say the Ministry, increased equity and access to ECD provisions and enhanced quality of education. It modernised classes to have safe equipment for children to use and stipulated that children also get a meal each day. Leer (2006) states that analysis on health and nutrition revealed that many ECD centres in primary schools did not give food to children in schools. In fact, children had to bring their own meal from home and in some cases the children had no food. This affected their health and development.

In Zimbabwe to date, not all ECD centres feed children. This is supported by Makonye (2014)who acknowledges that most ECD centres in Masvingo district and in Zimbabwe at large are not feeding ECD children. The centre under investigation is a church run mission institution which provides meals to ECD children. They are doing this in line with Statutory instrument 106 of 2005 article 10 (3) which stipulate that ECD centres should have planned feeding schemes. Therefore, the study sought to establish the nutritional patterns in ECD centres in Masvingo district.

The Directors' circular 48 of 2000, states that the local community can be mobilised to assist in providing food and feeding the children. The parents at this centre are teachers, nurses, lecturers, students at the teachers' college and at the university as well as ancillary staff at the mission station. Majority parents who send their children at the centre are low income earners who are ancillary staff and students at the teachers' college and university. The elite members of the community send their children to ECD centres in town. Therefore, this study sought to establish stakeholders' capacity to provide adequate nutritional meals to ECD children.

Provision of food variety and well balanced diet at ECD centres maybe a problem as Zimbabwe is facing acute food insecurity and high food cost. Manwa *et al.* (2012) state that, availability of basic commodities (protein, carbohydrates, and vegetables) has been affected by continuous drought so foodstuffs are scarce and exorbitantly expensive, leading to difficulties in food securing and food choices especially by poor communities in Zimbabwe .This therefore, may make it difficult for ECD centres to provide variety of foodstuffs hence this may compromise the children's nutrient intake. Glasauer (2004) confirms that variety is essential in children's diet. Therefore, the study sought to assess whether ECD centres have the capacity to offer varied diet to ECD children in relation to proper nutrient composition.

Glasauer (2004), states that quantity of food is affected by acute food insecurity and high cost of food. Initial investigations reveal that children pay little fees whose major portion is devoted to caregiver's salaries and toys for the children and little money is budgeted for food. As a result, quantity of food taken per day may be reduced and the feeding patterns negatively affected. National Guideline for ECD Centres (2000) states that fifty percent of the budget should go to food, thirty percent to salaries and twenty percent to other expenses. Therefore, this research sought to investigate if ECD centres are able to provide correct amounts of food in terms of portion size.

The centre under investigation offers day care for children for more than eight hours that is from 0730 hours to 1630 hours. Children spend a lot of time at the centre. Children in ECD centres should be given meals depending on the length of their stay at the centre. Therefore, this research sought to find out the frequency of meals at the centre.

Safe water supply, sanitation and hygiene development are lagging behind in developing countries. UNICEF (2000) notes that globally two billion people die every year due to diarrhoea related diseases and mostly young children in low income communities.

UNICEF (2006) alludes that among the main problems which are responsible for this situation are lack of sustainability water supply in public places such as hospitals and schools. This means that, schools may sometimes go for days without safe and reliable water supply hence compromising the health of children. Therefore, this study sought to assess if ECD centres have adequate and appropriate WASH facilities for the children.UNICEF (2006) states that; the government formulated policies that guide the registration, implementation, running and evaluation of ECD programmes. Dyanda and Musara (2010) state that, Statutory Instrument 106 of 2005 has the guidelines on how ECD centres should be run. Other policies such as the Director's circular No 12 of 2005 and Director's circular No 48 of 2007 explain the provision of food, water and hygiene and staff suitable to be at ECD centres. Therefore, this study sought to assess if policies that guide ECD centres are capable of informing nutritional patterns and WASH provisions in ECD centres.

In view of the above, the study explored quality of meals in terms of meal diversity, food preparation, cooking and serving skills, portion size, frequency of meals and water, sanitation and hygiene.

2. Review of Related Literature

2.1. Cooking, Preparation and Serving Skills in ECD Centres

There are many different ways of improving nutrition at ECD centres. Staff in ECD centres is expected to improve the nutrition through practising good nutritional skills. These skills include food preparation, cooking and serving. Good cooking methods greatly improve the nutritional value of food Mpofu and Nyamuda (1996). UNICEF (2008) states that; parents and communities should be involved in improving child nutrition. This indicates that parents and community impact positively on provision of quality meals. This study therefore, sought to explore the capacity of stakeholders to provide adequate nutritional meals to ECD children.

According to Tan (1998) careful preparation, cooking, serving techniques are important in child care centres. Food should be made aesthetically pleasing. Mpofu and Nyamuda (1996) state that appearance, flavours and textures of various foods are important. This implies that meals should be made in contrasting colours and be of different flavours. The sight, smell, and at times the memory of food lead to stimulation of appetite (Lemlech, 1984). This means that children's meals should be colourful and stimulate their appetite.

According to Tull (1996) the making of delicious dishes depends largely on the selection of the cooking methods. Tull (1996) goes on to say knowing how prepare different types of foods lies greatly in understanding the methods of cooking. This indicates that cooking skills are of paramount significance when it comes to food preparation, cooking and serving. These skills need to be employed in ECD centres in order to improve quality of meals. According to Malaba (1994) food can be cooked in three ways that is by moist heat, dry heat or by combining moist and dry heat.

