

**ADDIS ABABA UNIVERSITY  
COLLEGE OF HEALTH SCIENCES  
SCHOOL OF NURSING AND MIDWIFERY  
DEPARTMENT OF NURSING  
POSTGRADUATE PROGRAM**

**ASSESSMENT OF NEONATAL SUNLIGHT EXPOSURE AND  
FACTORS AFFECTING IT AMONG MOTHER'S ATTENDING  
GOVERNMENTAL HOSPITALS IN ADDIS ABABA, ETHIOPIA,  
2020.**

**BY: YOHANNES GODIE (BSc)**

**ADVISORS:**

- 1. MR. GIRUM SEBSIBIE (ASS. PROF, PHD FELLOW)**
- 2. MR. DEBELA GELA (MSc)**

**A THESIS TO BE SUBMITTED TO THE DEPARTMENT OF  
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**DEPARTMENT OF NURSING**

<b>Name of principal investigator</b>	<b>Yohannes Godie (BSc)</b>
<b>Name of advisors</b>	<b>1. Mr. Girum Sebsibie (Ass. Prof, PhD fellow)</b> <b>2. Mr. Debela Gela (MSc)</b>
<b>Full title of the research project</b>	<b>Assessment of Neonatal Sunlight Exposure and Factors Affecting it among Mothers Attending Governmental Hospitals in Addis Ababa, Ethiopia, 2020.</b>
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<b>Address of investigator</b>	<b>Phone: +251-928-577359,</b> <b><u>Email:</u> <a href="mailto:yohannesguadie@gmail.com">yohannesguadie@gmail.com</a></b>

## APPROVAL SHEET

I, the undersigned MSc student, declare that I have submitted my original work on neonatal sunlight exposure and factors affecting among mothers attending governmental hospitals in follow up clinic and immunization clinics in Addis Ababa town.

### Submitted by:

Name: Yohannes Godie (BSc)    Signature: \_\_\_\_\_ Date \_\_\_\_\_

This thesis work has been submitted for examination with my approval as an advisor.

### Examiner:

1. Mr. Bereket Gebremichael	_____	_____
Name of Examiner	Signature	Date

### Advisors:

1. Mr. Girum Sebsibie	_____	_____
Name of Major Advisor	Signature	Date

2. Mr. Debela Gela	_____	_____
Name of Co-Advisor	Signature	Date

## DECLARATION

I, the undersigned, declare that this thesis is my original work and has not been presented for a degree in this or another university and that all sources of materials used for this thesis have been fully acknowledged.

**Name:** Yohannes Godie (BSc)

Signature: \_\_\_\_\_

Date \_\_\_\_\_

**Place:** Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery,  
Department of Nursing and Midwifery

**Date of submission:** \_\_\_\_\_

This thesis is submitted for examination with my approval as university advisors.

### Approved by:

1. **Name of Major Advisor:** Mr. Girum Sebsibie (Ass. Prof, Phd Fellow)

Signature \_\_\_\_\_

Date \_\_\_\_\_

2. **Name of Co-Advisor:** Mr. Debela Gela (Msc)

Signature \_\_\_\_\_

Date \_\_\_\_\_

## APPROVAL BY THE BOARD OF EXAMINATION

This thesis by Yohannes Godie (Bsc) is accepted in its present form by the board of examiners as satisfying thesis requirement for degree of Masters of Science in Neonatal Nursing.

### 1. EXAMINER:

Name of Examiner: Bereket Gebremichael

Rank: (MSc, Ass't Professor)

Signature \_\_\_\_\_

Date \_\_\_\_\_

### 2. RESEARCH ADVISORS:

1. **Name of Major Advisor:** Mr. Girum Sebsibie (MSc, Ass. Prof, Phd Fellow)

Signature \_\_\_\_\_

Date \_\_\_\_\_

2. **Name of Co-Advisor:** Mr. Debela Gela (Msc)

Signature \_\_\_\_\_

Date \_\_\_\_\_

### 3. DEPARTMENT HEAD:

**Name of department head:** Niguse Tadele (MSC, Ass. Prof.)

Rank: Department head

Signature \_\_\_\_\_

Date \_\_\_\_\_

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## ACRONYMS

BB-UVB	Broad band UVB
EPI	Expanded program of immunization
GMH	Gandhi memorial hospital
NB-UVB	Narrow band UVB
NICU	Neonatal Intensive Care Unit
SADs	Seasonal Affective Disorders
SNNPR	Southern Nations Nationality and Peoples Region
TASH	Tikur Anbessa Specialized Hospital
PUVA	Psoralen and ultraviolet A
UVB	Ultraviolet B
UVR	Ultraviolet Radiation
VDD	Vitamin D deficiency
WHO	World Health Organization
Y12HMC	Yekatit 12 hospital medical college

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## ABSTRACT

**Background:** Sunlight exposure is the main source of vitamin D and Vitamin D is essential for the growth of healthy bones. Parents expose their neonates to sun light which has been used for the therapeutics purposes of neonatal jaundice for a long period of time. Daily sunshine exposure remains the cheapest, safest and most effective method to prevent rickets.

**Objective-** The aim of this study was to assess neonatal sunlight exposure and factors affecting it among mothers attending governmental hospitals in Addis Ababa, Ethiopia, 2020.

**Methods-** Institution based cross sectional study was conducted among 420 mothers with their neonates attending in immunization and follow up clinics of selected government hospitals in Addis Ababa town. To select study participants by systematic random sampling techniques were utilized. The collected data was entered by using Epi-data version 4.6 and which exported to SPSS version 26 for analysis. Variables that have p-value  $\leq 0.25$  in bivariate modeling were taken into the multivariable model to control for confounder. Statistical significance was declared at p-value  $<0.05$ . Odds ratio with 95% CI is used to determine the direction and strength of association.

**Results:** The prevalence of neonatal sunlight exposure in this study area was 27.1% with 95% CI (22.9-31.7). In this study, parameters such as postnatal age of the neonate (AOR=1.99, 95% CI: 1.15-3.44), family size (AOR=1.86, 95% CI: 1.08-3.21), housing type (AOR=2.59, 95% CI: 1.26-5.32), antenatal care visit (AOR=2.79, 95% CI: 1.49-5.22), gestational age (AOR=2.54, 95% CI: 1.06-6.07), mother's knowledge on sunlight exposure of their neonates (AOR=0.40, 95% CI: 0.22-0.70) and mothers fear to exposed sunlight for the neonates (AOR=1.83, 95% CI: 1.08-3.12) were factors associated with neonatal sunlight exposure.

**Conclusion and Recommendations:** The findings of this study showed that poor practice about sunlight exposure. Therefore, health education which focuses on the importance of sunlight exposure is vital to improve mothers' practice on exposing sunlight for their neonates.

**Keywords:** Sunlight exposure, Practice, Neonates, Addis Ababa

# 1. INTRODUCTION

## 1.1. Background

Sunlight exposure is the main source of vitamin D and Vitamin D is essential for the growth of healthy bones (1). Neonates exposed to sunlight is important to increase the ability of vitamin D and serotonin levels in the human body which makes more active and alert (2).

Sunlight exposure in the morning is mainly effective which leads to earlier melatonin onset in the evening and it makes easier to fall asleep. Morning bright light has effective against premenstrual syndrome, insomnia and seasonal affective disorder (3, 4).

Sunlight was first used for the treatment of neonatal jaundice in 1958 (5, 6). Neonates exposed to sunlight for about 30-60 minutes in the morning can obtain daily requirement of vitamin D (7). In ancient Rome and Greece sunlight has been used for the therapeutic purposes or heliotherapy for centuries (5). In the 2<sup>nd</sup> half of the 19<sup>th</sup> century, it was realized that sunshine which could have bactericidal effect as well as a treatment role of rickets (8, 9).

Sunlight exposure has a lots of health benefits for newborns and infants, which helps to the body produce vitamin D (absorb calcium) (10). During the neonatal period sunlight exposure is used for the treatment of neonatal jaundice. Sunlight help to break down indirect bilirubin so that a baby's liver can process it more easily. In the phototherapy unit usually operated at a distance of 50 cm in this place the light intensity of sunlight is 6.5 times greater than phototherapy. The hourly and seasonal changes in sunlight intensity significantly affected to the reduction of bilirubin concentration (11).

Sunlight does not provide Vitamin D and so cannot increase Vitamin D levels by sitting through a clear glass window; it is not the same as being in the sun (the window blocks UVB). UV light doesn't help to break down bilirubin which is blue-green spectrum light that breaks down bilirubin. Sitting by a window can treat jaundice (not with Vitamin D) but you would have to leave the baby naked in the window all day which is not recommended. Every young and old should get some sunlight exposure during the day time which helps to obtain Vitamin D(12). Vitamin D is not only produced by the body during sunlight exposure but also found in oily fish, eggs and fortified food products(13).

Neonate exposed to sunlight in the morning is used to produce nocturnal melatonin sooner which makes them to enter into sleep simply. Seasonal variation about available of light with the hormone produced melatonin production for a short period of time in the summer than in the winter(4).

Exposure of sunlight to the neonate is important for bones development. So, the role of Vitamin D is playing an important in bone metabolism through regulation of calcium and phosphate homeostasis and can also have participated an important function in immune system regulation.

## 1.2. Statement of the problem

In Middle East Asia countries such as; the northern parts of China (including Tibet), Afghanistan and Mongolia the mother's practice of sun light exposure for the neonates are poor due to this problem most of the neonates are complicated to rickets and vitamin D deficiency has a public health problem despite all year (14, 15).

In adequate practice of mothers exposed to sunshine for neonates leads to vitamin D deficiency and jaundice which is common in many countries of the world, mainly in developing countries (especially in Sub-Saharan African countries), and countries such as India, China, Turkey, Iran, Egypt, Nigeria and Ethiopia are mainly affected (15, 16).

Timely and properly mothers practice to exposed sunlight for neonates has a lot of health benefits, but deliberately and unlimited to exposed sunlight without any form of sunlight protection is not recommended, while for those diagnosed or assessment of vitamin D deficiency and jaundice (17). A little skin exposure to ultra violate B (UVB), those exclusive breast feeding neonates and those mothers had poor vitamin D status during pregnancy time for a long period of time are at risk of rickets (18).

The "dose" and its timing of Sunlight exposure for neonates are vital. Whereas, several studies suggested that it's incorrectly practice or suddenly getting a lot of sun or exposed over time is more dangerous for neonates. In many western countries particularly among Caucasian populations, Skin cancer is a significant problem when over exposed for neonates (19).

Schedule outdoor activities for neonates exposed to the sun spends 15-30 minute. A baby's skin can burn easily and sensitive (20). So, too much ultraviolet (UV) radiation can cause eye damage, skin burn and skin cancer. Avoid the sun when it is the hottest time at 10am to 4pm especially on days with little cloud cover, the sun is usually at its hottest (1). Overexposure to ultra violates during childhood and adolescence time a major factor of determining the risk of skin cancer futurity (21).

In Ethiopian children's lack of exposure to sunshine which leads to inadequate intake of vitamin D, and the major cause is rickets. For neonates not exposed sunshine is the major cause of lack of

awareness and due to traditional beliefs (22). Another study done in Jimma shows that 10.5% of children admission diagnosed were to have rickets (23).

In Jimma town another study shows that children between 6 to 59 months of age were 4% of children were found to have signs of rickets. The highest rate 11% occurred in infants. It is also significantly associated to increased frequency of respiratory infections. Mothers practice and knowledge of sunlight exposure of their neonates are there is a gap (24).

Mothers' plays a key role in prevention of rickets and jaundice by exposing their neonates to sunlight adequately. So, sunlight may be considered as an alternative source for the treatment of neonatal jaundice particularly in those areas which conventional phototherapy units were unavailable. Since there is limited research conducted on neonatal sunlight exposure particularly around the study area. Therefore, this study was to assess neonatal sunlight exposure and factors affecting among mothers attending in immunization and follow-up clinic at Addis Ababa governmental hospitals.

### **1.3. Justification of the study**

Poor practice of sunlight lead to rickets, it is common among Ethiopian children. It contributes to neonatal and infant mortality and morbidity and carries long-term consequences. Neonates exposed to sunshine are not fully understand and simple protective strategy due to various factors influencing by caregiver behaviors (25).

After extensive web search this research is able to get some limited studies done in Ethiopia among under five children's including neonates, these are done in Debre Markos town, South Gondar and SNNPR. In all studies operational definition for practices is not scientifically sound because of their classification of exposure is good and poor not supported by any standard recommendation, rather WHO recommendation shows that exposed to neonates to sunlight such as outdoor, daily, unclothed, morning at 8-10 AM and do not apply any lubricants before exposure; should be answered to all the above questions. In addition to these factors, the association of birth weight, housing type and gestational age were not investigated in the previous studies.

#### **1.4. Significance of the Study**

The finding of this study was important for policy makers and the result will hopefully give as a base line data for any neonatal and child health intervention to be implemented at Ethiopian health institutions. Next to this, designing an interventional project towards improving in our country Ethiopia researches regarding sunlight exposure are inadequate particularly in the study area. Increasing the knowledge and practice of mothers and the whole communities can provide information about the overall situation of mother's. The result of this study was make the stakeholders to give attention for the development of guidelines concerning to sunlight exposure.

## 2. LITERATURE REVIEW

### 2.1. Practices for mothers about sunlight exposure for neonates

According to a study done in south India city shows that neonates exposed to sunlight playing outdoors for more than 30 minutes a day time which exposing more than 40% of their body surface area have a normal status (3). Another study shows in India, Randomized controlled trials are suggested that there is a significant positive association between indoor sunlight exposure for neonates (26).

