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ARTICLES

Full Length Research Paper

Prevalence and associated factors of female genital mutilation among high school students in Dale Wabera Woreda, Oromia Regional State, Ethiopia

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Female genital mutilation is still a serious health problem in Ethiopia. Female genital mutilation conceptualizes harmful traditional practice and is among existing traditional attitudes and practices on practice in different corners of the world. Other than demographic and health survey data, studies showing the prevalence of female genital mutilation is scarce and in some areas nonexistent. Its existence is only, time and again recognized as the practice has various health, social and psychological adversities. This study team found it imperative as the problem warranty study with the aim to assess prevalence of female genital mutilation (FGM) as well as identifying its associated factors among high school students. Institution based cross sectional study design was employed. 95% confidence level and 3% margin of error were used to study the magnitude and associated factors of FGM among 798 high school and preparatory students. A multi stage sampling procedure was employed to select female students in the schools. This research showed percentages and association among the variables by univariate, bivariate and multivariate analysis. Data were collected from 769 study participants with a response rate of 96.4%. About 78%, 95% CI (74.9%, 80.7%) of the study participants underwent the procedure. Age ≥17 [AOR=1.8, 95% CI (1.28, 2.61)], grades 11 and 12 [AOR =2.98; 95% CI (1.45, 6.12)] and [AOR=6.52, 95% CI (1.85, 22.94)], respectively, being from rural area [AOR= 1.6, 95% CI (1.01, 2.52)], and house wife and merchant mother occupation [AOR= 2.38, 95% CI (1.07, 5.29)] and [AOR= 2.72, 95% CI (1.04, 7.12)], respectively were independently associated to higher prevalence of female genital mutilation. Irrespective of different forms of interventions in the country, the prevalence of female genital mutilation is still very high in the study area. This study thus revealed that palatable and very convenient intervention strategies need to be crafted to curb the problem at large and for those rural villagers who are at higher risk in particular.

Key words: Female genital mutilation (FGM), high school students, Ethiopia.

INTRODUCTION

Female genital cutting, also termed female genital mutilation (FGM), pertains to any interventions that may involve injury or removal of the female external genitalia either partial or total for any reasons other than therapeutic (World Health Organization, 2006, 2008). The practice was first known as female circumcision, but since the late 1970s this was replaced by the term female genital mutilation (FGM) to give a better reflection of the violation of the woman or girl's basic human rights (World Health Organization, 2008; UNICEF, 2005a; Emam et al., 2011). The practice is widespread in 28 African countries, concentrated around the belt of the Sahel (Wagner, 2011; World Health Organization, 2011; USAID, 2012). Besides, it transcends the aforementioned geographical patterns and similarly practiced in some parts of Middle East and Asia. The practice is also found among immigrants from these areas to Europe, North America, and Australia. Although the practice has been exercised in most developing countries of various cultures, there is no definitive evidence documenting when or why this ritual begun. Some theories suggest that FGM might have been practiced in ancient Greece, Rome, Pre-Islamic Arabia and the Russian Federation (Konjit, 2002).

According to World Health Organization (WHO), about 130 million women and girls in the world have been victims of some kind of FGM. It has also been estimated that each year about three million girls are at risk or are subjected to some kind of ablation, essentially in the 28 countries in sub-Saharan Africa, where this type of ritual has strong, ancestral roots (Mitike and Deressa, 2009; Kaplan et al., 2009). During 2005/2006, the prevalence of FGM/FGC in 27 African countries ranges from 97.9% in Somalia to 0.6% in Uganda and according to EDHS 2005, this value was 74.3% in Ethiopia and 87.2% in Oromia National Regional State (Population Reference Bureau, 2010).

In Ethiopia, if not all or completely holistic for the whole society there are traditional practices that are mostly indigenous in almost all ethnic cultures, which affect the healthy functioning of people, goals, of equality and hinder developmental strategies proposed in different walks of life time. Women and children are more prone to the problem resulted from traditional practices and as a result suffer the negative impacts in which FGM particularly is among the violent traditional action against women. Female genital mutilation (FGM) or mutilating genitals of female is not a new phenomenon and it was in existence long before the beginning of Christianity and Islam as described earlier in this article. It is a national problem because not only it does and influence the physical, mental, and social life of more than half of Ethiopian population that is women or concerned sex, it also has its own impacts on the socio economic development of the country. Study of this type targeting on prevalence and factors associated is of remarkable input for designing very sound evidence based intervention with the desire to bring sound achievements in the area.

MATERIALS AND METHODS

Study design and population

A descriptive cross-sectional study was utilized in conducting this study during January, 2012. The study was conducted in Dale Wabera Woreda of Kelem Wollega zone, Oromia regional state. The source population were all female students who were enrolled in the two high schools and one preparatory school of the study area in the academic year 2011/2012.

