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BARRIERS TO THE DETECTION, MANAGEMENT AND PREVENTION OF PREECLAMPSIA/ECLAMPSIA IN ETHIOPIA

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ABSTRACT

BACKGROUND: Preeclampsia is the third leading cause of maternal mortality in Ethiopia accounting for 11% of maternal deaths. Barriers to the diagnosis, management and prevention of Preeclampsia are not well studied in Ethiopia.

OBJECTIVE: To explore barriers to the detection, management and prevention of preeclampsia/ Eclampsia in Ethiopia

METHODS: review of scientific papers on preeclampsia detection, management and prevention was made after employing search strategy and browsing through data bases (PubMed, Google Scholar,) using both text words and medical subject headings as appropriate. A simple word data extraction format was prepared to extract data from national documents including the availability and content of policy, guidelines, protocols and training materials on preeclampsia as well as the procurement process and availability of essential drugs in management and prevention of preeclampsia. Eight in-depth interviews were conducted with relevant stake holders at all levels of health care provision to get insight on their opinion on the challenges in the detection management and prevention of preeclampsia at individual, health care facility and policy level. Data was transcribed verbatim. Framework for analysis of barriers at three levels (health system, care provision and individual) was devised and narrative synthesis of findings done

RESULTS: Findings from eight primary studies; three demographic surveys (DHS), 11 national documents (2 policy papers; 2 legislations; 4 guidelines; 1 protocol and 2 training materials) and transcribed data from the in-depth interviews were included for the narrative synthesis. The barriers at health system level include : lack of national policy or protocol exclusively on preeclampsia.; very outdated management guidelines and protocols; poor drug procurement process and distribution; shortage of drugs (magnesium sulphate); restrictive protocol for administration of 1st dose of magnesium by frontline workers; lack of well-defined protocol on elements of referral and pre-referral care; inadequate CeMONC facilities and training of health professionals on management of preeclampsia; lack of recommendation to use aspirin and calcium for preeclampsia prevention in the protocols/ guidelines.

At health facility level inadequate training; perceived inability to provide magnesium; lack of local protocols; substandard quality of care and poor knowledge on preeclampsia by health providers and fear of administering magnesium sulphate were barriers whereas delayed care seeking; seeking alternative cultural remedies and poor awareness on preeclampsia were barriers at community level.

CONCLUSIONS: There are substantial barriers to the detection, management and prevention of preeclampsia at all levels of health care provision which should be addressed with concerted effort from all responsible stakeholders.

KEY WORDS: Preeclampsia, Eclampsia, Barriers, Diagnosis, Management, Prevention, Ethiopia

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INTRODUCTION

Preeclampsia/Eclampsia contribute to 18% of the 287 000 yearly maternal deaths globally[1]. However, the impact of the disease is disproportionately higher in developing countries where interventions are ineffective due to late presentation of patients and health facility constraints [2].

Pre-eclampsia and eclampsia is usually managed at higher centers[3]. Appropriate referral protocols with adequate pre-referral care at first level health facilities are also important[4]. A well-functioning health system, providing adequate management of preeclampsia care at different levels of maternal healthcare is imperative for favorable maternal and perinatal outcomes. Management of SPE/E poses a challenge in low- and middle-income countries due to a lack of basic supplies, health worker shortages, limited competencies of frontline providers, and health systems challenges that lead to delays in women receiving necessary treatment[5, 6]

Although there are no representative community-based data on its magnitude, preeclampsia/ eclampsia is one of the major maternal health problems in Ethiopia. The relative contribution of eclampsia for maternal deaths in hospital studies has progressively increased from 6.5 % in 1983 to 35.7% in 2008 [8]. In the most recent national survey (2016), preeclampsia was the third leading cause of death accounting for 11% of all direct maternal deaths[9].

In Ethiopia, two national EmONC surveys were done but the focus in relation to preeclampsia was only on clinical care provision at health facility level. There are numerous facility-based studies on preeclampsia/ Eclampsia but most are primarily focused on incidence and pregnancy outcome of preeclampsia. Moreover, there are no studies/clinical audits addressing the quality of preeclampsia care as well as no qualitative studies to explore views on the challenges in preeclampsia care across all levels of health care professionals and administrators.

A comprehensive exploration of potential barriers at all levels of the health care provision (system, health care provision/facility and individual) will give the opportunity to health care managers and providers to identify gaps and devise effective interventions. Hence the aim of this study was to explore barriers in the detection, management and prevention of preeclampsia/eclampsia operating at three levels of health care provision (health system, service provision/facility & community) in Ethiopia with a focus on barriers at policy, health facility and community level

METHOD AND MATERIALS

Literature review and in-depth interviews of representatives from all stakeholders was employed.

1. Literature review

1.1 Search strategy and Information sources for scientific papers (appendix -1)

The following categories of terms in different combinations were used for electronic searching of relevant articles both in text word and MeSH as appropriate (search strategy: supplementary file): Preeclampsia, eclampsia, management; magnesium, diazepam, barriers/factors; health care seeking, Aspirin, guidelines, policy, prevention, Ethiopia. MEDLINE (PubMed interface) EMBASE (OVID interface) and GOOGLE scholar data bases were browsed. The official websites of institutions working in the fields of maternal and child health in Ethiopia were also searched. The PRISMA flow diagram was used to select the relevant resources for the review (Figure-2)

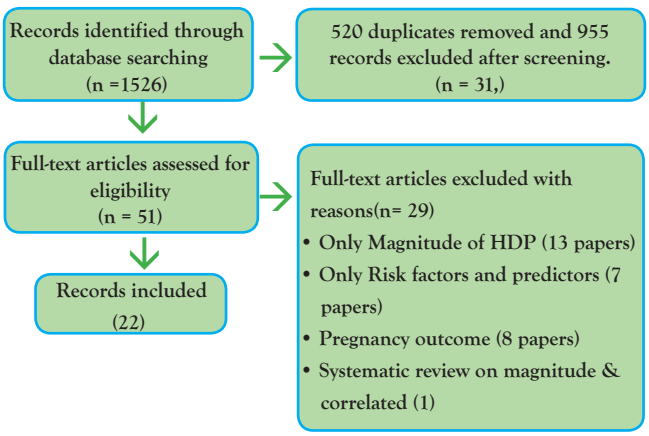
1.2 Inclusion criteria

All resources including: journal articles, guidelines, short communications, commentaries, national surveys (DHS), National Health policy and legislation documents, Standard Treatment Guidelines (STG) s, management Protocols, clinical guidelines, national training materials which have addressed any of the following aspects of the diagnosis, prevention and management of preeclampsia/eclampsia were included: availability of diagnostic equipment, availability of drugs; use of loading dose of magnesium sulphate (MgSO4) at community/lower health facilities, use of aspirin; use of anti-hypertensive, trainings on management of Preeclampsia/Eclampsia; health providers attitude; quality of preeclampsia care, community awareness & health-seeking behavior on Preeclampsia/Eclampsia. Records included were those with publication date from 1997 to 2018.

1.3 Data Extraction

A customized simple word format was prepared to record the key information on barriers to the prevention and treatment of preeclampsia at the three levels of health care provision as shown in the framework. (Figure 1 and table 3 in Supplementary file)

1.4 search outcome



2. In-depth Interview

An open ended structured interview guide was prepared and In-depth interviews (IDI) were conducted with stakeholders at various levels. All Providers were asked about the challenges/opportunities in the diagnosis, management and prevention of Preeclampsia/Eclampsia at different level of service provision (policy, health facility and individual) and their recommendation to improve the quality of preeclampsia care. The Stakeholders include: policy makers at the Ministry of Health, implementing partner agencies, focal persons from the Ethiopian Midwives Association (EMwA), Ethiopian Society of Obstetricians and Gynecologists (ESOG), FMHACA, program officer from NGOs, and practicing Obstetrician and Gynecologist. They were selected based on recommendations from leaders in the institutions taking into consideration the years of experience and degree of engagement in maternal health. The data was transcribed verbatim. The interviewer for the IDIs was an MSc nurse with adequate previous experience in qualitative data collection and verbatim transcription. A one-day training & Orientation on the IDI guide was given to the data collector. The interviews were face to face and tape-recorded for further analysis. In addition to the tape recording, the research assistant took take field notes.

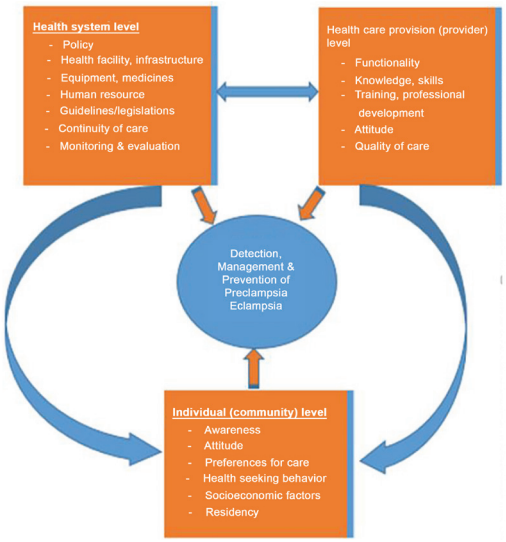


Figure 1: Framework for analysis of Facilitators & barriers to the clinical care & prevention of preeclampsia

RESULTS

Characteristics of the reviewed documents.

A total of 22 documents were included in this review. Eight primary studies; three demographic surveys (DHS) and 11 national documents. The national documents included: policy [2]; legislations[2]; Standard Treatment Guidelines (STGs)[4]; protocol[1]; Training materials on Emergency Obstetric care[2].

All of the eight primary studies were facility based (most in district and tertiary hospitals) except a single study on Knowledge of emergency maternal conditions in Gondar. Most were conducted in major towns in the different regions of Ethiopia. A single study was a secondary data analysis from a national EmONC survey. The focus areas of the papers were: Treatment of preeclampsia/eclampsia (magnesium sulphate) (3 papers); KAP on preeclampsia/eclampsia and health care seeking of patients (2); System/facility constraints in the diagnosis & management of preeclampsia/eclampsia (3) The findings on barriers to the detection management and prevention preeclampsia across all methods of data extraction were synthesized using the analysis frame work (**Fig 1**) and summarized in **table 1**.

Table 1: summary of the major findings from all data extraction methods on barriers to the Detection, management and prevention of Preeclampsia (stratified according to the analysis Framework)

	Level and category of barriers	Findings	Resources & reference #
Individual level Barriers (s)	Policy	No dedicated policy on Preeclampsia/eclampsia	IDI, all national documents1[11-18]
	EmONC facilities	Met need for EmONC low (33%) Poor infrastructure (ICU, beds)	EmONC Survey 20169 IDIs
	regulations	Drugs not registered Poor Distribution system	EmONC Survey 2016[9] IDI, NEML FMHACA (2014)[11]
	Health care provider	Inadequate trained health professionals	Inadequate trained health professionals
	Guidelines & protocols	- provider not specified -Mg use not recommended at HC or by HEW -elements of referral not detailed prereferral care not well addressed - no national Protocol on PE/E Aspirin prophylaxis and/or Calcium for preeclampsia prevention not included	EmONC survey (2016)[9] 3 national guidelines [13,14,15] 1 national protocol[16] 2 national training manuals[17,18]
	Equipments, drugs	- urine test strips - Availability of magnesium & antihypertensives limited	1 Article[12] IDIs EmONC 2016 survey[9]
	Referral pathways	- poor referral directory & liaison - no national referral guideline - no national referral guideline	3 national guidelines[13,14,15] 1 protocol[16] EmONC 2016 survey[9] IDIs2 national training Materials[17,18]
Health care Provision level	Care provision	- Limited Eclampsia care Providers - the spectrum of care providedis limited (administration of magnesium, antihypertensives,)	4 Articles [21,22,23,24] EmONC Survey (2016)[9] IDIs
	Training	- inadequate training on EmONC -limited providers of magnesium	1 article[21]IDIs
	Institutional protocols on Preeclampsia	- lack of management protocols in hospitals	2 articles[19,24]
	Attitude/perceptions	- perceived inability to provide Magnesium sulphate	EmONC Survey (2016)9
	quality of care	- substandard quality of PE/E care	1 Article[26] IDIs
	Knowledge about condition	Poor knowledge on danger signs of PE/E by low level providers	1 Article IDI
Individual level Barriers (s)	Health-seeking behavior and	Poor health care seeking Among women with PE/E	5 Articles [21, 27-30] IDIs
	Preferences for care And myths	Alternative cultural remedies Preeclampsia thought to be caused by evil spirits	1 Article[27] IDI
	Knowledge of Preeclampsia. on Preeclampsia	Poor knowledge of pregnant women	1 Article[30]

1. System level

1.1 Strategies & Policy

All of the national documents reviewed and IDIs revealed that there is no national policy exclusively on the prevention & management of preeclampsia.

'There is a health policy protects maternal health and related Reproductive Health Strategy that focuses primarily on bleeding. There is no specific policy for pre-eclampsia and eclampsia. It could be included in the strategy." IDI, federal policymaker

1.2 Regulations and Drug procurement

All the drugs used in the management & prevention of preeclampsia/ eclampsia have been included in the revised fifth 2014 national essential medicine list of Ethiopia [11]. There is a functional procurement system in place with 97% of facilities having drugs/supplies being through the MoH[9]. But there was no information on whether there is a functional distribution system in place. None of the national documents reviewed indicated registration of the most important drug (magnesium) in the country's pharmaceutical environment

Two of the participants of the IDI expressed their concern regarding the procurement process and distribution of drugs, notably magnesium sulphate.

'magnesium availability is not uniform. The distribution is not need based, unfair'. IDI with EMWA delegate.

'there is no proper need-based plan at FMOH level to achieve adequate stock of drugs (esp. magnesium). There is also a problem of distribution....' IDI, ESOG delegate

1.3 Availability Emergency Obstetric Newborn Care (EmONC) facility

Despite the government's target of 100 percent treatment of obstetric complications in health facilities, met need for EmONC in 2016 was low (18 percent in all facilities). Regionally, met need for EmONC ranged from 3 percent in Gambella to 83 percent in Addis Ababa. Most regions had a met need for EmONC of less than 33 percent [9].

1.4 Human resource

Ethiopia is one of the countries that have implemented the concept of task shifting. Accelerated training of health officers, midwives, health extension workers, integrated emergency surgery and obstetrics graduates and other health professionals was done under the HSTP strategy from 2003-2014 [10]. But despite the presence of these professionals and HEWs, most obstetric services and procedures were highly dependent on obstetricians/gynecologists [9].

1.5 Availability of Equipment/medicines/supplies

A study done based on the 2008 national EmONC survey showed the limited availability of urine test strips, anticonvulsants and antihypertensives as challenges, especially at Health centers[12]. The overall availability of anticonvulsants was 57%, with Diazepam being the most available (91%). Although most of the facilities had an antihypertensive in stock (74% HC; 99% hospitals), overall availability of hydralazine was 43%. The shortage was more severe at health centers (25%). Nifedipine was available only in 42% the facilities.[12]

However, there was improvement in the availability of equipment & drugs necessary in the 2nd EmONC survey. The most widely available basic equipment in the maternity area were stethoscope (98 percent), blood pressure cuff (94 percent). Drug supplies were available in 97% of the facilities with human resource for administration being available in 98%. But the stock out at time of survey was high (53%)[11]

The reflections from the IDIs detailed below also complement the findings of the desk review.

'The shortage of magnesium is not really because the medication is not available. At some locations, it expires before use. To resolve this problem, we have established linking systems among the health centers in Addis Ababa to communicate and start sharing the medication from where it's available...one health facility might not have treated any hypertensive cases and the other might have a lot of such cases at that time ' IDI, federal policymaker

'There is a big gap between our request and what we are provided ..... nothing has been provided in time in terms of equipment and medicines." .....Gynecologist, urban health center

'Mothers are suffering due to unavailability of some drugs like magnesium especially in private health facilities. Therefore, proper plan, adequate stock and need based distribution are necessary' ESOG delegate.

'availability of calcium gluconate is a problem especially in lower level facilities' IDI midwife Maternity foundation and ESOG delegate

1.6 Guidelines/protocols & training materials

The contents of the three Standard Treatment Guidelines (STG)s developed for the three levels of health facilities were reviewed and findings are summarized (table 2) Administration of magnesium and anti-hypertensives was not recommended at Health centers &referral of all patients is emphasized[13]. At primary and General hospitals, administration of anticonvulsants (1st line Mgso4 if not available diazepam) and antihypertensives (1st line hydralazine if not controlled labetalol or nifedipine) are recommended including expedited delivery[14,15]. Methyl Dopa is recommended for the long term control of hypertension[14,15].