Malaba (1994) further states that by moist heat, the heat passes through the liquid before getting in contact with the food for example boiling, stewing and steaming. Boiling and stewing methods are easy to follow and do not need constant attention. This is the reason why these methods are mostly employed in most instances. Stewing is however levelled against because it is a very slow method of cooking while boiling is criticised for consuming fuel and for producing broken pieces of meat when not skillfully done Tull (1996). This therefore shows that, expertise in cooking is essential especially when providing nutritional meals for children.

Children's appetites are stimulated by how the food is presented to them. If food served appears to be more attractive, children enjoy the meal times. Malaba (1994), states that food appearance can be enhanced by skilful use of garnishes. This means that garnishing makes the food aesthetically pleasing. Although boiling and stewing methods are mostly employed in institutions, the food needs to be improved in appearance to make it more appealing to children.

2.2. Stakeholders' Capacity to Provide Adequate Nutritional Meals in Terms of Diversity to ECD Children

The provision of adequate nutritional meals to ECD children in terms of diversity could be a problem to stakeholders. Dietary diversification has long been identified by nutritionists as a key element of high quality diets (UNICEF, 2008). Increasing variety is recommended in most dietary guidelines internationally to ensure adequate intake of essential nutrients and to promote good health.

According to Malaba (1994) variety is essential in children's diet. This implies that a variety of foods should be provided to children in care including a range of textures and tastes. The food should be appropriate to the developmental stages of different age groups. According to UNICEF (2008), meals in ECD centres should include porridge with peanut butter or fresh milk or margarine, fruits such as oranges, bananas, mangoes, or maheu or nhopi, sadza and beans and cooking oil or vegetables such as rape, cabbage, and matemba with peanut butter or milk. (Raeburn and Raeburn, 1984) propound that variety is the spice of life. They recommend that foods such as vegetables, fruits, cereals, lean meat, fish, chicken, milk, yoghurt and cheese. This indicates that different food items should be provided to children in ECD centres.

According to Manwa *et al.* (2012) Zimbabwe is facing acute food insecurity and high cost of food as a result of persistent droughts and economic downturn. Provision of meals in various institutions like hospitals, colleges, universities and schools in Masvingo Province is affected by persistent droughts (UNICEF, 2008). Masvingo Province is located in the Lowveld of the country where rainfall is minimal and uncertain. FAO (2001) asserts that large portions of the province are prone to drought for example in Masvingo district rainfall is erratic and soils are generally poor. This indicates that foodstuffs are scarce and exorbitantly expensive; leading to difficulties in food securing in ECD centres hence diversity maybe acutely affected. Therefore, this makes it difficult for caregivers to plan and follow proper food budgets and this may compromise quality of meals provided to ECD children.

Dietary factors are associated with increased risks of chronic diseases. Leer (2006) states that lack of dietary diversity is a particularly severe problem among poor populations from the developing world because their diets are predominantly based on starch staples and often include little or no animal products and few fresh fruits and vegetables. FAO (2001), states that the main cereal crops grown in Masvingo are maize, sorghum and millet. In line with dietary diversity, these foods are locally available in Masvingo and they are encouraged to be used in ECD centres. This is because these local foods have more nutrients and they promote safer food supply. Therefore, in drawing menu plan for ECD centres in Masvingo, the local foods in the region should be considered first and other foods must be included in order to provide energy, proteins and vitamins to prevent malnutrition.

2.3. Meal Frequency and Portion Size in ECD Centres

UNICEF (2000) encourages the provision of regular meals or snack times after every two or three hours to children. This spacing allows children to recognise their hunger cues and be ready to eat. This means that children need to be given something to eat every two to three hours. The Ministry of Health Nutrition Department of Zimbabwe (1989) advocates for respecting children's appetites and enabling them to eat the amount of food that is right for them. Neumegen (2008) is of the opinion that caregivers and parents should respect children's appetites.

This prospectus therefore sought to find out if ECD centres are able to provide the correct amount of food in terms of meal frequency and portion size.

2.4. Food Hygiene

The practice of maintaining health and preventing diseases may be a challenge to ECD centres in Masvingo District and in Zimbabwe at large. The science of keeping well the rules of health is concerned mostly in food and in the kitchen. Therefore, food hygiene needs to be practised in ECD centres.

According to Minet (2000) food hygiene is concerned with the care, preparation and storage of food in order to prevent food poisoning. This indicates that good storage of food, careful preparation of food and correct food handling are important techniques. Minnet (2010) states that child care centres must observe principles of food poisoning because food poisoning bacteria can exist in dirty and bits of leftover food lying around attract flies. The principles include washing hands with soap and water as well as drying of hands on clean towel before handling food. Minnet (2010) goes on to say the kitchen should be kept clean. Abraham and Allie (2013) emphasised on regular cleaning of floor, work surfaces, sink, cooking utensils, dish clothes, drying of cloth and waste bin. This indicates that hygiene impacts the environment that surrounds the child at home and at ECD centres.

How food is handled is a contributing factor to hygienic practices. Food handling by staff and children maybe a challenge in ECD centres. Malaba (1994) states that food should be handled with clean hands. Raeburn and Raeburn (1984) are of the opinion that safe food handling by children and staff in child care centres prevents contamination of food and this should be done when fruits are shared. This implies that washing of hands by staff and children is of paramount importance.