Sample size and sampling procedures

The sample size for the quantitative study was estimated using the single population proportion formula with the assumption of 3% margin of error (d), 95% confidence level (zα/2 =1.96) and 87% proportion of FGM of Oromia region taken from Ethiopian Demographic and Health Survey (EDHS) 2005 (Central Statistical Agency, 2005) and using a design effect of 1.5, the calculated sample size with 10% contingency for non-response was 798.

A multi stage sampling procedure was applied to select sample of female students in the schools (stratification in to grades and simple random sampling to select sections and again simple random sampling to select respondents in respective sections).

The calculated sample size was proportionally allocated to the three schools based on the student population they have. First, each school was stratified by grades (9th, 10th, 11th, and 12th). Proportional allocation of sample was done to the respective grades. Secondly, sections were randomly selected from each grade and study subjects were selected by simple random sampling technique.

Data collection procedures

Instrument

Self-administered structured questionnaire which was adopted from Ethiopian Demographic and Health Survey (Central Statistical Agency, 2005) were used to collect data on socio-demographic, status of FGM and other important data related to the objective of the study.

Pre-test was done before the actual data collection started on 30 (4%) female students in the Kebe High Schoolwhich is found in the Gawo Kebe wereda.

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Data collection

Data collection facilitators were experienced individuals and training was given by the principal investigator for two days specially how to create conducive environment for the respondents during data collection, how to give clarity, if there is any inconvenience.

Following an orientation, respondents filled the questionnaire in private by arranging their seat far apart from one another and not allowing their teachers to enter the room.

Data analysis

Data were entered using epi data version 3.1 and exported to Statistical Package for Social Science (SPSS) version 16 for further analysis. Data cleaning took place, during data entry by use of double entry and after data entry by simple frequency and cross tabulation and their consistency was checked. After data cleaning was completed, data were exported to SPSS version 16 for analysis. Data analyses were done through Univariate analysis to see the frequencies of the categories under each variable and the corresponding percentage for each category. We also did bivariable analysis to see association between the dependent variable (in our case female genital mutilation) and independent variables like socio-demographic variables and finally logistic regression was conducted to see the independent effect of the selected independent variables on the status of FGM using odds ratio.

Operational definitions

Female genital mutilation/cutting: This is partial or total removal of the external female genitalia or other injury to the female genital organ whether for cultural or non-therapeutic reasons (World Health Organization, 2006, 2008).

Clitoridectomy: Partial or total removal of the clitoris, with or without excision of part or all of prepuce (World Health Organization, 2006, 2008).

Infibulations: Narrowing the vaginal opening through the creation of a covering seal by cutting and repositioning the labia minora and/or the labia majora, and with or without removal of the clitoris (World Health Organization, 2006, 2008).

Defibulation: Defibulation is a surgical procedure wherein a vertical incision is made on the scar to expose the introitus and create new labia majora.

RESULTS

Socio-demographic characteristics

More than half of the participants (54.2%) were seventeen years old and above with a mean and SD of 16.93 and ±1.32 respectively. Three hundred and forty-two of the study participants, 44.5% (342) were from grade nine, 31.6% (243) were grade ten, and 14.4% (111) were from grade eleven. More than two-third of the study participants (77.1%) were from rural area and almost all of the study participants (97.9%) were Oromo in terms of their ethnic background, while protestant was the dominant religion in the area (71.3%) (Table1).

Ninety-five of the practice was done by traditional circumcisers and the rest was done by health professionals. Among 704 (91.5%) of the study subjects who reported that they have one or more sister(s), 63.6% of the sisters have FGM. From the total number of study subjects who reported mutilation and having sister (s), 56.4% of them have been mutilated with one or more of their sister (s) at the same time. The majority of procedure (64%) was done during night time which was followed by early morning (27.5%) and only 8.5% of it was performed at day time. About 24% of the study participants reported that FGM is required by their religion.

The majority of the respondents (77.7%) agreed with the idea of terminating the practice while 22.3% of them supported to perform FGM in the future.

Prevalence of FGM among the high school and preparatory female students, Dale Wabera, January 2012

The overall prevalence of FGM among the study participants was 77.8%; 95% CI (74.9%, 80.7%). As it is shown below the prevalence increased from 72.5%; 95% CI (69.4%, 75.6%) in grade 9 to 89%; 95% CI (87.9%, 90.1%) in grade twelve (Figure 1).

