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Adverse Neonatal outcomes and its Associated Factors Among Women with Adult and Advanced Aged Pregnancy at Awi Zone, Northwest Ethiopia 2020

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ADVERSE NEONATAL OUTCOMES AND ITS ASSOCIATED FACTORS AMONG WOMEN WITH ADULT AND ADVANCED AGED PREGNANCY AT AWI ZONE, NORTHWEST ETHIOPIA 2020

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Declaration

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This thesis is my original work and has not been presented for award of MSc Degree or for any similar purpose in any other institutions.

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Acronyms

AMA	Advanced Maternal Age
ANC	Antenatal Care
AOR	Adjusted Odds Ratio
CI	Confidence Interval
COR	Crude Odds Ratio
IUGR	Intra-Uterine Growth Restriction
LBW	Low Birth Weight
LGA	Large for Gestational Age
NICU	Neonatal Intensive Care Unit
SD	Standard Deviation
SDG	Sustainable Developmental Goals
SGA	Small for Gestational Age

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Abstract

Introduction: Even though reduction of neonatal mortality is needed to achieve Sustainable Development Goals 2030, advanced maternal age is still an independent and a substantial risk factor for different adverse perinatal outcomes, responsible for neonatal morbidity and mortality. In Ethiopia, researches have validated that advanced maternal age is a significant factor for neonatal morbidity and mortality, but studies which addressed or estimated those adverse neonatal outcomes are limited and specifically no study was done in the study area.

Objective: To compare adverse neonatal outcomes and its associated factors among women with adult and advanced aged pregnancy at Awi Zone, Northwest Ethiopia 2020.

Methodology: comparative cross-sectional study was conducted in Awi Zone public hospitals, Northwest Ethiopia from February 25 to March 25/2020. Systematic random sampling was employed to select 524 (348 adults and 176 advanced age) women. Interview and chart review based structured questionnaires were applied to collect the data. The collected data were analyzed using Statistical Package of Social Sciences version-25. Binary and multivariable logistic regressions were fitted to assess the association between adverse neonatal outcomes and explanatory variables. *P*-value less than 0.05 was used to declare final statistical significance.

Result: a total of 520 mothers who gave birth were included, giving a response rate of 99.2%. The prevalence of adverse neonatal outcome among advanced aged women (29.1%) was higher compared to adult aged women (14.5%). The odds of adverse neonatal outcome was higher among advanced aged women when compared to adult aged women (AOR=2.01, 95% CI: 1.06, 3.79). No formal education (AOR=2.75, 95% CI: 1.27, 5.95), short birth interval (AOR=2.25, 95% CI: 1.07, 4.73) and complications during pregnancy (AOR=2.12, 95% CI: 1.10, 4.10) were also significantly associated with adverse neonatal outcomes.

Conclusion and recommendation: composite adverse neonatal outcomes, low birth weight, prterm birth and low 1st minute Apgar score were significantly higher among advanced aged compared to adult aged women. Advanced maternal age, no formal education, short birth interval and complications during pregnancy were significantly associated with adverse neonatal outcomes. Access of equal education, provision of family planning and perinatal care (early detection and management of complications) is recommended.

Key words: adverse neonatal outcomes; advanced maternal age pregnancy; Ethiopia.

1. Introduction

1.1. Background

Pregnancy in advanced maternal age is defined as a pregnant women who has an estimated delivery date established for a time when a mother is 35 years of age or older [1, 2]. The pregnancy rate of Advanced Maternal Age (AMA) is increasing worldwide [3, 4]. Evidences from Canada, low and middle income countries and South Africa showed that 22.6%, 12.3% and 17.5% of pregnancies were occurred at advanced maternal age level respectively[4-6].

The increased occurrence of pregnancy in AMA is due to the increased population of women at 35 years of age especially in countries with advanced fertility specialists [7]. Postponing marriage until later, the availability of better contraceptive options, wider opportunities for further education and career advancement have impacted AMA prevalence. Social and cultural shifts influenced women's choices, including postponing pregnancies until they are ready to support children considering the economic impact, childcare availability, changing in housing, workplace demands and impact on carrier, including availability of maternity leave [7, 8].

Fertility is impacted by the age a woman decides to begin her childbearing period and reduced as women age, with a significant reduction in ovarian oocyte reserves after the age of 35 years [9]. The aging of oocytes is also associated with this reduced ovarian reserve and contributes to pregnancy complications and adverse fetal outcomes, including genetic abnormalities [8]. Proponents of encouraging women to delay pregnancies until a family has secure financial and psychosocial stability assert that many AMA pregnancies have excellent neonatal outcomes and mothers with maturity are able to easily cope with the physical and emotional stresses of pregnancy [10].

Most adverse outcomes in older women appear to be related to the aging process alone, even though coexisting factors such as multiple gestation, higher parity, and chronic medical conditions, are less likely to be observed in younger women [11]. Older women experience an increased rate of spontaneous abortion, chromosomal abnormalities, congenital malformations, placental problems including placenta previa and abruption [12]. It also associated with perinatal morbidity including low birth weight (LBW), preterm birth and low Apgar score, may contribute to poor pregnancy outcomes including perinatal mortality [13, 14].

1.2. Statement of problem

Adverse neonatal outcomes are the major causes of neonatal morbidity and mortality [15]. Lack of Antenatal Care (ANC), extremes in maternal age (adolescents or women with AMA), pre-existing medical diseases including diabetes mellitus, anemia and chronic hypertension, along with obstetric complications such as antepartum hemorrhage, premature rapture of membrane, pregnancy induced hypertension and previous poor obstetric history (previous still birth, preterm birth and LBW) are related to neonatal morbidity and mortality [16, 17].

Globally, AMA is a significant factor affecting pregnancy outcomes and major contributor to different adverse perinatal outcomes as compared with adult aged pregnancy [18-20]. Increasing maternal age without a clear cutoff is an independent and substantial risk factor for adverse perinatal outcomes [21]. As the number of women having their babies at 35 or older dramatically increases, problems associated with pregnancy in AMA are considered to have a significant impact on perinatal mortality [22].

Even though, one of the major Sustainable Development Goals (SDGs) needed to achieve at 2030 is reduction of maternal and neonatal death including improving of their health, neonatal mortality remains a problem [23]. It is confirmed that AMA increased the risk of preterm birth, Intrauterine Fetal Growth Restriction (IUGR), LBW, low Apgar score, still birth and neonatal mortality, irrespective of parity [24, 25]. AMA also predisposes a pregnancy to a increased congenital malformation and chromosomal abnormalities, including trisomy and others [26].

In addition, AMA is associated with additional neonatal morbidities including Large for Gestational Age (LGA) and Small for Gestational Age (SGA) and an increased risk of Neonatal Intensive Care Unit (NICU) admissions [27]. AMA pregnancies, with women approaching their upper fertility limits, are consistently associated with increased risk of adverse perinatal outcomes, contributing to the persistent global neonatal mortality [28].

Literatures have reported inconsistent results in relation to adverse neonatal outcomes and advanced maternal age pregnancies. Even though there are reports of AMA pregnancy associated with adverse birth outcomes, others studies failed to support AMA as a risk factor [29-31]. In addition, Ethiopia, specifically has limited research on AMA pregnancies neonatal outcomes [32, 33], majorly used secondary data. In addition, no research was done in this study area. Therefore,

this study was conducted to compare the adverse neonatal outcomes among women with adult and advanced aged pregnancy and to identify factors associated with adverse neonatal outcomes.

1.3. Literature review

Adverse neonatal outcomes

Concerning to prevalence, a comparative study conducted in Denmark reported that, adverse neonatal outcome among advanced aged women was 10.8% while 5.4% among adult aged women [34]. Similar studies done in Canada revealed that, the prevalence of preterm birth among advanced aged women was 7% whereas 5.76% in adult aged women. It was also evidenced that IUGR and still birth were significantly higher among maternal age ≥45 years [5].

Literatures from Sweden and meta-analysis from Portugal showed that AMA significantly increased risk of adverse neonatal outcomes including LBW, low Apgar score, preterm birth and early neonatal death compared to younger women [11, 14, 28, 35]. In relation, studies from Taiwan and Japan reported that AMA increased the risk of composite adverse neonatal outcomes and LBW [36, 37].

Another evidence in India confirmed that, the risk of chromosomal abnormality, congenital anomaly, preterm birth, LBW, IUGR, still birth, neonatal mortality and NICU admission were higher among pregnancies of advanced maternal age [8, 26]. Consistently, Italian study reported that preterm birth and congenital malformation among AMA were 13.9% and 2.06% whereas 9.8% and 1.38% among adult aged women respectively [38]. Similarly, Barcelonan and another Italian studies reported that AMA was an independent risk factor for preterm delivery and LBW [29, 39].

Studies in United Kingdom and Finland reported significant increase of still birth, preterm birth, SGA, macrosomia and extremely LGA among AMA pregnancy [3, 40, 41]. Consistently, review of evidences in Australia reported that, women aged 45 years or more had significant increases in still birth, perinatal mortality, preterm birth and LBW [22].

Large scale global survey across 29 counties in Africa, Asia, Middle East and Latin America indicated that, AMA predisposes women to adverse neonatal outcomes included stillbirth, LBW, NICU admission and preterm birth which cuases perinatal mortality and morbidity compared to adult aged women [4]. Another comparative cross sectional study conducted in Turkey indicated

that, SGA and late preterm birth were more significant in AMA groups (12.1% and 7.6%) compared to adult maternal age groups (4.5% and 7.25) respectively [30].

Similar study done in South Africa confirmed that, the prevalence of LBW, preterm birth and perinatal death among advanced aged women were higher (27.9%, 19.2% and 5.6%) compared to adult aged women (18.8%, 14.7% and 4.8%) respectively [6]. In Ethiopia, the average prevalence of adverse neonatal outcomes ranges from 20.7% to 33% [42]. A study conducted in Jima showed that, the prevalence of adverse neonatal outcome among advanced aged women was higher (40.5%) when compared to adult aged women (29.4%) [32]. Similarly, study done in Tigray evidenced that the prevalence of adverse neonatal outcomes among advanced aged women were higher than adult aged women specifically, LBW (17.8% vs 5.4%), preterm birth (11.3% vs 2.7%), perinatal death (10.1% vs 3.2%) and fifth minute low Apgar score (14.4% vs 2.4%) respectively[33].

Factors associated with adverse neonatal outcomes

Analysis from global network population-based systematic review on birth registration and birth outcomes in low and middle income countries confirmed that, adverse neonatal outcomes including still births were associated with poverty, extreme maternal ages (less than 20yrs and greater than 34yrs), multiparity, poor obstetric history, maternal infection during pregnancy, placental and amniotic fluid related complications, lack of prenatal care and neonatal related problems like asphyxia and meconium aspiration syndrome [43, 44].

Studies done in Unites States of America, China, Bangladesh and Turkey evidenced that, no formal education, short birth interval, abnormal presentation, hypertension during pregnancy, AMA, premature rupture of membrane and placenta previa were significantly associated with adverse neonatal outcomes [45-49].

In addition, studies conducted in India and Afghanistan showed that, adverse neonatal outcomes were associated with lack of ANC, lower maternal educational status, rural residence, a low family income, early pregnancy bleeding, complication during pregnancy and delivery and a birth interval less than two years [50, 51]. An Ugandan cross sectional study also revealed that, mothers with severe preeclampsia were significantly associated with adverse neonatal outcomes [52].

Similarly, studies done in South Africa, Tanzania, Nigeria and Egypt evidenced that, adverse neonatal outcomes were associated with fewer ANC follow up visits, short birth interval, premature rupture of membrane, maternal anemia, infections during pregnancy (like malaria) and extremes of maternal age [53-56].

Consistently, studies conducted in Ethiopia reported that adverse neonatal outcomes were associated with advanced age of the mother, lack of ANC, lack of partner involvement, living in rural area, grand multigravidas, multiple pregnancy, antepartum hemorrhage, induction of labor, pregnancy induced hypertension and previous adverse pregnancy outcomes [15, 20, 57, 58].

Similarly, other studies in Ethiopia confirmed that adverse neonatal outcomes were associated with AMA, no formal education, obstetric complications during pregnancy and delivery, emergency cesarean section, grand multigravidas, short birth interval, medical diseases (including anemia), rural residence, low income, Middle Upper Arm Circumference less than 23cm and low educational status [16-18, 59-63].

Generally, pregnancy in AMA have associated with adverse neonatal outcomes including LBW, still birth, preterm birth, congenital anomalies and low Apgar scores. Other researchers published reports that AMA was not always a risk factor for adverse neonatal outcomes.