In the 2010 is a national Obstetrics & Gynecology protocol on obstetrics and gynecology, the use of hypertensives like nifedipine, labetalol, hydralazine, atenolol for control of hypertension is incorporated but the use of Diazepam was recommended over magnesium for convulsions because of the unavailability of MgSO4 at that time[16]

The first national protocol on the administration of magnesium was developed by ESOG in collaboration with UNICEF & MOH in 2007. Although it is being used widely in many higher-level facilities, there was no information whether it is being available for wide scale utilization by all levels of health facilities.

The revised national Training manual on BEmONC (Jan 2018) includes a dedicated module on HDP with updated guidelines on the Diagnosis, management & prevention of preeclampsia/eclampsia[17]. The training manual for HEW also includes the diagnosis and early referral of preeclampsia[18]. Importantly, administration of the 1st dose of magnesium at lower health facilities (including by HEW) is not mentioned.

Table 2: National documents reviewed and the contents on preeclampsia & Eclampsia

Document (document name, year of publication)	Information (recommendations) contained on				
	Dx of PE/E	Mg sulphate	Antihyp- ertensive	Prevention(ASA)	Referral
National Guidelines/protocols					
[13] Standard Treatment Guidelines for General Hospitals - Ethiopia (FMHACA 2014) PP: 546-553	Yes	Yea	Yes	Yes (high risk)	No
[14] Standard Treatment Guidelines for Primary Hospitals - Ethiopia (FMHACA 2014) PP: 492-498	Yes	Yes	Yes	Yes (high risk)	Yes(Eclampsia
[15] Standard Treatment Guidelines for Health Centers - Ethiopia (FMHACA 2010) PP: 254-256	Yes	No	No	No	Yes (P/E & E)
[16] Management protocol on selected obstetrics topics (FMOH, 2010) PP: 176-192	Yes	Yes	Yes	No	Yes
		Training materials			
[17] Basic Emergency Obstetric & newborn Care Training manual (FMOH) 2017	Yes`	Yes	Yes	Yes	Yes
[18] Blended Learning Module for theHealth Extension Programme: pregnancy Induced Hypertension (FMOH)	Yes	No	No	No	Yes
[36] Ethiopian Primary Health Care Clinical Guidelines	No	Yes	Yes	No	No

The absence of facility based (local) management protocols & guidelines on preeclampsia/ eclampsia was identified in 2 of the reviewed studies[19, 20].

'.....protocols job aids posted in health facilities are available but not wide spread....' IDI, EMWA delegate

'.....there is a problem of availability of guidelines, most are found at individual levels. It is better to be put it at mini library and distribute to the facility. The importance of these guide lines is to update knowledge and skill of health professionals to provide quality care, increase their confidence, and avoid/ minimize ethico-medical issues...' IDI, Program officer NGO

1.7 Referral system

There is a paucity of data on the referral process of patients with preeclampsia/ eclampsia in Ethiopia. The functionality & effectiveness of the referral system was explored in the 2016 EmONC survey[9]. Seventy-three percent of women with obstetric complications admitted at health centres were referred out to a higher level of care. Hypertensive disorders were the third leading cause of referral. Only 18 percent of woredas had a liaison officer in every facility. Moreover, only 17 percent of facilities had their own dedicated functioning ambulance and 26 percent had written guidelines [9]

'..... there are referral challenges such as lack of ambulance. Although the trained HCPs have skills to provide maintenance dose, the protocol obliges them to refer after providing loading dose. So, referral delays happened.' IDI, EMWA delegate

' ....There is no problem by now in towns since liaison system is established .... But, there may be delay in referring at rural areas....' IDI with delegate from NGO working on maternal care

'.....there is referral problem. This limit the early treatment..... In addition, transportation is not available. There should be feedback & referral audit to strength referral system...' IDI, Mid-wife Maternity foundation

2. Health service provision level Barriers (Facility & provider)

2.1 Preeclampsia Care provision

Care provision for preeclampsia/eclampsia was explored in 3 national surveys. In all studies the least provided basic signal function was parenteral anticonvulsants. Despite 72% and 68% of the facilities being well stuffed, only 20%, 22%, and 26 percent of facilities respectively in 2015, 2016 and 2008 provided anticonvulsants [9,21, 22]. The administration was disproportionally higher in hospitals compared to HC (80% HOSPITAL; 22% HC in 2008). 83.3% v 12.1% in 2008.

There are only 3 articles focused on the availability, use and the safety of magnesium sulfate[23,24,25]. A clinical audit (study) was done at three teaching hospitals in Addis Ababa in 2008 after the first experience in the use of magnesium in the Ethiopian health care system which showed appropriate selection of candidates in (94%), correct administration of loading dose in 90% and magnesium toxicity in 1.1%[23]. A study in Jimma compared the use of magnesium sulphate and diazepam in the management of severe pre-eclampsia and eclampsia and concluded that Magnesium sulphate is more effective than diazepam[24].

There are no studies done to explore the administration and effectiveness of 1st (loading) dose of magnesium sulphate by frontline health workers (HEW, at health post/health center level). There are also no studies addressing the prevention of preeclampsia through evidence-based recommendations (ASA and/or Calcium).

'.... I am not sure if there is protocol on administration of magnesium by lower level health care providers but 1st dose is given at health centers.....' IDI EMWA delegate and midwife at maternity foundation.

'.... There is a problem of appropriate diagnosis and referral what I observed during supportive supervision. As to my experience and guidelines, those patients should be managed every one hour and strictly taking/ following vital signs, whereas they provide the drug out of the guide line sated time and take vital signs while, only, the provide medication....'. IDI program officer at NGO

2.2 Training/expertise

The availability of providers with specific EmONC training was limited, with the shortage more pronounced at health centers. Overall, approximately two-thirds of the facilities reported having staff that could provide parenteral anticonvulsants in 2008 [21], while it was 86% in 2016 [9]. The 2016 EmONc survey also showed few midwives working in health centers/clinics have received

BEmONC training. Fewer than 5 percent of medical doctors and health officers have received CEmONC training. There were also gaps in the percent of Ob/Gyns and ESOs who have been trained in CEmONC [9].

'.... Refreshment training for those training for those trained health care professionals since they may forget if they did not expose for frequent cases. And availing necessary materials are things to be done further.....'IDI, EMWA delegate

2.3 local (institutional) guidelines

Effective and evidence-based provision of care by a health provider may depend on the availability local of management guidelines/protocols. The absence of facility based (local) management protocols & guidelines on preeclampsia/ eclampsia was identified in 2 of the reviewed studies (19,24).

2.3. Attitude/Perception

In the 2016 national EmONC survey, interview with health providers revealed that a substantial proportion of providers (13 percent) indicated that they would never give a loading dose of magnesium sulphate, including 20 percent of nurses [9]. This may be associated with lack of experience with management of PE/E and/or fears and poor perceptions about magnesium

2.4 quality of PE/E care

A substandard quality of care compared to both African and international standards in the management of preeclampsia and eclampsia was reported by a study done in Dilla, south Ethiopia which showed significant difference in how mild and severe pre-eclampsia and eclampsia; high caesarean sections rate (89%); magnesium administered only for 15 percent of women with severe pre-eclampsia [26]. But there is no a single study exclusively exploring quality of care at different levels of health care provision.

Concerns on the quality of preeclampsia care were also expressed by the participants of the IDIs.

'..... Regarding the management of PE/E facilities have constraints like e.g Ca gluconate for management of complications and ICU back up,.....there are problems with early identification giving adequate pre-referral care especially in lower health care areas....'. IDI, ESOG delegate

'.... due to lack of ICU and proper monitoring many mothers die (Eg: eclampsia, PPH due to coagulopathies) .....' Gynecologist at Government hospital

'..... Even, auditing whether the referral case & management were appropriate or not is good. This will provide opportunity to learn. In facilities where there are medical doctors and seniors. We have seen improvements because they have a morning session in which they discuss on difficult cases. So, everyone knows how to manage that. So, it helps the facility to provide quality service....'. Mid-wife, NGO

3. Individual (community) level

There are very few studies addressing the influence of community (individual) factors on the early detection & management of preeclampsia/eclampsia. The available data from the limited studies is not comprehensive enough to help understand the effect of individual level factors on preeclampsia/eclampsia care. Health seeking behavior of mothers to emergency obstetric conditions including preeclampsia/eclampsia was explored in 5 studies [21, 27, 28, 29, 30]. The 2008 national EmONC baseline survey showed that only estimated 3.8% of women with eclampsia received care at health facilities [21].

The study in Gondar revealed that 50% of women with emergency obstetric complications failed to seek care from a skilled birth attendant[29]. It was also reported in another study which explored health care seeking of eclamptic women in Eastern Ethiopia that only 43% of eclamptic women visited health facility after experiencing prodromal symptoms of Eclampsia[27]. There was also considerable delay in presentation of the patients after developing convulsions. A study done at Dire Dawa town assessing pregnant women's knowledge of preeclampsia found that only more than half of pregnant women had knowledge of pre-eclampsia [30]

'.... The community's' awareness on preeclampsia is poor..... ' IDI, ESOG Delegate

'.... Community awareness is low (both mothers and their husbands), especially those mothers who attend ANC have poor knowledge on danger symptoms and signs of pregnancy' IDI maternal health expert, NGO.

'.... I consider it as problem because the community perception towards eclampsia is questionable. Therefore, they prefer traditional and regional treatment than

health facility. They consider it as spirit issue.....' IDI, Mid-wife maternity foundation

'.... The community perceives it as spiritual related problems so they do not visit health facility rather go to holly water. So, mothers came after they convulse. So, awareness creation is necessary since the problem is being prevalent....'. IDI, Program officer, NGO

DISCUSSION

In a well-functioning health system, the opportunities for reducing maternal and perinatal morbidity and mortality from pre-eclampsia and eclampsia are enormous. Each country's political environment, health care system and pharmaceutical conditions are unique. For the purposes of planning specific interventions, data must be obtained on a country's context in order to develop appropriate strategies for improving access to care & quality of maternal health care provision. Hence, this study identified barriers in clinical care and prevention of preeclampsia/ eclampsia which can be envisioned to operate at three levels. At system level: lack of policy on Preeclampsia, inadequate and substandard EmONC facilities, lack of updated and detailed guidelines/protocols, inefficient drug procurement and distribution as well as poor referral system were some of the barriers. At health care provision level: substandard care, inadequate training, shortage of equipments & drugs, poor pre-referral care, health professionals perceived incompetency of providing eclampsia care and absence of local management protocol were the barriers. Individual level barriers were: Poor awareness of community on Preeclampsia eclampsia, wrong cultural beliefs and myths regarding preeclampsia.

A dedicated policy on Preeclampsia/Eclampsia with improved legislations in terms of drug registration and improved procurement strategies (to target frequent stock outs) are needed to address the observed barriers at health system level in Ethiopia. Persistent gaps in policy (e.g. lack of an explicit PE/E policy) and budget allocation to health systems—including health worker remuneration, HEW support, and supply chain functioning—limit the extent to which PE/E can be effectively addressed.

Even though there has been progressive improvement in the availability of functional EmONC facilities, the high unmet need suggests there is still a lot to be done in terms of ensuring access to quality Preeclampsia care in most regions of Ethiopia. The lack of ICUs which has been expressed in IDIs is concerning as significant number of patients with Eclampsia need intensive care and mortality is directly related with efficiency of ICU management.

Task shifting of health professionals has been in effect in Ethiopia for long but the review revealed still the majority of women with pregnancy complications rely on availability of Gynecologists[10]. Hence a continuous capacity building of other health professionals with supportive supervision should be in place. Particular attention should be given to empowering HEW to detected hypertension at community level via implementing simple evidence-based approaches. In Bangladesh a program to manage preeclampsia at primary level facilities through cascade training, to screen for severe preeclampsia and eclampsia and initiate treatment with magnesium sulfate was successful [6]. Experience from four developing countries regarding the feasibility of community level interventions for pre-eclampsia, recommended strategies to improve health worker knowledge and routine management of HDP and consideration of expanding the role of community health workers to reach the most remote women and families with health education and access to health services[7]

In an era where scientific evidences are emerging and ever changing in the field of hypertension in pregnancy, the presence of very outdated guidelines and protocols in Ethiopia calls for regular updating of them as new evidences emerge. The protocols should be well detailed to address specific issues in the management of preeclampsia eclampsia. Among others, Including Prophylactic Aspirin and calcium supplementation in the prevention for preeclampsia and specifying details of referral and pre-referral care should be considered. Although not universally accepted, advocating the administration of 1st dose of magnesium by lower level health professionals and HEW should be considered.

The quality of Preeclampsia care provision in Ethiopia is not well explored and the only study done in Dila

has identified that care provision is inconsistent with magnesium being given for few women with severe pre-eclampsia[26]. Hence implementing a criterion-based auditing which has been shown to be effective in some African countries too should be considered at different levels of health facilities[31]. Strengthening in-service training of health care providers with spelling out of myths regarding the administration of magnesium is imperative. Developing local management protocols on preeclampsia/eclampsia (specially at higher centers) is advised to ensures that standard care is provided to all patients. In a Brazilian study lack of access to magnesium sulfate in primary care facilities, was reported. Clinical protocols for professional guidance were also lacking in the emergency mobile care service[34].

In developing countries, the use of maternal health services is significantly affected by cultural beliefs and values that shape the way individuals perceive their health and available healthcare services[32]. This is even more crucial in Ethiopia where there are diverse ethnic groups with wide cultural differences. This review revealed that there is poor awareness, delayed health care seeking and myths regarding preeclampsia in Ethiopia. This was also evident in a study done in Dhaka where poor knowledge of Eclamptic mothers to the cause and consequences of preeclampsia was reported[35]. Behavioral communication strategies both at health facility and community level should be implemented. Simple but effective ways of educating mothers on danger signs of preeclampsia (e.g maternal pictorial cards) should also be considered[33]. One important aspect of barriers to timely maternal health care access are tied to women's decision-making power, physical and financial access constraints, and experiences of care. Further studies (especially qualitative) on individual level barriers involving community members and survivors of preeclampsia is imperative.

One of the limitations of this review is that the IDIs were limited to stakeholders at the Capital city and the federal government level. Inclusion of reflections from regional states might have given a more comprehensive view of barriers which might be also region specific.

CONCLUSIONS & RECOMMENDATIONS:

There are significant barriers to the detection, management and prevention of Preeclampsia at Policy, health care provision and community levels which should be addressed with concerted efforts from all responsible stakeholders. Hence, updating the national guidelines, protocols and training materials on Preeclampsia, ensuring availability of drugs and supplies, providing regular refresher trainings to health professionals; criterion based auditing of preeclampsia/ Eclampsia care, improving capacity of facilities, strengthening referral pathways and prereferral care provision; building capacity of low level health workers on detection early referral and administration of 1st dose of magnesium; expanding the use of Aspirin and/ or Calcium for preeclampsia prophylaxis; increasing community awareness on preeclampsia & spelling out myths regarding preeclampsia are recommended.