Associated factors of female genital mutilation

From those factors significantly associated with dependent variable (age, grade, residence, religion, father education, mother education, father occupation, mother occupation, and perceived monthly income) during crude analysis, four of them (age, grade, residence, and mother occupation) remained independently associated with the dependent variable on multivariate analysis.

Among the age groups, those ≥17 years were at higher odds of practicing FGM compared to the other age group [AOR 1.8; 95% CI (1.28, 2.6). The odds of FGM was higher in grades eleven and twelve students compared to grade nine [AOR=2.98, 95% CI (1.45, 6.12)] and [AOR=6.52, 95%CI (1.85, 22.94)], respectively.

Residence was one of the factors independently associated with magnitude of FGM given that the chance of being mutilated was higher in students from rural area compared to those urban residents [AOR=1.6, 95% CI (1.01, 2.52)].

The other factor independently associated with FGM was mother occupation. The odds of practicing FGM was higher among female students whose mothers were housewives and merchants compared to those with government employee mothers after adjusting for age, grade, and residence [AOR 2.38; 95% CI (1.07, 5.29)] and [AOR 2.72; 95% CI (1.04, 7.12)], respectively (Table 2).

Table 1. Socio-demographic characteristics of high school and preparatory female students of Dale Wabera woreda, January 2012, n=769.

Variables	Number	%
Age		
<17	352	45.8
≥17	417	54.2
Mean ± SD	16.93 ± 1.32	
Grade		
9th	342	44.5
10th	243	31.6
11th	111	14.4
12th	73	9.5
Residence		
Rural	593	77.1
Urban	176	22.9
Religion		
Protestant	548	71.3
Orthodox	130	16.9
Muslim	91	11.8
Ethnicity		
Oromo	753	97.9
Non-Oromo	16	2.1

DISCUSSION

As indicated in the study, based on data revealed from the field 77.8% (74.9%, 80.7%) of the students that underwent the procedure which is higher than the Demographic and Health Survey (DHS) (2005) country prevalence (74.3%) but lower than the Oromia regional prevalence (87.2%) (Central Statistical Agency, 2005), this lower prevalence in this study may be due to their age that in DHS those in age group of 15-49 were included and in this current study the maximum age was 23. The finding of this study is also lower than the finding of the base line survey which was 89.4% in Kelem Wollega zone, but higher than that of follow up survey which was 61.3% (EGLDAM, 2011) in the same zone. It is also lower than the finding of the study conducted in West Showa zone which was 96.4%, and the difference may be due to inclusion of higher age group (24-33) years in the former study (Oduro et al., 2006). So, if we would include higher age of the study participants the current prevalence might be higher. The prevalence is lower than the finding of the study conducted among high school female students in south Ethiopia which was 82.2% (Tamire and Molla, 2011) and the possible explanation is the difference in age at which FGM is performed. When we compare finding of our study with some other countries, the finding of this study is higher than the finding of the study conducted among high school students in Egypt which was 50.3%(17). It is also much higher than that of primary school girls in Addis Ababa which was 25.8% (Tamire and Molla, 2011; Zewde et al., 2009) and might be due to the difference in age of the study participants included and the other may be those of Addis Ababa with more educated parents and has higher access to information.

The age at which FGM is performed on girls varies between countries and even from area to area within the same country. In most countries it is practiced on girls between four and twelve years but it can be done as early as before one year of age and in some areas it can be delayed up to just before their marriage (Population Reference Bureau, 2010; Tag-Eldin et al., 2008; Kerubo, 2010; Olenja and Kamau, 2001; Boyden et al., 2011; Kaplan et al., 2011).

According to the research conducted in Egypt, the average age of mutilation was 10.1±2.3 years (Afifi and Bothmer, 2007), while the figure was 2.9±0.65 years from the study conducted in the primary school girls in Addis Ababa (Zewde et al., 2009). The finding of this study showed that the average age of FGM is 12.95±2.23 years which is much higher than that of the study conducted in Addis Ababa and also slightly higher than the value from the Egypt. As confirmed by different studies, this age varies based on the culture of the specific population (Kaplan et al., 2011).

More than 95% of the procedure was done by traditional practitioners and the rest was done by health professionals. This finding agrees with results of most studies that FGM is mostly done by traditional practitioners commonly known by the name of the village women (World Health Organization, 2008).

Educational level of the study participants were independently associated with the prevalence of FGM especially in those grades eleven and twelve students. The odds of the practice was about three times higher in grade eleven and about 6.5 times higher in grade twelve students when compared with grade nine female students. This finding should be cautiously interpreted because one could be confused with the idea of decreasing trend of FGM as a result of increased community awareness, but the reality may be those who did not undergo FGM this year are candidates for the coming year as the community is still highly in favour of its continuation. This finding is in line with that of study conducted in Egypt and south Ethiopia which showed increased magnitude of the practice along with their grades (Njue and Askew, 2004; Stewart et al., 2002; Tag-Eldin et al., 2008).