1.4. Conceptual frame work

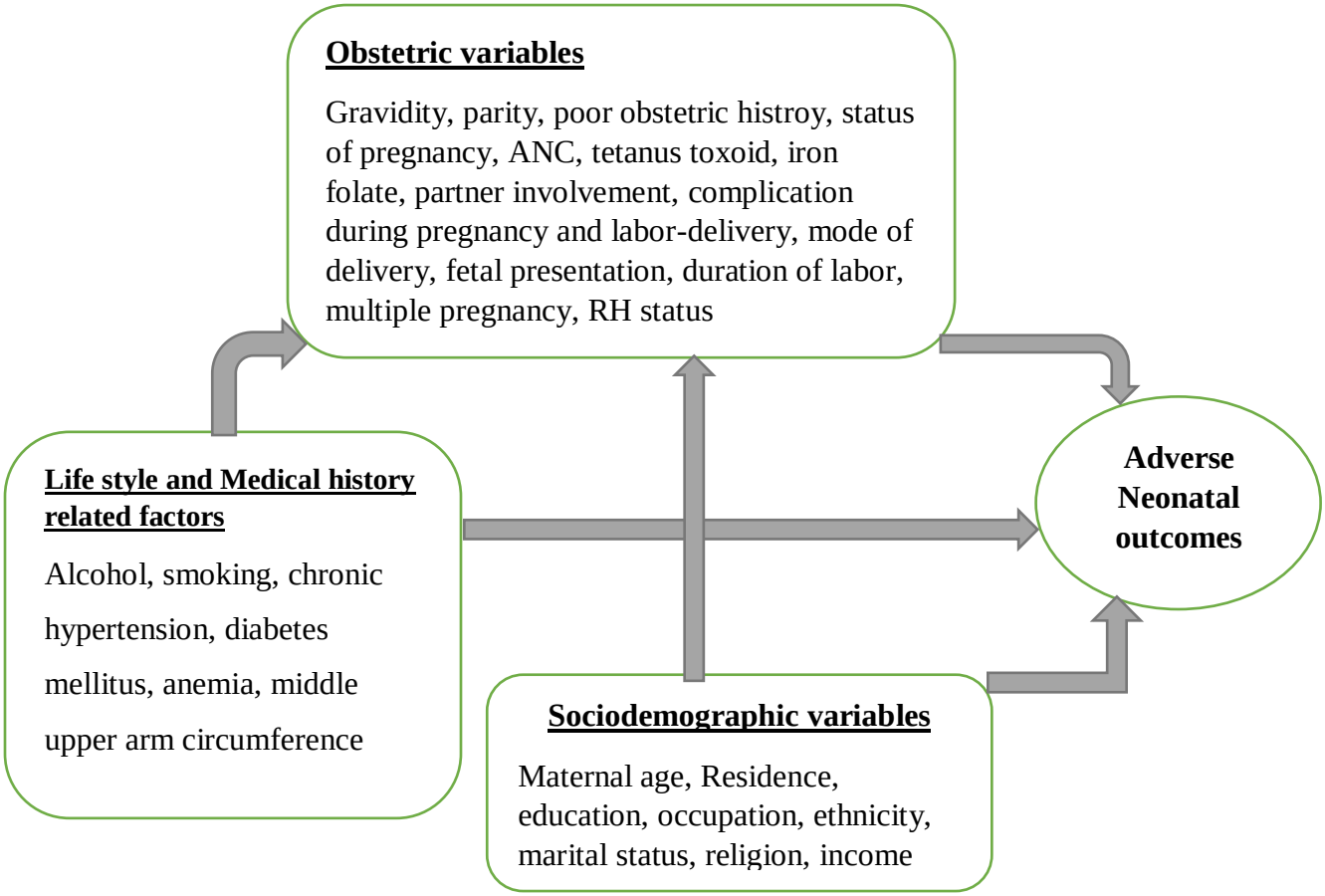


Figure 1: Conceptual frame work to compare adverse neonatal outcomes and its associated factors among women with adult and advanced aged pregnancies at Awi Zone Public Hospitals, Northwest Ethiopia 2020

(Source: [3, 5, 28, 30, 32, 33, 37])

1.5. Justification of the study

Pregnancy in AMA is at an increased risk of adverse neonatal outcomes such as LBW, preterm birth, still birth, congenital anomalies and low Apgar score [34]. Reduction of neonatal mortality is one of the major SDGs needed to be achieved by 2030. But, neonatal mortality is still unacceptably high, specifically in Ethiopia as confimed in Ethiopian Mini Demographic Health Survey 2019 report [64]. Pregnancy of AMA predispose to increased risk for adverse perinatal outcomes. Globally, adverse neonatal outcomes significantly contribution for neonatal mortality and represent a gap in the ability to reach SDGs targets [38].

Despite advanced age a major contributor for adverse birth outcome; most Ethiopian studies do not address adverse neonatal outcomes of AMA's and impact on neonatal morbidity and mortality. The research focus given to birth outcomes of advanced aged population is scarce. This research expands on published work describing the impact of AMA on neonatal morbidity and mortality in Ethiopia. This study was conducted to compare adverse neonatal outcomes among women with advanced aged pregnancies and women between the ages of 20 and 34 years and to identify factors associated with adverse neonatal outcomes.

1.6. Significance of the study

In a country like Ethiopia where striving to reduce neonatal mortality in 2030, conducting such under investigated study will have paramount input for future neonatal health improvement especially in the study area where such research not done.

This study will investigate the impact of AMA on neonatal outcomes which could determine gaps in health policy and care that can be addressed to improve neonatal health. These research outcomes can inform health care providers, women and population health experts about the impact of AMA on pregnancy outcomes. There may be important recommendations that encompass not only health care practices, but societal changes that enable women to securely choose to achieve their desired family size during between the ages of 20 and 34.

This research can aid with establishing in-country baselines for AMA's impact on neonatal outcomes. Any gaps in neonatal morbidity and mortality may inform policy makers and program implementers about strategies to reduce problems associated with advanced age pregnancy, to pass evidence based informed decisions and target neonatal outcomes when considering objectives and practices of implementation research initiatives.

2. Objectives

General objective

- To compare adverse neonatal outcomes and its associated factors among women with adult and advanced aged pregnancy at Awi Zone, Nortwest Ethiopia 2020

Specific objectives

- To compare adverse neonatal outcomes among women with adult and advanced aged pregnancy at Awi Zone Public Hospitals
- To identify factors associated with adverse neonatal outcomes of women with advanced and adult aged pregnancy at Awi Zone Public Hospitals

3. Methods

3.1. Study area and period

This study was conducted at Awi zone public hospitals, Amhara regional state, Ethiopia. Awi zone is one of the zones found in Amhara Regional State of Ethiopia. Awi Zone is bordered on the West by Benishangul-Gumuz Region, on the North by North Gondar Zone and on the East by West Gojjam. The administrative center of Awi Zone is Injibara [65]. According to the 2007 Central Statistical Agency of Ethiopia report, among 491,077 females live in Awi zone. Among 232,443 reproductive aged groups (15-49), 114,660 were adult women and 58,306 were advanced aged women [66]. According to the 2018/19 annual report of Awi zone health office, there are five public hospitals and 47 health centers that serve for a total population of around 1,077,144 [67]. The study was employed from February 25 to March 25/2020.

3.2. Study design

Institutional based comparative cross sectional study was conducted.

3.3. Population

Source population

All women aged of ≥20 years' old who gave birth at 28 weeks of gestation or greater at Awi zone public hospitals.

Study population

All women aged ≥20 years old who gave birth at 28 weeks of gestation or greater at Awi Zone public hospitals during the data collection period.

3.4. Eligibility criteria

Inclusion criteria

All women aged ≥20 years old who gave birth at 28 weeks of gestation or greater at Awi Zone public hospitals were included in this study.

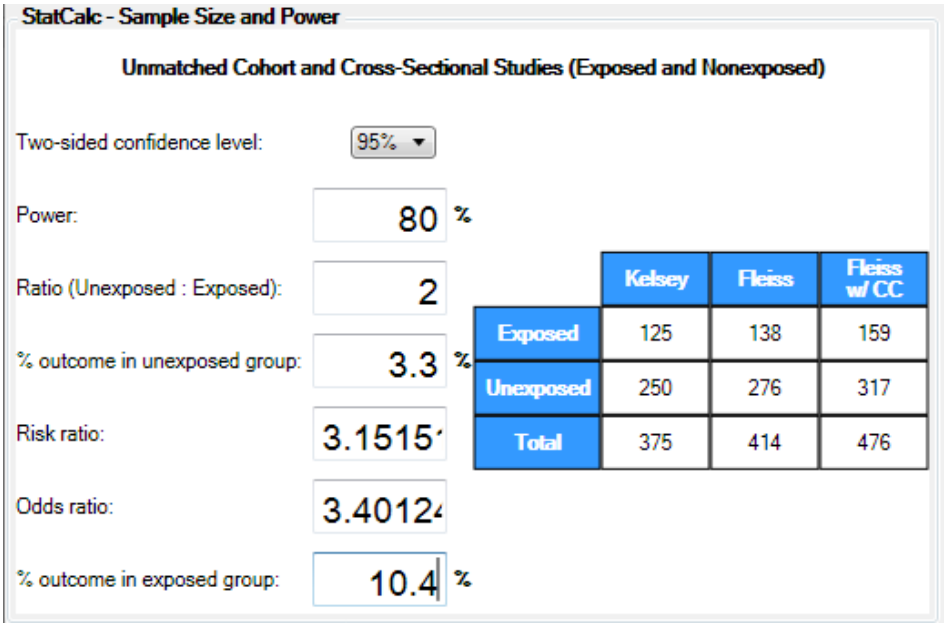
Exclusion criteria

Women with unknown or unreliable last normal menstrual period or no early obstetric ultrasound and women living in Awi zone less than 6 months were excluded from this study.

3.5. Sample size and sampling procedure

Sample size determination

Sample size was calculated using double population formula with Epi-info version 7. Based on study conducted in Southern Ethiopia on adverse neonatal outcomes among adult and advanced aged women, LBW was one of the adverse neonatal outcomes occured [32], which give maximum sample size. From this study, the proportion of LBW among adult and advanced aged women was 3.3% and 10.4% respectively. Then, using the following assumptions: 95% two sided level of confidence, a power of 80%, 2:1 ratio and 10% non-response rate, the sample size required for this study was calculated as follows:



Finally, adding 10% non-response rate, the final sample size was 524 mothers (176 advanced aged and 348 adult mothers).

Sampling procedure

All five public hospitals found in Awi Zone were included in this study. The previous year average delivery report of two months of each hospitals with similar season was used to proportionally allocate the calculated sample size and getting sampling fraction (k) (calculated using population size divide by sample size i.e. the calculated k-value was 2, similar for both populations and all public hospitals). The first mother was selected using simple random sampling technique among mothers who gave birth on the day of data collection (then after the

first mother selected, the next was continued based on their discharge from postpartum ward). Then systematic random sampling technique was employed to select the final study participants till the required sample size for each facility was saturated.

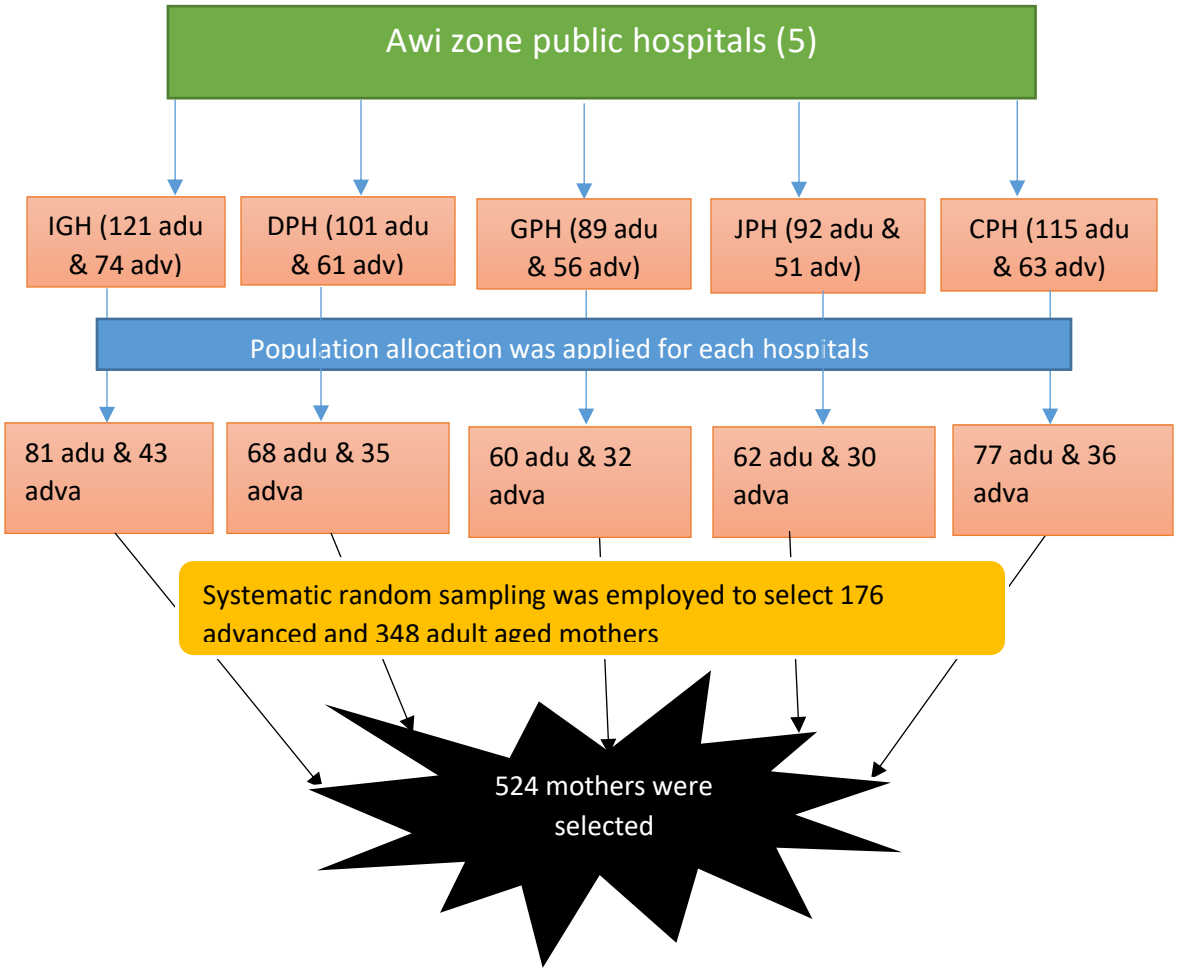


Figure 2: Schematic presentation of sampling procedure to select 524 women, at Awi Zone public hospitals, Ethiopia 2020

3.6. Variables of the study

Dependent variable

- ❖ Adverse neonatal outcomes

Independent variables

- ➢ Sociodemographic variables (age, residence, educational status, occupation, religion, ethnicity, marital status, income)

- Obstetric related variables (gravidity, parity, gestational age, ANC, iron folate supplementation, tetanus toxoid injection, bad obstetric history, mode of delivery, status of pregnancy, multiple pregnancy, complication during pregnancy and labor-delivery, RH status)
- Life style and medical disease related (alcohol, smoking, chronic hypertension, pre-pregnancy diabetes mellitus, anemia, chronic renal disease, middle upper arm circumference)

3.7. Operational definitions

Advanced maternal age is considered when maternal age is greater or equal to 35 years old [25, 31].