2.5. Food Storage

Food like any other item or commodities needs to be stored properly. Contamination of some food items can be done during storage hence food storage at ECD centres needs to be planned. The storage of food contributes to food hygiene and this may be a challenge to ECD centres. UNICEF (2006) states that, food needs to be stored at ECD centres for convenience. This implies that storage of food is done to ensure that food is available when it is needed. Malaba (1994) says that food needs to be stored in cupboards, refrigerator or food freezer. Malaba stresses on refrigeration of meat and other perishables in order to get rid of germs and the keeping of food in clean utensils. This means that food needs to be protected against contamination. Meanwhile, the schools under study were likely to face challenges in provision of proper food handling techniques.

2.6. Kitchen Hygiene

The kitchen must be absolutely clean. Leer (2006) supports that, the floor, cupboards, walls, doors, sinks, should always be kept spotlessly clean. Hygiene must be observed so that food does not come in contact with germs. Malaba (1994) confirms that in a clean kitchen, food is kept fresh and wholesome. Failure to observe good health habits results in children and caregivers having the following diseases; diarrhoea, tuberculosis, scabies, tapeworms and bilharzias.

Minnet (1984) confirms that practice of hygiene in the kitchen avoids illnesses caused by flies. Abraham and Allie (2013) state that flies are a serious health hazard especially to young growing children. This indicates that routinely cleaning of the kitchen should be done to ensure that it stays a hygienic environment for young children. Therefore, kitchen hygiene needs to be practised in ECD centres to promote good nutrition and health among infants.

2.7. Water and Sanitation in ECD Centres

UNICEF (2009) states that thirty five percent of the world's population lacks improved sanitation facilities and seven hundred and sixty eight million people still use unsafe drinking water sources and sanitation services coupled with poor hygiene practices. This kills and sickens thousands of children less than 5 years of age due to diarrhoeal diseases UNICEF (2009). This means that water, sanitation services and hygiene need to be maintained.

Water is considered to be the most important resource for sustaining ecosystems which provide life supporting services for people, animals and plants. WHO (2014), notes that, contaminated water is a major source of illness, and death and water quality is a determining factor in children's education. This means that unsafe water and unhygienic conditions not only affect the attendance and learning capacities of children but have adverse effect on children's health.

UNICEF (2009) states that, in schools, water sources need to be located throughout the school, especially in areas where food is served among others. Providing water to children during meal times is very important because children need water for washing hands and fresh drinking water. This implies that ECD centres need reliable safe sources of water at all times to promote good health practices.

Without water, proper hygiene is difficult to maintain. UNICEF (2006) states that the following water sources provide safe drinking water; tap, borehole and protected well. UNICEF (2006) goes on to say that water from other sources like dams and unprotected well must be boiled before use. According to Makonye (2014) the Mayor of Masvingo, Hubert Pfidze confessed that mounds of pampers dogged and blocked water at Mutirikwi water works thereby forcing the whole city to consume contaminated water for a while. This shows that though tap water is considered to be safe water supply, the water may not be safe for drinking. Therefore, safe drinking water must be always available at ECD centres and in schools at large.

ECD centres may have challenges in maintaining basic sanitation for children. According to UNICEF (2009) basic sanitation is described as having access to facilities for the safe disposal of human waste (faeces and urine) as well as having the ability to maintain hygiene services such as garbage collection and waste management, waste water treatment and disposal. This indicates that, the need for better sanitation in schools is therefore very clear.

Schools lack adequate sanitation facilities and the poor sanitation contributes to children's death from diarrhoea each year (Gunhu *et al.*, 2011). This is because chronic diarrhoea can hinder child development by impeding the

absorption of essential nutrients and reducing the effectiveness of life saving vaccines. Improved water and sanitation helps fulfil each child's right to health and education. Therefore, safe water and sanitation are major factors in protecting children from infestations and other illnesses.

Access to improved water and sanitation does not on its own necessarily lead to improved health. There is clear evidence showing the importance of hygienic behaviour, in particular hand washing with soap at critical times: after defecating and before eating or preparing food FAO (2001). Hand washing with soap at all times can reduce incidences of diarrhoea which is the second leading cause of death among children under five years of age. In fact recent studies suggest that hand washing by soap at all times can reduce the number of diarrhoeal bouts by almost fifty percent (UNICEF, 2009). Also, good hand washing practices have also been shown to reduce incidences of other diseases notably pneumonia, trachoma, scabies, skin and eye infections and diarrhoea related diseases like cholera and dysentery WHO (2014).

This indicates that good hand washing is of paramount importance in human health.Toilet hygiene is also crucial in ECD centres. The toilets must be kept clean at the ECD centre. Toilet disinfectants like jik should always be used to thoroughly clean the floors and toilet seats. The toilet is a place that is highly susceptible to the growth and spread of germs, hence strict hygiene has to be observed. A water point near the toilet is necessary so that children can wash their hands before and after using the toilet. The use of soap, ash and hand sanitizers is encouraged in ECD centres.

2.8. Capacity of WASH Policies in the Country to Direct WASH in Schools

To guide WASH in ECD, the statutory instrument 106 of 2005 was produced by the Ministry of Education, Sports, Arts and Culture. Some regulatory policies such as Director's circular No 48 of 2007 were passed to address the WASH needs in ECD centres. The Directors' circular 48 of 2007 states that the Secretary should approve or certify that the ECD premises have food storage, safe and adequate water as well as sanitation facilities. It also stipulates that all ECD centres should be kept in a safe, clean and sanitary condition.