The age of the study participants was the other variable independently associated with FGM that those seventeen years and above were with a higher odds of the practice; however, like that of the grades of the study participants,
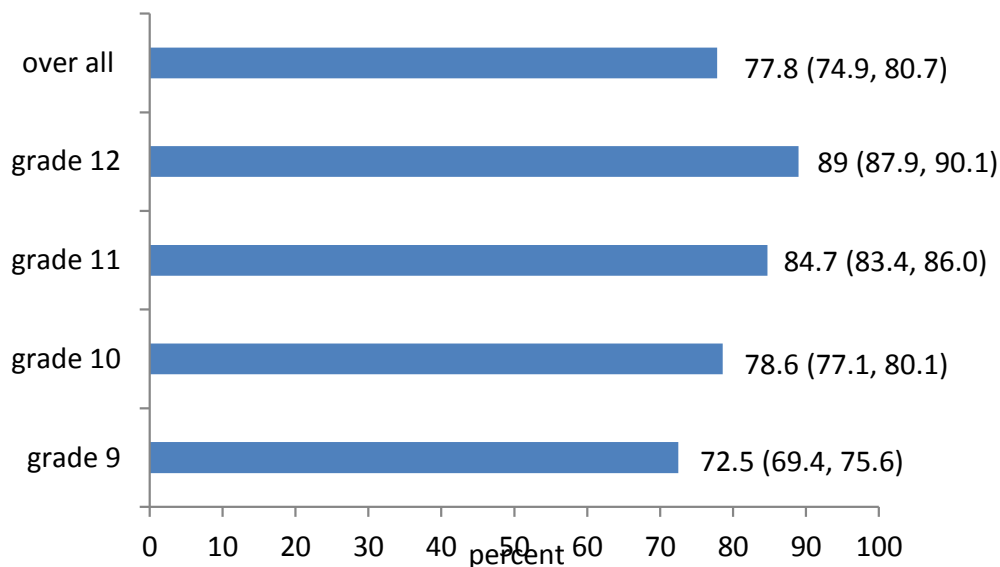
Figure 1. Prevalence of FGM among high school female students in Dale Wabera woreda, January 2012.

the association with the age needs cautious interpretation. This also agrees with the findings of other studies that the prevalence of FGM increased with the age of the participants (Mitike and Deressa, 2009; Tamire and Molla, 2011).

Even though it is marginal, residence of the study participants was the other factor independently associated to the practice of FGM as those who were from rural areas were at higher odds of the practice and this may be due to the discrepancy in access to information about harmful effects of FGM. This finding agrees with that of high school based study in Egypt and EDHS (2005) findings in which the residence of students was independently associated with the prevalence of FGM (Central Statistical Agency, 2005; Tamire and Molla, 2011; Tag-Eldin et al., 2008).

Mothers' occupation was the other factor significantly associated to FGM. Female students whose mothers were housewives and merchants were at higher odds of practicing FGM compared to those students whose mothers were government employees even though it had no significant association in previous researches with increased prevalence of FGM (Tamire and Molla, 2011). This may be because of those mothers who were government employees that have had better access to information about harmful effects of the practice when compared to housewives mothers who spent most of their time at home and merchants who are mostly busy with their work. Although this study showed no association between magnitude of FGM and education of the parents, other studies showed the presence of significant association with parental educational status (Central Statistical Agency, 2005; Tamire and Molla, 2011; Zewde et al., 2009; Tag-Eldin et al., 2008;

UNICEF, 2005b). This may be due to fear of the challenges they would face from the community even if they have information about harmful consequences of FGM.

As a limitation, the research was conducted among high school students and is not community based and it may not reveal realistic and very precise image of the issue figure in the general community.

Conclusions

Currently most people assume that the prevalence of FGM is decreasing in most parts of the country, but this study showed that this figure is very high (77.8%) in the current study area.

Study participants with age ≥17, grades 11 and 12, residing in rural area, and having housewives and merchant mothers' occupation were at higher odds of FGM. Female genital mutilation is one among traditional practices that is still ongoing across society either in severe or less form in both urban and rural areas. The practice is harmful and cause serious problem on the circumcised women and girls that may be categorized as both short term and long term pain. Community sensitization about the negative impacts of FGM should be designed through different mechanisms such as media, health personnel, community leader, religious leader, and seminar presentation, community education to increase awareness resulting in behavioral change over time. The governmental and nongovernmental organizations working towards building community or girls free from such harmful traditional practice especially in remote areas should rely on evidence based

Table 2. The association of female genital mutilation with selected variables in Dale Wabera woreda, January 2012.