Competing interest: None

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REFERENCES

1. Coppage K, Sibai BM, Glob. Lib. Women's med. (ISSN: 1756-2228) 200; DOI 10.3843/GLOWM. 10158. March 12, 2010.
2. Kayode O. Osungbade and Olusimbo K. Ige. Public Health Perspectives of Preeclampsia in Developing Countries: Implication for Health System strengthening. Hindawi Publishing Corporation Journal of Pregnancy. Volume 2011, Article ID 481095, 6 pages doi:10.1155/2011/481095
3. Josephine Changole. Perspectives of first level health care providers on the management of pre-eclampsia and eclampsia in Blantyre, Malawi. Masters Thesis, 2013. doi:http://urn.nb.no/URN:NBN:no-37429
4. Ching-Ming Liu, et al. Comparison of Referral and Non-Referral Hypertensive Disorders during Pregnancy: an Analysis of 271 Consecutive Cases at a Tertiary Hospital Chang Gung Med J 2005;28:326-34)
5. Goldenberg RL, McClure EM, Macguire ER, Kamath BD, Jobe AH. Lessons for low income regions following the reduction in hypertension-related maternal mortality in high-income countries. Int J Gynecol Obstet 2011;113(2):91–5.
6. Anna Williams et al., Management of Preeclampsia, Severe Preeclampsia, and Eclampsia at Primary Care Facilities in Bangladesh. Global Health: Science and Practice, 2019
7. Kinney MV, Smith JM, Doherty T, Hermida J, Daniels K, Belizán JM. Feasibility of community level interventions for pre-eclampsia: perspectives, knowledge and task-sharing from Nigeria, Mozambique, Pakistan and India. Reprod Health. 2016;13(1):125. doi:10.1186/s12978-016-0245-6. pmid:27716335
8. Ahmed Abdella. Maternal Mortality Trend in Ethiopia. Ethiop. J. Health Dev. 2010;24 Special Issue 1:115-122.
9. Emergency Obstetric and Newborn Care (EmONC) Assessment 2016. Final Report. Ethiopian Public Health Institute. Addis Ababa, Ethiopia
10. Federal Democratic Republic of Ethiopia Ministry of Health (FMOH). Health Sector Transformation Plan: 2015/16 – 2019/20. Addis Ababa, Ethiopia, 2015.
11. Food, Medicine and Health Care Administration and Control Authority. 2014. National Essential Medicine List.Fifth Edition Addis.
12. Gaym A. et.al. Disease burden due to pre-eclampsia/eclampsia and the Ethiopian health system's response. Int J Gynaecol Obstet (2011) vol 115 (1): 112-1611. Federal Democratic Republic of Ethiopia Ministry of Health (FMOH). Health Sector Transformation Plan: 2015/16 – 2019/20. Addis Ababa, Ethiopia, 2015.
13. Drug Administration & Control Authority of Ethiopia (2010). Standard Treatment Guidelines for Health Centers - Ethiopia (FMHACA 2010) PP: 254-256
14. Food, Medicine and Health Care Administration and Control Authority (2014): Standard Treatment Guidelines for General Hospitals – Ethiopia. PP: 546-553
15. Food, Medicine and Health Care Administration and Control Authority (2014): Standard Treatment Guidelines for General Hospitals – Ethiopia. PP: 492-498
16. Management protocol on selected obstetrics topics (FMOH, 2010). PP: 176-192
17. Federal Ministry of Health. Basic Emergency Obstetric & newborn Care Training manual Jan 2018.
18. Federal Ministry of Health of Ethiopia (2015). Blended Learning Module for the Health Extension Programme: Chapter 17; Pregnancy Induced Hypertension.
19. Vata K. et.al. Assessment of prevalence of preeclampsia from Dilla region of Ethiopia. BMC Res Notes (2015) 8:816. DOI 10.1186/s13104-015-1821-5
20. Nega Desalegn, Merga Haile. Causes of Admission and out Comes Among Preeclampsia and Eclampsia Mothers Admitted to Jimma University Specialized Hospital Intensive Care Unit. Clinical Medicine Research. Vol. 4, No. 5, 2015, pp. 154-159. doi: 10.11648/j.cmr.20150405.16
21. Gaym A. et.al. Disease burden due to pre-eclampsia/eclampsia and the Ethiopian health system's response. Int J Gynaecol Obstet (2011) vol 115 (1): 112-16
22. Ethiopia Service Provision Assessment Plus Survey 2014. Key Findings. Ethiopian Public Health Institute (EPHI). www.ephi.gov.et
23. Workineh G. Kumbi S. Use of magnesium sulfate in pre-eclampsia and eclampsia in teaching hospitals in Addis Ababa: a practice audit. Ethiop Med J (2008): 48(2): 147-52
24. Kassie G. Maternal outcomes of magnesium sulphate and diazepam use in women with severe pre-eclampsia and eclampsia in Ethiopia Pharm Pract (Granada):2014, vol 12 (2):400
25. Fentahun M. The use of magnesium sulphate in Eclampsia. Ethiop Med J (2011)
26. Vata K. et.al. Assessment of prevalence of preeclampsia from Dilla region of Ethiopia. BMC Res Notes (2015) 8:816. DOI 10.1186/s13104-015-1821-5

27. Gudu W. Prodromal Symptoms, Health Care seeking in Response to Symptoms and associated Factors in eclamptic Patients. Gudu BMC Pregnancy and Childbirth (2017) 17:87 DOI 10.1186/s12884-017-1272
28. Birhan Y. et.al. A five years retrospective study of risk factors associated with maternal mortality among eclamptic women in Hawassa University referral hospital. Eth Jour. Reprod Health. 2015
29. Worku AG, Yalew AW, Afework MF (2013) Maternal Complications and Women's Behavior in Seeking Care from Skilled Providers in North Gondar, Ethiopia. PLoS ONE 8(3): e60171. doi:10.1371/journal.pone.0060171
30. Helewina Fekenssa. Knowledge on preeclampsia and its associated factors among pregnant women visiting public health facilities in dire dawa city administration. Haromaya univ (2017) (MSc thesis, unpublished)
31. Hussein Lesio Kidanto et.al Criteria-based audit on management of eclampsia patients at a tertiary hospital in Dar es Salaam, Tanzania. BMC Pregnancy and Childbirth 2009, 9:13 doi:10.1186/1471-2393-9-13
32. Andersen, Ronald M. Revisiting the behavioral model and access to medical care: Does it matter? Journal of Health and Social Behavior Mar 1995;36(1)
33. MacGillivray I, McCaw-Binns AM, Ashley DE, Fedrick A, Golding J. Strategies to prevent eclampsia in a developing country: II. Use of a maternal pictorial card. Int J Gynecol Obstet 2004;87(3):295–300.
34. Lotufo et.al. Situational analysis of facilitators and barriers to availability and utilization of magnesium sulfate for eclampsia and severe preeclampsia in the public health system in Brazil. BMC Pregnancy and Childbirth (2016) 16:254 DOI 10.1186/s12884-016-1055-0
35. Jabeen M, Akhter D, Shimul S., Salma U. Health Seeking Behavior of Women with Eclampsia Attending at Institute of Child and Mother Health in Dhaka City. Medicine today. 2018 Volume 30 Number 02
36. Ethiopian Federal Ministry of Health. Ethiopian Primary Health Care Clinical Guidelines (2017)

SAFE INDUCED ABORTION: KNOWLEDGE AND ATTITUDE AMONG MEDICAL INTERNS OF ADDIS ABABA UNIVERSITY

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ABSTRACT

BACKGROUND: Ethiopia has become one of the countries that have shown a significant reduction in maternal mortality concerning unsafe abortion after the revision of the abortion law that resulted in the legalization of abortion in certain circumstances since 2005. Medical interns are future physicians who will encounter many women in need of safe abortion in their careers. Their knowledge and attitude towards induced abortion will determine their practice.

METHODS: A cross-sectional descriptive study was conducted using self-administered questioner that was distributed among all 240 medical interns of Addis Ababa University, School of Medicine between September and October 2018.

RESULT: Two hundred and five medical interns have participated in the study with 85.4% response rate. Male respondents constitute 64.9%. The majority of the study participants, 63.1%, were followers of Orthodox Christian religion. Only 66% of the medical interns have the knowledge of all the indications for which the Ethiopia Abortion law permits safe abortion services. One hundred and ninety seven (96%) of the interns believe safe abortion is important but only 54% of them are willing to provide safe abortion services by themselves. The most common reason reported for not willing to provide a safe abortion service is a religion.

CONCLUSION: The study shows that most of the medical interns are aware of one or more of the indications to providing safe abortion under the current Ethiopian abortion law and that most have positive attitude towards the importance of safe abortion services but nearly half are not willing to provide safe abortion services.

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INTRODUCTION

Abortion is the termination of pregnancy before the age of viability, which is 28th weeks in the Ethiopian context. Abortion is an issue that affects every country around the globe. In countries that have decriminalized abortion, women are spared of the dire consequences of illegal abortion. In many other countries wherein, abortion is a criminal act, however, illegal abortion is the major cause of maternal mortality and other serious health problems.[1]

Unsafe abortion has nega¬tive consequences beyond its immediate effects on individual women's health. Treating complications increases the economic burden on poor families and incurs considerable costs to already struggling public health systems.[2]

Ethiopia's legal regime about abortion has been changing through time. Any form of abortion was illegal in Ethiopia two decades ago. In 2004, Ethiopia has enacted a new Criminal Code that has radically reversed the highly restrictive position of previous laws on abortion. In May 2005, Ethiopia's new Criminal Code came into effect.[1]

According to Article 551 of the penal code of the Federal Democratic Republic of Ethiopia termination of pregnancy are allowed under the following conditions: when the pregnancy results from rape or incest when the continuation of the pregnancy endangers the life of the mother or the child or the health of the mother or where the birth of the child risk the life of the mother, the fetus has an incurable and serious deformity, women with physical or mental disabilities, minors who are physically or psychologically unprepared to raise a child. In the implementation of the law women who request termination of pregnancy after rape and incest are not requested to provide evidence or/and identify the offender. And in case of minority, no additional proof of age is required additional to the stated age by the client.[3]

The top four causes of maternal mortality in Ethiopia in the year 1980-1999 were abortion- related complications (31%), obstructed labor/uterine rupture (29%), sepsis/infection (21%), and hemorrhage (12%). In the next decade after the updated abortion law, however, the top four causes of maternal mortality were obstructed labor/uterine rupture (36%), hemorrhage (22%), hypertensive disorders of pregnancy (19%), and sepsis/infection (13%). (4)

In 2014, there were an estimated 620,296 induced abortions in Ethiopia, resulting in a rate of 28 abortions per 1,000 women aged 15–49 annually, of which 53 % of them occurring in health facilities. The number of women receiving treatment in health facilities for complications of induced abortion is 103,648. (5)

Providers' attitudes have potential consequences for women's already with scarce access to safe abortion services. Safe public sector services are often not available for eligible women for reasons like providers bias, lack of medical equipment, or lack of trained personnel, and bureaucratic problem.[6]

The above data shows the burden on health professionals to provide comprehensive abortion care. Health providers are responsible for the provision of comprehensive abortion care services and are authorized to perform abortion procedures on women whose medical conditions warrant the immediate termination of pregnancy.[7] Medical interns are the future physician who will encounter many women in need of safe abortion in their careers. Their knowledge and attitude towards induced abortion will determine the practice of abortion and thus affects many.

In order to increase access to safe abortion, proper education of the service providers is essential. Physicians are being deployed to different areas of the country to give the service where they are involved in the provision of reproductive health services including abortion. Medical interns are one of soon to be abortion providers however, there is no abundant data that shows their basic knowledge regarding abortion practice and their attitude towards induced abortion. This study is aimed to fill this information gap.

METHODS

A cross-sectional study was conducted in September 2018 at Addis Ababa University, collage of health sciences, Ethiopia. All medical interns of Addis Ababa University during the study period were the source population. A total of two hundred five students (205) who gave consent for the study were included in the study.

The data was collected using a questionnaire in

English. A self-administered questionnaire structured with questions on demography, basic abortion-related knowledge, and attitudes towards induced abortion was distributed to all the study participants.

The data was distributed and then collected by an independent data collector. Data was checked manually and cleaned. The data was checked on daily basis of the data collection period by the data collector and the researcher acting as a supervisor. Before processing, the data was coded and cross-checked for completeness.

The analysis was performed using SPSS 20.0 software packages for statistical analysis. Appropriate measures of central tendency, frequency distribution, and cross tabulation were conducted. A p-value of less than 0.05 was considered a statistically significant association between assessed variables.

Protocol approvals were obtained from the Ethical Review Committee of the Department of Obstetrics and Gynecology of Addis Ababa University. Informed consent was sought before study enrollment

RESULTS

Two hundred and five medical interns have participated in the study with an 85.4% response rate. One hundred and thirty-three (64.9%) male and 72(35.1%) female medical interns were enrolled in the study. The mean age of the study participants was 24.5 years (standard deviation of 1.26 years). The majority of the study participants, 129(63.1%), were followers of Orthodox Christian religion followed by Protestant Christian 36(17.6%) and Muslim 17(8.3%).

One hundred and ninety-one (93.2%) of medical interns know about the indications for induced abortion allowed under the penal code of the Federal Democratic Republic of Ethiopia but only 134 (66.3%) know all of the listed indications for providing safe abortion service. Some of the wrong indications for providing safe abortion services that were mentioned include gestational age is below 12 weeks, being married and financial incapacity to raise a child; 58(28.4%) of the medical interns believe that financial incapacity alone is one of the indications for providing safe abortion service. Five study participants (2.4%) believe that provision of abortion is illegal in Ethiopia. Nearly three fourth (71.4%) of the medical interns do not know that a woman fulfilling the indication for safe abortion service should get the service within 72 hours.

Less than half (44.1 %) of the medical interns know that the preferred method of termination of pregnancy for the gestation of 9 weeks and less from LNMP. Sixty-six (32.2%) of the interns mentioned sharp metallic curettage as one of the safe methods of induced abortion in the first trimester. Hysterectomy was also mentioned as a safe abortion method by 35(17.2%)of study participants.

Table 1: Socio-demographic characteristics of medical interns of AAU, 2018

Demographic variables		Frequency	%
Marital status	Single	196	95.6
	Married	7	3.4
	Divorced	2	1
Place of Upbringing	Urban	151	73.7
	Semi-Urban	37	18
	Rural	17	8.3
Sex	Male	133	64.9
	Female	72	35.1
Religion	Orthodox Christian	129	62.9
	Protestant Christian	36	17.6
	Muslim	17	8.3
	Atheist	12	5.8
	Bahai	3	1.4
	Catholics	2	1
	Jehovah Witness	2	1
	Other	2	1
	Missing	2	1

Seventy seven (37.7%) medical interns reported the need for evidence of the actual age of the women like birth certificate, X-ray before provision of safe abortion service for minors. And 51(25.9%) of the study subjects reported the need for evidence of `rape` before provision of safe abortion service for women reporting the pregnancy is a result of rape.

One hundred and ninety seven (96%) of medical interns reported that safe abortion is important in preventing maternal mortality and morbidity but only 110 (53.7%) of them are willing to provide safe abortion service by

themselves. Sixty nine (33.7%) of interns reported that even though they support the idea of safe abortion service but are not willing to provide the service by themselves and reported that they will refer the client so that the service is provided by other health professional. Twenty six (12.6 %) of the interns reported that provision of abortion service should be made illegal in Ethiopia.

The most common reason associated with unwillingness of medical interns to providing safe abortion service is religion. 77(59.7%) of followers of Orthodox Christians and 10(83.3%) of followers of Muslim religion are willing to provide safe abortion service as oppose to 30(83.3%) Protestant Christian religion and 2 (100%) Catholic Christian followers are unwilling to provide safe abortion service. (Table 2) Among the socio-demographic variables statistical significant association for willingness to provision of safe abortion is found with only religion (p-value: 001). Age , Gender, Marital Status, place of upbringing of the interns were found to be statistically insignificant with willingness to provision of safe abortion services. **(Table 3)**

Table 2: Willingness to provision of safe abortion service among the different religion

Religion of the intern	Willingness to provision of safe abortion		Total
	Willing	Not willing	
Orthodox Christian	77 (59.7%)	52(40.3%)	129(100.0%)
Protestant Christian	6(16.7%)	30(83.3%)	36(100.0%)
Muslim	10(58.8%)	7(41.2%)	17(100.0%)
Atheist	9(75.0%)	3(25.0%)	12(100.0%)
Bahai	2(66.7%)	1(33.3%)	3(100.0%)
Catholic Christian	0(0.0%)	2(100.0%)	2(100.0%)
Jehovah Witness	1(50.0%)	1(50.0%)	2(100.0%)
Others	2(100.0%)	0(0.0%)	2(100.0%)
Total	**107**	**96**	**203**

Table 3: Comparison of sociodemographic characteristics by willingness to provide safe abortion

Characteristics	Willing to provide safe abortion	Not willing to provide safe abortion	Chi square test of independence
Gender			
Male	77 (58.3%)	54 (41.7%)	0.132
Female	32 (44.4%)	40 (55.6%)	
Marital status			
Single	102 (53.6%)	88 (46.4%)	0.526
Married	5 (71.4%)	2 (28.6%)	
Divorced	2 (100%)	0 (0%)	
Place of Upbringing			
Urban	77 (51.6%)	72 (48.4%)	0.156
Semi-urban	24 (64.8%)	13 (35.2%)	
Rural	8 (47%)	9 (53%)	
Religion			
Orthodox Christian	77 (60.1%)	51 (39.9%)	0.001**
Protestant Christian	6 (16.6%)	30 (83.4%)	
Muslim	10 (58.8%)	7 (41.2%)	
Atheist	9 (75%)	3 (25%)	
Bahai	2 (100%)	0 (0%)	
Catholic Christian	0 (0%)	2 (100%)	
Jehovah Witness	1 (50%)	1 (50%)	
Others	2 (100%)	0 (0%)	

**= P-value < 0.05

DISCUSSION

This study shows that 134(66.3%) of the medical interns know all the indications for which the law permits safe abortion service. This is higher than the one reported among mid-level health professionals practicing in Addis Ababa, 53.1%. (8) Seventy seven (37.7%) of the study participants reported the need for evidence for age in minors and 53(25.9%) reporting the need for evidence of rape before provision of safe abortion service.