Adult maternal age is considered when maternal age is 20-34 years -inclusive [32, 34].

Adverse/unfavorable neonatal outcome is the occurrence of at least one of the following: LBW, preterm birth, low Apgar score at first or fifth minutes after birth, still birth, gross congenital anomaly or neonatal death within 24hrs [60].

Low Apgar score is when the neonatal Apgar score less than 7 at the first or fifth minute of life [29].

Gross congenital anomaly is when the newborn has been diagnosed with congenital anomaly (hydrocephalus, spinal bifida, anencephaly, cleft lip or pallet and polydactyl) [34].

Reliable normal menstrual period is considered when women's menstrual cycle is normal in terms of regularity, duration, frequency and amount of flow plus having regular menstrual cycle for at least 3-6 months and not using any type of contraceptive during this period [68].

Bad obstetric history is considered when the women had at least one of the following condition in previous pregnancy: still birth, early neonatal death and recurrent abortion (three and above spontaneous consecutive abortion) [69].

3.8. Data collection tool and procedure

Data collection tool was adapted after reviewing different related articles and documents [3, 28, 32, 70]. First, the tool was prepared in English version then translated in to Amharic version and then to local language, Agew. Finally, it was translated back to English version to check its consistency. In addition, the tool was pretested and revised by experienced academic researchers. An interviewer administered and chart reviewing, well-structured and pre-tested; containing both

open and close-ended questionnaire and checklist was used to collect the data. Mother's sociodemographic data, obstetric and medical related data, life style related data and neonatal outcomes were included in the tool. Five diploma and two BSC midwives who had experience in similar work were recruited as data collectors and supervisors respectively. One-day training was given for both data collectors and supervisors by principal investigator about the objective of the study, data collection tool, procedure and how to fill the questionnaires. All women who gave birth at Awi Zone public hospitals were interviewed and their chart reviewed at 24 hours of postpartum period, after assessing eligibility and obtaining informed verbal consent.

3.9. Data quality assurance

One-day training was given for data collectors and supervisors. The tool was pretested at Dure Bete public hospital on 5% of the sample size to ensure consistency and completeness of questioners. Data collectors were supervised throughout the course of data collection period. Then, the overall process was coordinated and controlled by principal investigator. Principal investigator, supervisors and data collectors were taken a discussion meeting after data collection to ensure completeness. Furthermore, the collected data were entered in to Epi-data computer programs version 3.1 to minimize data entry error.

3.10. Data processing and analysis

The collected data were entered using Epi data version 3.1 computer program. Then, it was exported to Statistical Package of Social Sciences version 25 for analysis. Descriptive statistics like frequency and summary statistics were employed to describe characteristics of the study participants. Chi square and independent t-test were used to compare categorical and continuous variables between adult and advanced aged women respectively. Logistic regression model was fitted to determine if there is any association between maternal age and adverse neonatal outcomes, adjusting for the confounding effects of other variables. All explanatory variables in binary logistic regression with *p*-value 0.25 or less were considered for multivariable logistic regression analysis to control for confounding factors.

Adjusted Odds Ratio (AOR) with their corresponding 95% Confidence Intervals (CI) and p-value less than 0.05 were used to declare the association between dependent and independent variables and statistical significance in this study.

3.11. Ethical consideration

Ethical clearance was obtained from Institutional Review Board of College of Medicine and Health Science, Bahir Dar University. Responsible officials and managers at Hospitals were communicated and permission was obtained. Informed oral consent was obtained from each study participants. Codes were given to the questionnaires during data collection. The collected data were kept in the form of file in secured place. Finally, the results of study were used only for study purpose.

4. Results

Socio-demographic characteristics

In this study, a total of 520 participants were included, giving a response rate of 99.2%. The mean age ± standard deviation (SD) of adult aged mothers was 25.8 (±3.1) while 37.5 (±2.8) years for advanced aged mothers. More than two-third 117 (66.9%) of advanced aged women were rural resident whereas 69.9% (241) of adult mothers were urban resident. In regarding to educational status, more than half 108 (61.7%) of advanced aged women had no formal education compared to 63 (18.3%) adult aged women. Among the total respondents, 226 (43.5%) women and 203 (39%) their husbands were engaged in housewife and farming respectively. All populations (both advanced and adult aged mothers) were non-alcohol user and non-smoker (Table-1).

Table 1: Socio-demographic characteristics of mothers who gave birth in Awi Zone Public Hospitals, Northwest Ethiopia: 2020

Variables		Advanced age (n=175)	Adult age (n=345)	Total (n=520)	
		Frequency (%)	Frequency (%)	Frequency (%)	p-value
Residence	Urban	58 (33.1%)	241 (69.9%)	299 (57.5%)	<0.001
	Rural	117 (66.9%)	104 (30.1%)	221 (42.5%)	
Marital status	Single	3 (1.7%)	8 (2.3%)	11 (2.1%)	0.363
	Married /union	171 (97.7%)	335 (97.1%)	506 (97.3%)	
	Others*	1 (0.6%)	2 (0.6%)	3 (0.6%)	
Maternal education	Illiterate	108 (61.7%)	63 (18.3%)	171 (32.9%)	<0.001
	Primary	35 (20%)	124 (35.9%)	159 (30.6%)	
	Secondary and above	32 (18.3%)	158 (45.8%)	190 (36.5%)	
Ethnicity	Amhara	175 (100%)	343 (99.4%)	518 (99.6%)	0.601
	Others**	0	2 (0.6%)	2 (0.4%)	
Religion	Orthodox	173 (98.9%)	335 (97.1%)	508 (97.7%)	0.162
	Others***	2 (1.2%)	10 (2.9%)	12 (2.3%)	
Maternal occupation	House wife	64 (36.6%)	162 (47%)	226 (43.5%)	<0.001
	Farmer	86 (49.1%)	62 (18%)	148 (28.5%)	
	Government employ	16 (9.1%)	66 (19.1%)	82 (15.8%)	
	Others[a]	9 (5.1%)	55 (15.9%)	64 (12.3%)	
Husband occupation	Farmer	116 (68%)	87 (26.1%)	203 (40.1%)	<0.001
	Government employ	32 (18.7%)	99 (29.5%)	131 (25.8%)	
	Merchant	15 (8.7%)	101 (30.1%)	116 (22.9%)	
	Others[b]	8 (4.6)	48 (14.3%)	56 (11.2%)	
Family monthly income (ETB)	≤500	67 (38.3%)	59 (17.1%)	126 (24.2%)	<0.001
	501-1000	19 (10.9%)	26 (7.5%)	45 (8.7%)	
	1001-2000	22 (12.6%)	24 (7%)	46 (8.8%)	
	>2000	67 (38.3%)	236 (68.4%)	303 (58.3%)	

*Divorced and widowed, **Oromo and Benishangul Gumz, ***Muslim and protestant, [a]Student, merchant and private employ, [b] Private employ and driver

Obstetric characteristics

Twenty four (14%) advanced aged women had short birth interval, almost comparable with adult aged women 24 (15.2%). Nearly 35% (60) of advanced aged women had previous bad obstetrical history compared with 16 (10.1%) adult aged women. More than one-third 35.4% (62) of advanced aged women had unplanned pregnancy compared with 8.7% (30) of adult aged women. One hundred seventy one (97.7%) advanced aged and 339 (98.3%) adult aged women had ANC follow up. But, only 57 (33.3%) advanced aged women were initiate ANC at 12 weeks or before compared to 184 (54.3%) adult aged women. In contrast, there was no significant differences between advanced aged and adult women regarding tetanus toxoid vaccination (92.6% vs 94.5%) and iron folate supplementation (95.4% vs 92.2%) respectively (Table-2).

Table 2: Obstetrics characteristics of mothers who gave birth in Awi Zone Public Hospitals, Northwest Ethiopia: 2020

Variables		Advanced age (n=175)	Adult age (n=345)	Total (n=520)	
		Frequency (%)	Frequency (%)	Frequency (%)	p-value
MUAC	≥23cm	158 (90.3%)	319 (92.5%)	477 (91.7%)	0.394
	<23cm	17 (9.7%)	26 (7.5%)	43 (8.3%)	
Rh status	Positive	160 (91.4%)	320 (92.8%)	480 (92.3%)	0.592
	Negative	15 (8.6%)	25 (7.2%)	40 (7.7%)	
Birth interval	<24 months	24 (14%)	24 (15.2%)	48 (14.5%)	0.750
	≥24 months	148 (86%)	134 (84.8%)	282 (85.5%)	
Previous bad obstetrical history	Yes	60 (34.9%)	16 (10.1%)	76 (23%)	<0.001
	No	112 (65.1%)	143 (89.9%)	225 (77%)	
Type of poor obstetric history[R]	Recurrent abortion	4 (6.6%)	2 (12.5%)	6 (7.9%)	0.442
	Still birth	35 (58.3%)	10 (62.5%)	45 (59.2%)	0.763
	Early neonatal death	29 (48.3%)	5 (31.3%)	34 (44.7%)	0.222
No of pregnancy	Singleton	165 (94.3%)	339 (98.3%)	504 (96.9%)	0.026
	Twin	10 (5.7%)	6 (1.7%)	16 (3.1%)	
Status of pregnancy	Planned	113 (64.6%)	315 (91.3%)	428 (82.3%)	<0.001
	Unplanned	62 (35.4%)	30 (8.7%)	92 (17.7%)	
ANC follow up	Yes	171 (97.7%)	339 (98.3%)	510 (98.1%)	0.668
	No	4 (2.3%)	6 (1.7%)	10 (1.9%)	
Number of visit	1-3 visit	101 (59.1%)	132 (38.9%)	233 (45.7%)	<0.001
	≥4 visit	70 (40.9%)	207 (61.1%)	277 (54.3%)	
GA when start ANC	≤12 weeks	57 (33.3%)	184 (54.3%)	241 (47.3%)	<0.001
	>12 weeks	114 (66.7%)	155 (45.7%)	269 (52.7%)	
Tetanus toxoid vaccine	Yes	162 (92.6%)	326 (94.5%)	488 (93.8%)	0.389
	No	13 (7.4%)	19 (5.5%)	32 (6.2%)	
No of TT vaccine	One	40 (24.7%)	34 (10.4%)	74(15.2%)	<0.001
	≥ two times	122 (75.3%)	292 (89.6%)	414 (84.8%)	
Iron folate supplementation	Yes	167 (95.4%)	319 (92.5%)	486 (93.5%)	0.196
	No	8 (4.6%)	26 (7.5%)	34 (6.5%)	
Iron folate months	<3 months	52 (31.1%)	69 (21.7%)	121 (24.9%)	0.022
	≥3 months	115 (68.9%)	249 (78.3%)	364 75.1%)	

Male partner involvement	Yes	96 (54.9%)	195 (56.5%)	291 (56%)	0.718
	No	79 (45.1%)	150 (43.5%)	229 (44%)	
Gravidity	Primigravida	3 (1.7%)	186 (53.9%)	189 (36.3%)	<0.001
	2-5	98 (56%)	158 (45.2%)	256 (49.2%)	
	Grand muligravida	74 (42.3%)	1 (0.9%)	75 (14.5%)	
Parity	Nulliparous	3 (1.7%)	186 (53.9%)	189 (36.3%)	<0.001
	2-5	117 (66.9%)	158 (45.2%)	275 (53%)	
	Grand multipara	55 (31.4%)	1 (0.9%)	56 (10.7%)	
GA at delivery	Mean ±SD	38.39±0.15	39.03±0.083	38.92±1.73	0.036
Onset of labor	Spontaneous	133 (76.4%)	294 (85.7%)	427 (82.6%)	0.009
	Induced	41 (23.6%)	49 (14.3%)	90 (17.4%)	
Mode of delivery	SVD	128 (73.1%)	199 (57.7%)	327 (62.9%)	<0.001
	CS	19 (10.9%)	31 (9%)	50 (9.6%)	
	Instrumental vaginal delivery	28 (16%)	115 (33.3%)	143 (27.5%)	
Fetal presentation	Vertex	166 (94.9%)	329 (95.4%)	495 (95.2%)	0.799
	Others*	9 (5.1%)	16 (4.6%)	25 (4.8%)	
Duration of labor	≤12 hours	156 (90.7%)	263 (76.9%)	419 (81.5%)	<0.001
	>12 hours	16 (9.3%)	79 (23.1%)	95 (18.5%)	

* Breech, shoulder and face

Obstetric and medical complications characteristics

Around 21% (37) of advanced aged women had complication during pregnancy compared with 14.5% (50) of adult aged women. Complications during labor-delivery were significantly more common among advanced aged 40 (22.9%) than adult aged women 56 (16.2%). Similarly, significant percentage of advanced aged women 19.4% (34) had chronic medical illness compared to 6.7% (23) of adult aged women (Table-3).