According to a study done in Debre Markos town shows that mothers practice of sunlight exposure for the neonates were 93%, among this 57.9% of them were exposed daily. Among the exposed neonates condition of closing during exposure time mothers which exposed their infants on sunlight uncovered were 41.4% and mothers exposed their infants by partly covered were 37.7%. Maternal age, husband educational status, mothers fear to evil eye and pneumonia was associated to practice on sunlight exposure (27).

According to a Study done in South Gondar zone, mothers had practices of sunlight exposure of Infant 51.98% were exposed their infants to sunlight. So, mothers started between 0-15 days exposed to sunlight of their neonates, the range of time from 8 -10 AM in the morning mothers exposed their neonates to sunlight, and feared to expose their infants to sunlight were associated(28).

According to a study in SNNPR Sidama zone, 80.1% of mothers exposed their infants to sunlight, from this 30% of mothers exposed sunlight for neonates at age of 45 days and over(29). Another study in Eastern Ethiopia Dire Dawa town shows that, children had expose rickets 1 in every 13 children, due to the problem of being under the care of the caregiver, full dressing during sun exposure, no oil massaging during sun exposure and being sick in the last one month prior to the study (30).

## **2.2. Factors affecting sunlight exposure for neonates**

According to literatures, factors associated with sunlight exposure are mostly related to socio-demographic, maternal and neonatal factors, knowledge of mothers and other factors influencing which are discussed below.

### **2.2.1. Socio-demographic characteristics**

According to a study done in Debre Markos town, mothers with the age group of above 33 years, educational status of mothers, family size of 4-6 and mothers who have husband's educational status were associated with sunlight exposure (27).

### **2.2.2. Maternal and neonatal factors related to Sunlight Exposure**

According to a study done in South Gondar Zone, North West Ethiopia, Most 90.3% of respondents had ANC follow up. More than half, 53% of the mothers delivered at health center (28).

### **2.2.3. Knowledge of mothers about sunlight exposure for neonates**

In East London, China, Australia and Saudi Arabia, as well as France studies shows that mother's limited or poor knowledge about the health benefits of sun exposed for the neonates are associated with poor practice of mothers (14, 31).

Another study done in Australia, a cross-sectional study was conducted from knowledge's about mother's are associated with poor practice of sunshine. However, majority of the participants incorrectly identified the advantage of sunlight and some of the mothers had sunlight uses to treat neonatal jaundice (31).

According to a studies done in SNNPR Sidama zone and Debre Markos town, mothers had information about the need of exposing sunlight for their neonates were associated with practice of mothers, out of those mother who got the information from neighbors/elders and midwife/nurse (27, 29).

Another studies done in south Gondar zone and Debre Markos town shows that majority of the mothers had knowledge or information about benefits of sunlight exposure was associated with mothers practice and mentioned sunlight exposure was beneficial to strengthening bone(27, 28).

#### **2.2.4. Other factors influencing mothers about sunlight exposure for neonates**

According to a study done in Saudi Arabia on knowledge and attitude among female students that indicates participants were limited or poor practices of sunshine. They reported limited sunlight exposure due to intense heat, cultural reasons for covering the body and due to lack of an infrastructure that makes sunlight exposure difficult(32).

A research done in developing countries there is a high proportion of sunny weather, the occurrence of rickets in a significant proportion of children is largely attributed to social and cultural factors. Keeping children indoors because of the fear that they will catch cold, fear of evil eyes, and the tradition of wrapping children in swaddling clothes contribute to lack of adequate sunlight exposure(33).

According to a study done in Debre Markos town show that mothers fear to exposed sunlight their neonates on sunlight were associated with poor practice of sunlight exposure. Mothers had feared to expose their infants on sunlight was 38.3%. Among this majority of mothers was fear of cold 29% and fear of evil eye was11.9% (27).

According to a study in SNNPR Sidama zone, the reasons mothers for not exposing their neonates to sunlight, 30.7% responded due to fear of evil eyes and 19.9% of mothers said that due to fear of cold (29).

Another study in Jimma town shows that exposing a child to sunshine which was useful. But, 24% of them did not know what good it will do or, had some misconceptions. About 6% of mothers had fears for exposing a child to sunlight while 9% preferred to have the child covered during exposure. Nearly 32% of supposed that a child should be taken outside the door after the first month of life(24).

Therefore, majority of the literature review shows that, mothers had good knowledge about the importance of exposing sunlight for their neonates however there is a gap time to stay on sunlight, time to start sunlight exposure, and fear to expose for sunshine.

## CONCEPTUAL FRAME WORK

The conceptual framework is adapted after reviewing different literatures and modified accordingly our situation (3, 24, 27-29, 32). This framework conceptualizes sunlight exposure of neonates with attending mothers as the result of interaction between various factors which are directly related to sunlight exposure. In this study this conceptual framework looks at the relationship between dependent and independent variables (**Figure 1**).

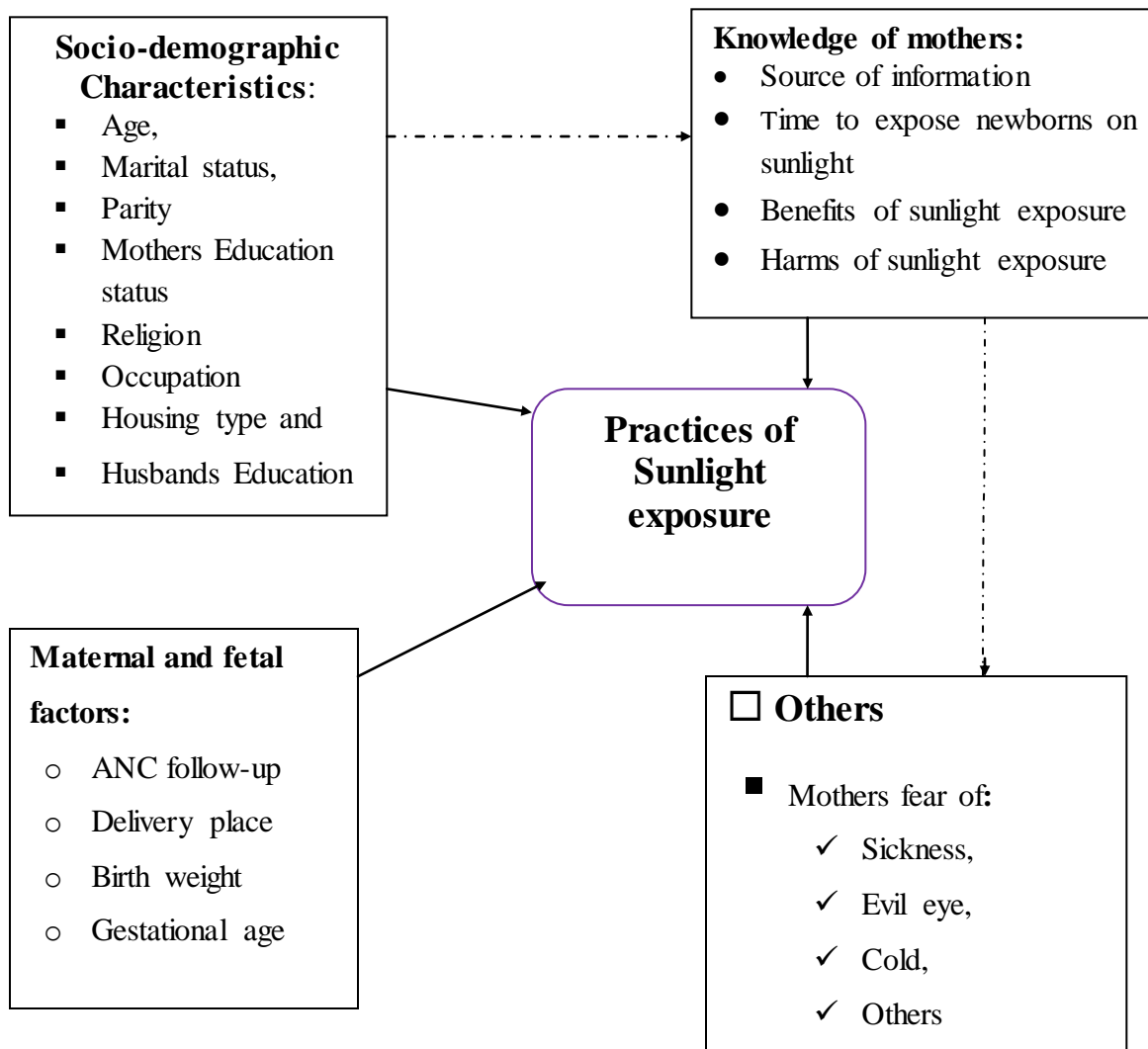


Figure 1: Conceptual framework on mother’s practice of neonatal sunlight exposure and factors affecting among mothers attending governmental hospitals in Addis Ababa, Ethiopia, 2020.

**Sources:** (3, 24, 27-29, 32).

### **3. OBJECTIVES:**

#### **3.1. General objective:**

- To assess neonatal sunlight exposure and associated factors it's among mothers attending governmental hospitals in Addis Ababa, Ethiopia, 2020.

#### **3.2. Specific objectives:**

- To determine the magnitude of neonatal sunlight exposure among mothers attending governmental hospitals in Addis Ababa, Ethiopia, 2020.
- To identify factors affecting sunlight exposure of neonates among mothers attending governmental hospitals in Addis Ababa, Ethiopia, 2020.

## **4. METHODS**

### **4.1. Study area and period**

#### **4.1.1. Study area**

The study was conducted in Addis Ababa town, which is the capital city of Ethiopia and Seat of African Union and the United Nations World Economic Commission for Africa. It covers an area of 527 square kilometers and has 10 sub cities. According to population projection value for 2019 the city has an estimated population of 4.592 million (34).

The city has 13 government hospitals among these 10 hospitals having neonatal follow up clinic and EPI clinic. Among these 6 were under Addis Ababa Health Bureau, 4 were under Ministry of Health, 1 was under Addis Ababa University (Tikur Anbessa Specialized hospital), 1 was under Ministry of Defense and 1 was under police hospital (35).

The study was conducted in three Addis Ababa government hospitals selected by lottery method. These selected hospitals were Gandhi Memorial hospital (GMH), Tikur Anbessa specialized hospital (TASH) and Yekatit 12 hospital medical college (Y12HMC).

In Gandhi Memorial Hospital (GMH): In neonatal intensive care unit a total of 29 nurses and 6 physicians are working in follow up clinic, all of them done by rotation only working time and in EPI clinic a total of 5 nurses are working(36). In Tikur Anbessa Specialized Hospital (TASH): In neonatal intensive care unit a total of 10 nurses working in follow up clinic and in EPI clinic a total of 12 nurses are working in its unit(37). In Yekatit 12 Hospital Medical College (Y12HMC): In neonatal intensive care unit a total of 38 nurses, 1 neonatologist fellow and 3 pediatricians are working in the unit and in EPI clinic a total of 12 nurses are working in its unit (38).

#### **4.1.2. Study period:**

The study was conducted from March 18<sup>th</sup> - April 30<sup>th</sup>, 2020.

## **4.2. Study design:**

An institutional based cross-sectional study design was conducted in selected Addis Ababa governmental hospitals.

## **4.3. Populations**

### **4.3.1. Source population**

All mothers having neonates and attending at follow up clinic and immunization clinic of all governmental hospitals in Addis Ababa town during a study period.

### **4.3.2. Study population**

All selected mothers with their neonates attending at immunization and follow up clinics of each governmental hospital at the time of data collection, and who fulfill the inclusion criteria.

## **4.4. Inclusion and Exclusion Criteria**

### **4.4.1. Inclusion criteria**

Mothers with neonates who were attending at follow up clinic and immunization clinic of each governmental hospital in Addis Ababa town.

Mother's with their neonates who were mentally and physically capable of being responded.

### **4.4.2. Exclusion criteria**

Mother's with neonates above 1 months of age.

Mothers who are unable to communicate were excluded.

## **4.5. Sample size and sampling procedure**

### **4.5.1. Sample size determination**

Sample size was determined by using single population proportion formula, and the prevalence of sunlight exposure which was (45.7%) from the previous study conducted in South Gondar Zone, North West Ethiopia.

$$n = \frac{Z^{\alpha} / 2 \cdot 2p(1-p)}{d^2} \text{ was used to:}$$

Where;  $Z$  = normal standard distribution value at 95% confidence level of  $\frac{\alpha}{2} = 1.96$ ,  
 $n$ = Sample size,  
 $p$ = Prevalence of sunlight exposure practice which was 45.7 % from the previous study conducted in South Gondar Zone, North West Ethiopia was (28).  
 $d$ = Margin of error between the sample and population=5%=0.05

□ Using the above formula the sample size which was calculated as:

$z = 1.96$  for 95% confidence interval

$p = 45.7\% = 0.457$

So,  $n = \frac{z^{\alpha/2} p(1-p)}{d^2}$

$$n = \frac{1.96^2 \times 0.457 \times 0.543}{0.05^2} = \underline{\underline{381}}$$

**N.B:** Then, considering 10% of non-respondent rate the final desired sample size was 381+ 10% non-response rate,  $n=420$ .

❖ Then, the final sample size was **420**.