Even though prostaglandin analogues like misoprostol are preferred methods of pregnancy termination in the first trimester, 66 (32.2%) of medical interns reported sharp metallic curettage as preferred method of induced abortion in the first trimester. This figure is lower compared to a study done a decade back in Ethiopia

where 81% of service providers resorted to sharp metallic curettage and 17.2 % to hysterectomy. [9] [10]

One hundred and ninety seven (96%) of the interns reported that safe abortion is important in preventing maternal mortality and morbidity, this is similar to studies done in Addis Ababa Health Facilities which showed majority of health providers stating abortion is a big public health problem.[7,8] It's also similar to a study in Maharashtra, India among medical interns.[11]

The finding from this study shows that 110(53.7%) of interns are willing to provide safe abortion service. In a study done at St Paul Millennium Medical College among different health care providers in Ethiopia, 70.8% of the respondents reported being "very willing" or "willing" to provide comprehensive abortion services.[12] And in a study conducted in Addis Ababa Health facilities among health care providers only quarter of the participants were willing to participate in pregnancy termination. (6) This difference in willingness in provision of safe abortion service probably can be attributed to the difference in the study participants; medical interns in our study as compared to Obstetrician and gynecologists, OB/GYN residents, Midwifes and nurses in the later studies. The current result is higher as compared to a study done among medical students in South Africa which showed nearly one-quarter of students intended to perform abortions once they were qualified.

The study found a significant association between religion and willingness to provide safe abortion services. This is also evident in other studies; in a study done among medical students, interns, and healthcare personnel at Babol University of Medical Sciences, Iran religion was the main influencing factor to provide abortion care.[13] A study that was done in public hospitals of Mekelle, Ethiopia also showed that religion is the major contributing factor for the attitude of health providers towards abortion.[14] A systematic literature review in sub-Saharan Africa and Southeast Asia demonstrated that health care providers have conservative attitudes towards induced abortions with religious beliefs that affected these views, which is similarly reflected in this study. The conservative attitudes towards induced abortions among healthcare providers might also affect access to post-abortion care and, consequently, post-abortion contraceptive counselling.[15]

Another study in Ethiopia stated the attitude of providers toward abortion were strongly influenced by their experience addressing the complications of unsafe abortion.[16] Even if the current study didn't assess the experience of each intern regarding complications of unsafe abortion, the decline of unsafe abortion has limited the interns from witnessing the complications of unsafe abortion at a tertiary hospital.[4] There is also a similar finding at St. Paul Millennium College which concluded that providers need to be made aware of the huge contributor of unsafe abortion to maternal mortality and morbidity to improve their attitude towards induced abortion.[12]

Age, Sex, Marital Status, place of upbringing of the interns were found to be statistically insignificant with willingness to provide safe abortion. A similar result was found on a study done on health care provides at Addis Ababa and another study in Mekelle where the variables were statistically insignificant in explaining attitude. [6] [14] In contrast a study done among health care providers in Adama, Ethiopia showed males have had favorable attitude than females (COR=1.689[1.121-2.546]) (17)

CONCLUSION

The study shows that most medical interns are aware of one or more of the indications to providing safe abortion stated under the current Ethiopian abortion law and that most have positive attitude towards the importance of safe abortion services. Even though majority of the interns believe that safe abortion is important only half are willing to perform it. And religious believe is associated with the unwillingness to provision of safe abortion services.

DECLARATIONS:

1. Ethics approval and consent to participate: Ethical clearance was obtained from the department of gynecology and obstetrics research and publication committee of Addis Ababa University. Written informed consent was collected from all of the participants of the study.
2. Consent to publication: Not applicable
3. Availability of data and materials: The datasets used

and/or analyzed during the current study are available from the corresponding author on reasonable request.

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Kalkidan L., M.D: Proposal development, data collection, analysis and write up of the manuscript

Dawit W. M.D: Proposal development, analysis and write up of the manuscript

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REFERENCES

1. 2008, Wada T. ABORTION LAW IN ETHIOPIA. MIZAN LAW REVIEW. JAN and 2(1).
2. 2018., Abortion in Africa Guttmacher Institute. March.
3. FDRoEM, Health. Revised technical and procedural guidelines for safe abortion in Ethiopia.2014.
4. Berhan Y, Berhan A. Causes of maternal mortality in Ethiopia: a significant decline in abortion-related death. Ethiopian Journal of health sciences. 2014 and 25489180., 24 Suppl(0 Suppl):15-28. PubMed PMID.
5. 2014., The Estimated Incidence of Induced Abortion In Ethiopia.
6. Abdi J, Gebremariam M. Health Providers' Perception towards Safe Abortion Service at Selected Health Facilities in Addis Ababa2011. 31-6 p.
7. 2014., Revised technical and procedural guidelines for safe abortion in Ethiopia.
8. Knowledge, attitude and practice (KAP) of health providers towards safe abortion provision in Addis Ababa health centers. Assefa, Endalkachew Mekonnen. s.l. : BMC Women's Health, (2019) 19:138 .
9. Mekbib T, Gebrehiwot Y, Fantahun M. Survey of unsafe abortion in selected health facilities in Ethiopia2007. 28-43 p.
10. Lee P Shulman DFWL, MD Overview of pregnancy termination 2013.
11. Susanne Sjöström BE, Filip Sydéna, Kristina Gemzell-Danielssonb, Marie Klingberg-Allvina. Medical students' attitudes and perceptions on abortion: A cross-sectional survey among medical interns in Maharastra, India. Contraception. 2014 and 02.
12. Sarah D. Rominski1 JRL, Lia Tadesse3, and Senait Fisshea4. Reproductive health providers' willingness to provide comprehensive abortion services and knowledge of the abortion law in Addis Ababa, Ethiopia. International Journal of Nursing and Midwifery. No.
13. 2016, M. R. Evaluation of the Effect of Religious Beliefs on the Attitude toward Abortion among the Students and Healthcare Personnel of Babol University of Medical Sciences. J Babol Univ Med Sci. and 18(5):70-6.
14. Zaid Tadesse ABK, Weyzer Tilahun, Kalayou K Berhe. Assessment of Health Care Providers' Attitude and Associated Factors to Wards Safe Abortion at Public Hospitals, in Mekelle City, Tigray, Ethiopia and resea, A Cross-Sectional Study. Global Journal of Med.
15. Rehnström Loi U, Gemzell-Danielsson K, Faxelid E, Klingberg-Allvin M. Health care providers' perceptions of and attitudes towards induced abortions in sub-Saharan Africa and Southeast Asia: a systematic literature review of qualitative and quantitative d.
16. Obstet, David Bridgman-Packer1 SK. The implementation of safe abortion services in Ethiopia. Int J Gynecol, 2018, : . and 4):19–24., 143(Suppl.
17. Yitagesu Sintayehu1* BHaKS. Health Care Providers' Perception and Associated Factors towards Safe Abortion in Selected Health Facilities in Adama, Ethiopia. Journal of Women's Health Care. 2018 and 7(2):428.
18. Zaid Tadesse ABK, Weyzer Tilahun, Kalayou K Berhe. Assessment of Health Care Providers' Attitude and Associated Factors to Wards Safe Abortion at Public Hospitals, in Mekelle City, Tigray, Ethiopia and resea, A Cross-Sectional Study. Global Journal of Medical.
19. Obstet, David Bridgman-Packer1 SK. The implementation of safe abortion services in Ethiopia. Int J Gynecol, 2018, : . and 4):19–24., 143(Suppl.

CONTRACEPTIVE USE AMONG MARRIED WOMEN OF REPRODUCTIVE AGE GROUP WITH CHRONIC NON-COMMUNICABLE DISEASES IN ADDIS ABABA PUBLIC HOSPITALS, ETHIOPIA

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ABSTRACT

Women with chronic non-communicable diseases are at higher risk of adverse pregnancy outcomes, which may be minimized through optimal preconception care and appropriate contraceptive use. Information on the contraceptive use and affecting factors among women with chronic non-communicable diseases in Ethiopia is rare.

The objective of this study was to assess the magnitude of contraceptive use and associated factors among women with chronic non-communicable diseases in Addis Ababa's, public hospitals.

A hospital based cross-sectional study was performed on 357 married women of reproductive age group with chronic non-communicable diseases. Systematic sampling method was used to select the study participants. The Data were collected using interviewer administered structured questionnaires and was analyzed using SPSS version 20.0. Bivariate and multivariate logistic regression at 95% CI and $P < 0.05$ was used to determine the final predictor in the model.

Of the total 357women, only 124(34.2%) were contraceptive users. Majority of women with chronic non-communicable diseases were diabetic 140(39.2%), and hypertensive 134(37.5%). Those who discussed with their husband and got counselling were higher contraceptive users with AOR=2.5, 95% CI (1.3, 5.1) and AOR= 3.6, 95% CI (1.6, 8) respectively. Discussion with husband and counselling about contraceptive use were found the main predictors of contraceptive use.

In conclusion, a low proportion of women with CNCD were using contraceptives. Contraceptive use or non-use was associated with getting counselling from health care providers and discussion with spouse about contraceptive. Hence, it is recommended that getting adequate counselling and discussion with their husband's may increase contraceptive utilization of women with chronic non-communicable diseases.

KEY WORDS: Chronic non-communicable diseases, Diabetes, Hypertension, contraceptives, Addis Ababa.

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INTRODUCTION

Chronic health conditions are defined as conditions requiring "ongoing management over a period of years or decades" [1].Women of reproductive age are affected by many chronic medical conditions that have effects on preconception health and pregnancy outcomes. In addition, it can also affect women's contraceptive choices[2].

Even though, all reproductive age women with chronic non communicable diseases have the right to attain the highest standard of sexual and reproductive health on deciding and discuss freely on the number children, spacing between pregnancies and timing to have a child, they failed to do so[3].

Each pregnancy and childbirth carry health risks for women, and the risk is magnified in women with pre-existing chronic medical conditions [4,5].Women diagnosed with hypertension, diabetes, connective tissue diseases or heart disease are at a higher risk of pregnancy complications compared to healthy women6. This can lead to higher maternal morbidity and poorer fetal outcome, and some women can resort to unsafe methods of contraception[7- 9].

The selection of a contraceptive method for a woman with a medical disease must address the possible adverse or beneficial interactions with the state and complications of the disease and possible drug interactions with the therapy. It must be recognized that a risk-free and efficacious contraceptive option may not exist. However, the successful avoidance of pregnancy may be a lower net risk, and a further reduction of any risk for the contraceptive method may be achieved with close surveillance for complications[10].

A study conducted in Malaysia showed that about two-third of women with chronic medical conditions who needed contraceptive did not use them despite the higher risk of pregnancy related complications[11]. Likewise a few studies have suggested that women with chronic conditions are at increased risk for unintended pregnancy[12, 13]. The results of lower rates of contraceptive use in women with chronic medical conditions put them at greater risk[14, 15].

Globally lack of modern contraception caused around 0.3% of deaths and 0.8% of Disabled Adjusted Life Year (DALY). Africa, South-East Asia and low and middle income countries in the Eastern Mediterranean region had the highest disease burden because of lack of contraception–accounting for around 0.5% of deaths and 1 up to 1.2% of DALYs in these regions[16].

A study conducted in Tehran showed that coital withdrawal method was the most common method in diabetic, obese/overweight and hypertensive women 41.2%, 28.0% and 35.4% respectively [17, 18]. Use of a safe and modern method of contraception in women with chronic medical condition was low and needed more attention.

Another study conducted in Malaysia showed that of 450 women of reproductive age with chronic non-communicable diseases, 312 (69.3%) of them did not use contraceptive and only 30.7% of them reported using contraceptives. Contraceptive non-use was highest among the diabetics (71.2%), connective tissue patients (68.6%), and hypertensive patients (65.3%)[11].

Little is known about whether women with chronic medical conditions understand their pregnancy-related risks. Unintended pregnancy is not viewed as a result of inadequate contraceptive use, but rather decision by fate. A woman's perceived lack of control over her ability to avoid pregnancy is an additional barrier to contraceptive use and compliance[19].

In Ethiopia there is no study that shows the contraceptive use of women with chronic medical diseases. Therefore, this study aimed to assess contraceptive use and associated factors among women with chronic non-communicable medical conditions in Addis Ababa public hospitals, Ethiopia, from January-February 2017.

METHODS

Study settings and participants

The study was conducted from January 1st – February 28th 2017 in Addis Ababa, the capital city of Ethiopia. Addis Ababa is administratively divided into 10 kifle ketemas. According to 2007 population and housing census of Ethiopia, the projected total population of Addis Ababa in 2012 was 2,739,555 of this 1,434,164 were female (of this 947855-reproductive age group with 687,593 households). Addis Ababa has 12 governmental hospitals (5 under the Federal Ministry of Health, University hospital under the Addis Ababa University, 5

general hospitals and under the Addis Ababa Regional Health Bureau, 2 Army and Police), 35 private hospitals, and 710 private clinics of different levels and 26 health centers[20].

Married women of reproductive-aged (15-49 years) who had chronic non-communicable diseases and who were attending the selected public hospitals in Addis Ababa, Ethiopia were recruited for the study. After listing of the 12 public hospitals which have chronic diseases clinics such as the diabetic center, oncology, and other chronic diseases clinics, simple random sampling method was used to select the required hospitals. So, 3(25%) hospitals were selected using lottery method. The desired number of respondents (clients) from each hospital was determined based on the proportion to size allocation of total patients with chronic non communicable diseases (CNCD) in each of the hospitals and systematic random sampling was employed to select and approach each study subjects. Based on the married women attending CNCD clinic preliminary daily client load the first participant was selected using a simple random sampling technique (lottery method) then every kth interval was followed until the pre-determined sample size was obtained. In the case of selected participant refused to participate in the study, the next one was interviewed. An exit interview was conducted using a pretested structured questionnaire. So, a women with chronic non-communicable diseases eligible for contraceptive use in the selected hospitals were interviewed about contraceptive use after their diagnosis for chronic non-communicable diseases.

Hence, a total of 357 reproductive age women with chronic non-communicable diseases who came for regular checkup or were admitted in the selected hospitals participated in the study giving a response rate of 99.2%.

Study Design and Data Collection

The study was conducted in Addis Ababa public Hospitals. Hospital based cross sectional study design which contained quantitative methods of data collection was employed to answer the objectives of the study. Questionnaire comprised of information on socio-demographic variables, reproductive history, obstetric history and contraceptive use. The questionnaire were adapted by reviewing different literature and considering the local situation of the study subjects11, 21. Before the actual data collection, the questionnaire was pre-tested on 5% (18 women) in Minilik Hospital outside of the study area. So, correction on questions which lack clarity to the participants was done accordingly. Six diploma nurse data collectors and six BSc. Nurse supervisors were trained for two consecutive days about quantitative methods, informed consent, how to approach participants, ethical procedure, general information on contraceptives, how to administer the questionnaires and the aim of the study. The questionnaire was checked on daily basis by the supervisors for completeness.

Data Management and analysis

Data was entered, edited, cleaned and analyzed using SPSS version 20.0 statistical software. Descriptive analysis was done for Socio- demographic characteristics, reproductive history, knowledge and attitude of the study participants. Bivariate logistic regression was used to determine the preliminary relationship between the socio demographic, knowledge and attitude related characteristics towards contraceptive and outcome variable (contraceptive use). Collinearity matrix and Hosmer and Lemshow test were used to test collinearity and assumption of goodness of fit, respectively. Finally, variables which were found significant at $P<0.05$ in bivariate logistic regression were taken to multivariate logistic regression to identify the independent predictors of contraceptive use.

The results were summarized and presented by texts, frequency tables and other summary statistics.

Ethical Considerations

Ethical clearance was obtained from Mekelle University, College of Health Sciences Research and Ethical Review Committee. Informed consent was obtained from each study participant.