Table 3: Obstetrics and medical complications characteristics of mothers who gave birth in Awi Zone Public Hospitals, Northwest Ethiopia: 2020

Variables		Advanced age (n=175)	Adult age (n=345)	Total (n=520)	
		Frequency (%)	Frequency (%)	Frequency (%)	p-value
Complication during pregnancy	Yes	37 (21.1%)	50 (14.5%)	87 (16.7%)	0.035
	No	138 (78.9%)	295 (85.5%)	433 (83.3%)	
Complication during labor-delivery	Yes	40 (22.9%)	56 (16.2%)	96 (18.5%)	0.046
	No	135 (77.1%)	289 (83.8%)	424 (81.5%)	
Type of complication during pregnancy and labor-delivery[R]	Pregnancy induced hypertension	18 (10.28%)	25 (7.24%)	43 (8.26%)	0.321
	PROM	12 (6.85%)	20 (5.79%)	32 (6.15%)	0.514
	Prolonged labor	13 (7.42%)	24 (6.95%)	37 (7.11%)	0.150
	Obstructed labor	4 (2.28%)	4 (1.15%)	8 (1.53%)	0.442
	PPH	14 (8%)	21 (6.08%)	35 (6.73%)	0.502
	Others*	7 (4%)	6 (1.73%)	13 (2.5%)	0.156
Chronic medical illness	Yes	34 (19.4%)	23 (6.7%)	57 (11%)	<0.001
	No	141 (80.6%)	322 (93.3)	463 (89%)	
Type of chronic	Chronic HTN	7 (4%)	5 (1.4%)	12 (2.3%)	0.917

medical disease[R]	Pregestation DM	5 (2.8%)	2 (0.57%)	7 (1.3%)	0.798
	Renal disease	7 (4%	3 (0.86%)	10 (1.9%)	0.462
	Anemia	14 (8%)	8 (2.3%)	22 (4.2%)	0.627
	Others[a]	1 (0.57%)	5 (1.4%)	6 (1.1%)	0.023

[*]APH and chorioamnionitis, [a]Asthma and tuberculosis, [R]More than one choice possible

Newborn characteristics

Independent t-test showed that a significant different between the mean (±SD) birth weight of advanced aged and adult mothers newborns (3005.71 (±44.89) vs 3118.26 (±27.21) gram respectively). There were six perinatal death among advanced aged mothers while five cases among adult aged mothers. However, the difference is not significant. Of identified causes of perinatal death, prematurity and asphyxia accounts 9.1% and 36.4% respectively. Significant percent of newborn born from advanced aged women 33 (18.9%) had low first minute Apgar score compared to 36 (10.4%) adult aged women newborns. In addition, significant proportion of newborns of advanced aged mothers 36 (20.6%) were admitted to NICU compared with 46 (13.3%) newborns of adult aged mothers (Table-4).

Table 4: Newborn characteristics of mothers who gave birth in Awi Zone Public Hospitals, North west Ethiopia: 2020

Variables		Advanced age (n=175)	Adult age (n=345)	Total (n=520)	
		Frequency (%)	Frequency (%)	Frequency (%)	p-value
Sex of the newborn	Male	98 (56%)	192(55.7%)	290 (55.8%)	0.940
	Female	77 (44%)	153 (44.3%)	230 (44.2%)	
Outcome of the newborn	Alive	169 (96.6%)	340 (98.6%)	509 (97.9%)	0.138
	Dead	6 (3.4%)	5 (1.4%)	11 (2.1%)	
Type of death	Still birth	3 (50%)	4 (66.7%)	3 (50%)	0.740
	Immediate neonatal death	3 (50%)	1 (37.3%)	3 (50%)	
Cause of death	Prematurity	0	1 (20%)	1 (9.1%)	0.251
	Asphyxia	2 (33.3%)	2 (40%)	4 (36.4%)	0.819
	Unknown cause	4 (66.7%)	2 (40%)	6 (54.5%)	0.376
Weight in gram	Mean ±SD	3005.71±44.89	3118.26±27.21	3081.15±537.2	0.024
Weight for gestational age of the newborn	SGA	12 (6.9%)	15 (4.3%)	27 (5.2%)	0.458
	AGA	156 (89.1%)	314 (91%)	470 (90.4%)	
	LGA	7 (4%)	16 (4.6%)	23 (4.4%)	
First minute Apgar	<7	33 (18.9%)	36 (10.4%)	69 (13.3%)	0.007
	≥7	142 (81.1%)	309 (89.6%)	457 (86.7%)	
Fifth minute Apgar	<7	8 (4.6%)	9 (2.6%)	17 (3.3%)	0.234
	≥7	167 (95.4%)	336 (97.4%)	503 (96.7%)	
NICU admission	Yes	36 (20.6%)	46 (13.3%)	82 (15.8%)	0.032
	No	139 (79.4%)	299 (86.7%)	438 (84.2%)	
Reason of	Prematurity	9 (25%)	8 (17.4%)	17 (20.7%)	0.399

NICU admission[R]	Sepsis	4 (11.1%)	5 (10.9%)	9 (11%)	0.972
	Asphyxia	23 (63.9%)	34 (73.9%)	57 (69.5%)	0.328
	Others[*]	5 (13.9%)	5 (10.9%)	10 (12.2%)	0.678
Neonatal outcomes	Un-favorable	51 (29.1%)	50 (14.5%)	101 (19.4%)	<0.001
	Favorable	124 (70.9%)	295 (85.5%)	419 (80.6%)	

[R]More than one answer possible, [*]Respiratory distress and hypothermia

Adverse neonatal outcomes

Prevalence of adverse neonatal outcome among advanced aged women was 29.1% (95% CI: 22.9, 36.0), compared with 14.5% (95% CI: 10.7, 18.3) among adult aged women (figure-3). Overall, prevalence of adverse neonatal outcome was 19.4% (95% CI: 15.8, 22.9).

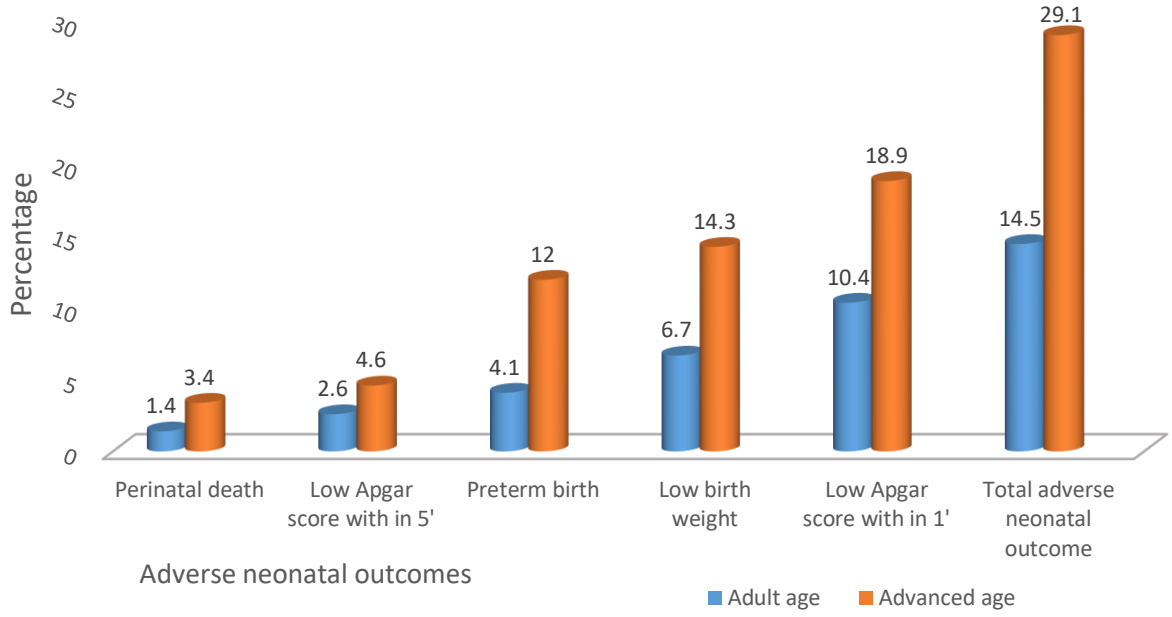


Figure 3: Adverse neonatal outcomes among adult and advanced age mothers who gave birth at Awi zone public hospitals, Northwest Ethiopia: 2020

Factors associated with adverse neonatal outcomes

Binary logistic regression was employed to evaluate the association between different sociodemographic, obstetric and medical related variables with adverse neonatal outcomes. Accordingly, maternal age, residence, maternal educational status, ANC follow up, tetanus toxoid vaccination, iron folate supplementation, birth interval, previous bad obstetrical history, complication during recent pregnancy and labor-delivery were variables which had p-value ≤

0.25. Then, these variables were further analyzed with multivariable logistic regression using backward likelihood ratio method. But, only five variables were appeared in the final step of the model (Table-5).

Model fitness was tested with Hosmer and Lemeshow Goodness of Fit test and fit with p-value >0.8. In addition, there was no problem of interaction effect and multicollinarity among explanatory variables, variance inflation factor <2 for all variables.

After adjusting known confounding variables, the odds of adverse neonatal outcomes among advanced aged women were 2.01 times higher when compared with adult aged women (AOR=2.01, 95% CI: 1.06, 3.79 with p-value=0.030). In relation, the likelihood of adverse neonatal outcomes among women who had no formal education were 2.75 times higher when compared with women who had secondary and above educational level (AOR=2.75, 95% CI: 1.27, 5.95 with p-value=0.010). In addition, women who had short birth interval (<24months) were 2.25 times more likely to have adverse neonatal outcomes when compared with their counterparts (AOR=2.25, 95% CI: 1.07, 4.73 with p-value=0.031). Moreover, the odds of adverse neonatal outcomes among women who had complications during pregnancy were 2.12 times higher when compared with their counterparts (AOR=2.12, 95% CI: 1.10, 4.10 with p-value=0.025) (Table-5).

Table 5: Logistic regression to identify factors associated with adverse neonatal outcomes among adult age and advanced age mothers who gave birth in Awi Zone public hospitals, Northwwest Ethiopia: 2020

Variables		Adverse neonatal outcomes				
		Frequency (%)		COR (95% CI)	AOR (95% CI)	p-value
		Yes	No			
Maternal age	Advanced 35+	51(29.1)	124(70.9)	2.42(1.55, 3.77)	2.01(1.06, 3.79)	0.030*
	Adult (20-34)	50(14.5)	295(85.5)	1	1	
Residence	Urban	42(14)	257(86)	1	-	
	Rural	59(26.7)	162(73.3)	2.22 (1.43, 3.46)	-	-
Maternal educational status	Illiterate	51(29.8)	120(70.2)	2.95(1.66, 5.23)	2.75(1.27, 5.95)	0.010**
	Primary	20(12.6)	139(87.4)	2.26(1.36, 3.77)	2.01(0.96, 4.20)	0.063
	Secondary and above	30(15.8)	160(84.2)	1	1	
Bad obstetric history	Yes	24(31.6)	52(68.4)	2.04 (1.14, 3.64)	-	-
	No	47(18.4)	208(81.6)	1	-	
ANC follow up	Yes	94(18.4)	416(81.6)	0.09(0.02, 0.38)	-	-
	No	7(70)	3(30)	1	-	

Iron folate	Yes	90(18.5)	396(81.5)	0.47(0.22, 1.01)	-	-
	No	11(32.4)	23(67.6)	1	-	
TT vaccine	Yes	87(17.8)	401(82.2)	0.27(0.13, 0.58)	-	-
	No	14(43.8)	18(56.2)	1	_	
Birth interval	<24 months	15(31.3)	33(68.8)	1.83(0.93, 3.60)	2.25(1.07, 4.73)	0.031*
	≥24 months	56(19.9)	226(80.1)	1	1	
Complication during pregnancy	Yes	29(33.3)	58(66.7)	2.50(1.50, 4.18)	2.12(1.10, 4.10)	0.025*
	No	72(16.6)	361(83.4)	1	1	
Complication during labor and delivery	Yes	29(30.2)	67(69.8)	2.11 (1.27, 3.50)	1.85(0.94, 3.64)	0.073
	No	72(17)	352(83)	1	1	

* Significant at P<0.05, ** Significant at P<0.02

5. Discussion

The overall prevalence of adverse neonatal outcome was 19.4% (95% CI: 15.8, 22.9). This figure is in agreement with studies conducted in South Nation and Nationality of People [20], Gondar [15] and Tigray [57]. This could implicated that adverse neonatal outcome is still a public health threat and efforts should be addressed. In addition, this study finding is higher than finding of study done in Kembata Tembaro Zone [71]. Nearly 95% of study participants of study done in Kembata Tembaro Zone were adult aged women. Pregnancy of adult aged women is less likely to have adverse neonatal outcomes. However, this result is lower than findings of studies done in Gurage Zone [61], North Wollo Zone [58] and Dessie [60]. In all these studies, adolescent women were included as study participants, in turn adolescent pregnancies were significantly increased risk of adverse neonatal outcomes [72]. Consistently, this finding is also lower than result of similar study done in Jima [32]. This could be due to currently there is improvement of family planning and perinatal care service provision when compared to the service given in 2016 (where the study was done) as evidenced with Ethiopian Mini Demographic Health survey 2019 report [64].