According to S1 106 of 2005 all ECD centres should have feeding schemes. It further states that premises should have food storage, safe and adequate water and sanitation facilities. The staff at ECD centres should be suitably qualified and experienced. It also stipulates that, all ECD centres should be kept in a safe, clean and sanitary condition.

According to Statutory Instrument 106 of 2005, regular training of all cooks and staff in safe food storage, preparation and safe food handling techniques by children and staff is highly recommended.

Section 11 of Statutory Instrument 106 of 2005 asserts that hot water and running water must be available at the ECD centre. It further states that, boys should have separate toilet facilities from girls. This study therefore sought to investigate how policies and statutory instruments are capable of informing nutritional patterns and WASH provisions in ECD centres.

3. Research Questions

The study sought to answer the following research questions:

1. Do stakeholders have the capacity to provide adequate nutritional meals to the ECD children in terms of diversity of meals, preparation, cooking and serving skills?
2. Are ECD centres able to provide correct amounts of foods in terms of meal frequency and size of portions?
3. Do ECD centres have adequate and appropriate WASH facilities for the children?
4. Do schools have the capacity of schools to implement policies that guide ECD centres?

4. Definition of Terms

4.1. Nutritional Assessment

Lee and Nieman (2010) assert that nutritional assessment is an evaluation of the nutritional status of individuals through measurements of food and nutrient intake and evaluation of nutrition related health indicators.

4.2. Caregiver

A caregiver is a person who gives a safe, caring home to a child or young person, and provides for their food, shelter and clothing needs. Lee (2010) defines caregiver as a trusted adult, friend, role model, advocate and teacher.

4.3. Early Childhood Development

Early childhood development is a vital means of providing children with an essential background to formal schooling. Children learn and develop through organised individual and group play activities Lee (2010).

4.4. Nutrition

WHO (2014) defines nutrition as the intake of food, considered in relation to the body's dietary needs. Good nutrition consists of adequate, well balance diet.

5. Theoretical Framework

This paper is premised on Piaget's cognitive theory of development. The preschool period is a time when children learn many concepts and develop life-long habits. In that period, children learn about appropriate and balanced nutrition and acquire good eating habits for later years. Piaget determined that children's cognitive development is important for their understanding of and learning about the world around them. Piaget's theory can be used as a guide in nutrition education.

In fact, it helps to design effective nutrition education appropriate for the developmental stages of childhood. This article discusses how Piaget's theory is used in the development of nutritional habits of preschool children and makes an attempt to provide a viewpoint for those who provide nutrition education.

6. Data Collection Procedures

The researchers sought permission from the school head of this primary school. Informed consent was also gained from all participants. The researchers administered interviews and observed the centre on agreed dates. Confidentiality of participants and anonymity of all responses was maintained at all times.

7. Research Design

This research adopts the qualitative research design. Qualitative research is a broad approach to the study of phenomena. The qualitative design was appropriate in this study for it granted the researchers opportunity to look at context and social meaning and how these affect educators. Qualitative research is grounded in use of words, phrases, sentences and paragraphs to describe phenomena.

8. Sample and Sampling Procedures

Non-probability sampling was used in this study. A sample of 2 college lecturers, 4 caregivers, 3 primary schools teachers and 20 ECD children was selected. Patton (1990) states that; purposive sampling is used to select individuals who are holders of specific data needed for the study. In this study, college lecturers, teachers and caregivers were selected because they have hands on experiences on child nutrition, hygiene, potential risks that children encounter in ECD centres. Lectures are assumed to have knowledge and expertise on how centres are manned and managed as well as the ability to interpret statutory provisions governing ECD centres. Teachers and caregivers were chosen on the assumption that they have first hand information on nutrition, water, sanitation and hygiene in ECD centres. The ECD children are the main beneficiaries of the programme hence their experiences are worthy exploring to determine their nutritional status.

9. Presentation, Analysis and Discussion of Findings: Data from Observations

9.1. Stakeholders' Capacity to Provide Adequate Nutritional Meals in Terms of Diversity, Preparation, Cooking and Serving Skills

UNICEF (2008), states that expertise in cooking is essential especially when providing nutritional meals for children and dietary diversity has long been recognised by nutritionist as key element of high quality diets. This study gathered data on the quality of food preparation as well as the diversity of meals. The following data were obtained:

Table-4.2. Food preparation and diversification of meals

Day	Planned meal	Served meal	Cooking methods
1	-porridge with peanut butter -Sadza and cabbage -banana/ apple	-porridge with peanut butter -Sadza and cabbage -apple	Boiling
2	-porridge with fresh milk -Potatoes and eggs -banana/apple	-porridge with peanut butter -Sadza and beef -banana	-Boiling -Stewing
3	-porridge with peanut butter -Sadza and chicken -banana/apple	-porridge with peanut butter -Sadza and beef -banana and apple	-boiling -Stewing
4	Porridge with fresh milk -Rice and beef -banana/apple	-porridge with fresh milk -Rice and chicken -banana and apple	-Boiling stewing
5	-porridge with peanut butter -Sadza and beef -banana/apple	-porridge with fresh milk -Sadza and cabbage -apple	Boiling

The findings showed that boiling and stewing are the main cooking methods employed at the centre. Overcooked meat was served to the children. Mealie –meal porridge with peanut butter or fresh milk was served at break time. The children were also given either a banana or an apple at snack time. Sadza with cabbage or beef or rice and chicken were served at lunchtime.