Variable	COR (95% CI)	AOR (95% CI)
Age		
<17	1	1
≥17	1.80 (1.29, 3.56)	1.80 (1.28, 2.60)*
Grade		
9th	1	1
10th	1.39 (0.95, 2.05)	1.41 (0.88, 2.26)
11th	2.10 (1.19, 3.70)	2.98 (1.45, 6.12)*
12th	3.08 (1.42, 6.66)	6.52 (1.85, 22.94)*
Residence		
Urban	1	1
Rural	1.74 (1.19, 2.54)	1.60 (1.01, 2.52)*
Religion		
Orthodox	1	1
Protestant	1.27 (0.82, 1.97)	1.36 (0.78, 2.37)
Muslim	2.21 (1.09, 4.47)	1.26 (0.50, 3.19)
Father education		
Illiterate	2.72 (1.32, 5.61)	1.97 (0.89, 4.38)
Primary	2.37 (1.18, 4.75)	1.71 (0.79, 3.65)
Secondary	1.77 (0.85, 3.69)	1.41 (0.65, 3.05)
College	1	1
Mothers education		
Illiterate	4.05 (1.27, 12.91)	2.96 (0.87, 10.11)
Primary	3.40 (1.06, 10.90)	2.50 (0.73, 8.49)
Secondary	2.48 (0.72, 8.56)	2.21 (0.61, 7.96)
College	1	1
Fathers' occupation		
Farmer	2.38 (1.43, 3.96)	1.53 (0.68, 3.43)
Merchant	2.02 (0.97, 4.19)	1.56 (0.61, 3.99)
Government employee	1	1
Mothers occupation		
House wife	3.22 (1.50, 6.93)	2.38 (1.07, 5.29)*
Farmer	2.97 (1.41, 6.26)	1.95 (0.88, 4.33)
Merchant	2.85 (1.12, 7.29)	2.72 (1.03, 7.12)*
Government employee	1	1
Perceived family income		
Low	2.29 (1.14, 4.61)	1.94 (0.92, 4.09)
Medium	1.67 (0.83, 3.34)	1.56 (0.74, 3.30)
High	1	1

Adjusted for, age, grade, residence, and religion. *= significant at $p < 0.05$.

interventions. Women's affairs bureaus and different gender based association should actively work starting from regional to international level collaboratively with both governments based and non – governmental

organizations to curb the practice from the root. A community based study with stronger study design is also recommended.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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Full Length Research Paper

Clinical outcomes of patients admitted in intensive care units of Nigist Eleni Mohammed Memorial Hospital of Hosanna, Southern Ethiopia

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An intensive care unit is a special department of hospital or health care facility that provides intensive treatment medicine. Critically ill patients are admitted to the intensive care unit to reduce morbidity and mortality associated with acute illness, trauma or surgical procedures. This study aimed to assess clinical outcomes of patients admitted in intensive care units of Nigist Eleni Mohammed Memorial Hospital of Hosanna from January 2015 to January 2016. Institutional based cross sectional study design was conducted. All the study participants admitted to intensive care unit were included. Regular supervision and follow up was made. Data was entered into Epi info version 7 by investigators and was transported to SPSS version 20 for analysis. Bivariate and multivariate analysis was used to identify factors associated with patient's outcome. A total of 280 clients were enrolled into the study of which 46.42% died. About 26% of patients were found in the age group of 20 to 24 years and majority of them were male (58.2%). Patient with head injury is about six times more likely to die in the intensive care unit than patients with small bowel obstruction (AOR 6.620 (95% CI ((468-93.584). There were poor outcomes of patients admitted to intensive care unit so that it was strongly recommended to improve quality of care.

Key word: Ethiopia, intensive care unit, cause of death, hospital discharge.

INTRODUCTION

Intensive care unit is a fused area of hospital where patients with acutely life threatening illness/injuries receive a specialized medical and nursing care, such as mechanical ventilation and invasive cardiac monitoring (Donaldson et al, 2000; Winter, 2013). The modern concept of intensive care was founded by anesthetist in Denmark during the polio pandemic (Berthelsen and Cronqvist, 2003). Since then, intensive care units (ICUs) have significantly improved the quality of care and outcomes of critically ill and injured patients, mainly in high-resource settings (Calvin et al., 1997; Bleck, 2009; Grenvik and Pinsky, 2009). In recent decades, intensive care medicine has developed into highly specialized discipline covering numerous fields of medicine (Berthelsen and Cronqvist, 2003).