The prevalence of adverse neonatal outcome among advanced aged women was significantly higher compared with adult aged women. This finding is in agreement with result of studies held in Denmark [34], Japan [37], Australia [10] and Jima [32]. This is due to the evidence that AMA is associated with a range of obstetrical complications and medical comorbidities which in turn predispose to different adverse neonatal outcomes [3, 40].

In regarding to specific adverse neonatal outcomes, significant proportion of advanced aged women (12%) had preterm birth when compared to (4.1%) adult aged women. It is supported with results of studies conducted in Turkey [30], United Kingdom [3], Italy [38], Finland [41] and Tigray [33]. This is due to the reason that the risk of developing medical and obstetrical complications could be increased when age of the mothers advances [14, 22]. These co-morbidities may also associated with increased risk of early labor induction or pregnancy termination [73]. Similarly, higher proportion of advanced aged women (14.3%) had LBW when compared to (6.7%) adult aged women. This result is consistent with studies done in Australia [22], a meta-analysis in Portugal [35], Taiwan [36] and South Africa [6]. This may be due to the evidence that AMA is associated with increased risk of co-morbidities such as chronic

hypertension, pregnancy induced hypertension and placenta abruption, which in turn causes placental insufficiency, preterm labor, IUGR, small for gestational age and other poor obstetric outcomes [11, 31, 38].

Furthermore, this study also showed that babies born among advanced aged women had lower first minute Apgar score compared babies born from adult aged women. This figure is in track with studies done in South Korea [21], Sweden [28] and meta-analysis done in Portugal [35]. It is evidenced that, AMA is at increased risk of medical and obstetric complications. So that, neonatal morbidity like prematurity, poor fetal growth and LBW are more common in advanced aged women which increased risk of birth asphyxia or low Apgar score [14, 74].

Maternal age was significantly associated with adverse neonatal outcomes. It was found that advanced aged women were more likely to have adverse neonatal outcome compared to adult aged women. This result is in line with studies conducted in Developing countries birth registry [43], Sweden [28], United Kingdom [40], Poland [27], Hawassa [20] and Debre Tabor [18]. The possible explanation could be the fact that, AMA is one of the non-modifiable risk factors for different adverse neonatal outcomes including preterm birth, LBW and still birth. In addition, it could be related to ageing process alone or increased risk of coexisting factors such as multiple gestation and chronic medical conditions [14, 74] as well as obstetrical complications including preeclampsia, preterm labor, placental abruption and IUGR [5, 49].

Concerning to maternal education, the odds of adverse neonatal outcomes among women who had no formal education were higher when compared with women who had secondary and above educational level. This result is in line with findings of studies held in United States of America [47], China [49], Debre Tabor [18] and North Wollo Zone [62]. This is could be due to the relationship between non-education with low resource for income which leads to traditional dietary practice and low decision power to access good quality of maternal health services [75]. In addition, uneducated women could be unaware to attend ANC and institutional delivery, less likely to carry out essential newborn care (like breast feeding) and dietary behavioral modifications [76, 77].

According to the present study, women who had short birth interval (<24 months) was associated with adverse neonatal outcome. This is supported with findings of studies done in Bangladesh [46], Afghanistan [50], Turkey [48], Egypt [56] and Tigray [63]. This could be due to the fact

that, short birth interval is associated with inadequate iron folate and other nutrient replenishment which leads to anemia and nutrient depletion [78, 79]. Furthermore, short birth interval could not allow sufficient time to recover from the stress of the previous pregnancy, associated with cervical insufficiency and placental abruption that increases multiple adverse neonatal outcomes like LBW, IUGR, preterm birth, small for gestational age and perinatal death [46, 80, 81].

Complication during pregnancy was also significantly associated with adverse neonatal outcomes. This finding is consistent with results of studies done in China [82], Uganda [52], Nigeria [54], Kenya [83], Gurage Zone [61], Gondar [15], Tigray [57] and Jima [17] and systematic review done in Ethiopia [42]. This could be due to most complications are associated with decreased placental nutrient, which results placental insufficiency [84]. It is evidenced that different obstetric complications were associated with LBW, preterm birth and perinatal death [85]. In addition, some life threatening pregnancy complications may be lead to obstetric interventions regardless of gestational age [86].

Limitation of the study

This study shares the limitation of cross sectional study that may not indicate causal relationship. In addition, as the study was done in hospital setting, neonatal outcome of women who gave birth at home was not assessed. Finally, our study misses adverse neonatal outcomes after 24hr of birth.

6. Conclusion

Generally, one out of five neonates develop adverse neonatal outcomes. Thus, odds of adverse neonatal outcomes among advanced aged women were higher when compared to adult aged women. In adding this, substantial proportion of preterm birth, LBW and newborn with low first minute Apgar score were seen among advanced aged women when compared to adult aged women. No formal education, short birth interval and complications during pregnancy were also significantly associated with adverse neonatal outcomes.

7. Recommendations

- Ethiopian Ministry of Education and their stake holders should give:
  - ✓ Equal access of education and promotion for all women
- To Ethiopian Ministry Health and Amhara Regional Health Bureau with their stake holders should focus on:-
  - ✓ Provision of family planning service for all reproductive aged women to prevent AMA pregnancy and increase birth interval
  - ✓ Provision of perinatal for all reproductive age women
    - Early detection and management of complications
- To health care providers should:-
  - ✓ Provide family planning and perinatal care service regarding to the protocol for all reproductive aged women
  - ✓ Give evidence based counseling to advanced aged women to securely choose during between the ages of 20 and 34 years old to achieve their desired family size
- To researchers:-
  - ✓ Finally, longitudinal study evaluating neonatal outcomes regardless of delivery setting and even after 24 hours of life is recommended.

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Appendix

Appendix-I Declaration

Author

This thesis proposal is my original work and has not been presented for award of MSc Degree or for any similar purpose in any other institutions.

Temesgen Getaneh Signature: _____ Date: _____

Advisors:

This thesis proposal has been submitted for review with my approval as University supervisor.

Mrs. Azezu Asres Signature: _____ Date: _____

Mrs. Toyba Hiyaru Signature: _____ Date: _____

Mrs. Selamawit Lake Signature: _____ Date: _____

Appendix-II principal investigator assurance

I certify that the statements herein are true, complete, and accurate to the best of my knowledge. I certify that individuals or organizations named herein are aware of their planned or potential involvement. I agree to accept responsibility for the scientific conduct of this research and to provide the required progress reports if needed.

Temesgen Getaneh Signature----------date -------

Appendix- III Information sheet and consent form

Introduction: Hello, how are you? My name is _____. I am working as data collector in a survey conducted by Temesgen Getaneh at Awi Zone public hospitals. The research supported in collaboration of Bahir Dar University, College of Medicine and Health Sciences, Midwifery Department to assess adverse neonatal outcomes and its associated factors among adult and advanced maternal age pregnancy at Awi zone, public hospitals, Ethiopia 2020. You are invited to participate in this study and I kindly request your active involvement in this survey in order to provide me the necessary information. So thank you for your contribution.

Study topic-adverse neonatal outcomes and its associated factors among adult and advanced maternal age pregnancy at Awi zone, Ethiopia 2020

Objective of the study-to assess adverse neonatal outcomes its associated factors among adult and advanced maternal age pregnancy at Awi zone public hospitals, Ethiopia 2020

Study period- February 25 to March 25/2020

Process of study: as part of this study different questions are prepared to be completed by you. For unclear questions, if you need clarification you can ask any time. Since your participation in this survey is totally depends on your voluntary basis you have the full right to refuse, to participate and to stop at any time. To complete these questions at list it takes 20-25 minutes.

Advantage and disadvantage: There is no payment or any special privilege given for your participation in this study but your honest answer to these questions is very important to complete this study that will have impact on reduction of neonatal morbidity and mortality. Also you are not obliged to participate or give information you don't want. If you are not feeling good any time, please don't worry to ask to stop the procedure.

Confidentiality: Certainly I assure that your name or your newborn baby's name will not be mentioned/ recorded anywhere. The confidentiality of the information you provided to me will be maintained and couldn't be accessed by third party but it's used for the purpose of research only and burnt by the end of the survey.

If you have any questions regarding this study, you can call me with **0924267981,** even you can call for institutional review board with phone number.....

Could I have your permission to continue? Yes ☐ No ☐

Signature of the data collector certifying that informed consent has been given verbally by respondent_____

Questionnaire code_____

Data collector name _____Signature _____Date of data collection_____

Checked by supervisor; Name _____Signature_____

Name of health facility_____

Appendix- IV English version Questionnaires and checklists template

English version Questionnaires

Part-1: sociodemographic characteristics			
S.No	Variables	Response	Skip to
101.	Age	--------years	
102.	Residence	1. Urban 2. Rural	
103.	Marital status	1. Married 2. Unmarried 3. Divoreced 4. Widowed	
104.	Educational status	1. No education 2. Primary education 3. Secondary education 4. Above secondary	
105.	Ethnicity	1. Amhara 2. Benishagul 3. Oromo 4. Others (specify)_____	
106.	Religion	1. Orthodox 2. Protestant 3. Muslim 4. Others, specify_____	
107.	Occupation	1. House wife 2. Farmer 3. Government employee 4. Private employee 5. Merchant 6. Others (specify) _____	
108.	If married, your husband's occupation	1. Farmer 2. Government employee 3. Private employee 4. Merchant 5. Others (specify)_____	
109.	Household monthly income (write in Ethiopian birr (ETB))	_____ ETB	
Part-2 life style and medical history related factors			
201.	Did you drink alcohol during this pregnancy?	1. Yes 2. No ⟹	203
202.	If yes for Q201, how many liters per day?	----------in number	
203.	Did you smoke cigarette during this pregnancy	1. Yes 2. no ⟹	205
204.	If yes for Q203, how many packet per week you smoke?	_____in number	
205.	Did you have chronic medical disease?	1. Yes 2. No ⟹	207
206.	If yes for Q. No 205---what type of pre-pregnancy disease?(more than one answer possible)	1. Hypertension 2. Diabetic mellitus 3. Chronic renal disease 4. Anemia	

		5. Others, specify_____	
207.	Mothers middle upper arm circumference	1. 21 cm and above 2. Less than 21 cm	
208.	Maternal RH status	1. RH positive 2. Rh negative	
Part-3 obstetric history of the respondents			
301.	Gravidity?	_____in number	
302	Parity?	_____in numbers	
303	Birth interval?	----------in months or years	
304	Number pregnancy?	1. Singleton 2. Twin 3. Triple and above	
305	Did you have bad obstetric history?	1. Yes 2. No ⟹	307
306	If yes for Q 305, what type of bad obstetric history? (More than one answer possible)	1. Recurrent spontaneous abortion 2. Still birth 3. Early neonatal death 4. Others, specify……	
307	What was the status of the last pregnancy?	1. Planned, wanted 2. Unplanned, wanted 3. Unplanned, unwanted	
308	Did you attend pregnancy checkups/ANC for this pregnancy?	1. Yes 2. No ⟹	311
309	If yes for Q309, at what gestational age you started ANC?	_____months _____weeks	
310	If yes for Q309, how many times did you received ANC?	_____in numbers _____don't know	
311	Did you receive tetanus injection last pregnancy?	1. Yes 2. No ⟹	314
312	If yes for question NO.311. During your last pregnancy, how many times did you receive tetanus injection?	_____ in numbers	
313	Have you received Iron and folic acid supplementation During your last pregnancy?	1. Yes ----------in month 2. No	
314	If yes for how many months	------months	
315	Did you get any complication during last pregnancy?	1. Yes 2. No ⟹	317
316	If yes for Q. No 315 what type complication did you get? (more than one answer possible)	1. Preeclampsia (<160/110) 2. Severe preeclampsia 3. Eclampsia 4. Antepartum hemorrhage 5. Premature rapture of membrane 6. Others, specify _____	
317	Did your spouse/partner came to health facility for antenatal care purpose during the last pregnancy?	1. Yes 2. No	
Checklists template			
Part-1 obstetric history related factors chart review checklist questions			
101	At what gestational age she delivered this neonate?	_____weeks of gestation	
102	The onset of labor?	1. Spontaneous 2. Induction	
103	What was the delivery type/mode of delivery?	1. Spontaneous vaginal delivery	

		2. Elective caesarean Section 3. Emergency cesarean section 4. Forceps delivery 5. Vacuum extraction 6. Other procedures _____	
104	What was the presentation of the fetus during delivery?	1. Vertex prsentation 2. Breech presentation 3. Shoulder presentation 4. Face presentation 5. Other(specify) _____	
105	Total time duration from initiation of labor to delivery?	_____ hours	
106	Did you get any complication during this delivery?	1. Yes 2. No ⟹	Part2
107	If yes for Q-107, what type of complication (more than one answer possible)?	1. Obstructed labor 2. Prolonged labor 3. Post-partum hemorrhage 4. Others specify----	
Part-2 Neonatal outcomes chart review checklist questions			
201	What was the general neonatal outcome status?	1. unfavorable 2. Favorable	
202	What is the sex of the newborn baby?	1. Male 2. Female	
203	What was the newborn outcome?	1. Alive ⟹ 2. Dead	206
204	If dead, what was the type?	1. Still birth 2. Immediate neonatal mortality	
205	If neonatal mortality, what was the cause?	1. Prematurity 2. Infection 3. Asphyxia 4. Others, specify_____	
206	What was the birthweight of the baby (in grams)?	_____ grams	
207	What was the weight of newborn to gestational age?	1. Small for gestation 2. Appropriate for gestation 3. Large for gestation	
208	APGAR score 1st minute after birth	_____(write the score)	
209	APGAR score 5th minute after birth	_____(write the score)	
210	Does the newborn had any form of gross congenital malformation?	1. Yes 2. No ⟹	212
211	If yes for Q-210, what was the type/diagnosis of malformation? (more than one answer possible)	1. Hydrocephalus 2. Anencephaly 3. Spinal bifida 4. Others, specify	
212	Was the newborn admitted to NICU?	1. Yes 2. No ⟹	216
213	If yes for Q-214, what was the reason for the NICU? (more than one answer possible)	1. Prematurity 2. Infection 3. Asphyxia 4. Other (specify) _____	

THE END!!! THANK YOU FOR YOUR TIME!!