### **Second objective sample size calculation for different factors associated with sunlight exposure:**

To determine the required sample size for the second specific objective of this study different factors which are significantly associated with sunlight exposure variable were considered with the following assumption; 95% confidence level, Margin of error=5%=0.05 and 10% of non-respondent rate. The calculated sample size for selected variables and maximum sample size was taken for the final required sample size (**Table 1**).

Different variables that have high contribution for sunlight exposure like **poor knowledge** 60% from previous studies done in Debre Markos (27) and **feared to expose their infants** to sunlight exposure 36.5% from previous studies in South Gondar Zone, North West Ethiopia (28).

(Table 1): Sample size calculation for different factors associated with sunlight exposure:

Factors	Prevalence (%)	95% CI	Margin of error %	Non-response rate %	Sample size	Reference
Poor knowledge	60	1.96	0.05	10	406	(27)
Feared to expose their infants to sunlight exposure	36.5	1.96	0.05	10	392	(28)

Finally, from the calculated sample size for the first and the second objectives, the largest sample size was **420**.

#### 4.5.2. Sampling methods (procedures):

The study which was conducted in Addis Ababa governmental hospitals those having neonatal follow up clinic and EPI clinic, 30% of the hospitals in Addis Ababa were selected by using simple random sampling technique. The reason of selecting only governmental health facilities was more clients are available at governmental health facilities than private health facilities, mothers follow their neonates immunization and follow up clinics at governmental health facilities which service is given free of charge.

According to data from the three hospitals in one month prior to the study period from October 2019 to December 2019 a total of 1,621 mothers with neonates attending follow up and EPI clinic (Gandhi Memorial hospital 650, Tikur Anbessa Specialized Hospital 536 and Yekatit 12 Hospital Medical College 435). Then allocation of the sample size to each hospital was made proportionally based on average number of mothers with their neonates attending in each hospital one month proceeding to the survey.

During starting the data collection time the first participant which was selected randomly. Each study participant was selected by using systematic sampling technique, which has every three clients was interviewed in each hospital. Another participants was selected every three ( $k=3$ ) intervals. The mothers interviewed every 3<sup>rd</sup> intervals after determination of  $k^{\text{th}}$  value (**Figure 2**).

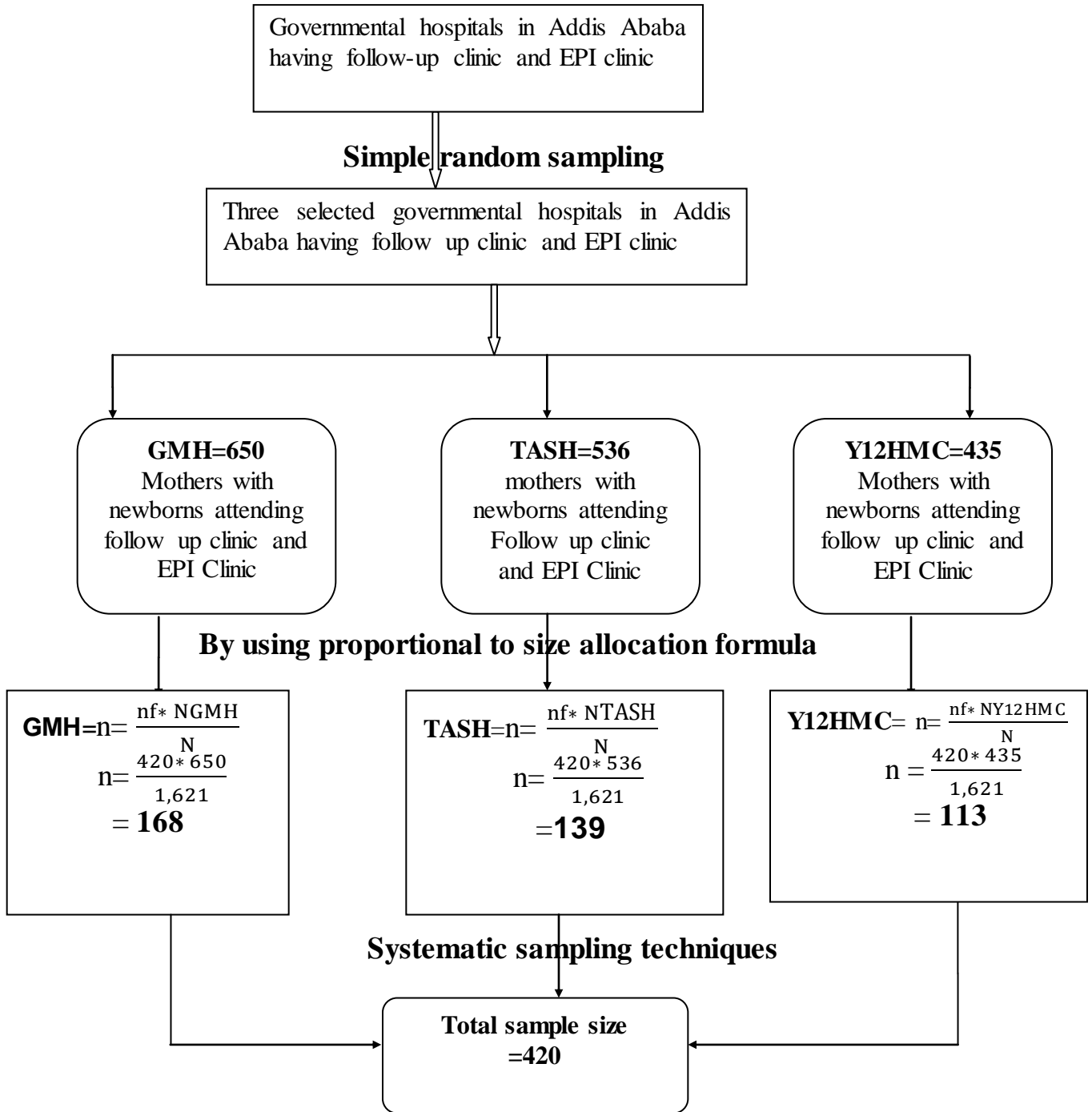


Figure 2: Schematic presentation of sampling procedure of the neonates in the selected governmental hospitals of Addis Ababa, Ethiopia, 2020.

#### **4.6. Operational definitions:**

**Sunlight exposure:** Those mothers who exposed their neonates to sunshine.

**Knowledge:** The theoretical understanding of mothers' about sunlight exposure of neonates.

**Good knowledge:** Those mothers that were responded to all knowledge questions. Four knowledge related questions were used.

**Poor knowledge:** Those mothers that were responded to knowledge questions and responded three and below three questions.

**Practice:** Mothers' activity or behavioral experience in relation to sunlight exposure of neonates.

**Good practice:** Those mothers that were responded to all practice questions. Eight practices related questions were used.

**Poor practice:** Those mothers that were responded to practice questions and responded seven and below seven questions.

#### **4.7. Study variables**

##### **4.7.1. Dependent variable**

Practices of sunlight exposure

##### **4.7.2. Independent variables**

Socio-demographic factors such as (age of the mother, marital status, educational status and occupation)

Maternal and neonatal related factors (ANC follow-up, place of delivery, birth weight and gestational age)

Mother's knowledge about sunlight exposure

Mothers fear (sickness, evil eye, and cold)

#### **4.8. Data collection instrument and procedures**

Data was collected by using structured questionnaire with face to face interview. The data collection tools were adapted from different literatures (3, 24, 27-29, 32) and by reviewing both maternal and newborns profile card. The questionnaire was first developed in English and

translated into Amharic versions and re-translated back into English by language experts to assure its consistency.

For data collection procedure, nine health professionals (six data collectors and three supervisors) were involved. Data collectors was closely monitored and guided by each hospital BSc nurses supervisors. Two-day training was given about data collection procedure for those data collectors and supervisors regarding the study purpose, on how to conduct the interview, how to administer questionnaire, how to take consent, keep confidentiality and respect the right of the participant. The collected data was checked by the supervisor daily for completeness and finally the principal investigator was monitored the overall quality of data collection.

The data was collected in the day time shift from 8:30 am – 5:30 pm after obtained consent from each participant prior to data collection in the hospitals after finishing the services and back to their home.

The questionnaire consists of four parts.

**Part I:** Mothers socio demographic information such as (age, marital status, educational status, occupation).

**Part II:** Maternal and neonatal related factors (ANC follow-up, place of delivery, birth weight).

**Part III:** knowledge of sunlight exposure such as Source of information (physician, nurse/midwife, TV/Radio, neighbors/elder people).

**Part IV:** Mothers fear about (sickness, evil eye, cold).

#### **4.9. Data quality control**

Tool was given to expertise to check content validity and accuracy. It was pre-tested on 5% (n=21) of similar mothers in Zewditu Memorial Hospital outside the study area to assess for its completeness, clarity, length, skip patterns and correctness of filled questioners. After the pre-test result, based on the response the questionnaire was modified. Data collection was carried out by trained nurses from other units of the health facilities.

In addition, check for completeness and quality of data collection was make on daily bases by the supervisors and detailed feedback was provided to data collectors.

#### **4.10. Data analysis procedure**

Data were entered using EPI Data version 4.6 and analyzed by using SPSS Software version 26. Mean, standard deviation, frequencies, percentage and odds ratio was calculated. After coding, and entering the data to the software descriptive statistics such as proportion, frequencies, cross tabulation, and measure of central tendency was calculated.

Bi-variable analysis were used to see the association between each independent variable & the outcome variable, multiple logistic regression analysis was carried out to determine the effect of various factors on the outcome variable. All variables with p-value  $\leq 0.25$  were taken into the multivariable model to control for all possible confounders. To assess multi-collinearity in the regression model the variance inflation factors (VIF) was conducted to identify correlation between independent variables. Hosmer and Lemeshow goodness of fit test was done to test the fitness of the model and it was found good. The degree of association between dependent & independent variables was assessed using odds ratio with 95% confidence interval and p-value  $<0.05$ .

#### **4.11. Ethical Consideration**

Ethical clearance was obtained from institutional review board of Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery and Department of Nursing. Formal letter was obtained from Addis Ababa public health research and emergency management core process in order to get permission to carry out the study. Informed written consent was obtained from each respondent after explaining the purpose and procedure of the study. No name or other identifying information was included in the instrument. The eligible study participants were enrolled in the study only after they give written informed consent and was not be forced to participate.

Each study participant was adequately informed about the purpose, method and anticipated benefit and risk of the study by their data collector. The respondents had the right to respond or refuse to the interview. Even they had the right to withdraw the interview at any time or skip any question that they do not want to respond. All the information given by the respondents was used for research purposes only, confidentiality and privacy were maintained by omitting the name of

the respondents during data collection procedure and after data collection information from the study put without participants' name and principal investigator put questionnaires locked with a key.

#### **4.12. Dissemination and utilization of the result**

The thesis was presented to Addis Ababa University, College of Health Sciences, School of Nursing and Midwifery and Department of Nursing as partial fulfillment of master's degree in neonatal nursing. The result of the study was disseminated to Federal Minister of Health, Addis Ababa public health research and emergency management core process and Addis Ababa town governmental hospitals. Hard and soft copy was available in the library of Addis Ababa University for graduate students as well as for other concerned readers.

The finding was presented in different seminars and meetings. Finally, I was prepare for manuscript and try to publish the research in internationally recognized journals, the abstract of this thesis was submitted to national or international peer reviewed publishers.

## 5. RESULTS

### 5.1. Socio-demographic characteristics of respondents

All the required 420 study participants were interviewed with the response rate of 100%. From those respondents, 151 (36.0%) of the mothers age were between 25–29 years and their neonates post natal age were 246 (58.6%) of above 15 days. The mean ages of the mother were 28.8 ( $\pm 5.61$ ) years and the mean post natal ages of the neonates were 17.8 ( $\pm 6.62$ ) days. Almost all, 399 (94.8%) of respondents were married. Around 267 (63.6%) of mothers had secondary and above their educational status. Above half, 225 (53.6%) of the respondents were housewives. Half, 210 (50.0%) of mothers had household family size of 4-6. About 334 (79.5%) of the mothers were living in compound or villa house and majority 122 (29.0%) of respondents household income were 3801-7500 Ethiopian Birr. The mean and SD age of the household income were 5138 ( $\pm 3806.14$ ) years respectively. Regarding to their husbands educational status 146(34.8%) of husbands had degree and above. (**Table 2**).

(Table 2): Socio-demographic characteristics of mothers whose neonates at selected governmental hospitals, Addis Ababa, Ethiopia, 2020 (n=420).

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Age_ group of the mother (Year)</b>		
$\leq 24$	93	22.1
25-29	151	36.0
30-34	102	24.3
$\geq 35$	74	17.6
<b>Neonatal (post natal) age (Day)</b>		
<15 days	174	41.4
$\geq 15$ days	246	58.6
<b>Marital status_ group</b>		
Un married	22	5.2
Married	398	94.8
<b>Mothers Educational status</b>		
No education	41	9.8
Primary education	112	26.7
Secondary and above	267	63.6

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<b>Occupation status</b>		
Housewife	225	53.6
Gov't employee	89	21.2
Prv't employee	75	17.9
Merchant	31	7.4
<b>Family size</b>		
1-3	184	43.8
4-6	210	50.0
≥7	26	6.2
<b>Residency</b>		
Rural	22	5.2
Urban	398	94.8
<b>Type of housing</b>		
Condominium/ Apartments	86	20.5
Compound House (villa)	334	79.5
<b>Income _ quartile (Eth. birr)</b>		
<1800	90	21.4
1801-3800	102	24.3
3801-7500	122	29.0
>7501	106	25.2
<b>husbands educational status</b>		
No education	26	6.9
Primary education	90	21.4
Secondary and above	301	71.7

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## 5.2. Obstetrical history of mothers'

Majority of the respondents, 412(97.6%) of had ANC follow up. Among those respondents who had ANC follow up, 247(60.2%) of them having four and above visit. Nearly three quarters 306 (72.9%) of mothers' delivered their neonate's at hospital. More than two-third, 287(68.3%) of mother's with their neonates were 37-42 weeks of gestational age. Regarding birth weight 301(71.7%) of neonates had ≥2500gram (**Table 3**).