RESULTS

Socio-demographic characteristics of women

A total of 360 reproductive age women with chronic non-communicable diseases were approached for the study and 357 respondents participated in this study making the response rate of 99.2%. Majority 152(42.6%) of the respondents were between the age of 30-49 years with mean age of 34.19(SD+8.144) and range of 15 to

49. Around 166(46.5%) of the respondents had above secondary school education and a total of 284(79.5%) of their husbands had secondary and above secondary school of education. Regarding ethnicity, above one third 131(36.7%) were Amara. The predominant religion was Orthodox Christianity 191(53.5%). Looking at occupation of the respondents majority 240(67.2%) were employed. From the total women with chronic non-communicable diseases, 140(39.5%) were diabetic, 134(37.5%) hypertensive, 39(10.9%) with heart disease, 30(8.4%) with cervical cancer, 14(4%) with renal dysfunction and other diseases. Regarding hospital admission around 196(54.6%) had history of at least one hospitalization. **(Table 1)**

Table1: Socio-demographic characteristics of women with chronic non-communicable diseases in Addis Ababa, Ethiopia, 2017

Variable	Frequency (%)
Current Age in years	
15-29	99(27)
30-39	152(42.6)
40-49	106(29.7)
Religion	
Orthodox Christianity	191(53.5)
Islam	107(30)
Protestant Christianity	48(13.4)
Catholic and others*	11(3.1%)
Respondent's occupation	
Housewife	117(32.8)
Employed	240(67.2)
Respondents Educational status	
Below secondary school	132(37)
Secondary school completed	59(16.5)
Above secondary school	166(46.5)
Family size	
2-4	137(38.4)
5-7	161(45.1)
>7	59(16.5)
Husband's Occupation	
Farmer	23(6.4)
Merchant	146(40.9)
Daily laborer and job less	38(10)
Employed	150(42)
Husband's Education	
<Secondary school	73(20.5)
Secondary school completed	140(39.2)
>Secondary School	144(40.3)

Others*= Adventist &No Religion

Pregnancy status of women with chronic non-communicable diseases, in public hospitals of Addis Ababa, Ethiopia

Regarding pregnancy status of the respondents, 322(90.2%) of women had ever gotten pregnancy. The highest gravida (total pregnancy) was ten with median and inter quartile range (IQR) of 3.0 (the IQR showed that 82.6% of the women were pregnant for 1 to 6 times. The highest parity was ten. About 53.2% of women had 2-4 children, 58 (16.2%) women reported that they had at least one times history of abortion and stillbirth. Majority 31(54.3%) of the abortion and stillbirth was unwanted pregnancy. **(Table 2)**

Table2: Distribution of obstetrics and reproductive characteristics of women with chronic non-communicable diseases in Addis Ababa, Ethiopia, 2017

Variable	Number (%)
Gravidity	
0-1	**64(17.9)**
2-4	**182(51)**
>=5	**111(31.1)**
Pregnancy history	
Yes	322(90.2)
No	35(9.8)
Ever given birth to a child	
Yes	317(88.8)
No	40(11.2)
Number of children	
<=2	161(45.1)
3-4	54(15.1)
>=4	142(39.8)
History of Still Birth	
Yes	39(10.9)
No	318(89.1)
History of Abortion	
Yes	116(32.5)
No	241(67.5)
History of unwanted Pregnancy	
Yes	58(16.2)
No	264(74)

Majority 325(91%) of respondents had heard about contraceptives. Three hundred and nineteen (89.4%) knew 3 or more different types of contraceptives, and 330 (92.5% knew where to find contraceptives. Regarding the perception towards using contraceptives, 146(40.9%) had supportive perception from the total contraceptive users.

Regarding to the type of contraceptive used before diagnosis of the chronic non-communicable disease, majority of 308 (86.4%) were using modern contraceptives and the most common contraceptive was injectable 214(59.9%), followed by pills 88 (24.6%). After diagnosis of the medical condition, contraceptive prevalence rate decreased by around 40% which was 122 (34.2%). The most common contraceptive used by the respondents at this stage were injectable 139(45.2%), followed by pills 75(24.4%). Majority 40(73%) of IUCD users were hypertensive and diabetic women. Thirty women with cervical cancer who participated in this study were using contraceptives before their disease diagnosis was confirmed. Majority used injectables 17(57%), followed by IUCDs 11(37%). **(Table 3)**

Table 3: Distribution of contraceptive practice of women before diagnosis of chronic non-communicable medical diseases in Addis Ababa, Ethiopia, 2017

Characteristics	All diagnosis (n=357)	Hypertension (n=134)	Diabetes (n=140)	Heart disease (n=39)	Cervical cancer (n=30)	Renal disease & other* (n=14)
Pills (a)	75	30	31	4	7	3
IUCD(b)	55	20	20	11	3	1
Injectable(c)	139	51	50	17	17	4
Implants(d)	33	13	14	3	2	1
Female condom(f)	4	1	3	0	0	0
Tubal ligation(g)	2	0	1	0	1	0
Modern contraceptive user	308(86.3)	115(85.8%)	119(85%)	35(89.7%)	30(100%)	9(64.3%)

After the diagnosis of CNCD, the most common contraceptive utilized was 48(39.7%) IUCD, followed by 18(15%) tubal ligation. Among the 48 IUCD users, the highest were diabetic 19(39.5%) and hypertensive 18(37.5%) patients. Tubal ligation was the second most common contraceptive method utilized with 18 (15%) and the majority of these users were 9(50%) diabetic, and 6(33.3%) hypertensive. The highest non-users were renal, goiter, and asthmatic patients 11(79%). **(Table 4)**

Table 4: Type of contraceptive used by women after diagnosis of chronic non-communicable diseases in Addis Ababa, Ethiopia, 2017

Characteristics	All diagnosis (n=357)	Hypertension (n=134)	Diabetes (n=140)	Heart disease (n=39)	Cervical cancer (n=30)	Renal disease & other* (n=14)
Pills (a)	12	5	3	3	0	1
IUCD(b)	48	18	19	6	4	1
Injectable(c)	14	8	5	0	0	1
Implants(d)	13	0	3	5	5	0
Foamy tablet(e)	1	0	0	0	1	0
Female condom(f)	1	0	1	0	0	0
Tubal ligation(g)	18	6	9	0	3	0
Male condom(h)	17	5	5	4	3	0
Calendar method(i)	2	2	0	0	0	0
Modern contraceptive user	122(34.2%)	44(33%)	46(33%)	18(46%)	16(53%)	3(21)
Non-users + calendar	235(65.8%)	90(67%)	94(67%)	21(54%)	14(47%)	11(79)

Factors affecting contraceptive use of married reproductive age women with chronic non-communicable disease

After adjusting for all variables, multivariate analysis revealed that contraceptive use in women who were ever counselled about contraceptive were 3.6 times more likely to use contraceptive compared to women who never got counselling about contraceptive (AOR=3.6 and p=0.003). Women who ever discussed with their husbands about contraceptive were 2.5 times more likely to use contraceptive compared to women who never had a discussion about contraceptive (AOR=2.51, P=0.01). **(Table 5)**

Table 5: Factors affecting contraceptive use of women with chronic non-communicable diseases in Addis Ababa, Ethiopia, 2017

Variables	Contraceptive use		COR	AOR
	Yes	No		
Respondent's Education				
Below secondary school	33(25%)	99(75%)	0.4(0.3,0.7)	1.3(0.9,1.9)
Secondary completed	18(31%)	41(69%)	0.6(0.3,1.1)	0.7(0.4,1.7)
Above secondary school	73(44%)	93(56%)	1	1
Husband's Education				
Below secondary school	17(23.3%)	56(76.7%)	0.4(0.2,0.8)	0.8(0.5,1.3)
Secondary school completed	47(33.6%)	93(66.4%)	0.7(0.4,1.2)	0.8(0.4,1.5)
Above secondary school	60(41.7%)	84(58.3)	1	1
Respondent's Age at marriage in years				
<18years	46(29%)	113(71%)	0.6(0.4,0.98)	1.5(0.9,2.5)
>=18years	78(39.4)	120(60.6%)	1	1
Ever discussed contraceptive with husband				
Yes	102(55%)	85(45%)	1	1
No	24(14%)	145(86%)	7.2(4,12)	2.5(1.2,5)
Decision maker on family size				
Husband	2(13%)	13(87%)	0.2(0.04,0.8)	1.2(0.7,2.1)
Myself	29(20.4%)	113(79.6%)	0.3(0.2,0.5).	7(0.3,1.2)
Husband and wife	93(46.5)	107(53.5%)	1	1
Ever counselled about contraceptive				
Yes	107(53.5%)	93(46.5%)	1	1
No	17(11%)	140(89%)	9.6(5.4,17)	3.6(1.6,8)
Ever used contraceptive				
Yes	103(40%)	155(60%)	1	1
No	21(21%)	78(79%)	2.5(1.4,4)	1.4(0.7,2.6)

COR=Crude Odds Ratio, AOR= Adjusted Odds Ratio

DISCUSSION

Contraceptive prevalence rate (CPR) in this study was 34.2%. This is almost similar to studies conducted in Malaysia [14, 21] which were 30.7% and 34.4% respectively.

In this study CPR was very low when compared with studies conducted in Thailand, Indonesia, and Vietnam with 79.2%, 56.4% and 79% respectively8, 22. This discrepancy might be due the Thailand, Indonesia and Vietnam might have better health service distribution and better educational status compared to Ethiopia.

This study revealed that perception towards contraceptive does not have any association with the contraceptive use, which is in line with studies conducted in Malaysia and Iran[11, 23].

In the current study, quite a high percentage of women with chronic medical conditions did not use contraceptive because they did not receive any counselling about it

during their encounter with the medical personnel and this finding is similar with a study conducted in Iran and Turkey [21, 23].

This study has shown that women who were ever counselled about contraceptive were about 3.6 times more likely using contraceptive as compared to women who never got counselling about contraceptive and this indicated that counselling has a huge influence on use or non-use of contraceptive in women with chronic medical conditions. This study also has shown that women who discussed with their husbands about contraceptive were about 2.5 times more likely to use contraceptive as compared to women who never discussed with their husbands. Therefore, with their husband could be a major predictor of preventing unwanted pregnancies and minimizing the risk that occur during pregnancy.

Studies conducted in Malaysia and Iran showed that having children and increasing age had an association with contraceptive use, but in this study these variables were not explanatory for the response variable[11, 18].

The number and percentages of study participants who had at least one stillbirth or abortion 58(16.2%) and unwanted pregnancies 31(53.4%) were similar with other studies[10, 11,19].

Women with chronic medical conditions need special attention regarding to contraceptive counselling and this finding is similar with two studies conducted in Iran and Turkey which showed that quite a high percentage of women with chronic medical conditions did not use contraceptive because they did not receive any counselling about it during their encounter with the medical personnel[21, 23].

The prevalence of any modern contraceptive use in this study was slightly higher than the national prevalence (29.9%) and lower than Addis Ababa 63% according to EDHS, 2011 report6. Low prevalence of contraceptive use shows that there is a high unmet need of contraception among women with chronic medical conditions.

In this study discussing with husband about contraceptives was noted to be significantly associated with contraceptive use which was consistent with studies conducted in Nigeria[24]. Discussion between spouses is expected to increase contraceptive use, because one reason women cite for not using contraception is their husband's disapproval, despite never having discussed family planning with their husbands. In a study conducted in Ghana, married women who discussed family planning with their partners were three times as likely to be current users of contraception as compared to their counterparts who had never had such discussion[25].

Intervention programs aimed at increasing contraceptive use may need to involve different approaches, including promoting couples' discussion of fertility preferences26.

CONCLUSION and RECOMMENDATIONS

In conclusion, this current study showed that low proportions of women with CNCD were using contraceptives. Contraceptive use or non-use was associated with getting counselling from health care providers and discussion with spouse about contraceptive. In addition, this study revealed that the most common contraceptive used by women with CNCD was IUCD followed by permanent contraceptive like tubal ligation. Therefore, getting adequate counselling and discussion with their husband's may increase contraceptive utilization of women with chronic non-communicable diseases.

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Contribution of Authors

Hailay Gebremichael and Teame Gebretinsae originated the study idea, designed the study, contributed to statistical analysis of the study and prepared the manuscript. Mussie Alemayehu and Gebremeskel Miruts reviewed the study protocol, contributed significantly to statistical analysis. All authors read and approved the final manuscript.

The authors declare that they have no competing interests and the content of the manuscript has neither been previously published nor being considered for publication elsewhere.

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REFERENCES

1. Prevalence of Selected Chronic Conditions: United States, 1990– 92 Atlanta, Georgia, Centers for Disease Control and Prevention, 1997 (Vital and Health Statistics, Series 10, No. 194 (stacks.cdc.gov/view/cdc/6280)
2. Chuang CH, Velott DL and Weisman CS. Exploring knowledge and attitudes related to pregnancy and preconception health in women with chronic medical conditions. Maternal and Child Health Journal, 2010, 14:713–719.
3. Declaration B. Platform for Action (1995) Fourth World Conference on Women A. InCONF (Vol. 177, p. 20).
4. Cunningham F G, Leveno KL, Bloom SL, Hauth JC, Gilstrap III LC and Wenstrom KD. Hypertensive Disorders in Pregnancy: Introduction: McGraw-Hill. (www.ashjournal.com/article/S1933-1711(08)00185-X/fulltext). 2005
5. Domènecha AP and Gatzoulisb MA. Pregnancy and heart disease. Rev EspCardiol, 2006; 59(9), 971-984.
6. Ethiopian demographic and Health survey Addis Ababa, Ethiopia, CSAE' March 2012. Available http://ethiopia.usaid.gov demographic health survey Addis Ababa. Pdf (accessed in November 2013).
7. Klima CS. Unintended pregnancy: consequences and solutions for a worldwide problem. Journal of Nurse-Midwifery, 1998; 43(6), 483-491. http://dx.doi.org/10.1016/S0091-2182(98)00063-9
8. Kuroki L M, Allsworth J E, Redding C A, Blume J D and Peipert J F. Is a previous unplanned pregnancy a risk factor for a subsequent unplanned pregnancy? American Journal of obstetrics and gynecology, 2008; 199(5), 517. e511-517.
9. Aghajanian A, Mehryar AH, Delavar B, Kazemipour S and Zinab HE. Continuing use of withdrawal as a contraceptive method in Iran. Canadian Studies in Population. 2007 31;34 (2):179-90.
10. Kjos SL. Contraception for women with medical problems. Infertility and Reproductive Medicine Clinics of North America. 2000; 11(4):551-86.
11. Rosliza A, Irmi Z and Latiffah A. Contraceptive Use among Women with Chronic Medical Conditions and Factors Associated with Its Non-Use in Malaysia, Global Journal of Health Science; 2012: 4(5) 17.
12. Bitto A, Gray RH, Simpson JL, Queenan JT, Kambic RT, Perez A,Mena P, Barbato M, Li C and Jennings V.Adverse outcomes of planned and unplanned pregnancies among users of natural family planning: A prospective study. American Journal of Public Health. 1997; 87:338–343.
13. James PJ, Younger MD, Hamilton BD and Waisbren SE. Unplanned pregnancies in young women with diabetes. An analysis of psychosocial factors. Diabetes Care.1993; 16:1572–1578.
14. Chuang CH, Chase GA, Bensyl DM and Weisman CS. Contraceptive use by diabetic and obese women. Women's Health Issues. 2005; 15:167–173.
15. Vahratian A, Barber JS, Lawrence JM and Kim C. Family-planning practices among women with diabetes and overweight and obese women in the 2002 National Survey for Family Growth. Diabetes Care. 2009; 32:1026–1031.
16. Global Health Risks http://www.who.int/healthinfo/global_burden_disease/GlobalHealthRisks_report_part2.pdf (accessed June, 2017)
17. Fajumi JO. Alterations in blood lipids and side effects induced by Depo=Provera in Nigerian women. Contraception. 1983; 27:161
18. Erfani A. The use of withdrawal among birth limiters in Iran and Turkey. Calverton, Maryland, ICF Macro 2010 (DHS Working Papers No. 71). (dhsprogram.com/pubs/pdf/WP71/WP71[revised_Yuan_22 April 2011.pdf)
19. Nojomi M, Morrovatdar MI, Davoudi F and Hosseini S. Contraceptive use by Iranian women with hypertension, diabetes or obesity . Eastern Mediterranean Health Journal. 2013; 638:19(7)
20. The 2007 Population and Housing Census of Ethiopia: Statistical Report for Addis Ababa City Administration (www.etharc.org/resources/download/view.download/68/381)
21. Rogers P, Mansour D, Mattinson A and O'Sullivan JJ. A collaborative clinic between contraception and sexual health services and an adult congenital heart disease clinic. Journal of Family Planning and Reproductive Health Care, 2007; 33(1), 17-21. http://dx.doi.org/10.1783/147118907779399648
22. Ministry of Health Republic of Indonesia. (2003). Reproductive Health Profile of Republic of Indonesia. Retrieved 30 July 2012, from http://www.searo.who.int/EN/Section13/Section36/Section1579_6415.htm
23. World Health Organization 2011. Women and health in the Western Pacific Region: remaining challenges and new opportunities. Retrieved 10 July 2012 from http://www.wpro.who.int/reproductive_health/data/en/
24. Nwachukwu I and Obasi OO. Use of modern birth control methods among rural communities in Imo State, Nigeria. African Journal of Reproductive Health. 2008;12(1):101-8.
25. Tawiah EO. Factors Affecting Contraceptive use in Ghana. Regional Institute for Population Studies, University of Ghana, Legon, Ghana, Journal of biosocial science, 1997. (journals.cambridge.org/production/action/cjoGetFulltext?fulltextid)
26. Boulay M and Valente TW. The relationship of social affiliation and intrapersonal discussion to family planning knowledge, attitudes and practice, International Family Planning Perspectives, 1999, 25(3):112-118.