<u>አማረኛ ቅጅ</u>

ተጨማሪ መረጃ-1 የሰነድ ማረጋገጫ

<u>ተመራማሪዉ</u>

ይህ የምርምር ንድፈ ሀሳብ የራሴ፣ ትክክለኛ ስራ እና ሌላ ቦታ ሁለተኛ ዲግሪ ለማግኘት ወይም ለሌላ አላማ ያልቀረበ መሆኑን አረጋግጣለዉ።

ተመስገን ጌታነህ ፊርማ----------ቀን-------

<u>አማካሪወች</u>

ይህ የምርምር ነድፈ ሀሳብ እንደ ዩኒበርስቴ አማካሪ ገቢ ተደርጎልኝ ክለሳ ማድረጌን አረጋግጣለዉት።

ወ/ሮ አዘዙ አስረስ ፊረማ----------ቀን---------

ወ/ሮ ጦይባ ሀያሩ ፊረማ----------ቀን----------

ወ/ሮ ሰላማዊት ላቀ ፊረማ----------ቀን----------

ተጨማሪ መረጃ-2 የዋና ተመራማሪዉ ዋስትና ማረጋገጫ

ከዚህ ፅሁፍ ላይ ያሉ መግለጫወች በሙሉ እኔ እስከማቀዉ ድረስ እዉነት፣ ትክክል እና የተሙአሉ መሆናቸዉን አረጋግጣለዉ። ከዚህ ጥናት ላይ ስማቸዉ የተካተቱ ግለሰቦች ወይም ድርጅቶች ተሳትፎአቸዉን እና እቅዳቸዉን እነደሚዉቁ አረጋግጣለዉ። ይህን ሳይንሳዊ ጥናት ለመስራት ሙሉ ሀላፊነት እንደምወስድ እና የጥናቱን ሪፖርት በሚፈለግበት ጊዜ እንደማቀርብ በሙሉ እምነት አረጋግጣለዉ።

ተመስገን ጌታነህ ፊርማ----------ቀን-------

ተጨማሪ መረጃ-3 የመረጃ ቅፅና የስምምነት መጠይቅ

ባህዳር ዩኒቨርስቲ፣ ህክምና ጤና ሳይንስ ኮሌጅ፣ሚድዊፈሪ ት/ት ክፍል

መግቢያ፡- እንዴት ነዎት? እኔ ስሜ ----------ይባላል:: አቶ ተመስገን ጌታነህ በአዊ ዞን በሚሰራው ጥናት የመረጃ ሰብሳቢ ነኝ። ጥናቱ በ ባህዳር ዩኒቨርስቲ፣ ህክምና ጤና ሳይንስ ኮሌጅ፣ሚድዊፈሪ ት/ት ክፍል ትብብርና ድጋፍ በአዊ ዞን የመንግሰት ሆስፒታሎች እድሚቸዉ ከገፉ እናቶች የሚወለዱ ጨቅላ ህፃናት የሚጋጥሙአቸዉ ችግሮች በሚል ይካሄዳል ። እርስዎ በዚህ ጥናት ተሳታፊ እንዲሆኑ ተጋብዘዋል ። እናም በዚህ ጥናት ንቁ ተሳትፎ እነዲደረጉ በትህትና እጠይቃለዉ። >ሚያደርጉት አስተዎፅኦ ከልብ አመሰግናለሁ።

<u>የጥናቱ ርዕስ፡-</u> በአዊ ዞን የመንግሰት ሆስፒታሎች እድሚቸዉ ከገፉ እናቶች የሚወለዱ ጨቅላ ህፃናት የሚጋጥሙአቸዉ ችግሮች

<u>የጥናቱ አላማ፡-</u> በአዊ ዞን የመንግሰት ሆስፒታሎች እድሚቸዉ ከገፉ እናቶች የሚወለዱ ጨቅላ ህፃናት የሚጋጥሙአቸዉ ችግሮች ለመለየት

የጥናቱ ጊዜ፡ ከየካቲት 25-ማርች 25/2020

የጥናቱ ሂደት ፤-ለዚህ ጥናት መሳካት በቀጥታ ግንኙነት ያላቸው የተለያዩ መጠይቆች ተዘጋጅተዋል። ለማቀርባቸው ጥያቄዎች ተጨማሪ ማብራሪያ ከፈለጉ በማንኛውንም ግዜ መጠየቅ ይችላሉ:: ተሳትፎወት በፈቃደኝነት ላይ የተመሰረተ ስለሆነ በማነኛውም ሰአት ማስቆም ወይም ማቁአረጥ ይችላሉ። ለምጠይቅዎ ጥያቄ የሚያምኑበትንና ትክክለኛ መልስዎን እንዲሰጡኝ እጠይቃለዉ:: ይህ መጠይቅ ለማጠናቀቅ ቢበዛ ለ20-25 ደቂቃ አብረን እንቆያለን።

<u>የጥናቱ ጥቅምና ጉዳት፡-</u> በዚህ ጥናት በመሳተፍዎ የሚከፈለወት ክፍያ ወይም ቀጥተኛ ጥቅም አያገኙም ። ግን የእርስዎ እውነተኛ መልስ ለዚህ ጥናት አላማ በጣም ጠቃሚ ነው። በተጨማሪም በጥናቱ በመሳተፍዎ ምንም አይነት ችግር ወይም ጉዳት እንደማደርስበወት አረጋግትለወታለዉ$ መመለስ ያፈለጉትን ጥያቄ አለመመለስ ይችላሉ። እናም መጠየቁን በፈለጉት ጊዜ ካልተመችዎት ማስቆም ይችላሉ።

<u>ሚሲጢራዊነት፡-</u> በመጠይቁ ላይ ½እርስዎ እና የልጅዉ ስም አይመዘገብም። እርስዎ የሰጡን መረጃ የሚወለዉ ለጥናቱ አላማ ብቻ ነዉú$ ከጥናቱ አጥኝ በስተቀር ለሌላ ተላልፎ አይሰጥም።

ጥናቱን በተመለከተ ጥያቄ ካለዎት በ0924267981 ስልክ ቁጥር መደወል ይችልሉ:: በተጨምሪም ለባህርዳር ዩኒቨርስቲ የጥናት ስነምግባር ኮሚቴ በ----------ስልክ ቁጥር መደወል ይቻላሉ።

- መጠየቁን ለመሙላት ይስማማሉ ይስማሙም
- ተሳታፊወች የቃል ስምምነት ማድረጋቸዉን የ ረጋገጡለ ረጃ ሰብሳቢዉ ፊርማ----------

  የመጠይቁ መለያ ቁጥር ----------

  የጠያቂው ስም---------- ፊርማ----------መጠይቁ የተሞላበት ቀን ----------

  ያረጋገጠው ሱፐርቫይዘር ስም----------

ተጨማሪ መረጃ-4 የአማረኛ ቅጂ መጠይቆች እና ከመዝገብ የሚወሰዱ መረጃወች ቅፅ

የአማረኛ ቅጂ መጠይቆች

ክፍል 1. የተጠያቂ ማህበራዊ ባህሪያት በተመለከተ የሚጠየቁ ጥያቄዎች			
ተ.ቁ	**ጥያቄዎች**	**መልስ**	ይዘለል
101.	እድሜ	_____አመት	
102.	መኖሪያ ቦታ	1. ከተማ 2. ገጠር	
103.	የጋብቻ ሁኔታ	1. ያገባች 2. ያላገባች 3. አግብታ የፈታች 4. የሞተበት	
104.	የትምርት ሁኔታ	1. ያልተማረች 2. አንደኛ ደረጃ የተማረች 3. ሁለተኛ ደረጃ የተማረች 4. ከሁለተኛ ደረጃ በላይ የተማረች	
105.	ጎሳ /ብሄር	1. አማራ 2. ቤኒሻንጉል 3. ኦሮሞ 4. ሌላ(ይግለጹ)_____	
106.	ሃይማኖት	1. ኦርቶዶክስ 2. ፕሮቴስታንት 3. ሙስሊም 4. ሌላ (ይግለጹ) _____	
107.	ሥራ	1. የቤት እመቤት 2. አርሶ አደር 3. የመንግስት ተቀጣሪ 4. የግል ተቀጣሪ 5. ነጋዴ 6. ሌላ (ይግለጹ)_____	
108.	ያገቡ ከሆነ የባለቤትወ ሥራ	1. አርሶ አደር 2. የመንግስት ተቀጣሪ 3. የግል ተቀጣሪ 4. ነጋዴ	

		5. ሌላ (ይግለጹ)_____	
109.	የእርስዎ ቤተሰብ ወርሃዊ ገቢ (በኢትዮጲያ ብር ይገለፅ)	----------ብር	
ክፍል 2. የአኑኑር ዘይቤ እና ለረጅም ጊዜ የሚቆይ በሽታ የተያያዙ መጠየቆች			
201	በአሁኑ እርግዝና አለኮል ጠጥተዉ ያዉቃሉ	1. አወ 2. የለም ⟹	**203**
202	መልሱ አወ ከሆነ፣ በቀል ምን ያክል ሊትር ይጠጣሉ	---------በቁጥር	
203	በአሁኑ እርግዝና ሲጋራ አጭሰዉ ያዉቃሉ	1. አወ 2. የለም ⟹	**205**
204	መልሱ አወ ከሆነ፣ በሳምንት ስንት አሽግ ያጨሳሉ	----------በቁጥር	
205	ከእርግዝና በፊት ለረጅም ጊዜ የሚቆይ ህመም አለብወት	1. አወ 2. የለም ⟹	**207**
206	ለጥያቂ 201 አወ ከሆነ፣ ምን አይነት ህመም ነዉ(ከአንድ በላይ መልስ ይቻላል)	1. ደም ግፊት 2. የስኪር በሽታ 3. የኩላሊት በሽታ 4. የደም ማነስ 5. ሌላ ይገለፅ---	
207	የእናቲቱ የላይኛዉ ክንድ መሀል ዙሪያ	1. 23 ሴንቲሜትር እና ከዛ በላይ 2. ከ23 ሴንቲሜትር በታች	
208	የእናቲቱ የደም አይነት	1. ፖዘቲቭ 2. ነገቲቭ	
ክፍል 3. ስለ ፅንስ እና የወሊድ ታሪክን በተመለከተ መጠየቆች			
301.	የአሁኑን እርግዝና ጨምሮ ስንት ጊዜ አርግዘሽ ታውቂያለሽ (ከሰባት ወር በፊትን ሁሉንም)?	----------በቁጥር	
302.	ሰባት ወር ከሞላዉ በሁላ ስንት ጊዜ ወልደዉ ያዉቃሉ (ይህንን ጨምሮ)?	----------በቁጥር	
303.	ከዚህ በፊት ከወለዱ ስንት ጊዜ ሆነወት	--------በወር	
304.	እርግዝነዉ ስንት ነዉ	1. አነድ ፅንስ 2. ሁለት ፅንስ 3. ሶስት እና ከዛ በላይ ፅንስ	
305.	ከአሁን በፊት በነበረዉ እርግዝና ያጋጠመወት ችግር ነበረ	1. አዎ, 2. የለም ⟹	307
306.	ለጥያቂ 305 መልስወት አወ ከሆነ፣ ምን አጋጥመወት ያወቃል?(ከአንድ በላይ መልስ ይቻላል)	1. 3 እና ከዛ በላይ ለተከታታይ ማስወረድ 2. ፅንሱ ማህጸን ወስጥ ሙቶ መዉጣት 3. ከተወለደ በሃላ በ7 ቀናት መሞት 4. ሌላ ካለ ይጠቀስ----------	
307.	ያሁኑን እርግዝና	1. አቅደሽበትና ፈልገሽዉ 2. ያልታቀደ ግን የሚፈልግ 3. ያልታቀደ ያልተፈለገ	
308.	በአሁኑ የእርግዝና ወቅት፣ የቅድመ ወሊድ እንክብካቤ/ክትትል አድርገሽ ነበር	1. አወ 2. የለም ⟹	311
309.	ለጥያቄ 308 አወ ከሆነ መለሱ፣ ክትትል ሲጀምሩ እርግዝናዉ ስንተኛ ወር ወይም ሳምንት ነበር	-------ወር -------ሳምንት	
310.	ለጥያቄ 308 አወ ከሆነ መለሱ፣ ስንት ጊዜ ክትትል አደረጉ	በቁጥር------ አላስታዉስም-----	
311.	በዚህ የእርግዝና ወቅት፣ የቴታነስ መከላከያ ክትባት በክንድሽ ተሰጥቶሽ ያውቃል?	1. አዎ 2. የለም ⟹	313
312.	ለጥያቂ 311 አወ ከሆነ፣ በዚህ እርግዝና ወቅት ቲታነስ መርፌ ለምን ያህል ጊዜ ነው የወሰድሽው?	_____ ጊዜ	
313.	በዚህ እርግዝና ወቅት የ” አይረን እና ፎሊክ አሲድ” (ለደም ማነስ ችግርን ለመከላከል የሚወሰድ) እንክብል መድሃኒት አግኝተሻል/ወስደሻል?	1. አዎ 2. አልወሰድኩም	