(Table 3): Obstetric history of mothers whose neonates was less than 28 days in selected governmental hospitals, Addis Ababa, Ethiopia, 2020 (n=420).

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>ANC visit</b>		
Yes	412	97.6
No	10	2.4
<b>Number of ANC visit(n=412)</b>		
1-3	163	39.8
≥4	247	60.2
<b>Place of delivery</b>		
Home	7	1.7
Health center	104	24.8
Hospital	306	72.9
Other	3	0.7
<b>Gestational Age</b>		
<37 Wks	107	25.5
37-42 Wks	287	68.3
≥ 42 Wks	16	3.8
Un Known	10	2.4
<b>Birth Weight</b>		
< 2.5 Kg	115	27.4
≥2.5 Kg	301	71.7
Un Known	4	1.0

### 5.3. Mothers' knowledge about sunlight exposure of neonates

Majority, 388 (92.4%) of the mothers had information (knowledge) about sunlight exposure of neonates. Regarding to harmful effect of sunlight exposure 190(49.0%) said sunlight exposure had harmful effect for the neonates. About 104(45.4%) mentioned harmful effect of sunlight exposure was blindness. About time of sunlight exposure 373(88.8%) of mothers had knowledge on good time to expose neonates on sunlight. Among those majority, 365(82.2%) of mothers said that good time to expose neonates on sunlight was at the morning (**Table 4**).

(Table 4): knowledge of mothers whose neonates was less than 28 days in selected government hospitals, Addis Ababa, Ethiopia, 2020 (n=420).

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Knowledge of sunlight exposure (n=420)</b>		
Yes	398	92.4
No	32	7.6
<b>Does sunlight exposure benefit (n=388)</b>		
Yes	380	97.9
No	40	2.1
<b>Does sunlight exposure harmful (n=388)</b>		
Yes	190	49.0
No	198	51.0
<b>Sunlight exposure had harmful effect (n=190)</b>		
Skin cancer	37	16.2
Sterility	80	34.9
Blindness	104	45.4
Others	8	3.5
<b>A Good time to expose neonates (n=444)</b>		
Morning	365	82.2
Afternoon	13	2.9
Evening	66	14.9

Regarding source of information about 258(45.3%) of mothers got this information from midwife/nurse. (Figure 4).

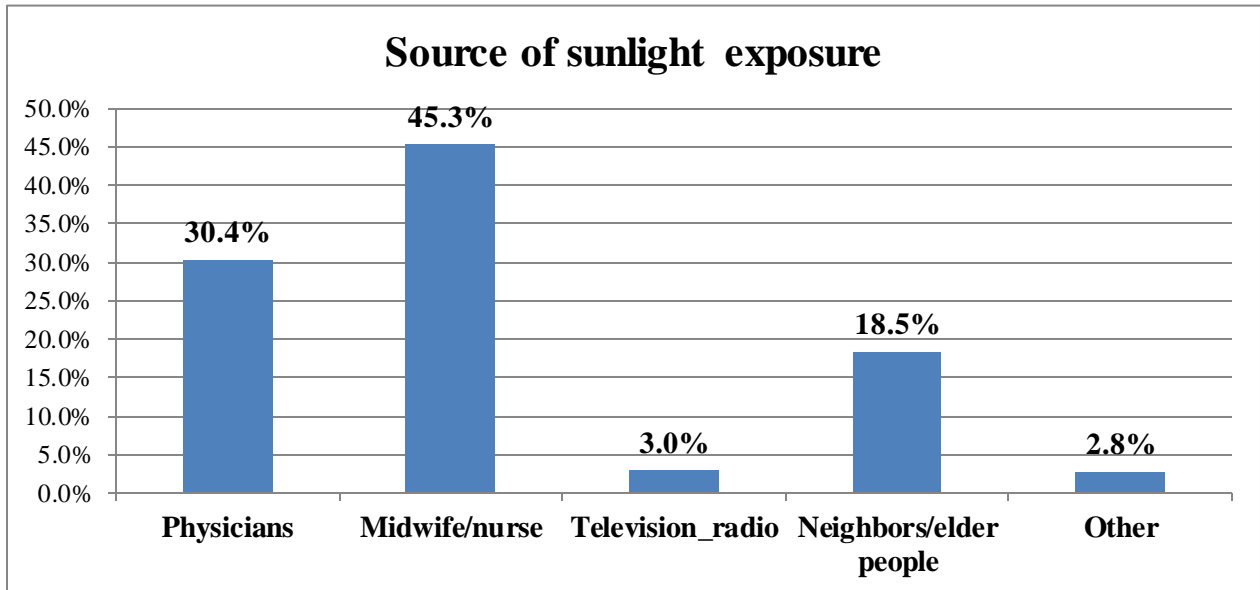


Figure 3: Distribution of mothers by their source of information about sunlight exposure at selected governmental hospitals Addis Ababa town, Ethiopia, 2020

Regarding benefit of sunlight exposure almost all 380 (90.5%) of mothers said sunlight exposure was beneficial for neonates and from these 252 (34.5%) mention sunlight exposure was useful to strength bone (Figure 5).

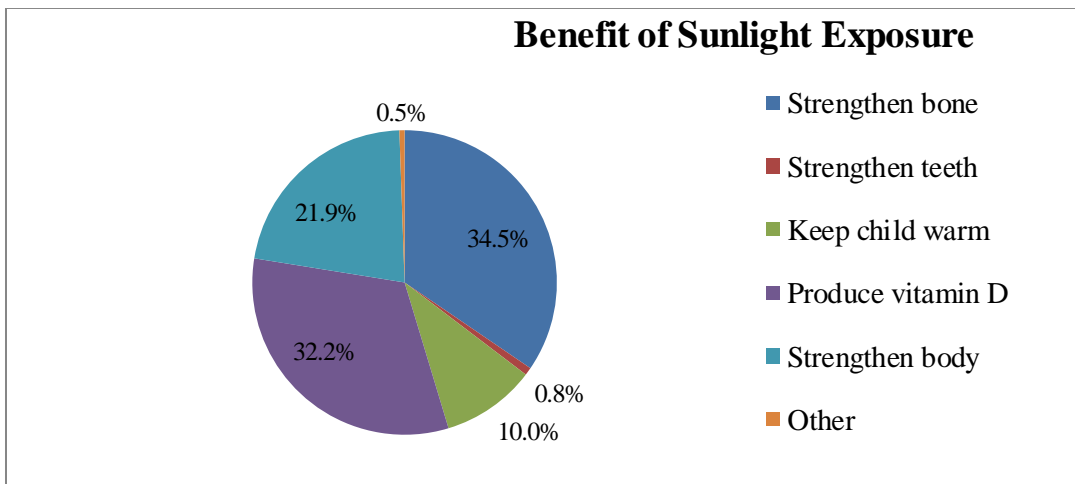


Figure 4: Distribution of mothers by their benefits of sunlight exposure at selected governmental hospitals Addis Ababa town, Ethiopia, 2020.

### **5.3.1. Mothers' knowledge level about sunlight exposure of their neonates**

Based on the above knowledge questions out of the total respondents, 388 (92.4%) of mothers who had knowledge about sunlight exposure. Therefore, about 181(43.1%) of mothers had good knowledge (based on the operational definition respondents were answered to all knowledge questions such as mothers had knowledge on sunlight exposure, benefit of sunlight exposure, harms of sunlight exposure and good time to exposed sunshine) about sunlight exposure for their neonates.

### **5.4. Practice of mothers about sunlight exposure of neonates**

Out of 420 respondents, 355 (84.5%) of mothers exposed their neonates on sunlight. From these 282 (67.2%) started sunlight exposure of their neonates from 0-15 days. More than half 238 (56.7%) of mother's exposed daily their neonates to sunlight. Regarding place of sunlight exposure most of them 338 (80.5%) of mothers told they exposed neonates on sunlight outdoor (outside the house). Majority 295 (70.2%) of mothers exposed their neonates between the time range of 8-10AM and condition of closing during exposure 153 (36.4%) of mothers exposed their neonates on sunlight uncovered and 142 (33.8%) of mothers exposed their neonates covered with diapers and eye protection only. Regarding to the time duration of exposure of their neonates on sunlight 271 (64.5%) were exposed from 15-30 minutes. In this study, majority of the mothers 305 (72.6%) were used lubricants to be applied on their neonate's body when exposed to sunlight. Beside this, mothers who were applied lubricant after sunlight exposure which accounts 224 (53.3%) from these 234 (55.7%) of mothers apply baby Vaseline on the neonates body (Table 5).

(Table 5): Practice of mothers whose neonates was less than 28 days in selected governmental hospitals, Addis Ababa, Ethiopia, 2020 (n=420).

<b>Variables</b>	<b>Frequency</b>	<b>Percentage (%)</b>
<b>Do you expose your neonates on Sunlight (n=420)</b>		
Yes	355	84.5
No	65	15.5
<b>Age to start sunlight to the neonates (n=355)</b>		
<7 days	152	42.8
8-14 days	130	36.6
15-30 days	73	17.6
<b>How frequently expose (n=355)</b>		
Daily	238	67.0
Sometimes	117	33.0
<b>Where do you expose your neonates on sunlight(n=355)</b>		
Outdoor	338	95.2
Indoor	17	4.8
<b>Time of sunlight exposure (n=355)</b>		
Morning 8-10 AM	295	83.1
Mid-day 11AM-1 PM	46	13.0
Afternoon 2-4 PM	14	3.9
<b>Condition of clothing during exposure (n=355)</b>		
Unclothed	153	43.1
With diapers and eye protection only	142	40.0
Partly covered	50	14.1
Completely covered	10	2.8
<b>For how much minutes exposed to sunlight (n=355)</b>		
<10 Minutes	52	14.6
10-14 Minutes	2	0.6
15-30 Minutes	271	76.3
>30 Minutes	30	8.5

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<b>Application of lubricants during sunlight exposure</b>		
<b>(n=355)</b>		
Yes	305	72.6
No	50	11.9
<b>When do you apply lubricants (n=305)</b>		
Before exposure	33	10.8
During exposure	48	15.7
After exposure	224	73.5
<b>What type of lubricants applied (n=305)</b>		
Baby Vaseline	234	76.7
Baby Lotion	40	13.1
Butter	23	7.6
Other	8	2.6

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#### **5.4.1. Practice of mothers about sunlight exposure for their neonates**

Based on the above practice questions out of the total respondents, 355 (84.5%) of mothers exposed their neonates to sunlight. Therefore, about 114(27.1%) of mothers had good practice (based on the operational definition respondents were answered to all practice questions such as mothers had exposed their neonates for sunlight, postnatal age of the neonate, frequency, where do exposed, time of exposure, condition of clothing, for how much minutes exposed and when do you apply lubricants) about sunlight exposure for their neonates.

### 5.5. Factors affecting practice of sunlight exposure of mother’s with their neonate

Out of the total of 420 respondents, more than half 245 (58.3%) of mothers had fear to expose their neonates on sunlight. The highest fear of mothers’ in this study was 145 (38.9%) fear of sickness (Figure 6).

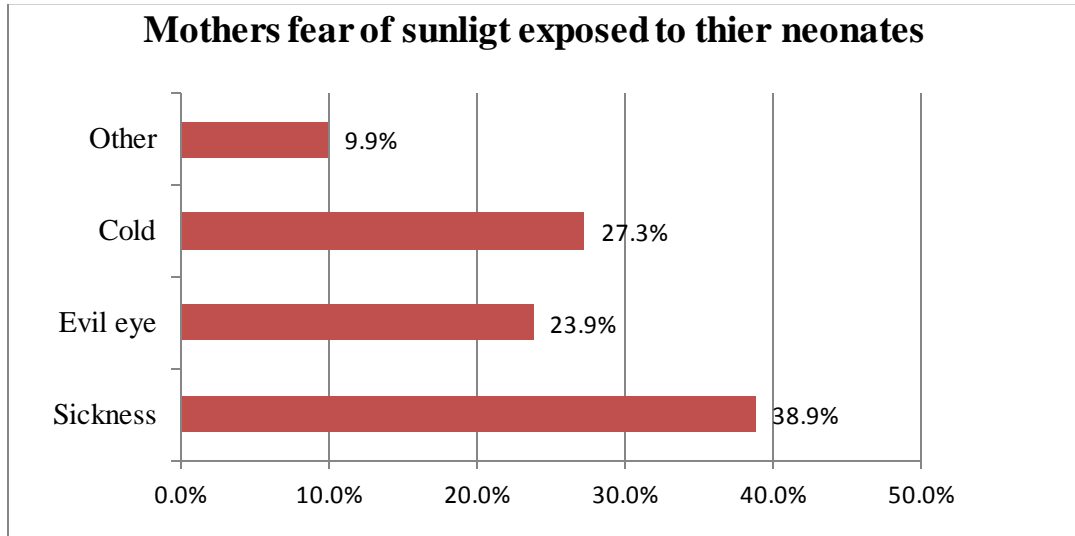


Figure 5: Factors affecting practice of mothers fear to exposed practice of sunlight for their neonates in selected governmental hospitals, Addis Ababa, Ethiopia, 2020 (n=420).