According to Malaba (1994) food can be cooked by moist heat, boiling or stewing. The moist heat methods of cooking soften the food. The nutritional value of food is greatly improved by the methods of cooking. In this study, it was found that the quality of meals was compromised by the cooking methods. Food was overcooked resulting in potential risk of key nutrients loss. Malaba (1994) alludes that food can be made appealing to the eye by skilful use of garnishes. The observed food was not garnished. In this study food was stewed or boiled and its appearance could have been enhanced by using garnishes.

According to Raeburn and Raeburn (1984) in long day child care centres, menus should aim to meet a significant amount of child's nutrient requirement. A variety of foods such as vegetables fruits, cereals, lean meat, fish, chicken, milk, yoghurts should be provided to children in care including a range of textures and tastes. This should be appropriate to the development of different age groups. In this study, it was found that a limited range of food was provided at the centre. Seasonal fruits and traditional foods were not given to the children.

Concerning food preparation, cooking and serving skills, and diversity of meals, the study established that stakeholders do not have the capacity to provide adequate quality nutritional meals to ECD children. Therefore the study recommends centres to start projects such as gardening, poultry production, dairy and ranching to supplement the food budget.

9.2. To Find out if ECD Centres are Able to Provide Correct Amount of Food in Terms of Meal Frequency and Portion Size

Besides issues related to diversification, the study also gathered data on size of meal portions and the frequency of meals. The following data were obtained:

Table-4.3. Quantity of meals in terms of frequency and portion size

Time	**0830** **Breakfast**	**1030** **Morning snack**	**1230** **Lunch**	**1600** **Afternoon snack**
Portion size	halfcup porridge	-one apple or -one banana	-Half cup sadza with quarter cup cabbage -Half cup sadza with one piece beef -half cup rice with one drumstick	-one apple or -one banana

The findings showed that the children were given half cup porridge at break time, a morning and afternoon snack of either a banana or an apple and lunch of either sadza with cabbage or beef or rice with one drumstick. Although the centre provides breakfast for children of half cup porridge with peanut butter or fresh milk, Ministry of Health Nutrition Department of Zimbabwe (1989) recommends one cup of porridge for 1-3 years old. It also recommends one and half cups for 4-6 years old. This indicates that the portion size given to the children is smaller compared to the children's ages.

The study noted that the centre is able to provide food at the right frequency in terms of timing. The meal is however affected by portion size. Therefore the study recommends the centre to strictly adhere to recommendations by the Ministry of Health Nutrition Department of Zimbabwe (1989).

9.3. To find out if ECD Centres have Adequate WASH Facilities for the Children

An integrated definition of food security acknowledges the importance of the quality of WASH during food preparation, cooking, serving as well as the disposal of wastes and faecal matter. To that end, the following data were obtained:

Table-4. Quality of WASH during food preparation, cooking and serving

Food Hygiene	**Handling**	**-food was handled with clean hands but sometimes kept in unclean utensils**
	Storage	-uncovered raw meat on the working surface -a refrigerator was available
	Hand washing	-staff and children wash their hands before handling food -soap or hand sanitizers were not used -hands were cleaned and wiped with a hand towel which was shared by both caregivers and the children.
	Attire	-caregiver had a clean apron and cap

The findings showed that food was handled by clean hands by both staff and children however in some instances the food was kept in unclean utensils. Poor storage of food was noted as the findings revealed that uncovered raw meat was on the working surface. Staff and children wash their hands without soap or hand sanitizer before handling food. The hands were wiped using a hand towel which was shared by both caregivers and children. The cooks were putting on clean aprons and caps which cover the hair.

According to Malaba (1994) food should be handled with clean hands and kept in clean utensils. Malaba (1994) goes on to say raw meat should be protected against flies by keeping it in a refrigerator, food safe or covering it with a gauze cover. This indicates that food hygiene is important. Hand washing should be done using soap or hand sanitizers and dried to prevent the spread of germs.

UNICEF (2006), states that ash can be used in place of soap or sanitizer. This indicates that hands should be thoroughly washed and dried to prevent the spread of diseases. Cooks should wear clean aprons and caps or tie their hair with a veil to prevent it from falling into the food. This shows that personal hygiene is crucial when dealing with food.

The study found that the centre under investigation had poor food hygiene standards. The centre may be prone to cases of diarrhoea, dysentery and typhoid due to exposure of food to houseflies and unclean utensils as well as inadequate hand washing which may cause contamination of food.

Therefore, this study recommends the centre to ensure that strict measures are taken to see that all persons who are employed to handle food observe rules of food hygiene. The study also recommends the Ministry of Health to hold awareness campaigns which demonstrate proper hand washing practices in schools. The use of saviets in place of hand towels for drying hands is also recommended by the study.

On the same note, the study sought data on kitchen hygiene .The centre was observed for cleanliness of the floor, sink, utensils and waste -bin. The following data was obtained:

Table-4.5. Kitchen hygiene at ECD centre

Kitchen hygiene	**Floor cleanliness**	**-bits of leftover food lying around**
	Sink status	-dirty dishes pilled in the sink
	Status of utensils	-dirty utensils
	Waste -bin state	-full bin and flies hovering around

The findings showed that bits of leftover food were lying on the floor; dishes were piled in the sink. The waste-bin was full and had flies hovering around.

