

**Impact of Hygiene Practices at Early Childhood Development Centers on
Hygiene Practices and Health Outcomes of ECD Children in Rural Communities,
Kenya**

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Abstract

Lack of improved hygiene environment is one of the main risk factors of diarrhea and pneumonia among children aged under five in the world. These diseases are leading causes of death among them. In Kenya, located in the sub-Saharan Africa region, the health of ECD children is neglected. Diarrhea and pneumonia account for approximately one-third of under-five deaths. Changing hygiene practices and environment have been regarded as keys to protecting children's health. The objectives of this study are threefold. First, this study will examine whether the training on hygiene practices for ECD teachers is effective in improving hygiene practices and health outcomes of ECD children. Second, it will examine the association between hygiene practices and health outcomes of ECD children. Third, it will examine the factors associated with hygiene practices of ECD teachers, hygiene practices and health outcomes of ECD children.

要旨

安全な飲料水及び基本的な衛生施設へのアクセスの欠如は、5歳未満児における下痢症や呼吸器疾患などをもたらすリスク要因の一つであり、これらの感染症は5歳未満児における主な死亡要因である。サブサハラアフリカ地域に属するケニア共和国では、5歳未満児の死亡要因の約3分の1が下痢症及び急性呼吸器疾患によるものである。学術的には、衛生環境を改善し、衛生に関する行動を変えることで、子どもの健康を守ることができることが知られている。本研究の目的は、幼稚園における衛生改善が、児童の衛生行動及び健康状態に与える影響及びその要因を明らかにすることである。

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1. Introduction

Lack of improved hygiene environment is severe public health issues among the marginalized and vulnerable population. In 1990, only 49% of the world population had access to improved sanitation facilities and 76% had access to improved water sources in the world, but it increased to 64% and 89% in 2012. The pace of these progresses, however, was slow in Oceania and sub-Saharan African regions for sanitation facilities and Central Asia region for water sources. (1, 2) Globally, rural population contributes approximately 90% of population for the lack of access to improved drinking water sources. Likewise, it accounts for 70% of population for the lack access to sanitation facilities. (2) Lack of improved hygiene environment is one of the main risk factors of diarrhea and pneumonia among children aged under five. These diseases are leading causes of death among them. (3, 4)

Hygiene promotion has been identified as an effective approach to prevent diseases through changing poor hygiene behavior. (5, 6) It is a planned approach based on the existing local health problems, motivation for hygiene and appropriate channel of communication of the targeted groups. Changing hygiene practices and environment have been regarded as keys to protecting children's health too. (4, 7) Globally recommended hygiene practices include handwashing (washing hands before eating and after toilet with soap), water management and treatment, and the correct use of latrines.(8) These hygiene practices prevent children from receiving infectious diseases such as diarrhea and pneumonia. (8, 9)

Hygiene promotion has been known to be effective on children's health at the household level and the primary school level. Learning on child health through neighborhood meetings and participatory women's group is effective to improve knowledge and hygiene practices of mothers. (10, 11) It reduced 12.2% incidence of acute respiratory infections among their children aged under five. (10) At the primary school level, hygiene promotion also improved knowledge and hygiene practices of children. It reduced 35% absenteeism among students of grades 4 to8, too. (12)

ECD center typically covers children aged three to six, one of the riskiest groups of diarrhea and pneumonia. An ECD center can be a channel of spreading diarrhea and pneumonia among children from different households. Limited knowledge is available whether hygiene promotion in ECD centers can change hygiene practices and improve health status of ECD children.

In Kenya, located in the sub-Saharan Africa region, the health of ECD children is neglected. (13) Diarrhea and pneumonia account for approximately one-third of under-five deaths in Kenya. (14) Hygiene practices have been extensively promoted in communities and primary schools in rural Kenya.

(12) However, ECD centers have not been considered as the target of these promotions. It may be because parents and communities leaders recognize the role of ECD centers in educating child rather than in protecting child health. (15, 16) More understanding is needed on the effectiveness of hygiene promotion in ECD centers to protect the health of children aged under five.

The objectives of this study are threefold. First, this study will examine whether the training on hygiene practices for ECD teachers is effective in improving hygiene practices and health outcomes of ECD children. Second, it will examine the association between hygiene practices and health outcomes of ECD children. Third, it will examine the factors associated with hygiene practices of ECD teachers, hygiene practices and health outcomes of ECD children.