### 5.6. Association factors of mothers on sunlight exposure of their neonates

Accordingly, as shown in Table 6 below those bi-variable regression associated with the crude odds ratios (COR) for practice sunlight exposure such as post natal age of the neonate, marital status, education status of the mothers, occupation status of the mother, family size, housing type, husband educational status, antenatal care follow up, gestational age, birth weight of the neonate, mother’s knowledge on sunlight exposure of their neonates and mothers fear from sunlight exposed to the neonates.

In Multivariable analysis results showed that, there was statistically significance association found between practice of sunlight exposure, parameters which showed p-value of below 0.05 were post natal age of the neonate, family size, housing type, ante natal care follow up,

gestational age, mother's knowledge on sunlight exposure of their neonates and mothers fear from sunlight exposed to the neonates.

The odds of neonates whose ages greater than 15 days were 1.99 (AOR=1.99, 95% CI: 1.15-3.44) times more likely practice of sunlight exposure than those neonates whose age less than 15 days. The family sizes of 4-6 were 1.86 (AOR=1.86, 95% CI: 1.08-3.21) times more likely practice of sunlight exposure when compared to family size of 1-3. In addition, those who had family size greater than 7 were 4.43 (AOR=4.43, 95% CI: 1.54-12.78) times more likely practice of sunlight exposure when compared to those neonates whose mothers are living with a family size of 1-3.

The odds of neonates whose mothers living in compound/villa house were 2.59 (AOR=2.59, 95% CI: 1.26-5.33) times more likely practice of sunlight exposure compared to those neonates whose mothers live in condominium/ Apartments house.

The odds of neonates whose mothers had more than 4 times antenatal care follow up were 2.79 (AOR=2.79, 95% CI: 1.49-5.22) times more likely practice of sunlight exposure compared to those neonates whose mothers had 1-3 times follow antenatal care visit. The odds of neonates whose mothers had 37-42 weeks of gestational age were 2.54 (AOR=2.54, 95% CI: 1.06-6.07) times more likely practice of sunlight exposure compared to those neonates less than 37 weeks of gestational age.

Among neonates whose mothers had good knowledge's on sunlight exposure were 60% (AOR=0.40, 95% CI: 0.23-0.71) less likely practice of sunlight exposure compared to those neonates whose mothers had poor knowledge on sunlight exposure. The odds of sunlight exposure among neonates whose mothers had no fear to exposed sunlight were 1.83 (AOR=1.83, 95% CI: 1.08-3.12) times more likely practice of sunlight exposure when compared to those neonates whose mothers fear to exposed sunlight (**Table 6**).

(Table 6): Bi-variable and multivariable logistic regression for practice of sunlight exposure among neonates whose mothers at selected governmental hospitals, Addis Ababa, Ethiopia, 2020. (n=420).

Variables	Sunlight Exposure		COR (95% of CI)	AOR (95% OF CI)
	Poor	Good		
<b>Post natal age of the neonate</b>				
0-15 days	148(78.7%)	40(21.3%)	1	1
16-28days	158(68.1%)	74(31.9%)	<b>1.73(1.11-2.71)*</b>	<b>1.99(1.15-3.44)**</b>
<b>Mothers Educ. Status</b>				
No formal Educ.	34(82.9%)	7(17.1%)	<b>1</b>	1
Primary Educ.	93(83%)	19(17%)	0.99(0.38-2.57)	0.61(0.20-1.86)
Secondary & above	179(67%)	88(33%)	<b>2.39(1.02-5.60)*</b>	1.07(0.36-3.19)
<b>Occupation Group</b>				
House wife	180(80%)	45(20.0%)	<b>1</b>	1
Gov't employee	53(59.6%)	36(40.0%)	<b>2.72(1.59-4.64)*</b>	1.49(0.74-3.02)
Priv't employee	45(60%)	30(40%)	<b>2.67(1.51-4.69)*</b>	0.93(0.45-1.93)
Merchant	28(90.3%)	3(9.7%)	0.43(0.13-1.47)	0.34(0.08-1.44)
<b>Marital status group</b>				
Married	20(90.9%)	2(9.1%)	<b>1</b>	1
Un married	286(71.9%)	112(28.1%)	<b>3.92(0.90-17.03)*</b>	1.80(0.35-9.20)
<b>Family size</b>				
1-3	149(81.0%)	35(19.0)	1	1
4-6	145(69.0%)	65(31.0%)	<b>1.91(1.19-3.05)*</b>	<b>1.86(1.08-3.21)**</b>
≥7	12(46.2%)	14(53.8%)	<b>4.97(2.11-11.67)*</b>	<b>4.43(1.54-12.78)**</b>
<b>Type of housing</b>				
Condominium/Aparta	72(83.7%)	14(16.3%)	1	1
Compound (villa)	234(70.1%)	100(29.9%)	<b>2.19(1.18-4.08)*</b>	<b>2.59(1.26-5.33)**</b>
<b>Husband Educ Status</b>				
No formal Educ.	25(86.2%)	4(13.8%)	1	1
Primary Educ.	77(85.5%)	13(14.4%)	1.06(0.32-3.53)	0.63(0.16-2.42)
Secondary & above	204(67.8%)	97(32.2%)	<b>2.97(1.01-8.78)*</b>	1.64(0.45-5.99)

<b>ANC follow up</b>				
1-3 times	142(87.1%)	21(12.9%)	1	1
≥4 times	154(62.3%)	93(37.7%)	<b>4.08(2.41-6.91)*</b>	<b>2.79(1.49-5.22)**</b>
<b>Gestational Age Group</b>				
<37 Wks.	102(87.2%)	15(12.8%)	1	1
37-42 Wks.	193(67.2%)	94(32.8%)	<b>3.31(1.83-6.01)*</b>	<b>2.54(1.06-6.07)**</b>
≥42 Wks.	11(68.7%)	5(31.3%)	3.09(0.94-10.14)	3.24(0.72-14.55)
<b>Birth weight group</b>				
<2.5kg	84(81.6%)	19(18.4%)	1	1
≥2.5kg	218(69.6%)	95(30.4%)	<b>1.93(1.11-3.35)*</b>	1.42(0.59-3.39)
<b>Mothers knowledge on sunlight exposure</b>				
Poor	163(68.2%)	76(31.8%)	1	1
Good	143(79.0%)	38(21.0%)	<b>0.57(0.36-0.89)*</b>	<b>0.40(0.22-0.70)**</b>
<b>Mothers fear to sunlight exposure</b>				
Yes	189(77.1%)	56(22.9%)	1	1
No	117(66.9%)	58(33.1%)	<b>1.77(1.15-2.73)*</b>	<b>1.83(1.08-3.12)**</b>

**Key** 1= Reference

\* Statistically significant by COR at p-value ≤0.25

\*\*Statistically significant by AOR at p-value <0.05

Hosmer and Lemeshow test, p-value = 0.318

## 6. DISCUSSION

The main result of this study was that many mothers not expose their neonates because of inaccurate information of sunlight usually due to cultural reason, fear of sunlight, and limitation of knowledge. Although, potential harmful effects of sun exposure in addition to its potential benefits is known for more than half a century, most parents do not seem to have enough information about benefit of sun exposure.

In this study, the prevalence of sunlight exposure among neonates whose mothers attending governmental hospitals in follow up and immunization clinics in Addis Ababa town was 27.1% with 95% CI (22.9-31.7). This finding was lower compared to a study which was conducted in Debre Markos town 44.6% (27), Aleta wondo town 32.6% (29) and South Gondar zone 54.3% (28). The possible reason for this may be due to housing type, low family size and uses different standards. This study lower than the study conducted in Brazil which was 32.8% (39) and Turkey 82.2% (40). The possible reasons for this may be due to that sunlight exposure was beneficial for neonatal jaundice, because some countries believed that sunlight exposure for the neonate which is beneficial, even considered an alternative source of phototherapy by medical staff for the treatment of neonatal jaundice and prevention of vitamin D deficiency related conditions such as disease of cardiovascular, bone disease and hypertensions etc (11, 41, 42). This study is higher compared to which the study done in Australia which was 20% (1). The possible explanation for this may be due to they were found in tropical region which was high prevalence of skin cancer, so due to fear of skin cancer mothers may not exposed their neonates to sunlight.

In this study postnatal age of the neonate was one of the factors associated with sunlight exposure. The odds of neonates whose ages greater than 15 days were 1.99 times more likely practice of sunlight exposure compared to those neonates whose age less than 15 days. This finding was consistence from the study conducted in Debre Markos town was 23.4% (27), Aleta wondo town was 17.6% (29) and South Gondar zone was 15.7% (28). The reasons for this difference may be due to mothers fear to exposed neonates for different reasons such as sickness, evil eye, cold and other cultural reasons.

Neonates whose mothers live in compound/villa house were 2.59 times more likely practice of sunlight exposure compared to those neonates whose mothers live in condominium/ Apartments house. This might be due to fear of much population living in the compound, fear to evil eye and most of the condominium has no lift due to this mothers fear to fail down.

In this study family size of the parents was statistically significant factors for sunlight exposure. The family sizes of 4-6 were 1.86 times more likely practice of sunlight exposure compared to those family sizes of 1-3. In addition, those who had family sizes of greater than 7 were 4.43 times more likely practice of sunlight exposure compared to those neonates whose mothers are living with a family size of 1-3. This finding consistency which was a study conducted in South Gondar zone (28) and in Debre Markos town (27). This may be due to the fact that when family size is high, there will be enough human resource to take and expose the neonate for sunlight and the parents who have low family size were inadequate experience for the first neonate so the risk is increased for primi mother.

Based on this study, neonates born from mothers who had more than 4 times antenatal care follow up were 2.79 times more likely practice of sunlight exposure compared with those whose mothers had 1 to 3 times antenatal care visits. This may be due to the fact that when antenatal care visit is regular and completed the mother will have sufficient and adequate knowledge and practices about sunlight exposure for their neonates.

The odds of neonates whose mothers had 37-42 weeks of gestational age were 2.54 times more likely practice of sunlight exposure compared to those neonates less than 37 weeks of gestational age. This may be due to the reason that sunlight exposure to prematurity and low birth weight baby is controversial. Another explanation may be due to most preterm babies stay at hospital due to different preterm complications which might again affect the exact time of initiation.

Among neonates whose mothers had good knowledge's on sunlight exposure were 60% less likely practice of sunlight exposure compared to those neonates whose mothers had poor knowledge on sunlight exposure. This finding shows that low result when compared to a study conducted in Jimma town was 64.6% (24) and Aleta wondo town was 62.2% (29). This may be due to the reason that most mothers living in Addis Ababa may have poor knowledge about

benefit of sunlight exposure rather than harmful effect of sunlight exposure because they had fear of skin cancer.

In this study neonates whose mothers had no fear of sunlight were 1.83 times more likely practice of sunlight exposure compared to those neonates whose mothers fear to exposed sunlight. This finding consistency which was a study conducted in Debre Markos town 38.3% (27), South Gondar zone which was 54.3% (28) and in Jimma town which was 1.46% (24). The possible reasons for this difference which may be due to cultural differences among the two populations, a study setting differences and the majority of respondents were residing in rural areas and fear of factors such as fear of evil eyes, sickness and level of proper information concerning sunning for the neonate.

In this study by multivariable logistic regression not associated with the adjusted odds ratios (AOR) for sunlight exposure such as educational status of the mother, marital status of the mother, occupation of the mother, husband's educational status and neonatal birth weight.

## **7. LIMITATION OF THE STUDY**

### **7.1. Strength of the study**

- The previous conducted studies did not consider housing type, antenatal care, birth weight and gestational age, but this study investigated this factor.

### **7.2. Limitation of the study**

- The limitation of this study which shows that sample were collected at facility based governmental hospitals, which may not truly represent neonates follow up in health centers, private institution, other lower level health facilities and those neonates have no follow up. Thus, this may underestimate or overestimate the prevalence depicted in the study.
- Since, this study it doesn't show cause and effect between dependent and independent variables. Because of this study design is cross-sectional.

## 8. CONCLUSION

In this study, the determinants factors of sunlight exposure had significant association with mothers practice on sunlight exposure for their neonates are mainly related to postnatal age of the neonate, family size, housing type, ante natal care follow up, gestational age, and mothers' knowledge on sunlight exposure and mothers fear from sunlight exposed to the neonates. Majority of the respondents have poor practice about sunlight exposure for neonates, which is a gap on clothing condition, starting time of sunlight exposure for neonates and time to staying on sunlight while exposed. This implies information given about sunlight exposure during antenatal care; follow up clinic, delivery and immunization clinic was not comprehensive. Fears of mothers which influence practice of sunlight exposure in this study area were sickness, cold and evil eye. Therefore, health education which focuses on the importance of sunlight exposure is vital to improve or develop mothers practice on exposing sunlight for their neonates.

## **9. RECOMMENDATIONS**

### **9.1. For governments and stakeholders**

- The policy makers, Ministry of health and Addis Ababa health bureau should create awareness about practice of sunlight exposure of neonates among mothers and health workers to resolve problem of neonates that results from lack of sunlight exposure by giving continuous health education program.
- Mass Medias should create awareness about sunlight exposure in the community by giving health education for the community.