DYSMENORRHEA AND ASSOCIATED FACTORS AMONG MEDICAL STUDENTS OF ST PAUL'S HOSPITAL MILLENNIUM MEDICAL COLLEGE, ADDIS ABABA, ETHIOPIA: CROSS SECTIONAL STUDY

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ABSTRACT

BACKGROUND: Dysmenorrhea is one of the most common gynecologic complaints in young women. It is a health burden for most women and key public health problem in the world. Dysmenorrhea affects the quality of life and daily activities of females in school. Despite the presence of different studies that assess its prevalence and associated factors among women in Ethiopia, there is sparse information in relation to medical students which is addressed in this study. The objective of this study was to determine the prevalence of dysmenorrhea and its associated factors among medical students of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia.

METHOD: An institutional-based analytical cross-sectional study was conducted among female medical students of St. Paul's Hospital Millennium Medical College. A sample of 156 female medical students was included in the survey using simple random sampling technique and female students who were available during the data collection period were eligible to the study. Five trained data collectors collected the data using the English version structured questionnaire that was pretested before the actual data collection. The data collected was entered using Epi info 7.0 and analyzed by SPSS version 23 statistical software. Multivariable logistic regression analysis was used to assess the association between selected explanatory variables and the dichotomous outcome variable. Adjusted odds ratios and 95% confidence intervals were reported and a P<0.05 was taken as statistically significant.

RESULTS: Among the study participants 124(79.5%) had dysmenorrhea. About one third (33.3%) of the participants reported that they have a family history of dysmenorrhea and 39.7% study participants experienced moderate type of pain. Back pain (64.1%), weakness (41%) and loss of appetite (32.7%) are amongst the commonest symptoms with dysmenorrhea. More than half of the participants reported to be irritable (54.6%) and have decreased academic performance (50.6%). Students also reported lack of concentration (42.9%) and poor appetite (41.7%). More than half of the respondents (58.3%) used home remedies as a primary management option. Heat (41%) and tea (41.7%) were the most used home remedies. More than half of the respondents (55.8%) reported to use over the counter drugs such as Ibuprofen and diclofenac. Longer duration of menstruation (AOR 95 % (CI) = 0.308 (0.100, 0.943), p=0.039) and longer menstrual cycle (AOR 95% (CI) =0.247 (0.051, 1.197), p=0.042) had statistically significant association with the occurrence of dysmenorrhea.

CONCLUSION: A high proportion of female medical students experience dysmenorrhea. Decrease academic performance was the most common burden reported. The majority of respondents used home remedies and over the counter medications for treatment.

KEY WORDS: Dysmenorrhea, Medical Students, SPCMMC, Addis Ababa, Ethiopia

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1 St Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia

INTRODUCTION

Menstruation is a normal physiological process that occurs approximately every month in women. Most females experience certain degree of pain and discomfort during their menstruation period[1]. Dysmenorrhea is defined as uterine pain or cramps in the lower abdomen, occurring just before and during menstruation, with variations among different females [2]. The pain usually occurs intermittently, ranging from mild to disabling. Other symptoms that may accompany cramping include nausea, diarrhea, dizziness, fatigue, headache, or a flu-like feeling[3]. Risk factors associated with more severe episodes of dysmenorrhea include earlier age at menarche, long menstrual periods, heavy menstrual flow, smoking, positive family history, obesity and alcohol consumption[4,5]. Dysmenorrhea may be categorized into two types as primary and secondary. Primary dysmenorrhea is defined as painful menses among females with normal pelvic anatomy, frequently beginning during adolescence with only ovulatory cycles. Secondary dysmenorrhea is a menstrual pain associated with underlying pathology and its onset might be years after menarche[6].

Dysmenorrhea is a key women's health burden. The morbidity of dysmenorrhea has a significant impact on public health as it is the leading cause of work or school absenteeism in women and a leading cause of recurrent short-term school absenteeism among adolescent girls. According to Ethiopian standard treatment guideline, dysmenorrhea occurs in about 50% of menstruating women. A study done in University of Gondar shows that prevalence of dysmenorrhea among female students was 77.6 [7]. As many as 90% of adolescent females and 50% of menstruating women worldwide report suffering from it, with 10-20% of them describing their pain as severe and distressing[8]. In Egypt, it was reported a highest prevalence rate of dysmenorrhea (94.4%) with 49% for mild pain, 34.4% for moderate pain and 16.6% for severe pain[9]. Due to its importance, different pharmacological and non-pharmacological treatments have been stated. Pharmacological treatments include NSAID, IUD and OCP. Non pharmacological treatments include application of heat, herbal, dietary therapies, exercise and acupuncture[10]. Data on experiences of menstruation and its impact on the health status, quality of life and social integration among women in developing countries are scanty. Although dysmenorrhea is a common gynecological problem in young females, there are limited studies in this subject especially in Ethiopia. The main aim of the study is to know the actual prevalence of dysmenorrhea and understand the enormity of the problem. It also assesses the impact and management practice of this common health problem that would lighten on the need for appropriate intervention through a change in lifestyle.

METHOD AND MATERIALS

Study Area and Period: This study was conducted in St. Paul's Millennium Medical College from March 4 to April 12, 2019. St. Paul's Hospital was established in 1968 by the late Emperor Haile Selassie, although the medical school opened in 2007. There are 777 medical students, among which 304 are females. First year medical students are 105, among which 52 are females. Second year medical students are 140, among which 69 are females. Third year medical students are 154 among which 58 are females. Fourth year medical students are 109, among which 32 are females. Fifth year medical students are 115, among which 37 are females. Sixth year medical students are 154, among which 56 are females.

Study Design: An institution -based analytic cross-sectional study was conducted to determine the prevalence of Dysmenorrhea and its associated factors among medical students of St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia.

Source population: all female undergraduate medical students.

Study population: all female undergraduate medical students who were at the school at the time of the study and were willing to participate in the study.

Sample Size and sampling technique: the minimum required sample size for this study was obtained using a single population proportion formula. The assumptions considered included: the prevalence of Dysmenorrhea among female medical students (p=77.6%) [2]. Making the reliability coefficient for 95% CI, 5% margin of error, the sample size calculated was 267. Since the source population was 304 female students, which is <10,000, the sample size adjusted using the formula:

nf= ni/(1+ni/N) nf and after 10% consideration for possible nonresponse, the final sample size became 156 female students. The calculated sample size was proportionally allocated to each of the medical year, the total number of female medical students for each year during the study period. A simple random sampling procedure was employed to select the study subjects.

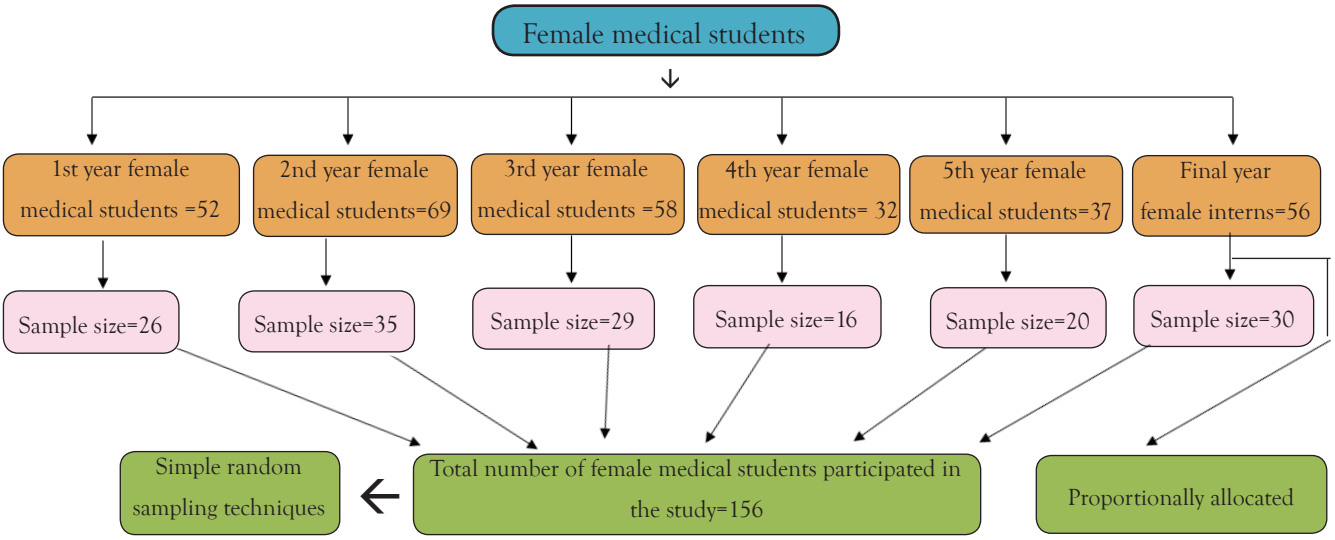

Figure1. Schematic presentation of sampling procedure

Study Variables: The outcome variable was the presence of Dysmenorrhea. The explanatory variables included socio-demographic characteristic of the students, variables related to menstruation characteristics and management practice of dysmenorrhea.

Data Collection Procedures: Data were collected using a structured and self-administered questionnaire that was adopted in English version from previous studies [7, 11]. Five data collectors and one supervisor were trained for two days on the data collection and supervision procedures. The data collectors administered the questionnaire after obtaining verbal informed consent from selected female medical college students.

Data quality assurance: The quality of data was assured through careful design of the study procedure, proper training of the data collectors and the supervisor. Pretest of the data collection tool involving the data collectors and supervisors was conducted on 5% of sample size in the medical college. Close supervision of the data collection procedures, proper categorization and coding were also employed. The principal investigator and the data collectors reviewed the questionnaires on a daily basis in the field to ensure completeness and consistency. To minimize data entry error, double entry procedure was conducted and the data were cleansed before analysis.

Data Analysis: The data was entered, cleaned and coded using Epi info software version 7.0 and analyzed by SPSS version 23 statistical software. Descriptive analysis using frequencies and percentage was used to characterize different variables of the study participants. Bivariate analysis was used for unadjusted analysis factors associated with the presence of Dysmenorrhea and variables with $p< 0.2$ were selected for the multivariable binary logistic regression model. Multivariable logistic regression analysis was conducted to adjust for the effect of confounders. Both crude and adjusted odds ratio with 95% confidence interval were reported and statistical significance was considered at a significance level of 5%.

Ethical considerations

Ethical clearance for the study was obtained from the Institutional Ethical Review Board (IRB) of St. Paul's Hospital Millennium Medical College. The detail nature and objective of the study was fully explained to all female medical students who participated in

the study before the actual data collection and verbal informed consent was received.

RESULTS

The response rate was 100%. The mean (±1SD) age of the participants was 21 (± 1.93) years. Eighty (51.3%) were in the age range of 15 to 20 (Table 1). All the 156 (100%) of the study participants had started menstruation. The mean age of menarche (±SD) of the study participants was 12.97(± 1.37). The mean length of menstrual cycle (±SD) of the study participant was 29.7 (± 5.51) days with a range of 20 to 48 days. Most of the students (n=111, 71.1%) had normal menstrual cycle duration of 21-35 days. Students with menstrual cycle duration longer than 35 days were 36 (23.1%) (Table 1).

The mean length of menstrual bleeding (±SD) of the study participants was 5.2 (± 1.51) days, ranging from 2 to 8 days. Majority of participants (n=86, 55.1%) had normal bleeding duration ranging between 3-5 days. More than one third of the participants' (n=59, 37.8%) bleeding duration was more than 5 days (Table 1).

Most of the participants (n=124, 79.5%) had painful menstruation. Among those who had painful menstruation, eighty two (66%) started to have pain at the onset of menstruation and fourteen (11.5%) experienced severe menstrual pain. The most frequent symptoms associated with dysmenorrhea were back pain (64.1%) and weakness (41%) (Table 2). Seventy nine (50.6%) study participants had experienced decreased academic performance (Figure 2). About two thirds of the respondents (n=72, 58.3%) were using home remedies as a non-pharmacological treatment option of dysmenorrhea whereas only 22.4% sought medical help for their dysmenorrhea. The most commonly used home remedies were heat (41%) and tea (41.7%). Only (n=17, 10.9%) of them did routine physical exercises. About 56% of the respondents used over the counter medications, such as ibuprofen (50%) and diclofenac (21.2%). Out of all the respondents who were using medications, more than half of them (n=96, 61.8%) started to take the medications with the onset of the pain on per need base (49.4%). The most common route of administration is PO (87.6%). Majority of the respondents (n= 116, 74.2% and n=96.4, 61.8%) knew about the precaution and contraindication of the drugs used respectively (Table 3).

To identify factors independently associated with the presence of dysmenorrhea, bivariate analysis was used considering the presence of dysmenorrhea as an outcome variable. Accordingly, family history of dysmenorrhea, age range of 15-20 years, alcohol consumption, smoking, age of menarche >15 years, length of menstrual cycle > 35 days and length of menstruation lasting >5 days were found to be associated with the presence of dysmenorrhea ($p<0.2$). Based on the finding of multivariable logistic regression analysis conducted using significant variables in the bivariate analysis, the most important covariates identified after controlling the potential confounders were length of menstrual cycle > 35 days and length of menstruation lasting >5 days **(Table 4).**

Table 1: Sociodemographic and menstrual characteristics and factors associated with dysmenorrhea on bivariate analysis of medical students at St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2019.

	Coding categories	Dysmenorrhea			
		Yes No. (%)	No No. (%)	Total No. (%)	P-value
Age	15- 20 years	54 (71.1)	22 (28.9)	80 (51.3)	0.013*
	21-25 years	70(87.5)	10(12.5)	76 (48.7)	
Year at medical school	1st year	19 (73.1)	7 (26.9)	26 (16.7)	0.255
	2nd year	24 (68.6)	11 (31.4)	35 (22.4)	0.223
	3rd year	25 (83.3)	5 (16.7)	29 (19.2)	0.242
	4th year	12 (80)	3 (20)	16 (9.6)	0.200
	5th year	16 (80)	4 (20)	20 (12.8)	0.210
	Intern	28 (93.3)	2 (6.7)	30 (19.2)	
Age of menarche	9-15 years	121 (42.8)	28 (18.8)	149 (95.5)	
	>15 years	3 (42.8)	4 (57.2)	7 (4.5)	0.027*
Length of menstrual cycle	<21 days	8 (88.9)	1 (11.1)	9 (5.8)	0.370
	21-35 days	91(75.2)	30 (24.8)	111(71.1)	
	>35 days	25 (96.2)	1 (3.8)	36 (23.1)	0.043*
Length of menstruation	<3 days	7 (63.6)	4(36.3)	11(7.1)	0.500
	3-5 days	63 (73.2)	23 (26.7)	86 (55.1)	
	>5days	54 (91.5)	5 (8.5)	59 (37.8)	0.090*
Family history	Yes	46 (88.5)	6 (11.5)	52 (33.3)	0.055*
	No	78 (50.6)	26 (49.4)	104 (66.7)	
Smoking history	Yes	20 (90.9)	2 (9.1)	22 (14.1)	0.169*
	No	104 (77.6)	30 (22.4)	134 (85.9)	
Alcohol history	Yes	26 (92.8)	2 (7.2)	28 (17.9)	0.070*
	No	98 (76.5)	30 (23.5)	128 (82.1)	
History of STI symptoms	Yes	10 (90.9)	1 (9.1)	11(7.1)	0.349
	No	114 (78.6)	31 (21.6)	145 (92.9)	
History STI treatment	Yes	7 (87.5)	1 (12.5)	8 (5.1)	0.570
	No	117 (79)	31 (21)	148 (94.9)	
Routine physical exercise	Yes	12 (70.5)	5 (29.5)	17 (10.9)	
	No	112 (80.5)	27(19.5)	139(89.1)	0.340

*p-value <0.2

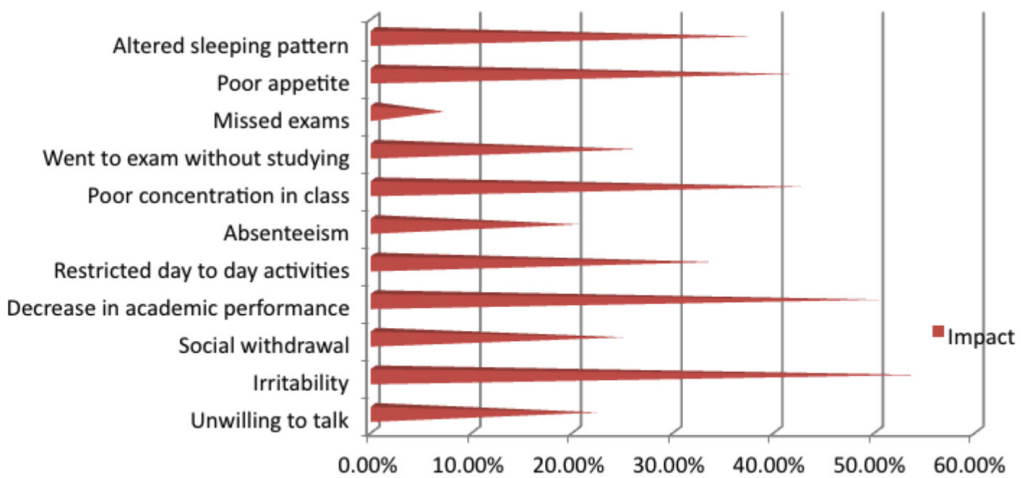

Figure 2: Impact of dysmenorrhea among female medical students of SPHMMC, Addis Ababa, 2019

Table 2: Characteristic of dysmenorrhea among female medical students at St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2019.