314.	መልሱ አወ ከሆነ፣ ለስነት ወር ወሰዱት	----በወር	
315.	በአሁኑ የእርግዝና ወቅት፣ያአጋጠሽ ችግር ነበር	1. አዎ 2. የለም ⟹	317
316.	ለጥያቂ 315 አወ ከሆነከአጋጠመወት ከሚከተሉት ችግሮች መካከል የትኞቹ አጋጥመወታል?(ከአንድ በላይ መልስ ይቻላል)	1. የደም ግፊት መጨመር (<160/110) 2. ከፍተኛ የደም ግፊት መጨመር 3. ራስን መሳትና መንቀጥቀጥ 4. ከብልት የሚወጣ ደም መፍሰስ(በእርግዝና ሰአት) 5. የእንሽርት ዉሀ መፍሰስ (ምጥ ከመጀመሩ ቀድሞ) 6. ሌላ፣ይጠቀስ_____	
317.	በአሁኑ የእርግዝና ወቅት፣ የቅድመ ወሊድ እንክብካቤ ክትትል ስታደርጊ ባለቤትሽ/የትዳር ጓደኛሽ አብሮሽ በህክምና ተቋም ተገኝቶ ነበር?	1. አዎ 2. የለም	
ከመዝገብ የሚወሰዱ መረጃወች			
ክፍል-1 ስለ ፅንስ እና የወሊድ ታሪክን በተመለከተ የተዘጋጁ ቅፆች			
101.	ይህ ልጅ ሲወለድ የእርግዝና እድሜዉ ስንት ነበር?	-------በሳምንት	
102.	ምጡ ሲጀምር	1. በራሱ ጊዜ 2. በምጥ ማስጀመሪያ	
103.	አሁን ሲወልዱ በምን መነገድ ነዉ የወለዱት?	1. በማህፀን በር (ያለምንም አገዛ) 2. በቀዶ ጥገና (በቀጠሮ) 3. በቀዶ ጥገና (በድንገተኛ) 4. በማህፀን በር (በመሳሪያ ታግዞ)	
104.	በምጥ ሰአት የህፃኑ አመጣጡ ምን ነበር?	1. በቅንጭላቱ (ቨርቴክስ) 2. በቂጡ 3. በትክሻዉ 4. በፌቱ 5. ሌላ፣ ይገለፅ-----	
105.	ምጡ ከጀመረ እስኪመወለድ ጠቅላላ ስነት ሰአት ሆነ?	-------ሰአት	
106.	በዚህ ምጥ እና ወሊድ ጊዜ ያጋጠመ ችግር ነበር?	1. አወ 2. የለም ⟹	ክፍል2
107.	ለጥያቄ 106 አወ ከሆነ፣ ምን አይነት ችግር ነበር (ከአነድ በላይ መልስ ይቻላል)	1. የተቀረቀረ ምጥ 2. ረጅም ሰአት ምጥ (ከሚፈቀደዉ በላይ) 3. ከወለዱ በኃላ የደም መፍሰስ ብዛት 4. ሌላ፣ ይገለፅ----	
ክፍል-2. ከጨቅላ ህፃኑ ጋር የተያያዙ መጠየቆች			
201.	የጨቅላ ህፃኑ አጠቃላይ ሁኔታዉ እነዴት ነዉ?	1. ተስማሚ ያልሆነ 2. ተስማሚ	
202.	የጨቅላ ህፃኑ ፆታ	1. ወንድ 2. ሴት	
203.	የጨቅላ ህፃኑ ዉጤት ምንድን ነዉ?	1. በህይወት ያለ ⟹ 2. የሞተ	206
204.	ለጥያቄ 203 የሞተ ከሆን፣	1. ሙቶ የተወለደ ⟹ 2. ከተወለደ በ24ሰአት ወሰጥ የሞተ	206
205.	ተወልዶ የሞተ ከሆነ፣ ምክንያቱ (ከአነድ በላይ መልስ ይቻላል)	1. መዉለጃ ሰአቱ ሳይደርስ መወለድ 2. ብክለት 3. መታፈን(በኦክስጅን እጥረት) 4. ሌላ፣ ይገለፅ------	
206.	የጨቅላ ህፃኑ ክብደት ስንት ነዉ	-----በግራም	

207.	የጨቅላ ህፃኑ ክብደት ከእርግዝና እድሜዉ ጋር ሲነፃፃር	1. ለእርግዝና እድሜዉ ያንሳል 2. ለእርግዝና እድሜዉ ትክክለኛ ነዉ 3. ለእርግዝና እድሜዉ ይበዛል	
208.	የመጀመሪያ አንድ ደቂቃ አፕጋር ዉጤት	------በቁጥር	
209.	ከተወለደ አምስት ደቂቃ ላይ አፕጋር ዉጤት	------በቁጥር	
210.	የጨቅላ ህፃኑ ላይ የሚታይ የአፈጣጠር ችግር አለበት	1. አወ 2. የለም ⇒	212
211.	ለጥያቄ 210 አወ ከሆነ፣ምን አይነት ነዉ(ከአነድ በላይ መልስ ይቻላል)	1. ቅንጭላት ዉስጥ ዉሀ መብዛት 2. ሙሉ ቅንጭላት አለመፈጠር 3. የአከርካሪ አጥንት በሽታ 4. ሌላ፣ ይገለፅ----	
212.	ህፃኑ ወደ ጨቅላ ማሞቂያ እና መቆያ ክፍል ገብቶ ነበር	1. አወ 2. የለም ⇒	መጨረሻ
213.	ለጥያቄ 214 አወ ከሆነ፣ ምክንያቱ ምነድን ነበር	1. መዉለጃ ሰአቱ ሳይደርስ መወለድ 2. ብክለት 3. መታፈን(በኦክስጅን እጥረት) 4. ሌላ፣ ይገለፅ------	

ከልብ አመሰግናለዉ!!

ድምክኒ ሜሬጂ-1 ሴአዱ ኦምንቻፂ

ማራማርስታንቲ

- እን ምርመሪው ጁፂ አሰብ ይው፡ ክችክቺ እንፅኺ እስታ እሊውዳ ቦቲዳ ለታንቴ ዲግሬ አግፅቻስ አኹኪ እሊውስ አለሚስ ዲጋያሱ አኸኞ አምንቻፂ።

ተመስገን ጌታነህ ፊርሚ …… ጌርክ ……..

<u>ኩስቻፃንትካ</u>

- እን ምርመራ ጂፂ አሳብ ዩንቨረቲው ኩስቻፃንቲ ሚፅቻፃማ ክንታ ፔፑክስታ አምንቻፂ።

ወ/ሮ አዘዙ አስረስ ፊርሚ …… ጌርክ …….

ወ/ሮ ጦቢያ ሀያሩ ፊርሚ …… ጌርክ …….

ወ/ሮ ሰላማዊት ላቀ ፊርሚ ……..ጌርክ …….

<u>ድምክኒ ሜሬጂ 2(ለታ)</u>

ዋኒ ማራማርስንታንተው እዊው ማረጋጊቺ
እንዳ ፁፍዳ ዝኩንኩ ጌሌፅካ ውለ አንቅምቦ ኪስቴ ውኒተኒ ፡ ክችክቺ እስታ ዋኽትኞኽ አኽኞ አሜንቻፂ።
እንዳ ፅናጽዳ ስም ዘራዘርስትኩ እቜ ኦኹኪ እምፕልቱ አሲቲፍኺ አስታ አለሚ አቻንታ ኦምንቻፂ። እስ ሳይንሳዌ ፅናቶ እንፃኽስትሻስ ዋኸ አላፊነቶ ካፃሙስታ እስታ ፅናቱሳ ሪፓርቶ ፋይስቲክስ ጊዝስ ዲግሰውስታ ዋኽስ እምኔትስ አምንቻፂ።

ተመስገን ጌታነህ ፊርሚ …….. ጌርክ ……..

<u>ድምክኒ ሜሬጂ 3(ሹኻ) ሜሬጂው ክፅስታ እስምምኒው ካሲ</u>

ባህርዳር ዩኒቨርስቲ ፡- እክምኒው ቲኑ ሳይንስ ኮሌጅ ሚድዋይፈሪ ክንተው ቤን

ቱፂ፡- ዴኬጽካማ ; ይው ስም ……..እስቴ አቶ ተመስገን ጌታነህ አዊ ዘንዕ እንፃኽስታው ፅናቱ ሳሜሬጂ ኩፕፃንቲኽ። ፅናትኪ ቲኑ ሳይንስ ኮሌጅ ፡ ሜድዋይፈሪ ክንተ ቤኑ አጊዝኺው ድጋፍ እድሚ ሼንኩክ ቹትካዳ ኮሜንስታንኩ ስራሰሪዳ ታምባንኩ ችግርካ አዊ ዞን መንግስቱ ሆስፒታል ካዳ ካስቻኼ። እንቱ እንስ ፅናጽሽ አሴቴፍቻታንታ ጋቢዚስቲካ ። እስታ እንስ ፅናትስ ኒኩኽስ ቴሳትፎ ፔዋንታ ኬቤርፅሻስ ካስቴ። ፔውትካየታንውስ አጊዝሺስ ወሌቴ ሼዴሽ አሜሴጌኔ ።

<u>ፅናቱ ኃሪ፡-</u> እድሚ ሺንኩክ ቹትካዳ ካሜንስታንኩ ስራሰሪዳ ታምባው ችግር አዊ ዞን መንግስቱ ሆስፒታልዳ።
<u>ፅናቱ አሊሚ፡-</u> አዊ ዞን ሜንግስቱ ሆስፒታልካዳ እድሜ ሺንኩክ ቹትካዴስ ካሜንስታንኩ ስራሰሪዳ ታመባውሳ ችግሮ ሺሽቻስ።

<u>ፅናቱ ጊዝ፡-</u> 25/02-25/03/2020

<u>ፅናቱ ካሰኜ፡-</u> እንስ ፀናትስ ኬትንኹ ታምትኝ ዝኩክ ሊሊት ኾንኩ ካስቻቻካ ዲግካ።
ዲግሰኩሰ ካስካስ ድምክኔ ገሊፔ ፈቱኒጊ ፋታነውስ ጊዝስ ካሳቻስ ካሌና ።
አሲቲፍጊ እንቱውጌስ ፈቃድዴስ ሜሴሬትስቱኽ ኦኽግስ ዋሺንሰኪ ገዘዕ ቲሪፅቻስ ካሌና።
ካስታውስ ካሲስ አምናኑሰስታ ክችክቼ ዙርፔ እያንታ ካስቴ።
እሳ ካሴ ዊድቻስ ሚንቹኒ 20-25 ዴኪካ አብርቶ እጀኔ
<u>ፅናቱ ትክምስራ ጉዳት፡-</u> እንሰፅናትስ አሲቲስኺስ ኬይስታው አኹኪ ኩትኩቴ ትክም አግፃላኪያኽ። አኹኒላ እንቱው ውኒቲ ዙርፂ እንሰ ፅናቱውስ አሊሚስ አይሎ ፋይስታንቲያኽ። ድምክኒስ ኪላ ፅናትዳ አሲትፍኺስ ዋታኪ ከዋስ ችግሮ አኹኪ ጉዳቶ ታምፃቲውስታ አሬጌጌትቻፂ።
ዙርፅኾ ፋታቲኑውሳ ካሴ ባይቻስ ካሌና። እስታ ካሶቻኜ ፋቱኑውስ ጊዝስ አሜቻየሱ ዲብ ዝኩኒ ቲሪፅቻስ ካሌና።
ሰርኩኒ = ካሳቻኺዳ ½ እንቱስታ ኪራሱ ስም ሜዜቱውብስታላኽ። እነንቶጂ ይቱኑ ሜሬጂ ፅናትስ ኺኹቺስ አጌላጌሌ። ፅናቶ ፂኒሰንቲዴስ ይጉ እሊውሳ ፌያማ እይስታላኽ።
ፅናቶ ካንቱኽስ ካሲ ዝኩኒጊ 0924267981 ስልኪ ቼፋስ ዴዌልቻስካሌና።
ድምክኒሳ ኪላ ባህርዳር ዩንቨርስቲው ፅናቱ ምግባረ ፅንታው ከሚቲስ እንሳ ስልኪ ቼፋስ ዴዌልቻስ ካሌና።

ካስቻኜ ዋኽትቻፅቻስ አስሜምቻታናማ [ ]ሜሞታላ [ ]

አሴቴፍታንትካ ካሉሳ ሰምምኔቶ ፄውቱኑስ አሪኒኒትቻፄ ሜሬጂ

ሳባሳባንታው ፊሪሚ …… ካስቻኚው ሺሽፂ ቼፍ ……

ካሴንቲው ስም …….. ፊሪሚ ……..