### **9.2. For the health care providers**

- Health professionals should provide appropriate information about sunlight exposure for mothers since they had a direct relationship with mothers in different circumstances e.g. during antenatal care, follow up clinic, delivery, immunization and integrated management of newborn and childhood illness service.
- Health care providers should advice mothers as sunlight exposure for preterm neonates wouldn't have harm full effect if and only if the mothers perform appropriately and timely.

### **9.3. For the researchers:**

- Finally, researchers should do further study to identify mothers practice on sunlight exposure for their neonates with qualitative data which has large scale.

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## 11. APPENDIX

### **Annex I: Participant information Sheet and informed voluntary consent form for the head of the hospitals**

How are you? My name is \_\_\_\_\_. I am a data collector for the study being conducted in three hospitals and this hospital which are one of the study ready to collect data on neonatal sunlight exposure and factors affecting it among mothers attending governmental hospitals in follow up clinics and immunization clinics in Addis Ababa town, 2020 by Yohannes Godie who is studying for his Master's degree at Addis Ababa University, School of Health Science and Department of nursing. I kindly request you to give me your attention to explain you about the study and be selected as the study participant.

**1. The study title:** Assessment of neonatal sunlight exposure and factors affecting it among mothers attending governmental hospitals, Addis Ababa, Ethiopia 2020.

**2. Purpose of the study:** the main aim of this study is to prepare thesis for partial fulfillment of the requirement for masters of Science in neonatal nursing by investigator. In addition, the study finding was used as baseline data, evidence and input to develop future quality improvement projects so this hospital were had benefited for this study, and also governmental and non-governmental organizations was used this study finding for designing proper implementation and evaluation on reduction of neonatal morbidity and mortality.

**3. Procedure and duration:** I was interviewing you using a questionnaire to provide me with applicable data that is helpful for this study. This questionnaire contains 34 questions, the majority of questions which are to be answered by you while I am interviewing you, and the rest 2 to 4 questions collected from both your and baby's chart. The interview were take around 30 minutes for each participant, so I kindly request you to give me this precious time for the interview.

**4. Risks and benefits:** there was no any risk to participate in this study, but only taking few minutes from the mother's time. There was no payment in the participation but, the findings

from this research were give important information for the hospital, ministry of health and for health planners.

**5. Confidentiality:** The questionnaire was coded to keep privacy of the participants. The information which you were gives us kept confidentially. There was no information that was identifying you in particular. The findings of the study were generalized for the study population and it was not reflect anything specific of individual participants. No reference was made in oral or written reports which link participants to the research.

**6. Rights:** Mothers have the right to participate or not in this study, participation for this study is fully voluntary. If the mother agrees to participate, she has the right to withdraw from the study at any time and these were not labeling her for any loss of benefits which she otherwise is entitled. Mothers do have the right to not respond any question that she doesn't want to answer.

**7. Contact address:** If there are any questions or enquires any time about the study or procedures, please contact by the following address.

- Principal investigator: **Yohannes Godie**
- E -mail: yohannesguadie@gmail.com
- Mobile phone: +251-928-57-73-59.

Are you willing to participate? If the answer is,

**YES**, - Please continue

**NO** \_\_\_\_\_ Thanks her and end

**Annex II: Declaration of informed voluntary consent form for the head of the hospitals:**

I have read the participant information sheet. I have clearly understood the purpose of the research, the procedure, risks and benefits, issues of confidentiality, the rights of participating and the contact address for any questions. I have been given the opportunity to ask questions for things that may have been unclear. I was informed that participants have the right to withdraw from the study at any time or not to respond any question that they do not want. I am also informed that the hospital has the right to discontinue this study from being conducted if any misdeeds and unethical procedures are observed during the data collection process in the hospital principles.

Therefore, I declare my voluntary consent on behalf of \_\_\_\_\_ management to allow this study to be conducted in the Hospital with my initials (Signature) as indicated below.

Name and Signature of head of the Hospital: \_\_\_\_\_ Date \_\_\_\_\_

Name and Signature of Data Collector: \_\_\_\_\_ Date \_\_\_\_\_

**Thank you for your collaboration!!!**

## **Annex III: English version Participant Information sheet for mothers**

### **Good Morning/ Afternoon?**

How are you? My name is \_\_\_\_\_. I am a data collector for the study which is conducting in Addis Ababa three governmental hospitals. This hospital is one of the study area in which data is collected on neonatal sunlight exposure and factors affecting it among mothers attending governmental hospitals in follow up clinics and immunization clinics in Addis Ababa town, 2020 by Yohannes Godie who is studying for his Master's degree at Addis Ababa University, Collage of Health Science, school of Nursing and Midwifery, Department of nursing. I kindly request you to give me your attention to explain you about the study and be selected as the study participant.

**1. The study title:** Assessment of neonatal sunlight exposure and factors affecting it among mothers attending governmental hospitals, Addis Ababa, Ethiopia 2020.

**2. Purpose of the study:** the main aim of this study is to prepare thesis for partial fulfillment of the requirement for masters of Science in neonatal nursing by investigator. In addition, the study finding was used as baseline data, evidence and input to develop future quality improvement projects. So, this hospital was benefited from this study and also other governmental and non-governmental organizations was use the finding of this result for designing proper implementation and evaluation to reduce neonatal morbidity and mortality.

**3. Procedure and duration:** data were collected through by using a face to face interviewee questionnaire and by review mothers and baby's record to provide with applicable data that is helpful for this study. This questionnaire contains 34 questions, the majority of questions which was answered by you while I am interviewing you, and the rest 2 to 4 questions were collected from both your record and your baby's record. The interview were take around 30 minutes for each participant, so I kindly request you to give me this precious time for the interview.

**4. Risks and benefits:** there is no any risk to participate in this study, but only taking few minutes from your time. There is no payment in the participation but, this is beneficial to identify areas of improvement in the mother's knowledge and practice. By doing this we were provide

sufficient information for policy makers, clinicians and researchers, as a result they could make informed decision.

**5. Confidentiality:** The questionnaire was coded to keep privacy of the participants. The information which you were given us was being kept confidentially. There was no information that was identifying you in particular. The findings of the study were generalized for the study population and it was not reflect anything specific of individual participants. No reference was made in oral or written reports which link participants to the research.

**6. Rights:** I would like to confirm you have the right to participate or not in this study, participation for this study is fully voluntary. If you agree to participate, you have the right to withdraw from the study at any time and this was not labeling you for any loss of benefits which you otherwise are entitled. You do have the right to not respond any question that you don't want to answer.

**7. Contact address:** If there are any questions or enquires any time about the study or procedures, please contact by the following address.

- Principal investigator: **Yohannes Godie**
- E -mail: yohannesguadie@gmail.com
- Mobile phone: +251-928-57-73-59.

Are you willing to participate? If the answer is,

**YES**, - Please continue

**NO** \_\_\_\_\_ Thanks her and end

## **Annex IV: Declaration of informed voluntary consent form for mothers**

The participant information sheet was read for me. I have clearly understood the purpose of the research, the procedures, the risks and benefits, issues of confidentiality, the right of participation and the contact address for any questions. I have been given the opportunity to ask any questions for things that may have been unclear. I was informed that I can terminate the study at any time. Therefore, I confirm my voluntary consent to participate in this study with my signature as indicated below.

I had informed that the responses which were provided by me are very essential for the successful accomplishment of the study objectives. Therefore, I confirm my voluntary consent to participate in this study with my signature as indicated below.

- Name and signature of the participant \_\_\_\_\_ date \_\_\_\_\_
- Name and Signature of data collector \_\_\_\_\_ date \_\_\_\_\_

Yes; ----proceed with the interview

No; ---- thanks her and end.

Thank you for your collaboration!!

## Annex V: English Questionnaires

Name of Hospital: \_\_\_\_\_

Date: \_\_\_\_\_

Questionnaires on neonatal sunlight exposure and factors affecting it among mothers attending governmental hospitals in follow up clinic and immunization clinics in Addis Ababa town.

### Part I- Socio-demographic information

**Instruction: Socio-demographic characteristics of the study participants in governmental hospitals, Addis Ababa, Ethiopia, 2020.**

No.	Questions	Coding categories	Skip to
101	Mother's age	_____years	
102	Neonatal/postnatal/ age	_____days	
103	Marital status	1. Single 2. Married 3. Divorced 4. Widowed 5. Others _____	
104	Mother's educational status	1. No formal learning 2. Grade 1 -8 <sup>th</sup> 3. Grade 9 <sup>th</sup> -12 <sup>th</sup> 4. College Diploma 5. University Degree and Above	
105	Occupation	1. Student 2. House wife 3. Government employee 4. Private employee 5. Daily laborer 6. Merchant 7. Others _____	
106	Residency	1. Urban	

		2. Rural	
107	Type of housing designs	1. Compound House (villa) 2. Condominium/ Apartments 3. Other specify _____	
108	Family size	_____	
109	Monthly income	_____ Ethiopian birr	

**Husband's educational status about sunlight exposure of their neonates**

110	Husband's educational status	1. No formal learning 2. Grade 1 -8 <sup>th</sup> 3. Grade 9 <sup>th</sup> -12 <sup>th</sup> 4. Diploma 5. Degree and Above	
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**Part II: Maternal and Neonatal factors related to mothers practice of Sunlight Exposure among neonates in governmental hospitals, Addis Ababa, Ethiopia, 2020.**

No.	Questions	Coding categories	Skip to
201	ANC visit	1. Yes 2. No	
202	Number of visit	_____number	
203	Place of delivery	1. Home 2. Health center 3. Hospital 4. Others _____	
204	Gestational Age	_____in wks	
205	Birth weight	_____in kg	

**Part III- knowledge's of mothers on sunlight exposure for their neonates in governmental hospitals, Addis Ababa, 2020.**

No.	Questions	Coding categories	Skip to
301	Do you have knowledge about sunlight exposure	1. Yes 2. No →	401
302	Source of information about sunlight exposure (circle more than one)	1. Physician 2. Midwife/nurse 3. Television/radio 4. Neighbors/elder people 5. Others _____	
303	Does sunlight exposure beneficial?	1. Yes 2. No	305
304	Benefit of sunlight exposure (circle more than one)	1. Strengthen bone 2. Strengthen teeth 3. Keep child warm 4. Produce vitamin D 5. Strengthen body 6. Others _____	
305	Does sunlight exposure harmful	1. Yes 2. No	307
306	Harmful effect of sunlight exposure (circle more than one)	1. Skin cancer 2. Sterility 3. Blindness 4. Others _____	
307	Good time to expose newborns on sunlight (circle more than one)	1. Morning 2. Afternoon 3. Evening	

**Part IV- Practices of mother about sunlight exposure of their neonates in governmental hospitals, Addis Ababa, Ethiopia, 2020.**

No.	Questions	Coding categories	Skip to
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401	Do you expose your neonate on sunlight?	1. Yes 2. No	501
402	Age of the neonate to start sunlight exposure	_____	
403	How frequently do you expose?	1. Daily 2. Sometimes	
404	Where do you expose your neonate on sunlight	1. Outdoor 2. Indoor	
405	At what time of the day do you expose your baby outdoors? (circle more than one)	1. Morning 8-10 AM 2. Mid-day 11AM-1 PM 3. Afternoon 2-4 PM	
406	Condition of clothing during exposure	1. Unclothed 2. With diapers and eye protection only 3. Partly covered 4. Completely covered	
407	For how much minutes you expose your neonate on sunlight?	_____	
408	Do you apply lubricants on your neonate body during sunlight exposure?	1. Yes 2. No	501
409	If you apply, when do you apply? (circle more than one)	1. Before exposure 2. During exposure 3. After exposure	
410	What things do you apply?	1. Baby Vaseline 2. Baby lotion 3. butter 4. other _____	

**Part V- Other Factor affecting practice sunlight exposure of mother's with their neonate among governmental hospitals, Addis Ababa, Ethiopia, 2020.**

No	Questions	Code categories	Skip to
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501	Do you have fear to expose your baby on sunlight?	1. Yes 2. No	
502	Mother's fear on sunlight exposure (circle more than one)	1. Sickness 2. Evil eye 3. Cold 4. Other specify_____	

**Annex VI: Amharic version of the participant information sheet and informed voluntary consent form for the head of the hospital**

ሰላም ነዎት፡- ስሜ \_\_\_\_\_ እባላለሁኝ፡፡ አሁን ከእርሶ ጋር የተገናኘሁት በመንግስት ሆስፒታሎች ላይ አተኩሮ በሚሰራው ጥናት ላይ መረጃ ሰብሳቢ ሆኜ ነው፡፡ እንዲሁም ይህ ሆስፒታል ጥናቱ ከሚካሄድባቸው ሆስፒታሎች ውስጥ አንዱ ነው፡፡ ጥናቱ የሚያተኩረው የእናቶችን የፀሀይ ብርሀን ማሞቅ ትግበራ ልጆቻቸው ላይ በተመለከተ እና ተዛማጅ ምክንያቶችን ለሚያጠናው በአዲስ አበባ ዩኒቨርሲቲ በጤና ሳይንስ ኮሌጅ፣ በነርቪንግና አዋላጅ ነርቪንግ ትምህርት ቤት በነርቪንግ ትምህርት ክፍል የሁለተኛ ዲግሪ ትምህርቱን በጨቅላ ህጻናት ነርስነት ተማሪ በሆነው ዮሐንስ ጎዴ ነው፡፡ ስለሆነም ስለጥናቱ የተወሰነ ማብራሪያ ስለምሰጠት ሆስፒታሎ የጥናቱ ተሳታፊ ይሆን ዘንድ ትኩረቶን ሰጥተው በጥሞና እንዲከታተሉኝ በትህትና እጠይቃለሁ፡፡