Coding variables		Number	Percent
Menstrual pain	Yes	124	79.5
	No	32	20.5
Degree of menstrual pain	Mild	61	48.7
	Severe	14	11.5
Onset of Dysmenorrhea	One week prior to menstruation	11	9.6
	2 to 3 days prior to menstruation	25	20
	At the onset of menstruation	82	66
	After the onset of menstruation	6	4.8
Associated symptoms	Back pain	100	64.1
	Weakness	64	41
	Loss of appetite	51	32.7
	Nausea	50	32.1
	Headache	45	29
	Diarrhea	39	25
	Dizziness	33	21.2
	Sweating	28	17.9
	Vomiting	20	12.8

Table 3: Medical practice and knowledge about drugs used among female medical students at St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2019.

Coding variables		Number	Percent
Medication practice	Home remedy	91	58.3
	Medication	87	55.8
Type of Home remedy used exclusively	Heat	64	41
	Coca cola	28	17.9
	Coffee	8	5.1
	Tea	65	41.7
	Massage	34	21.8
Over the counter medications used exclusively over the past 6 months	Ibuprofen	78	50
	Diclofenac	33	21.2
	Paracetamol	22	14.1
	Tramadol	12	7.7
	Contraceptives	9	
Route of administration	PO	78	87.6
	Combination (PO with IM/IV)	11	12.4
Initiation of over the counter medication used (Ibuprofen, diclofenac, paracetamol or tramadol)	Before pain starts	19	21.3
	When pain starts	55	61.8
	After pain starts	15	16.9
Frequency of over the counter medication used per day (Ibuprofen diclofenac, paracetamol or tramadol)	1-2 times per day	37	41.6
	3-4 times per day	8	
	PRN(when needed)	44	49.4,
Knowledge on the precaution/warning of over the counter drugs utilized (Ibuprofen, diclofenac, paracetamol and tramadol)	Yes	66	73.3
	No	24	16.7
Knowledge on contraindication of over the drugs utilized (Ibuprofen, diclofenac, paracetamol and tramadol)	Yes	55	61.1
	No	35	38.9
Knowledge on maximum recommended dose of over the counter drugs utilized (Ibuprofen, diclofenac, paracetamol and tramadol)	Yes	68	74.4
	No	22	25.6
Knowledge on the risk and adverse effect of over the counter drugs utilized (Ibuprofen, diclofenac, paracetamol and tramadol)	Yes	72	80
	No	18	20

Table 4: Multivariable Logistic Regression Analysis Output of associated factors among female medical students at St. Paul's Hospital Millennium Medical College, Addis Ababa, Ethiopia, 2019

Variable		Dysmenorrhea		COR (95%CI)	AOR(95%CI)	p-value (<0.05)
		Yes (%)	No (%)			
Age	15-20 years	54 (71.05%)	22(28.9%)	2.852[1.247,6.524]	1.901[0.717,5.037]	0.197
	21- 35 years	70 (87.5%)	10 (12.5%)	1	1	
Age of menarche	<9 years	-	-	-	-	-
	9-15 years	121(81.2%)	28(18.8%)	1	1	
	>15 years	3(42.8%)	4 (57.2%)	5.762[1.220,27.211]	0.199[0.036,1.083]	0.062
Family history of dysmenorrhea	Yes	46 (88.5%)	6 (11.5%)	0.391[0.150, 1.022]	0.343[0.108,1.089]	0.069
	No	78 (50.6%)	26 (49.4%)	1	1	
Length of menstrual cycle	<21 days	8(88.9%)	1(11.1%)	0.379[0.046, 3.157]	-	0.370
	21-35 days	91 (75.2%)	30(24.8%)	1	1	
	>35 days	25 (96.2%)	1(3.8%)	0.166 [0.038, 0.736]	0.247 [0.051,1.197]	0.042*
Length of menstruation	<3 days	7(63.6%)	4(36.3%)	1.565 [0.419, 5.848]	-	0.50
	3-5 days	63(73.2%)	23(26.7)	1	1	
	>5days	54(91.5%)	5(8.5%)	0.254 [0.09,0.713]	0.308 [0.100,0.943]	0.039*
Smoking history	Yes	20 (90.9%)	2 (9.1%)	0.347 [0.077,1.568]	1.038 [0.173,6.220]	0.967
	No	104 (77.6%)	30 (22.4%)	1	1	
History of STI symptom	Yes	10 (90.9%)	1 (9.1%)	0.368 [0.045,2.984]	-	0.349
	No	114 (78.6%)	31 (21.4%)	1	1	
History of STI treatment	Yes	7 (87.5%)	1 (12.5%)	0.539 [0.064,4.548]	-	0.570
	No	117 (79%)	31 (21%)	1	1	
Routine physical exercise	Yes	12 (70.5%)	5 (29.5%)	1	1	
	No	112(80.5%)	27 (19.5%)	1.728 [0.561,5.322]	-	0.340

*statistically significant

DISCUSSION

Most women experience a monthly cyclic lower abdominal pain during menstruation called dysmenorrhea. The results of the present study showed that the overall prevalence of dysmenorrhea was 79.5%. This result is comparable to 76.6% in University Gondar[7] and 80% in Hong Kong University[14]. A higher prevalence was recorded in other studies like Tamale campus of the University for Developmental Studies in Ghana which reported a prevalence of 83.6%[11] and Beni-Suef University of Egypt which reported a prevalence of 92.9% [15]. This conspicuous discrepancy of prevalence rates of dysmenorrhea across different countries could be attributed to the lack of universally accepted and standard definition of dysmenorrhea as well as the use of different categories of subjects.

In this study, more than half of the students (51.2%) described the pain as moderate to severe. It was revealed that 48.7%, 39.7% and 11.5% of females had mild, moderate and severe pain respectively. These results go in accordance with a study conducted by Ortiz in 1539 students of Mexican University, where

the author concluded that dysmenorrhea was mild in 36.1%, moderate in 43.8% and severe in 20.1%[13]. This indicates that dysmenorrhea is still an important public health problem which has a negative impact on health, social environment, work and psychological status.

Epidemiological studies have shown link between dysmenorrhea and several environmental risk factors, including cigarette smoking and consumption of alcohol. However, this study did not find a significant association between smoking and alcohol consumption with dysmenorrhea. This can be attributed to the fact that many students are unwilling to disclose this information i.e. consumption of alcohol and cigarette smoking and hence are subject to social desirability bias. This study found a significant association between longer menstrual cycle and longer menstrual duration with dysmenorrhea. This goes in accordance to a study done in high school students in Kuwait where cycle irregularity and longer cycle was associated with dysmenorrhea (P=0.018) [16]. As it is evident in this study and other studies, anomalous menstrual cycle i.e. longer menstrual duration and longer menstrual cycle predisposes women to dysmenorrhea [7,16]. Subsequently, such conditions should not be overlooked rather they should be properly evaluated and managed so as to alleviate dysmenorrhea. In this study, the most disrupted activities were decrease in academic performance (50.6%), poor concentration in class (42.9%) and poor appetite (41.7%). Regarding this, similar results were reported in University of Gondar which shows that there has been an increase in number of decrease in academic performance and poor concentration in class[7]. Another study in university students of Northern Ghana also stated that absenteeism and poor concentration in class were the most disrupted daily life activities[11]. This shows that dysmenorrhea causes a great burden in female students, especially where the school load and stress can be high as where this study was conducted.

It would have been expected that the undesirable effects of dysmenorrhea and menstruation associated symptoms on daily activities of respondents would cause them to be eager to seek medical help but only 22.4% of the respondents ever did so. Similarly, hospital attendance rates were reported low (16.3%) in Ghana[11]. This low hospital visit could be attributed to the mere fact that most females are not comfortable with presenting to their doctor with a sensitive complaint like painful menstruation. Females also do not give enough emphasis to the pain as they consider it normal thus not worth taking to a hospital where there are long and daunting queues to consult their doctors. A study conducted in Iran stated the use of physical activity had positive impact on most of dysmenorrheal symptoms [12]. However, only 10.9% respondents in this study carried out routine physical exercise. Majority of the respondents restrained from conducting routine physical examination due to severity of the pain. This indicates that physical activity should be fiercely advocated to females as it is one of the preventive and alleviating methods.

Self-medication with analgesics and NSAIDs and home remedies like direct application of heat are common effective strategies. The present study showed that most of the students (58.3%) used home remedies as a non-pharmacological treatment option, heat being the most used home remedy (41%). NSAIDs and combined OCs are the most commonly used therapeutic modalities for the management of primary dysmenorrhea [2]. More than half of the respondents (55.8%) reported that they use OTC medications, ibuprofen being the most common drug used (50%). The pain is effectively reduced if the OTC medications are taken before the onset of pain[2]. However, 61.8% of the respondents stated that they start using these medications at the onset of menses and pain. This indicates that more than half of the participants are not aware of the effective time when the medication should be taken.

About 38.2% and 25.8% of the respondents reported that they don't know the contraindication and the maximum recommended dose of OTC medications. These figures are higher than expected for medical students as they take pharmacology courses during the first two years of medical school. This could be attributed to the self- treatment of dysmenorrhea by many female medical students rather than paying a hospital visit where they could gain more information on these commonly utilized drugs. They should be aware that the misuse of these drugs has potential complications like gastrointestinal bleeding and worsen existing case of

peptic ulcer disease. Students should be well trained on how to use these medications appropriately.

CONCLUSION AND RECOMMENDATION

The overall prevalence of dysmenorrhea in female medical students of SPHMMC was found to be high. More than half of the respondents stated that their pain is in the moderate to severe range and the pain starts to occur during the onset of menstruation. Half of the respondents stated that they encountered irritability and decrease in academic performance. More than half of the respondents stated that they use OTC medications to control their pain. About one third of those using the medications stated that they don't know the contraindication of the medications used. Longer menstrual duration and longer menstrual cycle were found to have independent determining factors for the occurrence of dysmenorrhea. Proper health education should be given more emphasis to alter students' habit so as to seek medical attention for their menstrual pain, to make life style modifications by decreasing alcohol intake, cessation of smoking, and do routine physical exercise. Most importantly, the students should be well taught about the precaution, contraindication, maximum recommended dose and risk and adverse effects of OTC medications used to treat dysmenorrhea. The rules and regulations of the teaching process should also be flexible enough to allow female medical students who suffer from severe dysmenorrhea to rest when needed. This study also calls for further study on a nationwide scale to identify and address the major problems associated with dysmenorrhea and educate the society on how to manage it by using home remedies and OTC drugs without misusing them.

ABBREVIATIONS

SPHMMC- St. Paul's Hospital Millennium Medical College, OTC- Over the Counter, OCP- Oral Contraceptive Pills, PRN. Per Need , IUD- Intrauterine Device, NSAID- Non Steroidal Anti Inflammatory Drug, STI- Sexually Transmitted Infection

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COMPETING INTERESTS

The authors declare that there is no conflict of interest regarding the conduct and publication of this research work.

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REFERENCES

1. Aktas D. (2015). Prevalence and Factors affecting dysmenorrhea in female university students: Effect on General Comfort Level. Pain Management Nurs, 16: 534-543.
2. S. Kaur, P.Sheoran, and J. Sarin. (2015). Assessment and comparison of dysmenorrhea in terms of severity of pain and utilization of nonsteroidal anti-inflammatory drugs among unmarried and married women. International Journal of caring sciences, 8(3): 737-745.
3. B. Kiran, T. Sandozi, L. Akila, A. Chakraborty, Meherban, RJ. Rani. (2012). Study of the prevalence, severity, and treatment of dysmenorrhea in medical and nursing students. International Journal of Pharma and Bio Sciences, 3(1): 161-170.
4. Ju H, Jones M, Mishra GD. (2014). Smoking and trajectories of dysmenorrhea among young Australian women. Tobacco Control, 25(2): 195-202
5. Unsal A, Ayranci U, Tozun M, Arslan G, Calik E. (2010). Prevalence of dysmenorrhea and its effect on quality of life among a group of female university students. Ups J Med Sci, 115: 138-145.
6. N. Sharma, M. Sagayaraj, and B. Sujata. (2014). Menstrual characteristics and prevalence of dysmenorrhea in college students. International Journal of Scientific and Research Publications, 4(10): 1-6.
7. Minalshewa Biruk Gebeyehu, Abebe Basazn Mekuria (2017) Prevalence, Impact, and Management Practice of Dysmenorrhea among University of Gondar Students, Northwestern Ethiopia. International Journal of Reproductive Medicine, 3:1-8
8. K.J. Berkley. (2013). Primary dysmenorrhea: an urgent mandate. International Association for the Study of Pain, 21(3): 1-8.
9. El-Hameed NA, Mohamed MS, Ahmed NH, Ahmed ER. (2011). Assessment of dysmenorrhea and menstrual hygiene practices among adolescent girls in some nursing schools at EL-Minia Governorate, Egypt. J Am Sci, 7: 223
10. N. Mahvash, A. Eidy, and K. Mehdi. (2012). The effect of physical activity on primary dysmenorrhea of female university students. World applied sciences journal, 17(10):1246-1255.
11. Evans Paul Kwame Ameade, Anthony Amalba, Baba Sulemana Mohammed. (2018). Prevalence of dysmenorrhea among University students in Northern Ghana; its impact and management practice. BMC Women's Health, 18:39
12. N. Mahvash, A. Eidy, and K. Mehdi. (2012). The effect of physical activity on primary dysmenorrhea of female university students. World applied sciences journal, 17(10): 1246-1255.
13. Mario I. Ortiz. (2010). Primary dysmenorrhea among Mexican university students: prevalence, impact and treatment. Eur J Obstet Gynecol Reprod Biol, 152(1): 73-7
14. CF Chia, Joyce HY Lai, PK Cheung, LT Kwong, Fiona PM Lau, KH Leung, MT Leung, Francis CH Wong, SF Ng. (2013). Dysmenorrhea among Hong Kong university students: prevalence, impact, and management. Hong Kong Med J, 19(3):222-8
15. Nesreen AA Shehata, Ahmed E Arafa, Hamada A Abd El Wahed, Ashraf S Fahim, Gaber K Hussein. (2017). Epidemiology of Dysmenorrhea among University Students in Egypt. Int J Womens Health Wellness, 4:073
16. Sharefah Al-Matouq, Hessah Al-Mutairi, Ohood Al-Mutairi, Fatima Abdulaziz, Dana Al Basri, Mona Al Enzi. (2019). Dysmenorrhea among high school students and its associated factors in Kuwait. BMC Pediatrics, 19(1)

SCHOOL LEVEL MENSTRUAL HYGIENE MANAGEMENT IN OROMIA REGION, ETHIOPIA

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ABSTRACT

BACKGROUND: Management of menstruation as a biological occurrence for women of reproductive age and men's role in its management is determined by socio-cultural factors. Yet, there is limited evidence on support and guidance girls obtain from boys on menstrual hygiene and management. This study aims to identify school based menstrual hygiene and management interventions and the role of boys in Oromia region, Ethiopia.

METHOD: The study was carried out in 2017-18 academic year in eight Oromia Development Association (ODA) supported public schools where sport for life interventions were running. Schoolboys and girls aged 12-15, parents and school teachers participated in the study. Focus Group Discussion (FGDs) with boys, girls, and key informant interviews (KII) with parents were completed. Data so collected were transcribed and translated into English and themes were developed following the objective of the study. Interpretation and presentation of the findings were made substantiated with shared opinions directly quoted.