ካሳቻኚ ዋኽትኾኽ ጌርክ ……. አሮጌትቻፁኽ ሱፐርቫይዘሩ ስም

ድምክኒ ሜሬጂ 4 አማካሪኒው ድውኚው ካሳካ እስታ ሜዝጌብዴስ ካፅስታንኩ ሜሬጃካው ክፅ

አማኻሪኚው ድውኚው ካስቻቻካ

ቤን 1 ካሲስታንቲው ማቤራዊውስ አሜሎ ካንቱኽስ ካስስታንኩ ካስካ			
ቴ.ቼ (ቴር ቼፍ)	ካስካ	ሜልስ	ዜሌሌ
101	እድሚ	……አሜት	
102	ዝኩፂ ቻን	1.ኬቴም 2.ጌፄር	
103	ቱትቻኚው አይኔት	1.ሚፂት 2.ሚፂያስቲ 3.ሚፄታኽይቱት 4.ክሩት	
104	ክንተው አይኔት	1.ክንቲያስቲ 2.እምፕላንቲ አቾ ክንቲቲ 3.ላታንቲ አቾ ክንቲት 4.ላታንቲ አችዴስጃላ ክንቲት	
105	ብሄሪ(ጎሲ)	1.ኦማኻሪኒ 2.ቤኒሻ 3.ኦሮሞኒ 4.እሊውሳ ኒሊፅ……..	
106	አይማኖት	1.ኦርቶዶክስ 2.ፕሮቴስታንት 3.ሙስሊም 4.እሊውሳ ኒሊፅ…….	
107	እንፅኺ	1.ቻንቶ ዋዛዝራ 2.አሬሰንታ 3.ሜንግስቲ ኬፄርስታንታ 4.ግሉ ኬፄርስታንታ 5.ኒፅስንታ 6.እሊውስ ኒሊፅ ……..	
108	ሚፂት አኹኒኪ ኼራሱ እንፅኺ	1.አሬሳንቲ 2.መንግሰቱ ኬፄርስታንቲ 3.ግሉ ኬፄርስታንቲ 4.ኒፅሳንቲ 5.እሊውስ ኒሊፅ ……	
109	እንቱውሳ ቻን አቜሳ አረረፈውሳ ሚፄ ኢተዮፕያውስ ብርስ ኒሊፅ	……ብር	
ቤን 2፡- ዝኩቻኚው ዘይቢስታ ሊኒስሚ ኒዘስ እጅወ ቜንዘሊ ምትኹኽ ካስካ			
201	ቻሺሳውስ ሼርትሌ አልኮሎ ዝቜካ ታቕካማ	1.ይፇ 2.እላኪ ⟶	203
202	ዘርፂ ይፇ ያኹኒኒ ጌርክስ ዋሳላካስ ሊትሮ ዝቜን	-------ቼፈስ	
203	ቻሸሱዉስ ሼርተስ ሲፇራ ቲሺፂካ ታቕካሚ	1.ይፇ 2.እላኪ ⟶	205

204	ዘርፂ ይፇ ያኹኒኒ ጌርክስ ዉኽ እሸፇስ ቲሺፄን	-------ቼፈስ	
205	ሼርተረዴስ ፋና ሊኒሲሚኒዝሳ (እንዴስፍና እሺኹ) ቁንዚ ዝኮማ	1.ይፇ 2.እላኪ ⟶	207
206	ካሲ 203 ይፇ ያኹኒኒ ዎታኮውቁንዚ (እምፕልዴሳ ጃላ ዙርፅሻስካሊስቴ)?	1.ብሪ ሺንካ 2.ሸኩዋር ቁንዛ 3.እንኩላሊቲ ቁንዛ 4.ብሪ እንፂታ 5.እሊውስ ጊሊፅ	
207	ኞዊ ጃሊኒ ኒደላዉ ክች ዙሪ	1.23 ሴንቲ ሜትር ስታ አነዴስጃላ 2.ለ23 ሴንቲ ሜትርዴላ ኩክር	
208	ኞዊ ቢሪዉ አይኔት	1.ፖዘቲቭ 2.ነፇቴቭ	
ቤን 3፡- ሼርቱሰስታ ካሚንሻኺውስ ታሪ ኮ ካንቱኽስ ካሳሻኺ			
301	ሻሺሱውስ ሼረቶ ዴሜካማ ወኺኒ ሼርታ ታቓ (ላጌታ አሪፊዴሳ ፈናውላጊ)?	……..ቼፍስ	
302	ለጊቲ አርፍ ዋኹኒዴስ ፈሌንፇ ውኺኒ ካሜንካ ያቕካ (እስሼርቶ ዴሜካማ)?	……..ቼፍስ	
303	እንዴስፍና ካሜንቱኒዴስ ዋሳላካ ጊዝ አኹኽ?	……..	
304	እንዴስፍና ካሜንታስኪኒ ወዳይ ካሜንቱኺ	1.ሻናኻዳ 2.አኪምሻናዳ 3.ወላዳጊ 4.እሊውስ ጊሊፅ	
305	እንዴስፍና እሹኹስ ሼርትስ ታምቡኽ ችግርዝኮማ	1.ይፇ 2.እላኪ ⟶	307
306	ካሲ 305 ዙርፂይፇ ያኹኒኒ ዳማ ታምባየቕ (እምልዴሳ ጃላ ዙርፅሻስ ካሊስቴ)?	1. 3 እስታ አንዴስ ጃላቴራ ጌምፃሺኽ 2. ሼርት አኽዳ ማፄናኻዳ ክራማ ፋኽ 3. ካሜንስቱኹስ 7 ጌርካኻስ ክርሻ 4. እሊውስ ጊሊፅ	
307	ሻሸሱስ ሼርቶ	1.አሴብታታሳታ ፈታታማ ሼርተኩዊ 2.አሴባያሱ አኹኒላ ፈየስታው 3.አሴብስታያሱ ፈይስታቲው	
308	ሻሺሱውስ ሼርቱውስ ጊዝዕ አሜንስትሻዴስ ፋና ሲፍሻኼ ፄውታሻቲኽማ	1.ይፇ 2.እላኪ	
309	ካሲ 308 ዙርፂ ይፇ ያኹኒ ሲፍሻኼ ጀሜረቱሳ ሼሪት ውኻንቲ አሪፊዳ (ሶኼትዳ) እሺኹ	1. ……..አርፊ 2. ……..…..ስኼት	
310	ካሲ 308 ኡርፂ ይፇ አኹኒኒ ውኺኒሲፈሻኼ ፄውታ	ቼፈስ……..... ታክሳለ……	
311	እንሳ ሼርቱውስ ሼርቱውስ ጊዝስ ቲታናሱስ ካለከልታንቴ ክንትባቴ ኒደፈሳ እይስታ ያቕማ	1.ይፇ 2.እላኪ	
312	ካሲ 312 ዙርፂ ይፇ ያኹኒኪ እንስ ሼርቱውስ ጊዝስ ቲታናስ ካለካልታንቴ ክንትባቴ ወኽኒ ካፂኹ?	……ኒ	
313	እንስ ሼርቱውስ ጊዝስ ብሪ እንፂታስ ካላካልታንቴ እጀ (አይሪንስታ ፎሊክ አሲድ እስታንኩስ) ካፄታቓማ?	1.ይፇውኽ አርፊስ 2.ካፃያላ	
314	አይረኖ (ኮሪ እንፂታሳ ካላካልታንቴ ውሽ አርፋሰ ካፂኹ	……አሪፊስ	
315	ሻሸሱውስ ሼሪቲውስ ጊዝስ ታምቡኽ ችግር አሺኽማ	1.ይፇ 2.እላኪ ⟶	317
316	ካሲ 315 ስ ዙርፂ ይፇ ያኹኒኒ ሲፋንኩ ችግርካዴስ ዋሺኒይ ችግር ታምባሸኹዊ (እምፕልዴስ ጃላ ሀርፅሻ ካሊስቴ)?	1.ብሪሺንካ ዴሜክሻ (‹ 160/11) 2.ኬፍቲኒ ብሪሺንካ ዴሜክሻ	

		3.ኃሬ ሳቲሻስታ ትራዙስሻ 4.ብልትዴስ ፋው ኮሪኃ ሼርቱውስሳትስ 5.ኬዎ ፌሬሰሻ (ክቢሻ) ምፃጂሜርግዴስ ፋና 6.እሊውስ ጊሊፅ	
317	ሻሺሰውስ ሼርቱውስ ዝስ ካሜንሻዴስ ፋና ዝኩክሳ ሲፍሻኜ ፄውቱስ ኬር አብራ ቲኑዳኾትዳ (አክምሻናዳ) አግስታይ	1.ይጋ 2.እላኪ	
	ሜዝኔብዴስ ካፅስታንኩ ሜሬጂካ		
ቤን 1፡- ሼረቱሳስታ ካሜንኚውስ ታሪኩ ካንቱኽስ ዲጉኽ ክፅ			
101	እን ስሪ ካሜንስቱስ ሼርቱ እድሚ ወኻ እሺኹ	……..ስኼትስ	
102	ምፃ ጂሜርኹዊ	1.ኚታፋስ 2.ምፃ ጂሚርፂስ	
103	ሻሺ ካሜንቱውስ ዎታከው ዳድስ ካሜንቱኹዊ	1.ማህፄኑውስ ቤርስ (እርዳታ ጊታ) 2.ቄድፃማ ሳኽሻሳ (ኬፄሩስ) 3.ቄድ ፃማ ሳኽሻሳ (ዲንግቲኒስ) 4.ማህፄኑውስ ቤርስ (ሜሳርስ እርዳትሰታማ	
104	ምፃውስ ስትስ ጂሩ አንትሻኚ ዋታከው እሺኹ	1.ኃሪስ 2ቱኹስ 3.ክሳሪስ 4.እላፈስ 5.እሊውስ ጊሊፅ	
105	ምፃ ጂሜሪሻዴስ ካኔንኹ ኪስታ ትክላሊስ ውኽ ሳታያኼ	1……ሳት	
106	እንስ ምፃስስታ ክምንትውስ ጊዝስ ታምቢኽ ችግሪ እሸኽማ	1.ይጋ 2.እላኪ ⟶	ቤን 2
107	ካሲ 106 ስ ዙርፂ ይጋ ያኹኒ ዎታኮው ችግር እሺኹ (እምፕልዴስ ጃላ ዙርፂ ካሊስቴ)	1.ካሸንኹ ምፃ 2.ፋይስታውዴስ ጃላ ያኹኽ ምፃ 3.ካሜኑኒዴሽ ፈሌንጋ ብሪ ክቢኃው ሚንቺት 4.እሊውስ ጊሊፅ	
ቤን 2፡- ፅልካ ስራስሪሊ ምትኾኽ ኩስሻኚ			
201	ፅሊ ስሩ ትክላሊ ወኔቲ ዎታይ	1.አስሜምኃያስ 2.አስሜምኾኹዊ	
202	ፅሊ ስሩ ፃቲ	1.ሻርጂ 2.ቩና	
203	ፅሊ ስሩ ውቴት ዳማኚ?	1.ንፋስ ዝኩኽ ⟶ 2.ክራስኩኽ	206
204	ካሲ 203 ስ ዙርፂ ክራስኩኽ አኹኒጊ	1.ክራማ ካሜንስቱኽ ⟶ 2.ካሜንስቱኹስ 24 ሳታኻዳ ክሩኽ	206
205	ካሜንስታማ ክሩኽ አኹኒጊ ምክንያት ዳማይ (እምፕልዴስ ጃላ ዙረፅሻስ ካሊስቴ)	1.ካሚንፂ ሳት ታምባውሌስ ካሜንስታማ 2.ቤኬልስታማ 3.አፌንስትሻ 4.እሊው ዘኩኒኪ ጊሊፅ	
206	ፅሊ ስሩ ክብዴት ውኽይ	1…….. ግራም	
207	ፅሊ ስሩ ክብዴት ሼርቱ እድሚሊ ዌዴዴሪኃኒ	1.ሼርትስ እድሚ እንፄ 2.ሼርትስ እድሚ ክችክቺ 3.ሼርትስ እድሚ ሜንቼ	
208	ጂሚሪ እምፓለ(1) ዴኪካኻዳ ኦፒጋር ወቴት ውኽይ	1……. ቼፍ	

209	ካማንቱኹስ 5(አንኩዋ) ዴኪካኻዳ አፒፇር ወቴት ውኻይ	1…….. ቼፍ	
210	ፅሊ ሰርዳ ካንትስታው ፈትሬቱ ችግር ዝኮማ	1.ይፇ 2.እላኪ ⟶	212
211	ካሲ 210 ይፇ ያኹኒፒ ዎታኮዊ እምፕልዴስ ጀላ ካሊስቴ	1.ችንክስታኻዳ አኹሜንቺታ 2.ዎኽ ችንክላቲ ፌቴርስታያ 3.አኮርካሪ ታፁ ቕንዚ 4.እሊው ዝኩኒ ጊሊፅ	
212	ስር ፅልካ ስራሰሪው እንኩዊንፂ ስታ እጂፂ ደናቫ ቶሺኾማ	1.ይፇ 2.እላኪ ⟶	ቺሪሴ
213	ካሲ 214 ስ ይፇ ያኹኒ ምክንያት ዳማይ እሺኹ	1.ካሚንፂስት ታምባውሌስ ካሜንስታማ 2.ቤኬልስትሻ 3.ኣፌንስትሻ 4.እሊውሳ ጊሊፅ	

ሼዉዴሻ አሜፔዴኔ!!!!!