Minnet (2010) asserts that floor; work surfaces, sink, cooking utensils, waste bin, dish clothes and drying up cloth among others should be cleaned regularly. Flies are a serious health hazard especially to young growing children. They further state that one should make sure that all work surfaces are wiped down, utensils are clean and dry, bins are not overflowing, floor is not wet and dirt, sinks are nice and clean and dish cloth and dry cloth are clean and dry. This means that a high degree of cleanliness needs to be maintained at all times. This study established that levels of hygiene at the centre were very poor. Therefore, the study recommends the centre to maintain high standards of hygiene in the kitchen.

The study sought data on availability of reliable safe source of water at the ECD centre. Observations were conducted and the following data were obtained:

Table-6. Water supply, cleanliness and reliability

Water Provision	**Availability**	**-water was not running during time of visit**
	Adequacy	-Supply not adequate to meet centre needs
	Water source	-tap
	Storage containers	-dirty containers some covered some not covered

Findings revealed that the centre has tapped water. The taps were not running during time of visit. Three dirty water storage containers were seen of which two of them were covered while one was not covered.

According to Makonye (2014) the Mayor of Masvingo, Hubert Pfidze confessed that mounds of pampers clogged and blocked water at Mutirikwi water works recently thereby, forcing the whole city to consume contaminated water for a while. This shows that though a tap is considered to be a safe water supply, the water may not be safe for drinking. UNICEF (2008) states that; safe and clean drinking water must always be available at ECD centres. Tan (1998) states that water can be contaminated during storage at home for example by contact with contaminated hands or using dirty storage containers. This means there should be strong measures in place to keep water safe from contamination during storage. This study unearthed that the centre has erratic water supply. This means that the centre does not have a reliable safe source of water. Therefore, this study recommends the centre to drill a borehole and the centre is recommended to boil water in order to make it safe to drink.

The study also sought data on toilet hygiene. The present research used observations check on toilet hygiene. The following data were obtained.

Table-7. Hygiene

Hygiene	**-Hand washing**	**-water for washing was available but no soap**
	-cleanliness of toilet	-no faecal matter on floor and walls -splashes of water on floor -toilet was stinking
	-sufficient water for washing	-not sufficient for cleaning

The findings showed that there was no faecal matter on the floor and walls. The toilet was stinking and splashes of water were seen on the floor. Water for washing hands was available but there was no soap for hand washing. It was also noted that the water was not sufficient for cleaning the toilet.

According to Grossman (2003) thorough cleaning is important in preventing the spread of fungal infections. Mould can live on walls and floor tiles. The mould can be responsible for infections, cause allergic responses, damage surfaces and cause unpleasant smells. Vogo (1980) states that airborne fungi are usually associated with damp conditions. This means that the toilet needs to be dry to avoid unpleasant odours and spread of diseases.

The study established that the toilet was clean but wet and smelly. Therefore, the study recommends routine cleaning of the toilet using detergents to reduce the risk of spread of germs. Generally, the centre does not have adequate water and good sanitation and hygiene standards. The study recommends the centre to ensure good sanitary conditions at the centre.

Overally, from the observations, it emerged that the centre under study does not have the capacity to provide adequate nutritional meals to children. The centre is not able to provide correct amounts of food thereby compromising the nutritional needs of children. In addition, issues of water, sanitation and hygiene are not addressed holistically by ECD centres in Masvingo district and in the province at large.

9.4. Sanitation Facilities in ECD Centres

In order to gain insight into sanitation facilities in ECD centres, the centre was observed and the following data were obtained:

Table-8. Sanitation Facilities in ECD centres

Sanitation	**Hand washing facilities**	**-soap and sanitizers not used for hand washing**
	Separate toilets for boys and girls	-they maintain separate toilets for boys and girls -ECD toilets are separate from mainstream toilets
	Number of toilets and adequacy	-7 child sized toilets -toilet ratio good
	Cleaning equipment and disinfectants	-no disinfectants ,cleaning equipment available
	Water for flushing inside the toilet	-No tap water during time of visit
	Water source close to the toilet	-tap close by but not functional

It was found that the centre had 7 child sized toilets and the toilet ration was good. The centre maintains separate toilets for boys and girls and had separate toilets from the rest of the primary school. Toilet cleaning equipment was available including brooms, scoopers and buckets. However, it was noticed that no disinfectants were used during cleaning, there was no running water during time of visit and the tap close to the toilet was reported not functioning. Soaps and hand sanitizers were not used after toilet use. UNICEF (2009) alludes that lack of improved sanitation facilities kills and sickens thousands of children every day. UNICEF (2009) concurs that, due to poor sanitation, 2.4 billion die every year due to diarrheal diseases most of them are children less than 5 years. This means that there is need for improved sanitation facilities in ECD centres.

The study established that the centre did not have adequate cleaning water and disinfectants as well as hand washing facilities. Therefore, the study recommends the use of detergents for washing hands and that a safe reliable supply of water is installed at the centre.