2. Methods

2.1. Study design and study area

This study is a cross-sectional comparative study between Migwani and Masinga Districts located in the eastern part of Kenya. Migwani and Masinga Districts are semi-arid area. The major ethnic group in this area is Kamba. In the study area, Community Action Development Organization (CanDo), an international NGO for community development, run an ECD project. As an intervention, the project purposively selected 9 out of 94 public ECD centers in Migwani District for the training of hygiene practices. The training was held in 2011 and 2012 for ECD teachers in the selected ECD centers. ECD teachers received follow-up activities, including training for head teachers, caregivers, and ECD teachers about water, sanitation and hygiene in 2013 and 2014. During the training, teachers acquired essential health knowledge and hygiene practices at ECD centers.

2.2. Participants

Participants were ECD teachers and ECD children who attended the selected ECD centers on the day of data collection. ECD children aged two to seven years old. As an intervention group, this study selected 8 out of 9 public ECD centers which received the intervention in Migwani District. The participants were 12 ECD teachers who attended the training of hygiene practices and follow-up activities and 225 out of 296 ECD children. Out of 225 ECD children, 196 have consent from their caregivers to participate in this study. As a comparison group, this study selected 7 public ECD centers which did not receive intervention from any organization out of 120 in Masinga District. The participants were 9 ECD teachers and 300 out of 306 ECD children. Out of 300 ECD children, 296 have consent from their caregivers to participate in this study.

2.3. Measurements

Semi-structured questionnaire was developed in English. This questionnaire was pre-tested among 25 ECD teachers of public ECD centers in Masinga District prior to the main data collection. Then, the questionnaire was modified for the main study.

Variables of this study are hygiene practices of ECD teachers and children, the characteristics of ECD center, teachers and children, health knowledge of ECD teachers and absenteeism of ECD children.

2.3.1. Independent variables

Independent variables of this research are hygiene practices of ECD teachers and children, the characteristics of ECD center, teachers and children, health knowledge of ECD teachers.

2.3.1.1. Hygiene practices of ECD children

Hygiene practices of ECD children were measured by observation with checklist. Hygiene practices of ECD children include handwashing at proper time (before having meals, after visiting the latrines and after playing), handwashing with proper materials (with only a water, a soap and water, ash and water), drying hands after washing, sitting during the meals.

2.3.1.2. Hygiene Practices that ECD Teachers Implement at ECD Centers

Hygiene practices of ECD teachers were measured by face-to-face interviews using semi-structured questionnaire and observation. Hygiene practices of ECD teachers include personal hygiene at ECD centers, water management and treatment, cleaning latrines and classroom, washing utensils for feeding (dishes and cups of children), making and using dish rack and water container, encouraging hygiene practices of ECD children. ECD teachers learned these hygiene practices during the training.

2.3.1.3. The characteristics of ECD centers, teachers, and children

The characteristics of ECD centers were measured by face-to-face interviews with ECD teachers using semi-structured questionnaire. The characteristics of ECD centers include water sources, water storage, the facilities of toilets, and the number of ECD teachers and children. The characteristics of ECD teachers include age, gender, socioeconomic status, academic status, and the history of receiving training. The characteristics of ECD children include age and gender

2.3.1.4. Health Knowledge of ECD Teachers

Health knowledge of ECD teachers was measured by using semi-structured questionnaire. Health knowledge include about water-related diseases, the method to prevent these diseases, the

way of water management and treatment, the method of making dish rack and water container, about child-friendly latrine. ECD teachers learned such knowledge in the training.

2.3.2. Dependent variables

2.3.2.1. Child absenteeism

Disease-related child absenteeism in the past 2 weeks were collected from face-to-face interviews with ECD teachers using their records.

2.3.2.2. Illnesses and health problems of ECD children

Illnesses and health problems which ECD children had in the past 2 weeks were collected from face-to-face interviews with ECD teachers.

2.4. Data collection

Data were collected through face-to-face interview with semi-structured questionnaire to ECD teachers and observation of ECD teachers and children from March to May, 2015. Local staffs of CanDo served as research assistants. Hygiene practices of ECD teachers and children were observed during a school day. ECD children wear a shirt with an ID number so that researchers can identify whether each child exercises hygiene practices. Face-to-face interviews with ECD teachers were also conducted at each ECD center after school. Researcher and research assistants will also conduct an observation survey at each ECD center during the school time.