1. የጥናቱ ርዕስ፡- በአዲስ አበባ የሚገኙ የመንግስት ሆስፒታሎች በ2012 ዓ.ም እናቶች ልጆቻቸውን የፀሀይ ብርሀን ማሞቅ ትግበራ በተመለከተ እና ሊያመጡት የሚችሉትን ተዛማጅ ምክንያቶችን የሚደረግ ማጥናት ነው፡፡
2. የጥናቱ ዓላማ፡- የጥናቱ ዋና ዓላማ የሁለተኛ ዲግሪውን በጨቅላ ህጻናት ትምህርት ለሚማረው ተማሪ ዮሐንስ ጎዴ የመመረቂያ ጽሁፍ ለማዘጋጀት ነው፡፡ ከዚህ ጥናት የሚገኘው መረጃ እንደ መሰረት ያገለግላል፡፡ እንዲሁም ወደፊት አገልግሎቱን ለማሳደግ ለሚሰሩ ፕሮጀክቶች እንደ መረጃና ግብአት ሆኖ ስለሚያገለግል ይህ ሆስፒታል ተጠቃሚ ይሆናል፡፡ እዲሁም ደግሞ መንግስታዊና መንግስታዊ ያልሆኑ ድርጅቶች የጥናቱን ውጤት በመጠቀም የጨቅላ ህጻናትን ሞትና ህመም ሊያመጡ የሚችሉ ችግሮችን ለመቀነስ ያገለግል ዘንድ እቅድ ለመቅረጽ፣ ተግባር ላይ እንዲውል ለማድረግና ለመገምገም ይረዳል፡፡
3. የመጠይቁ አካሄድ እና የሚወስደው ጊዜ፡ መረጃ የሚሰበሰበው እናት-የዋን በመጠየቅ እና የእናት-የዋን እና የልጅን የህክምና ካርድ በማየት ሲሆን ይህም የሚደረገው በመጠይቅና በማገናዘቢያ ሲሆን ይህ ደግሞ ለጥናቱ ትክክለኛ መረጃ እንዲሆን ይጠቅማል፡፡ ይህ መጠይቅ 34 ጥያቄዎችን የያዘ ሲሆን አብዛኛዎቹ ጥያቄዎች የሚመለሱት እናቶችን በመጠየቅ ሲሆን እንዲሁም ቀሪዎቹ ከ 2 እስከ 4 የሚሆኑት ጥያቄዎች ደግሞ ከእናት-የዋው እና ከልጅ የህክምና ማህደር ላይ በማየት ይሆናል፡፡ ቃለ መጠይቁ በአማካኝ 30

ደቂቃለእያንዳንዱለጥናትተሳታፊየሚወስድይሆናል።ስለዚህእናቶችውድጊዜያቸውንይሰጡኝዘን ድበትህትናእጠይቃቸዋለው።ቀጥለንቃለመጠይቁንእናደርጋለን።

4. የጎንዮሽ ጉዳት እና ጥቅማ ጥቅም፡ በዚህ ጥናት መሳተፍ ምንም አይነት ጉዳት የለውም። በጥናቱ ላይ መሳተፍ ምንም ጉዳት አያስከትልም ነገር ግን የእናትየውን ጥቂት ደቂቃዎች ሊሻማባት ይችላል።በዚህ ጥናት ስለተሳፉ ምንም አይነት ክፍያ የለውም ግን የጥናቱ ውጤት ለሆስፒታሎች፣ ለጤና ሚኒስቴር እንዲሁም ለተለያዩ ጤና ላይ ትኩረት አድርገው ለሚሰሩ ጠቃሚ ማስረጃ ሆኖ ሊያገለግላቸው ይችላል።

5. የመረጃው ደህንነት፡ መጠይቁ የተሳታፊዎችን ሚስጥር ለመጠበቅ ሲባል መለያ ቁጥር ይሰጠዋል። የጥናቱ ተሳታፊ እናት የምትሰጠን መረጃ ምስጥራዊነቱ የተጠበቀ ነው። ማንኛውም ዓይነት ስለእናትየው ማንነት ሊገልጽ የሚችል መረጃ በመጠይቁ አይጻፍም።የጥናቱ ውጤት እንዳጠቃላይ ጥናት እንደወከላቸው ህዝቦች ይወሰዳል እንጂ እንደግለሰብ ለጥናቱ ተሳታፊ ብቻ አይወሰድም።በመጠይቁ ላይም የተሳታፊ ስም አይኖርም።

6. በጥናቱ የተከበረው መብት፡ጥናቱ በእናትየው ሙሉፈቃደኝነት ላይ የተመሰረተ ነው። በጥናቱ የመሳተፍም ያለመሳተፍም ሙሉ መብት አላት። የጥናቱ አካል ለመሆን ፈቃደኛ ከሆነች መልስ ለመስጠት ፍቃደኛ ያልሆነችባቸውን ጥያቄያ ለመመለስ እንዲሁም ከጥናቱ በማንኛውም ጊዜ የማቋረጥ ሙሉ መብት ሲኖራት በዚህም ምክኒያት የሚደርስባት የተለየ ጥቅም መጓደል ወይም ጉዳት ፈጽሞ ሊኖር አይችልም።

7. የጥናቱ አድራሻ፡-ይህ ጥናት በሚካሄድበት ማንኛውም ጊዜ የጥናቱን አካሄድ በተመለከተ ወይም ሌላ ማንኛውም ጥያቄ ካሎት ከዚህ በታች በተሰጠው አድራሻ ማግኘት ይቻላል። እስከ አሁን በነገርኮት ነገር ላይ ጥያቄ ካሎት እኔን መጠየቅ ይችላሉ።

ስም፡ ዮሐንስ ጎዴ  
ስልክ ቁጥር- 09-28-57-73-59  
ኢ.ሜይል፡[yohannesguadie@gmail.com](mailto:yohannesguadie@gmail.com)

ከላይ በተደረገሎት ገለፃ መሰረት በጥናቱ ውስጥ ለመሳተፍ ፍቃደኛ ናት?

- ሀ. አዎ----- ከሆነ መጠይቁን ይቀጥሉ
- ለ. አይደለሁም ----- ከሆነ አመሰግናለሁ

**Annex VII: Amharic version of the informed voluntary consent form for hospitals**

ከላይ በቀረበው የግንዛቤ ማስጨበጫ መሰረት የጥናቱ ተሳታፊ ለመሆን የፈቃደኝነት ማረጋገጫ ለመስጠት ስለጥናቱ የግንዛቤ ማስጨበጫ መረጃው ተነቦልኛል(አንብቤዋለሁ)። ስለጥናቱ መሰረታዊ ዓላማ፣ አካሄድ፣ ጥቅምና ጉዳት፣ የመረጃው ደህንነት፣ እንዲሁም ሆስፒታሉ የስነምግባር ግድፈት ቢገኝ የማስቆም መብት እንዳለው እና የተሳታፊው መብት እና የአጥኝው አድራሻ ተገልጾልኛል። በጥናቱ ጊዜ ስለሚያጋጥሙ ግልጽ ያልሆኑ ጥያቄዎችን መጠየቅ እንደሚችልና እንዲሁም ተሳታፊዎች በማንኛው ጊዜ ጥናቱን የማቋረጥ መብት እንዳላቸው ተረድቻለው። በዚህ መሰረት በጥናቱ ለመሳተፍ በሆስፒታላችን ስም ፈቃደኛ መሆናችንን ከዚህ በታች በተቀመጠው ፊርማ አረጋግጣለው።

የሆስፒታሉ ሀላፊ ስምና ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_  
የመረጃ ሰብሳቢው ስምና ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_

**ስለትብብር እናመሰግናለን።**

Annex VIII- Amharic version of the participant information sheet for mothers

እንደምን አደሩ/ዋሉ፤

ጤናይስጥልኝ \_\_\_\_\_ እባላለሁ።

ሰላም ነዎት፡- ስሜ \_\_\_\_\_ እባላለሁኝ። አሁን ከእርሶ ጋር የተገናኘሁት በመንግስት ሆስፒታሎች ላይ አተኩሮ በሚሰራው ጥናት ላይ መረጃ ሰብሳቢ ሆኜ ነው። እንዲሁም ይህ ሆስፒታል ጥናቱ ከሚካሄድባቸው ሆስፒታሎች ውስጥ አንዱ ነው። ጥናቱ የሚያተኩረው የእናቶች እውቀትና ትግበራ ልጆቻቸውን የፀሀይ ብርሀን ማሞቅ በተመለከተ እና ተዛማጅ ምክንያቶችን ለሚያጠናው በአዲስ አበባ ዩኒቨርሲቲ በጤና ሳይንስ ኮሌጅ፣ በነርቪንግና አዋላጅ ነርቪንግ ትምህርት ቤት በነርቪንግ ትምህርት ክፍል የሁለተኛ ዲግሪ ትምህርቱን በጨቅላ ህጻናት ነርስነት ተማሪ በሆነው ዮሐንስ ጎዴ ነው። ስለሆነም ስለጥናቱ የተወሰነ ማብራሪያ ስለምሰጠት ሆስፒታሎ የጥናቱ ተሳታፊ ይሆን ዘንድ ትኩረቱን ሰጥተው በጥሞና እንዲከታተሉኝ በትህትና እጠይቃለሁ።

1. የጥናቱ ርዕስ፡ በአዲስ አበባ የሚገኙ የመንግስት ሆስፒታሎች በ2012 ዓ.ም እናቶች ልጆቻቸውን የፀሀይ ብርሀን ማሞቅ ትግበራ በተመለከተ እና ሊያመጡት የሚችሉትን ተዛማጅ ምክንያቶችን የሚደረግ ማጥናት ነው።
2. የጥናቱ ዓላማ፡ የጥናቱ ዋና ዓላማ የሁለተኛ ዲግሪውን በጨቅላ ህጻናት ትምህርት ለሚማረው ተማሪ ዮሐንስ ጎዴ የመመረቂያ ጽሁፍ ለማዘጋጀት ነው። ከዚህ ጥናት የሚገኘው መረጃ እንደ መሰረት ያገለግላል። እንዲሁም ወደፊት አገልግሎቱን ለማሳደግ ለሚሰሩ ፕሮጀክቶች እንደ መረጃና ግብአት ሆኖ ስለሚያገለግል ይህ ሆስፒታል ተጠቃሚ ይሆናል። እዲሁም ደግሞ መንግስታዊና መንግስታዊ ያልሆኑ ድርጅቶች የጥናቱን ውጤት በመጠቀም የጨቅላ ህጻናትን ሞትና ህመም ሊያመጡ የሚችሉ ችግሮችን ለመቀነስ ያገለግል ዘንድ እቅድ ለመቅረጽ፣ ተግባር ላይ እንዲውል ለማድረግና ለመገምገም ይረዳል።
3. የመጠይቁ አካሄድ እና የሚወስደው ጊዜ፡ መረጃ የሚሰበሰበው እናት-የዋን በመጠየቅ እና የእናት-የዋን እና የልጅን የህክምና ካርድ በማየት ሲሆን ይህም የሚደረገው በመጠይቅና በማገናዘቢያ ሲሆን ይህ ደግሞ ለጥናቱ ትክክለኛ መረጃ እንዲሆን ይጠቅማል። ይህ መጠይቅ 34 ጥያቄዎችን የያዘ ሲሆን አብዛኛዎቹ ጥያቄዎች የሚመለሱት እናቶችን በመጠየቅ ሲሆን እንዲሁም ቀሪዎቹ ከ 2 እስከ 4 የሚሆኑት ጥያቄዎች ደግሞ ከእናት-የዋው እና ከልጅ የህክምና ማህደር ላይ በማየት ይሆናል። ቃለመጠይቁ በአማካኝ 30

ደቂቃለኢያንዳንዱለጥናትተሳታፊየሚወስድይሆናል።ስለዚህእናቶችውድጊዜያቸውንይሰጡኝዘን ድበትህትናእጠይቃቸዋለው።ቀጥለንቃለመጠይቁንእናደርጋለን።

4. የጎንዮሽጉዳት እና

ጥቅማጥቅም፡በዚህጥናትመሳተፍምንምአይነትጉዳትየለውም።በጥናቱላይመሳተፍምንምጉዳትአ ያስከትልምነገርግንየእናትየውንጥቂትደቂቃዎችሊሻማባትይችላል።በዚህጥናትስለተሳፉምንምአ ይነትክፍያየለውምግንየጥናቱውጤትለሆስፒታሎች፣ ለጤናጥበቃሚኒስተርእንዲሁምለተለያዩ ጤናላይትኩረትአድርገውለሚሰሩጠቃሚማስረጃሆኖሊያገለግላቸውይችላል።

5. የመረጃው ደህንነት፡-መጠይቁ የእርሶን ሚስጥር ለመጠበቅ ሲባል መለያ ቁጥር ይሰጠዋል። እርሶ የሚሰጡን መረጃ ምስጥራዊነቱ የተጠበቀ ነው። ማንኛውም ዓይነት ስለእርሶ ማንነት ሊገልጽ የሚችል መረጃ በመጠይቁ አይጸፍም። የጥናቱ ውጤት እንዳጠቃላይ ጥናት እንደወከላቸው ህዝቦች ይወሰዳል እንጂ እንደ ግለሰብ ለጥናቱ ተሳታፊ ብቻ አይወሰድም። በመጠይቁ ላይም የእርሶ ስም አይኖርም።

6. በጥናቱ የተከበረው መብት፡- ጥናቱ በእርሶ ሙሉ ፈቃደኝነት ላይ የተመሰረተ ነው። በጥናቱ የመሳተፍም ያለመሳተፍም ሙሉ መብት አሉት። የጥናቱ አካል ለመሆን ፈቃደኛ ከሆኑ መልስ ለመስጠት ፍቃደኛ ያልሆኑባቸውን ጥያቄዎች ያለመመለስ እንዲሁም ከጥናቱ በማንኛውም ጊዜ የማቋረጥ ሙሉ መብት ሲኖራት በዚህም ምክኒያት የሚደርስበት የተለየ ጥቅም መጓደል ወይም ጉዳት ፈጽሞ ሊኖር አይችልም።

7. የጥናቱ አድራሻ፡-ይህ ጥናት በማካሄድበት ማንኛውም ጊዜ የጥናቱን አካሄድ በተመለከተ ወይም ሌላ ማንኛውም ጥያቄ ካሉት ከዚህ በታች በተሰጠው አድራሻ ማግኘት ይቻላል።እስከአሁን በነገርኮት ነገር ላይ ጥያቄ ካሉት እኔን መጠየቅ ይችላሉ።

ስም፡ ዮሐንስ ጎዴ፡  
ስልክ ቁጥር- 09-28-57-73-59  
ኢ.ሜይል፡[yohannesguadie@gmail.com](mailto:yohannesguadie@gmail.com)

ከላይ በተደረገሎት ገለፃ መሰረት በጥናቱ ውስጥ ለመሳተፍ ፍቃደኛ ኖት?