9.5. Data from Interviews of College Lecturers

The study sought data on centres which feed children in order to find out whether ECD centres are able to provide meals frequently in correct amounts of food. Two ECD lecturers in a Teacher's Training College were interviewed. The following data were obtained:

Table-9. Quality and adequacy of meals

Question	Responses
Do you know of any centres which feed children in Masvingo district?	-3 centres were identified by the participants
What is the position in centres in terms of provision of correct quantities of food to children?	-centres do not have enough funds to purchase food items - they provide food but measurements are not specific
When assessing and supervising students in ECD centres do you take into consideration hygiene in terms of cleanliness of centre, toilets, provision of water and good nutritional practices?	-it depends on the supervisor -l am more particular with these aspects
Do you write any critiques based on hygiene and nutritional practices in ECD centres?	-such aspects are assessed informally through observations but do not contribute greatly to the student's mark -the assessment instrument focuses mostly on key aspects like upkeep of teaching records, teaching methodology and classroom displays

The college lecturers identified three centres in Masvingo district which feed the ECD children. According to UNICEF (2008) ninety five percent of the ECD centres in Zimbabwe do not feed children. This indicates that only few ECD centres are providing meals. This is supported by Makonye (2014) who acknowledges that most ECD centres in Masvingo district and in Zimbabwe at large are not feeding ECD children.

Lecturers revealed that centres do not have enough funds to purchase food items. Another lecturer divulged that although centres provide food, the measurements are not specific. This was also confirmed during observations. The study established that majority ECD centres do not feed children. It is therefore recommended that centres take strides towards feeding children and improving their nutritional status.

The academics were interviewed on whether they take into consideration hygiene in terms of cleanliness of centre, toilets, provision of water and good nutritional practices when assessing and supervising students in ECD centres. One lecturer revealed that it largely depended on the supervisor in question. Another lecturer said, "I am more particular with these aspects."The study noted that supervisors do not prioritise hygiene and nutrition of children in ECD centres. It is recommended that lecturers complement promotion of proper hygiene practices and nutrition in ECD centres.

The lecturers were also interviewed on whether they write any critiques based on hygiene and nutritional practices in ECD centres. One academic revealed that the assessment instrument focuses mostly on key aspects like upkeep of teaching records, teaching methodology and classroom displays. Another academic noted that, "such aspects are assessed informally through observations but do not contribute greatly to the student's mark." Nziramasanga (1999) supports that proper hygiene promotion and nutritional practices are not addressed holistically in schools. The study found that ECD lecturers do no prioritise issues of hygiene and nutritional practices in their supervision. It is therefore recommended that supervisors should encourage practice of hygiene and nutrition by adding that component in their supervision.

9.6. Data from Interviews of Caregivers and Teachers

The study sought data from four caregivers and three teachers on frequency of meals provided to ECD children. The following data were obtained:

Table-10. Food preparation and frequency of meals

Questions	Responses
How Often Do You Feed The Children?	**Teachers**-We Feed Them Four Times A Day **Caregivers**-We Give Breakfast, Lunch And Two Snacks -We Give Them Breakfast, A Snack And Lunch Then Another Snack
Who Prepares The Meals?	**Teachers**-It Is The Caregivers Who Prepare Meals **Caregivers –**We Are The Ones Who Prepare The Food

Continue

	-Caregiver On Duty -We Have A Duty Roster
Do You Have Any Knowledge On Child Nutrition?	**Teachers**-We Are Trained As Teachers -We Have Basic Skills From Home Economics **Caregivers**-We Were Taught Little About Child Nutrition -Hatina Asi Tinogona Kubika Chete
What Challenges Do You Face In Provision Of Nutritional Requirements For Pre-School Children?	**Teachers** –We Divert From Planned Meals Because Some Food Items May Be Out Of Stock -We Do Not Have Specific Quantities, They Depend On Availability Of Food **Caregivers** –The Duties Are Demanding
Do You Have A Reliable Safe Source Of Water?	**Teachers**-We Have Tap Water But Not Reliable At All -We Only Get Water Early In The Morning And Late In The Evening **Caregivers**-We May Not Get Water Due To Technical Faults And Power Outages -"We See Dirty In The Water, Muddy Or Too Much Chlorine MvuraYachoHaiite So" -The Water Is Inadequately Purified

The findings showed that the centre feeds the children four times each day. Breakfast, lunch and two snacks constitute the daily meal intake. This resonates with recommendations of UNICEF (2008) which stipulate that children in a day care for more than five hours a session (full day) should be offered at least two meals including one hot meal. This indicates that children in ECD centres should be offered nutritious healthy meals and snacks frequently. The centre therefore, is able to provide the stipulated number of meals per day to the children in terms of meal frequency. Findings revealed that the caregivers prepare the meals for the children. They pointed that the caregiver on duty is the one who is responsible for cleaning, fetching water, food preparation, cooking and serving. According to Lemlech (1984) it is the duty of the caregiver to see that the environment mend for the children is kept clean and safe. Lemlech (1984) goes on to say that, the food should be prepared, cooked and served in time. This implies that the caregiver is the one who is responsible for meal preparation and cleaning of the centre. The caregivers revealed that they have a duty roaster. This implies that one caregiver is on duty on a daily basis. By so doing, thoroughness of duties may be sacrificed as the caregiver is overwhelmed by duties and responsibilities. Therefore, the study recommends ECD centres to have more caregivers and ancillary staff to increase thoroughness.

It merged that the caregivers and teachers had elementary knowledge on child nutrition. Most caregivers are Para- professionals. They all revealed that issues relating to nutrition were not taught in detail during their training hence most of the things were done on trial and error basis. The caregivers professed ignorance of different cooking methods as well as good presentation of food. None of the caregivers and teachers had a professional qualification in child nutrition.