2.5. Data analysis

All collected data were coded and entered into STATA version 13. Differences in the characteristics of ECD teachers and children among the intervention and control groups were examined using chi-squared test of independence and analysis of variance. Collected data will be analyzed from questionnaire and observation by the multilevel linear and logistic regression models with a random intercept at the school level.

3. Research findings

Research results will be obtained after the data analysis. As an initial research findings, hygiene practices such as handwashing and eating attitude were well encouraged to ECD children by ECD teachers in comparison group more than in intervention group according to the observation at

ECD centers. It is opposite finding from the hypothesis of this research. The kinds of hygiene practices of ECD teachers and children were differ from one ECD center to another. Hygiene environment such as water resources and toilets of ECD centers were also vary among ECD centers.

According to the questionnaire survey, the kinds of illnesses and health problems of ECD children in intervention group and comparison group were similar. There were diarrhea, malaria, ringworm, scabies, tapeworm, typhoid, malnutrition, fever, cough and running nose. Diarrhea, malaria, ringworm, scabies, typhoid and malnutrition are water-related diseases. Some ECD teachers could not answer health problems of their ECD children, because they do not pay attention to health status of them.

4. Discussion and conclusion

It is need to examine the factors associated with hygiene practices of ECD teachers and children to explain why hygiene practices of ECD teachers and children were observed more in comparison group than in intervention group. According to the observation, the characteristics of ECD centers, teachers and children will be factors associated with hygiene practices of ECD teachers. Additionally, the motivation of ECD teachers and social relationship between ECD teachers, head teacher of the school and parents of ECD children is considered to be one of the associated factors with hygiene practices of ECD teachers to examine. Hygiene practices of ECD teachers will be one of the important factors associated with hygiene practices of ECD children. It is also need to examine which independent variables are affected to the health outcomes of ECD children.

Also, it is need to consider that management system of educational services is different between Migwani and Masinga Districts due to the decentralization which have started in Kenya since 2013. Migwani District belongs to Kitui County and Masinga District belongs to Masinga County. The salary payer for ECD teachers is different among them. The payers are county in Kitui County and parents in Masinga County. It make a difference in the amount of salary for ECD teachers. It is affected the characteristics of ECD teachers of this research.

5. Ethical consideration

This study obtained approval from the Research Ethics Committee of the University of Tokyo. We also requested for ethical approval from the National Commission for Science, Technology and Innovation, Kenya. This study was designed and conducted in collaboration with the Kenyatta University in Kenya under the program organized by the United Nations University. We conducted this

study in cooperation with CanDo. Before one week of the data collection, the Area Educational Officer distributed a letter to selected ECD teachers and head teachers of each primary school which ECD centers attributed from, and parents/caregivers of ECD children. Researcher and research assistants explained to them the objectives of this study and obtained the consent form. During the data collection, the participants have an opportunity to refuse or to discontinue the participation at any time. The confidentiality will be ensured by removing all personal identifiers from the collected data.

6. Reflection on the Global Leadership Training Program in Africa

The Global Leadership Training Program in Africa was a great opportunity for me and this research because I could discuss with professors in different areas from public health. We discussed about my research based on their culture, policy and their cumulative academic knowledge. For example, Dr. Mangriu and Dr. Muriuki in Environmental Education studies helped me to modify the questionnaire based on their culture. I also had an opportunity to discuss about the research needs with Dr. Rachel in Educational studies. First, there are limited studies which specifically examine hygiene behavior at early childhood development centers in Kenya. Second, this study will contribute to the strategy of government in reducing child mortality. The First Lady is conducting the "Beyond Zero Campaign" which is one of the initiatives of strategic framework towards HIV control, promotion of maternal, new born and child health in Kenya since 2014. I would like to show my gratitude to all professors who helped me to improve my research.





Acknowledgement

This study is supported by the Global Leadership Program in Africa of United Nations University –Institute for the Advanced Study for Sustainability. The author thank Dr. Mangriu, Dr. Muriuki, and Dr. Rachel in Kenyatta University. The support of International NGO, Community Action and Development Organisation (CanDo) is highly appreciated.

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