Admission into ICU may be required if the patient

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experiences hemodynamic instability requiring frequent monitoring of vital signs, invasive hemodynamic monitoring, rapid titration of intravenous medication with concurrent monitoring. Apart from causing death, type and severity of illness can directly affect the length of ICU stay (De Lange et al., 2009). In sub-Saharan Africa, ICUs have varying qualities and quantities of infrastructure necessary for the provision of proper critical cares services (Baelani et al., 2011; Dünser et al., 2006). The reported disease characteristics and mortality rates of patients admitted to ICUs in sub-Saharan Africa vary widely from one population to another (Oke, 2001; Okafor, 2009; Merah et al., 2006).

Critically ill patients are admitted to the intensive care units to reduce morbidity and mortality associated with acute illness, trauma or surgical procedures (Braber and van Zanten, 2010). Up to fifth of patients will die in the ICU (Cook, 2006). Patients that survived in the ICU were discharged to the ward environment. Although, some patients died soon after ICU discharge, such deaths are predictable and cannot be avoided (Campbell et al., 2008; Campos et al., 2011). However, another study revealed that deaths occurring after ICU discharge are unexpected and may be prevented with better standards of care (Chaboyer et al., 2008; McLaughlin et al., 2007). Despite widely analyzed pathophysiological processes and new treatment methods in laboratory and clinical research, less data are available on the causes of death, short- and long-term outcomes of critically ill patients, and associated risk factors. Frequently, data on specific predictive criteria for single diseases have been identified (Benoit et al., 2003; Wunsch et al., 2008; Afessa et al., 2002; Arabi et al., 2004). But, little is known on the exact causes of death and the influence of general risk factors that may consistently complicate the course of critically ill patients regardless of the underlying disease (Estenssoro et al., 2002; Khouli et al., 2005 Chang et al., 2006). Thus, the aim of the study was to determine clinical outcomes of patients admitted in intensive care units of Nigist Eleni Mohammed Memorial Hospital of Hosanna.

MATERIALS AND METHODS

Study setting

The study employed a cross-sectional study design at Nigst Eleni Mohammed Memorial Hospital (NEMMH) from January 2015 to January 2016. NEMMH is one the governmental hospitals in Ethiopia which is found in Hosanna town. Hosanna town is administrative city of Hadiya zone and it is located at a distance of 230 km to the south of Addis Ababa, capital city of Ethiopia. The hospital has 9 wards. Adult intensive care unit was considered as it has been providing services for all critically ill patients admitted from different departments excluding neonatal unit. The hospital has a total of 220 beds including 8 and 7 beds in neonatal and adult ICU, respectively.

Source population

All charts of the patients admitted in intensive care unit of Nigst

Eleni Mohammed Memorial Hospital.

Study population

Selected charts of patients admitted in intensive care unit of Nigst Eleni Mohammed Memorial Hospital from January 2015 to January 2016.

Sample size determination and sampling technique

All consecutive patients admitted in intensive care unit of Nigst Eleni Mohammed Memorial Hospital from January 2015 to January 2016.

Data collection tools and procedure

Data was collected using pretested structured questionnaires by two BSc anesthetists and supervised by one MSc holder anesthetist. Patient's charts were reviewed. At the end of data collection, patient's charts were replaced with its original place properly.

Data quality assurance

The structured questionnaire was prepared in English first and translated to the local language, Amharic and again translated back to English to ensure consistency of the questionnaire. Pretest was done on 5% of the sample population. Data collectors and supervisors were trained on each items included in the study tools, objective, relevant of study, right of respondents. During data collection, regular supervision and follow up was made. Investigator cross checked for completeness and consistency of data on daily basis.

Data analyzing and processing

The data was entered into epi info version 7 and was exported to SPSS version 20 computer program for analysis. Descriptive statistics was used to summarize data, tables and figures for display results. Bivariate and multivariate analyses were used to see the effect of independent variable on outcome variable. Variables which were significant on bivariate analysis at p-value less than 0.2 were taken to multivariate analysis. In multivariate analysis, p- value of less than 0.05 was used as a cut of point for presence of association. Strength of association was measured by 95% confidence interval and/odd ratio.

Operational definitions

Clinical outcome

In this research, clinical outcome indicated either patients survived or died at the time of discharge.

Post-ICU patients

Patients who are transferred from ICU to inward environments.

Survived

Patients who are alive at the time of discharge.

Table 1. Distribution of sex and age group of patients admitted to intensive care unit at Nigst Eleni Mohammed Memorial Hospital, Hosanna, from January 2015 to January 2016.