UNICEF (2006) states that childcare centres should have staff trained in hygiene and food and nutrition among toddlers. This indicates that the caregivers should be adequately equipped with skills on child nutrition. This study found out that the caregivers do not have the capacity to provide adequate nutritional meals to ECD children due to lack of professional competences. Therefore, the study recommends staff at ECD centres to be suitably qualified and experienced in child nutrition. In this study, it emerged that the caregivers and teachers faced several challenges in ECD centres in terms of provision of quality meals. Findings in this study revealed that caregivers they do not strictly adhere to the meal plan due to a number of constraints. Sometimes the planned food items maybe out of stock or not readily available on the market. The fees paid by the ECD children are devoted to paying caregivers, buying toys and other requirements while a small proportion reserved for food items. Some care givers in this study perceived the ECD feeding programme as a burden while some perceived it to be enjoyable. One caregiver reiterated that, it can be belittling to male caregivers and very demanding in terms of work rate and workload distribution; from meal planning, dish washing and feeding the children. The caregivers seemed to rely on the children's impulses to feed them. They do not have specific measurements which each child should get on every meal. They children are fed as their appetite demands. Those with high appetites seemed to get more food. As observed, children with low appetites presented the greatest challenge to the caregivers. It can therefore be noted that caregivers face challenges ranging from meal preparation serving, lack professional expertise in centre management as well as sub standard hygiene and sanitation practices. The centre has a clean water supply from the tape. The water is however erratic in supply as water comes early in the morning and late in the evening. "We may not get water due to technical faults or power outages". The caregivers however complained that the water was not adequately purified leading to cases of diarrhoea. "Sometimes you see dirty in the water, muddy or too much chlorine, mvurayachohaiite so." "We are happy plans are underway to sink a borehole to relieve the water supply challenges."

At the time of the visit at the centre, 3 large water storage tanks were seen but were not covered. Safe and clean drinking water must always be available, all water containers must be covered at all times. Academics also emphasised the need for a clean reliable source of water.

9.7. Data from Policies and Statutory Instruments

Table-11. Data from policies and statutory instruments

Policy/Statutory instrument	**Guidelines**
Statutory instrument 106 of 2005	-centres should have feeding schemes - hot water and running water must be available at the ECD centre regular training of all cooks and staff in safe food storage, preparation and safe handling by children and staff, including sharing of food is highly

Continue

	recommended
Directors' circular 48 of 2007	- ECD premises have food storage, safe and adequate water as well as sanitation facilities. -It also stipulates that all ECD centres should be kept in a safe, clean and sanitary condition.

Document analysis of policies and statutory instruments was done to determine the capacity of ECD centres to implement their guidelines. Statutory Instrument 106 of 2005 states that ECD centres should have feeding schemes, hot water and running water, regular training of all cooks and staff in safe food storage, preparation and safe handling by children and staff, including sharing of food is highly recommended. The Director's circular 48 of 2007 states that ECD premises have food storage, safe and adequate water as well as sanitation facilities. It also stipulates that all ECD centres should be kept in a safe, clean and sanitary condition. According to UNICEF (2006) statutory instrument 106 of 2005 and the Director's circular 48 of 2007 were passed to address the WASH and nutritional needs in ECD centres.

From the interviews and observations conducted, the study found that WASH and nutrition recommendations in the statutory instrument and the Director's circular were too elicit and irrelevant to the centre under investigation. Issues of proper water, sanitation and hygiene as well good nutritional practices were addressed half heartedly at the centre. It is recommended that the centre should go an extra milestone to address WASH and nutritional aspects in order to promote normal growth and development of ECD children.

10. Conclusions

In relation to nutrient composition, findings of this study showed that ECD centres provided meals which had nutrient inadequacy. Overally, from the observations, it emerged that the centre under study does not have the capacity to provide adequate nutritional meals to children. The centre is not able to provide correct amounts of food thereby compromising the nutritional needs of children. From interviews, it was noted that caregivers face challenges ranging from meal preparation serving, lack professional expertise in centre management as well as sub standard hygiene and sanitation practices. Findings in this study revealed that caregivers they do not strictly adhere to the meal plan due to a number of constraints. It merged that the caregivers and teachers had elementary knowledge on child nutrition. The centre under study is able to provide the stipulated number of meals per day to the children in terms of meal frequency. The study found that ECD lecturers do no prioritise issues of hygiene and nutritional practices in their supervision. Issues of proper water, sanitation and hygiene as well good nutritional practices were addressed half heartedly at the centre.

11. Recommendations

There is no doubt ECD is a relatively new phenomenon in Zimbabwean education system. It is also clear that ECD plays a critical role in realizing Zimbabwe's thrust for education for all as enunciated by Zimbabwe's education Act of 1987 as amended in 2006. For the success of its full implementation, the policy makers, the government in particular, should consider the following recommendations:

- Caregivers need basic training in child nutrition, meal preparation; cooking and serving, waste management as well as hygiene and sanitation.
- It is recommended that the centre should go an extra milestone to address WASH and nutritional aspects in order to promote normal growth and development of ECD children.
- The study recommends staff at ECD centres to be suitably qualified and experienced in child nutrition.
- The study recommends ECD centres to have more caregivers and ancillary staff to increase thoroughness.
- It is recommended that supervisors should encourage practice of hygiene and nutrition by adding that component in their supervision.
- It is recommended that lecturers complement promotion of proper hygiene practices and nutrition in ECD centres.
- It is recommended that centres take strides towards feeding children and improving their nutritional status.

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