- ሀ. አዎ----- ከሆነ መጠይቁን ይቀጥሉ
- ለ. አይደለሁም ----- ከሆነ አመሰግናለሁ

**Annex IX: Amharic version of the informed voluntary consent form for mothers**

ከላይ በቀረበው የግንዛቤ ማስጨበጫ መሰረት የጥናቱ ተሳታፊ ለመሆን የፈቃደኝነት ማረጋገጫ ለመስጠት ስለጥናቱ የግንዛቤ ማስጨበጫ መረጃው ተነቦልኛል(አንብቤዋለሁ)። ስለጥናቱ መሰረታዊ ዓላማ፣ አካሄድ፣ ጥቅምና ጉዳት፣ ስለመረጃው ደህንነት፣ ስለመብቴ የአጥኝው አድራሻ ተገልጿልኛል። በጥናቱ ጊዜ ስለሚያጋጥሙኝ ግልጽ ያልሆኑ ጥያቄዎችን መጠየቅ እንደምችልና በማንኛው ጊዜ ጥናቱን የማቋረጥ መብት እንዳለኝ ተረድቻለሁ። በዚህ መሰረት በጥናቱ ለመሳተፍ ፈቃደኛ መሆኔን ከዚህ በታች በተቀመጠው ፊርማዬ አረጋግጣለሁ።

የጥናቱ ተሳታፊ እናት ስምና ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_  
የመረጃ ሰብሳቢው ስምና ፊርማ \_\_\_\_\_ ቀን \_\_\_\_\_

**ስለ ትብብርዎ በጣም አመሰግናለሁ!!!**

Annex X- Amharic Questionnaires

የሆስፒታሉ ስም: \_\_\_\_\_

ቀን: \_\_\_\_\_

በአዲስ አበባ ከተማ ስር ባሉ የመንግስት ጤና አገልግሎቶች የሚገለገሉ እናቶች ከአንድ ዓመት በታች ያሉ ልጆቻቸውን ፀሐይ ስለማሞቅ ያላቸውን እውቀትና ትግበራ ለማወቅ የተዘጋጀ መጠይቅ:-

ክፍል-1: የሥነ- ህዝብ ፤ ማህበራዊ እና ኢኮኖሚያዊ ጉዳዮችን በተመለከተ የተዘጋጁ ጥያቄዎች: አዲስ አበባ : ኢትዮጵያ፤ 2012 ዓ.ም.

ተ.ቁ	ጥያቄ	መልስ	ማለፍ
101	የእናት እድሜ	_____ በዓመት	
102	የልጅ እድሜ	_____ በወር	
103	የጋብቻ ሁኔታ	<ol style="list-style-type: none"> <li>1. ያላገባች</li> <li>2. ያገባች</li> <li>3. የፈታች</li> <li>4. ባሏ የሞተባት</li> </ol>	
104	የእናት የትምህርት ሁኔታ	<ol style="list-style-type: none"> <li>1. ማንበብና መጻፍ የማትችል</li> <li>2. ከ1-8ኛ ክፍል</li> <li>3. ከ9-12ኛክፍል</li> <li>4. ዲግሎማ</li> <li>5. ድግሪ እና ከዚያ በላይ</li> </ol>	
105	ሥራ	<ol style="list-style-type: none"> <li>1. ተማሪ</li> <li>2. የቤት እመቤት</li> <li>3. የመንግስት ሠራተኛ</li> <li>4. የቀን ሠራተኛ</li> <li>5. የግል ተቀጣሪ</li> <li>6. ነጋዴ</li> </ol>	

		7. ሌላ _____	
106	የቤተሰብ ብዛት	_____	
107	መኖሪያ ቦታ	1. ከተማ 2. ገጠር	
108	የመኖሪያ ቤት ዓይነት	1. ምድረግቢ ቤት (ቪላ ቤት) 2. ኮንደሚኒየም/አፓርትመንት 3. ሌላ ካለ _____	
109	ወራዊ የቤተሰብ ገቢ	_____	

**የባል የትምህርት ሁኔታ ህፃናትን ስለ ፀሐይ ብርሐን ማሞቅ በተመለከተ**

110	የባል የትምህርት ሁኔታ	1. ማንበብና መጻፍ የማይችል 2. ከ1-8ኛ ክፍል 3. ከ9-12ኛ ክፍል 4. ዲፕሎማ 5. ድግሪ እና ከዚያ በላይ	
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**ክፍል ሁለት:- የእናቶች የእርግዝና ክትትል እና የወሊድ ቦታን በተመለከተ፤ በተመረጡ የአዲስ አበባ ሆስፒታሎች ላይ የተዘጋጀ ጥናት፡ አዲስ አበባ፡ ኢትዮጵያ፤ 2012 ዓ.ም.**

ተ.ቁ	ጥያቄ	መልስ	ማለፍ
201	የእርግዝና ክትትል ነበረዎት	1. አዎ 2. የለም	
202	ለጥያቄ ቁጥር 201 መልስዎ አዎ ከሆነ ምን ያክል ጊዜ ተከታትለዋል	_____	
203	የት ነበር የወለድት	1. ቤት 2. ጤና ጣቢያ	

		3. ሆስፒታል 4. ሌላ ካለ.....	
204	ሰንተኛ የእርግዝና ሳምንትዎ ነው; (እናት-የዋን በመጠየቅ ወይም በመጀመሪያው 3 ወር ወስጥ በተነሳ አልትራ ሳውንድ)	_____ ወር _____ ሳምንት	
205	የህፃኑ/ክብደት	_____ ኪ.ግ	

**ክፍል- ሶስት:- የእናቶችን እውቀት ስለፀሐይ ብርሐን ማሞቅ በተመለከተ፤ በተመረጡ የአዲስ አበባ ሆስፒታሎች ላይ የተዘጋጀ ጥናት፡ አዲስ አበባ፡ ኢትዮጵያ፤ 2012 ዓ.ም.**

ተ.ቁ	ጥያቄ	መልስ	ማለፍ
301	ልጅሽን የፀሐይ ብርሐን ማሞቅን በተመለከተ እውቀት አለሽ?	1. አዎ 2. የለኝም	401
302	ልጅሽን የፀሐይ ብርሐን ማሞቅን በተመለከተ እውቀት ያገኘሽ ከየት ነው?	1. ዶ/ር 2. አዋላጅ/ነርስ 3. ቴሌቭዥን/ሬዲዮ 4. ጎረቤት/ሽማግሌ ሰዎች 5. ሌላ _____	
303	የፀሐይ ብርሐን ማሞቅ ለልጅሽ ጠቃሚ ነው ?	1. አዎ 2. አይደለም	305
304	አዎ ከሆነ, የፀሐይ ብርሐን ማሞቅ ለልጅሽ ምን ጥቅም አለው? (ካለ ከአንድ በላይ መልስ ያክብቡ)	1. አጥንት ለማጠንከር 2. ጥርስ ለማጠንከር 3. ህፃኑ እንዲሞቀው 4. ቫይታሚንዲ ለማምረት 5. ሰውነቱ እንዲጠነክር 6. ሌላ _____	
305	ልጅሽን የፀሐይ ብርሐን ማሞቅ ጉዳት አለው?	1. አዎ 2. የለውም	307

306	አዎ ከሆነ, የፀሐይ ብርሐን ምን ጉዳት አለው? (ካለ ከአንድ በላይ መልስ ያክብቡ)	1. የቆዳ ካንሰር 2. ዓይነ ስውርነት 3. መካንነት 4. ሌላ _____	
307	ህፃናትን ፀሐይ ለማሞቅ ጥሩው ሰዓት የትኛው ነው? (ካለ ከአንድ በላይ መልስ ያክብቡ)	1. ጧት 2. ከሰዓት በኋላ 3. ማታ	

ክፍል-አራት- እናቶችን ልጆቻቸውን ፀሐይ ሲያሞቁ የሚያደርጉት ትግበራን በተመለከተ፤ በተመረጡ የአዲስ አበባ ሆስፒታሎች ላይ የተዘጋጀ ጥናት፡ አዲስ አበባ፡ ኢትዮጵያ፤ 2012 ዓ.ም.

ተ.ቁ	ጥያቄ	መልስ	ማለፍ
401	ልጅሽን የፀሐይ ብርሐን ታሞቂው አለሽ?	1. አዎ 2. አላሞቀውም	501
402	ፀሐይ ማሞቅ የጀመርሽው በሥንት ጊዜው/ዋ ላይ ነው?	_____	
403	አዎ ከሆነ, ልጅሽን የፀሐይ ብርሐን የምታሞቁው እንዴት ነው?	1. በየቀኑ 2. አልፎ አልፎ	
404	ልጅሽን የፀሀይ ብርሀን የምታሞቁው የት ነው?	1. ከቤት ውጭ በር ላይ 2. ቤት ውስጥ ከመስኮት ጀርባ	
405	በቀን ውስጥ ልጅሽን የፀሐይ ብርሐን የምታሞቁው በየትኛው ሰዓት ነው? (ካለ ከአንድ በላይ መልስ ያክብቡ)	1. ጥዋት ከ2:00-4:00 ሰዓት 2. ቀን ከ5:00-7:00 ሰዓት 3. ከሰዓት በኋላ ከ8:00-10:00 ሰዓት	
406	ልጅሽን የፀሐይ ብርሐን የምታሞቁው እንዴት ነው?	1. ልብስ ሳይለብስ 2. የሽንት ልብስና የዓይን መሽፈኛለብሰ 3. በከፊል ለብሰ	

		4. መሉ በመሉ ለብሶ	
407	ልጅሽን የፀሐይ ብርሐን የምታሞቁው ለስንት ደቂቃ ነው?	_____	
408	ፀሐይ በምታሞቁበት ጊዜ ልጅሽ ገላ ላይ የምትቀቢው ነገር አለ?	1. አዎ 2. አልቀባም	501
409	አዎ ከሆነ, መቸ ነው የምትቀቢው? (ካለ ከአንድ በላይ መልስ ያክብቡ)	1. ፀሐይ ከመሞቁ በፊት 2. ፀሐይ እየሞቀ 3. ፀሐይ ከሞቀ በሐላ	
410	ልጅሽ ገላ ላይ የምትቀቢው ምንድን ነው?	1. የህፃን ባዝሊን 2. የህፃን ቅባት 3. ቅቤ 4. ሌላ ካለ _____	

**ክፍል-አምስት: እናቶች ልጆቻቸውን የፀሐይ ብርሐን እንዳያሞቁ ተጽኖ የሚያደርጉ ነገሮች በተመለከተ፤ በተመረጡ የአዲስ አበባ ሆስፒታሎች ላይ የተዘጋጀ ጥናት: አዲስ አበባ: ኢትዮጵያ፤ 2012 ዓ.ም.**

ተ.ቁ	ጥያቄ	መልስ	እለፍ
501	የፀሐይ ብርሐን ለማሞቅ ትፈራያለሽ?	1. አዎ 2. አልፈራም	
502	አዎ ከሆነ, የምትፈራበት ምክንያት ምንድን ነው? (ካለ ከአንድ በላይ መልስ ያክብቡ)	1. ያመዋል 2. ቡዳ ይበላዋል 3. ብርድ ይመታዋል 5. ሌላ ካለ _____	

ይህ የመጠይቁ ማብቂያ ነው።

የቃለ መጠይቁ መረጃ የተሰበሰበበት ቀን.....

መረጃውን የሰበሰበው ባለሙያ ስም .....ፊርማ.....

የተቆጣጣሪ ባለሙያ ስም .....ፊርማ.....

**አመሰግናለሁ!!!**