Variables	Category	Frequency	Percentage
Sex	Male	163	58.2
	Female	117	41.8
Age group	15-19	61	21.8
	20-24	73	26.1
	25-29	28	10.0
	30-34	29	10.4
	35-39	24	8.6
	40-44	20	7.1
	45-49	16	5.7
	50-54	19	6.8
	greater than 60	10	3.6
Religion	Orthodox	176	62.88
	Protestant	51	18.21
	Muslim	41	14.64
	Missing	7	2.50
	Others*	5	1.77
Ethnicity	Hadiya	132	47.14
	Kembata	63	22.50
	Silte	48	17.14
	Gurage	7	2.50
	Missing	18	6.44
	Others**	12	4.28

Others* Jehovah witness and wakefata; Others** Wolaita, Oromo and Amhara.

Died

Patients who are not alive at the time of discharge.

Ethical consideration

Ethical clearance and approval was obtained from ethical review committee, Anesthesia Department, Wolaita Soddo University. Permission to conduct was obtained from the hospital. Informed verbal consent was secured from every study participants. The obtained data was only used for study purpose. Confidentiality and anonymity were ensured.

RESULTS

A total of 280 clients were enrolled in the study of which 46.42% died in the ICU. Majority of the patients, 26.1% were between the age group of 20 and 24 years. The mean age of respondents was 31.27 ± SD (14.019), (minimum 15 and maximum 67). Regarding the sex composition of the sampled respondents, about 58.2%

were male, while the remaining 41.8% were female. This means that majority of sampled respondents were male (Table 1).

Admission diagnosis to intensive care unit

Patients with different diagnosis were admitted in intensive care unit of which small bowel obstruction (SBO) was 15.4% and followed by head injury (13.9%), shock (10.4%) and CHF (10.4%). The study also found that about 4.6% of all patients were admitted with acutely exacerbated bronchial asthma and for post-surgical observation (Table 2).

Cross tabulation of level of consciousness, condition of admission and length of ICU stay over patient's outcome

The relationship between time of ICU admission and level of consciousness on survival condition showed that late admitted patients (28.2%) and unconscious patients (25.36%) died in the ICU. This showed that early admitted and conscious patients are more likely to survive than the others (Table 3).

Factors affecting clinical outcome of patients admitted in ICU

The association between factors affecting outcome of patient admitted to ICU revealed that level of consciouness, sex and leangth of ICU stay for more than 14 days were strongly associated with clinical outcome of patients at p-value less than 0.05. The result of the study also showed that patients with head injury is about six times more likely to die than a patients with small bowel obstruction (Table 4).

DISCUSSION

This study attempted to determine clinical outcome of patients admitted in ICU of Nigst Eleni Mohammed Memorial Hospital. According to findings of this study, relatively higher proportions of patients were found between the age group of 20 and 24 years of age. It was also found that there was male predominance which was consistent with other study (Sawe et al., 2014). A similar finding was reported by other studies of ICUs in sub Saharan Africa as there was a predominantly young-age ICU population (Okafor, 2009; Ohaegbulam et al., 2007; Mhando et al., 2008; Jamison et al., 2006). Similarly, the patient population in this study is younger when compared with patients admitted to ICUs in most developed world (Moran et al., 2008; Towey and Ojara, 2007). The overall young population and male

Table 2. Admission diagnosis of patients admitted to intensive care unit at Nigst Eleni Mohammed Memorial Hospital, Hosanna, from January 2015 to January 2016.

Admission diagnosis	Frequency	Percentage
Small bowel obstruction (SBO)	43	15.4
Sock	29	10.4
Congestive heart failure (CHF)	29	10.4
Community acquired pneumonia (CAP)	16	5.7
Eclampsia	28	10.0
Head injury	39	13.9
bronchial asthma	13	4.6
postsurgical observation	13	4.6
uterine rupture	28	10.0
Diabetic ketoacidosis (DKA)	28	10.0
Postpartum hemorrhage (PPH)	14	5.0

Table 3. Relationship between time of ICU admission, lenght of ICU stay and level of consciousness on survival condition of patients admitted to intensive care unit at Nigst Eleni Mohammed Memorial Hospital, Hosanna, from January 2015 to January 2016.

Variables	Category	Died	Survived	Total
Time of admission	Early admission	51	45	96
	Late admission	79	105	184
	Unconscious	71	96	167
Level of consciousness	Conscious	59	54	113
	Less than a week	75	75	150
Length of ICU stay	One week to two weeks	35	51	86
	More than two weeks	20	24	44

predominance in this study may be because of high prevalence of trauma which likely occurred due to the nature of work exposing majority of males on urban streets or the increased level of participation in high-risk activities among male individuals and higher working age male predominance (Towey and Ojara, 2007).

This study also revealed that about 46.42% of patients admitted to ICU died which is higher than a study conducted in University of Nigeria Teaching Hospital on neurological and obstetric patients of which the mortality rates were 43.5 and 33%, respectively (Okafor and Onwuekwe, 2004a; Okafor and Aniebue, 2004b). But, it is lower than the study conducted at National Hospital Abuja in Nigeria on severe head injury patients in the ICU which showed the mortality rate of 68.4% (Ohaegbulam et al., 2007). Another study on critical care obstetric patients in Burkina Faso revealed a mortality rate of 60% (Dao et al., 2003), while the mortality rate in the general ICU population in Uganda was found to be 25% (Gomersall, 2010).

These differences are most likely because the present

study includes all departments of patients admitted to ICU while the others include only specific department or specific diagnosis of patients in the ICU. These differences may also be due to differences in safety and quality of health care services among different health care facilities.

Survival is the main endpoint that is considered important for patients and society (Fernandez et al., 2010). Mortality is a clinical outcome which is easy to define and measure using empirical methods and mortality following ICU discharge is a quality indicator and frequently a predicted event (Fernandez et al., 2006; Frick et al., 2003). The sudden death of post-ICU patients who are expected to survive represents a waste of valuable healthcare resources and a missed opportunity to save life. The result of present study also revealed that about 26% of patients discharged from the ICU died in the ward which is similar to some other studies (Moreno et al., 2001; Green and Edmonds, 2004). This may be due to the fact that post-ICU patients may frequently need a complex care. But, it may be difficult to provide a

Table 4. Factors affecting clinical outcome of patients admitted in ICU of Nigst Eleni Mohammed Memorial Hospital, Hosanna, from January 2015 to January 2016.

Variables	Category	Df.	Sig.	Exp(B)	95% C.I. for EXP(B)	
					Lower	Upper
	15-19	8	0.092			
	20-24	1	0.824	1.203	0.237	6.117
	25-29	1	0.879	.883	0.177	4.403
	30-34	1	0.654	1.528	0.240	9.742
Age category	35-39	1	0.689	1.483	0.215	10.220
	40-44	1	0.204	3.754	0.487	28.933
	45-49	1	0.610	2.171	0.110	42.775
	50-54	1	0.359	2.579	0.341	19.487
	greater than 60	1	0.236	0.206	0.015	2.809
Consciousness level	Unconscious	1	0.000	0.279	0.137	0.567
Sex	Male	1	0.012	2.525	1.226	5.201
	SBO	10	0.710			
	Sock	1	0.911	1.120	0.154	8.130
	CHF	1	0.911	0.899	0.139	5.806
	CAP	1	0.930	0.903	0.095	8.604
	Eclampsia	1	0.614	0.558	0.058	5.385
Causes of admission	Head injury	1	0.162	6.620	0.468	93.584
	Bronchial asthma	1	0.351	0.371	0.046	2.973
	Postsurgical observation	1	0.946	1.067	0.164	6.941
	Uterine rupture	1	0.222	0.276	0.035	2.182
	DKA	1	0.487	0.536	0.093	3.104
	PPH	1	0.735	0.709	0.097	5.178
Time of admission	Early admission	1	0.429	1.425	0.592	3.427
	less than 7days	2	0.104			
Length of ICU stay	7-14days	1	0.277	2.084	.555	7.828
	more than 14days	1	0.039	4.113	1.074	15.761

complex care in the ward environment. (NICE, 2007). This may also be because inexperienced nurses and doctors struggle to provide the necessary complex care (Endacott et al., 2007). This may also be due to intensive care staff that did not closely follow patients' progress on the ward for a few days to monitor recovery of multisystem disease and assure good continuity of care. Limitations of this study were relative scarcity of clinical data available on the patient's chart and lack of some socio demographic variables as the data was collected retrospectively.

Conclusion

Intensive care units provides patients with severe and life-threatening illnesses and injuries, which require constant, close monitoring and support from specialist equipment and medications in order to ensure normal bodily functions. Majority of ICU patients in Nigst Eleni Mohammed Memorial Hospital were male. Early admitted and conscious patients are more likely survive than the others. Over two fifth of the patients admitted to ICU died. There may be a limited infrastructure, personnel, and resource which likely contribute to high mortality rates. Therefore, it is very important to have well organized and adequate infrastructures, personnel and resources to provide optimal care for critically ill patients.

ABBREVIATIONS

ICU, Intensive care unit; **JUSH,** Jimma University Hospital; **NEMMH,** Nigst Eleni Mohammed Memorial

Hospital; **SSA,** sub-Saharan Africa.

CONFLICT OF INTERESTS

The authors have not declared any conflict of interests.

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