FINDINGS: The study shows that after two years of school based sport for life intervention, study participants invariably recognized menstruation as a natural biological occurrence and is a blessing rather than a curse. Girls who used to shy and abstain from school for fear of bullying and teasing due to stigma associated with menstruation, have regularly attended their classes and became competitors in their academic performance, . Common arguments by all participants alike show that 'We learnt that menstruation is a mark of healthy growth of girls. The absence of it that should be the source of concern'. With dedicated room and availability of water and sanitary napkin; and support from boys and schoolteachers and management of menstrual hygiene has improved at school level. Boys not only stopped teasing girls but also started contributing money to purchase sanitary napkins. Liaising such school level intervention with parents has extended support to girls at home level.

CONCLUSION: Although further study with mixed method may help to document level of changes, school level comprehensive intervention such as use of sport for life approach has contributed to improved menstrual management at school level with support from boys, school management and teachers that has further extended to engage parents. Such a comprehensive approach has far-reaching implication in keeping girls in school and improve their academic performance.

KEY TERMS: Menstrual hygiene, school intervention, boy's role in menstrual management, Oromia, Ethiopia

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BACKGROUND

Adolescents and youth are the largest single section of the population across the globe. This segment of the population exhibits a multitude of characteristics such as rapid physical, cognitive, social, emotional and sexual change with detrimental effects on young people's self-concept and their future. [1,2,3]

Young people are often active and run relatively limited risk to health problems and burden of diseases that has compromised organized health response.[4] Yet, advocacy for more investment in adolescent and youth development in general and health in particular is getting momentum. [5,4] Among key areas of investment, Sexual Reproductive Health including menstrual hygiene management is major area of focus.[6] Gender inequality and discrimination in connection to socio-cultural foundations of communities in Africa maintains menstrual hygiene and management outstanding challenge.[7] The problem is pronounced in school, compromising girl's educational performance and their participation in school affairs. During menstruation, girls fear teasing by boys and embarrassed if their menstruation is seen.[8] Evidences reveal that adequate menstrual hygiene and management is about availability of sanitary pad, water and soap and separate room for privacy to change and disposal facility.[9] Nonetheless, lack of awareness about the problem at family, school and community level, consideration of menstruation as taboo and consequent teasing and bullying by boys, poor availability of supply including sanitary pad, water, soap, disposal facilities and privacy at school level contributed to girl's school dropout and their poor performance. [10,11,12,13]

Few available evidences from Ethiopia shows limitation of awareness about menstrual management at different levels and lack of resources to manage when and if menstruation occurs while in school. There is lack of evidence on what support by whom could improve menstrual hygiene management. However, anecdotes and few available evidences reveal that with support including by boys in connection to menstrual hygiene management, school enrollment of girls has increased from 46% in 2012 to 52% in 2015.[14]

David and Lucile Packard Foundation has collaborated with Oromia Development Association (ODA) where it introduced Sport For Life, a club-based extra-curricular regular game-based learning activities to empower adolescents and youth with relevant sexual reproductive health awareness including menstrual hygiene management in over 100 schools in the region. [15,16]. The purpose of this study is to explore and describe the sport for life intervention in the schools and implications to improve menstrual hygiene management and indicative implication on academic achievement of girls.

METHOD:

Study settings

The David and Lucile Packard Foundation has collaborated with the Oromia Development Association (ODA) since 2009 to improve access to and use of quality comprehensive SRH information and services among young people among others. Such collaboration benefitted Jimma, Illu Ab Abor, east Arsi, South West and west Shoa zones. Eight ODA supported districts and school within these districts were chosen for the study.

Socio-ecological model was employed to explore the support to school girls from schoolteachers and managers, boys and parents to address menstrual hygiene and management concerns of schoolgirls. Schoolboys and girls aged 12-15 who were active members of the Sport for Life club during the 2018 academic year, school teachers and parents participated in the study. Twenty-four Focus Group Discussion (FGDs) with separate boys and girls sessions, 23 Key Informant Interviews (KII) with schoolteachers and with 16 parents were completed. Data was collected using checklists developed in line with the objective of the study. The investigators carried out the interviews supported by a trained research assistant. Data was collected using local languages and later transcribed and translated into English. The transcripts were read, and re-read to reduce data into themes. With the application of open code free software, the transcripts were categorized in to themes as: local conceptualization of menstruation,

role of Sport for life initiative and supportive school environment. Findings were interpreted and presented without influencing its original meaning. For direct quotes, names were avoided to ensure unanimity while sources of data and places were provided.

Ethical review

The IRB of the Oromia Regional Health Bureau cleared the project including use of verbal, informed consent for data collection. In addition, letter of support from the Packard Foundation and the Oromia Development Association to the study weredas and subsequent letter to the schools by the respective wereda administration facilitated smooth entry into the schools. School principals mobilized parents and schoolteachers thereby the study team explained about the purpose of the study and implications to improve healthy learning especially of the girls. Research team secured verbal, informed consent both from parents and from teachers secured before data collection, while participating students obtained explanation on the purpose of the study and implications. In the manuscript, quotes that represent shared opinion were presented without names but age of participants, places and type of data collection.

Findings

A total of 692 adolescents whose mean age is 11.7, 12.9, 14 and 14.6 for grades 5-8. 53% of the participants were girls. A total of 23 schoolteachers and 16 parents took part on the study. Sixty four percent of the participating school teachers and 63% of the parents were male.

Local understanding menstruation: In all the study settings, parents refer to menstruation as 'legu', which literally means menstruation contextually it means not clean and distancing oneself from people especially the elders. Talking about sex and sex related regular bleeding [laguu] is a taboo and particularly seen with a stain of blood on dress by parents especially male members of the household is breaking Safu (agreed on norms). As a result, menstruation remains personal issue and girls keep it as their top secret" (KII, 25 year old mother, Adami Tulu). For adolescents talking about menstruation in presence of father and elder brother is considered breaking safu and is sign of disrespect. One of the participants explained that, "Normally, girls are not expected to ask or tell about lagu to family members including mother but probably an elder sister" (KII, 32 years old school teacher, Jibat). Preparation of daughters for healthy menstruation did not come out during discussion with parents particularly mothers. "My mother didn't tell me what I will encounter as a girl. It happened to me when I was 15 years and was shocking at the beginning but eventually I learnt my own way. Of course, my elder sister who was then married helped me. Unfortunately, I did not tell any of my three daughters all of whom I believe are through now. Our culture makes this a taboo to talk about and as parents we find it difficult to talk" (KII, 42 years old women, Jibat).

My mother did not tell me what I will encounter as a girl: Girls argued to enter puberty without appropriate information about menstruation, how to manage when it occurs and unprepared to cope with it and unsure of when and where to seek help. Reasons were found to include lack of support by adults around them including parents and teachers for these are ill-informed and uncomfortable to discuss about sex, reproduction and menstruation. Before the intervention was started in this school, parents and schoolteachers associate menstruation with dirt, polluting and shameful. The finding reveals that even mothers who went through the same process do not recognize menstruation as normal state of life and do not guide their daughters. One of the participants said, "If my mother has told my sister she would not have felt ashamed. I know my sister was shocked and felt alienated. I do not see why she would be in that state if mom has prepared her" (KII, 16 year schoolgirl, Nono).

Another participant pointed out that, "If we see bloodstain on a girl's clothe, we lough, tease and bully them. They feel ashamed of this and isolate themselves probably stays at her desk in class until everyone is gone since she is ashamed of this and fear being teased and bullied by us [boys]. We did not know how harmful such action was until intervention started in our school " (FGD, 14 yea old boy, Dodota).

Implication of sport for life initiative: Participating unanimously reported that Sport for Life activities are valuable not only improving students and school community's awareness on SRH and gender based

discrimination, it was found to have empowered students to seek support and make decisions about their sexual health. One of the participants stated that, "Our classmate boys did not know that we [girls] bleed on a regular basis until this 'Sport for life' initiative. During our joint discussion boys told us that they learnt that girls menstruate every month and this is normal and healthy for girls" (FGD, 15 years old Schoolgirl. Yebu).

With the implementation of 'Sport for Life' in the school and involvement of male and female students in regular activities, support to female students has improved at school level. Male students from study sites reported to consider menstruation as normal part of life for females. One of the students explained that, "Before my involvement with Sport for Life activities, I felt menstruation is girl's problem that they have to deal with. Now, all male students have refrained from teasing and are in fact mobilizing money from students and teachers on a regular basis to buy them sanitary pad" (FGD, 15-year schoolboy, Dugdaa). Another student explained that, "I feel bad about how negative I was to a girl two years back, whom my friends and I laughed and teased at for we saw blood on her dress. I remember how embarrassed she was and we never see her again in our school. I regret that – we were wrong Had this sport for life was introduced early more of our sisters wouldn't have suffered" (14 year old, Nono).

Participants argued that Sport for Life has helped them realize that menstruation is normal life process for girls and the need to support them. One of the participants noted that, "In our group, we realized it is an identity for girls/women. If girls do not menstruate then she is not healthy. This is contrary to what I as well as my friends knew before. Now we learnt our mistakes that all boys in this school are in support of girls in this school and at home. Girls do not fear and feel ashamed any more due to menstruation" (FGD, 14 schoolboy, Dugda). Female students are not teased in connection to menstruation unlike it is usually the case, "I remember one of our classmate encountered menstruation in class. One of our colleagues gave her his jacket to cover herself to walk to the room where should could clean herself. Now, it is not something we [male students] lough about but we help." (14 years schoolboy, Toke Kutaye).

Through Sport for Life initiative, parental support to their daughters has improved in all settings. What has been considered as a taboo to discuss is not a problem any more at least with mothers. "Although discussing sex including menstruation with parents is considered 'safuu' (disrespectful), during school day, parents are educated about the challenges girls encounter in connection to menstruation through drama. Besides, parent are engaged through school-parent committee to discuss on menstruation and its implication on girls academic performance. This has brought useful result where parents now started giving money for purchase of sanitary pad" (KII, 28 Schoolteacher, Yebu). One of the students explained that, "During the school day at the end of academic year, we show drama to parents emphasizing how support from parents, siblings and the school community on menstrual hygiene management would improve girls academic performance and implication of lack of support. Parents expressed regrets for not supporting" (FGD, 14 year schoolgirls, Dugda).

Friendly school environment for girls: The school environment has become so friendly for girls improving girls participation in non-curricular activities and their academic performance. One of the students argued that "Sport for Life did not only removed our worries but girls are now active participating in school activities as leaders of clubs, class monitors and students representative. There is no girl that dropped out of school the last two years neither due to pregnancy or menstruation" (FGD, 14 year, Schoolgirl, Toke Kutaye). Another girl emphasized that "During the last academic year, a girl stood first from the entire school. This is the result of sport for life and am sure this will be the case this year too" (FGD, 15 year schoolgirl, Jibat). Furthermore, school dropout is not a problem during the last two years in the school. One of the participants argued that, "Usually regular menstruation has affected proper class follow up especially with lack of support. Now, with more support there is no reason for girls to drop out of school. During the last two years, no girl student has dropped out of school" (KII, 27 years schoolteacher, Dodota).

Finding shows that students are playing roles in sharing information they gained from 'Sport for Life'. One of the participants explained this, "Through mini-media, we share such information as HIV, unwanted pregnancy, saving, menstruation, gender based violence and implications to girl's school performance on a regular basis. This is what we learnt from the 'sport for life' activities. This has made the changes wider beyond few of us who participated in the sport for life"(FGD, 14 year schoolboy, Yayo).

Schoolboys who participated in 'Sport for Life' suggest the need to expand this initiative to reach out to more students. "I think students who participated in the 'Sport for Life' realized our limitation and the problems we posed to our female colleagues. I wish all students in school get same opportunity. It is only that way could sex and menstruation related problems of girls could be solved. 'Sport for Life', I found, is a very good initiative that has to expand to all schools in Oromia" (KII, 30 years, schoolteacher, Nono). One of the students who was a member of sport for life club since last year emphasized that, "Only few students participate at a time. As a result, most other students benefit through mini-media teaching. It would be useful if more facilitators are made available" (FGD, 16 year schoolgirl, Yebu). In as much as what is known about sex and menstruation has changed and positive attitudes were built, sustaining access to sanitary pad is argued important. As such one of the participants argued that, "Continuous provision of sanitary pad may be difficult. Perhaps building skills on how to make local sanitary pad may help. These are some experiences on ground as initiated by some NGOs and this may have to expand to ensure access to sanitary pad may not be a concern" (KII, 29 year, schoolteacher, Toke Kutaye).

Discussion

Management of menstrual hygiene is an important part of women's life that remains poorly discussed in Ethiopia. Especially for girls in school, it management coupled with limited interventions in terms of awareness building and provision of relevant services makes its occur acne and management very difficult for girls. This has been documented to have far-reaching implications on the educational attainment of girls.

Finding clearly reveal that menstruation has been a taboo and is a source of shame for adolescent girls both in school and at home. UNICEF's document reveals that more than half girls in Ethiopia have never received information about menstruation, do not know what to do when it happens and do not have support during menstruation. At home, adolescents and their mothers do not share same knowledge about menstruation and value different traditions. Local socio-cultural domains restrict discussions about menstruation between daughters and parents including mothers.[17] Neither do schools teach girls about menstruation and its management. [18,19]

Two-Third of the girls do not talk or discuss about menstruation with another person because they feel ashamed and often restrict their mobility.[20] Such cultural foundation of menstruation that consider it as taboo is challenged with the Sport for Life initiatives at School level. Now students stay at home and do not feel embarrassed at the settings where the study was conducted.

Consequently, hindrances from seeking advice from parents and teachers on appropriate menstrual hygiene management was not reported during the study. Strategies to encourage positive social norms towards menstruation was found to prevail in the study setting which is an encouraging experience for Oromia Development Association as well as the Packard Foundation. Similar call to promote open discussions about menstruation and its management at the family, community and school levels is documented to support improvements of menstrual hygiene management in low and middle income settings.[21]

A report form PMA2020 shows that 28% of women in Ethiopia have resources to manage their menstruation with no variation by age.[22] This means majority of women are unable to meet their menstrual management needs. Coupled with glaringly evident limited awareness, girls in school are likely to lack such resources and the problem is much at worst at this level.

Lack of water supply, hygiene and sanitation (WASH) facilities, limited access to sanitary materials and information on safe menstrual hygiene management (MHM) at school aggravate these situations. (18,20)

Finding from this study reveals that schools weren't built with the consideration of menstrual hygiene management nor were any guidance for schools to dedicate rooms for menstrual management. However, the schools visited during the study have started to dedicate a room for this purpose only following the 'sport for action' training given to school directors of the selected schools.

From this finding, it is clear that boys tease and bully girls if bloodstain is seen on girls uniform. This is an embarrassment for girls and cause school dropout. One could realize the irony of government's effort to ensure girl's enrollment and keep them in school while schools are not friendly to girls with appropriate facilities to manage their mensuration while in school. Most schools in Ethiopia are not equipped with basic amenities for menstrual management: easy access to sanitary pads, place to change pad, availability of running water and disposal facilities.[23,24]

This has accounted for school absenteeism and at worst school dropout for girls which is the case from this study. Studies show over three-quarter of female students miss class every month in connection to menstruation and some who still attend class during menstruation exhibit reduced class performance due to poor concentration. [25,19,20]

The initiative by Oromia Development Association with support from The Packard Foundation has generated useful lessons where due to 'Sport for Life' initiative support from boys has shown results in harnessing more support from parents. Following the initiative schoolboys were motivated to support girls where teasing and bulling has become obsolete as practice which was attributed to mere naivety about menstruation. In as much as gender inequalities that compromise women's ability to manage menstruation is rooted in the cultural norms around menstruation, the role of men and boys is equally compromised the potential role of boys and men menstrual hygiene management.[17] Available evidences attested that initiatives that involved boys and men in menstrual hygiene management have shown remarkable successes within schools and households.[26]

So, in efforts to improve girls' educational accomplishment, the role of boys, parents and school community was evident. Anonymous evidences have long documented that girls education is effective tool for improved women's health outcomes such as in the reduction of infant and maternal mortality, protection against early and unwanted pregnancy and other sexual reproductive problems including HIV/AIDS. (27,28) In view of this, ensuring friendly school with appropriate services for girls and expanding such support to family through family-parent partnership could play pivotal role.

Further studies with more geographical coverage for potential scale up of the experiences from Orimia development through Packard Foundation is important to consider

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Conflict of interest

We declare to have no conflict of interest what so ever

Author contribution

Mirgissa Kaba has substantially contributed in the design, planning and data collection and analysis, drafted the paper and revised while Zelalem Adugna has collected data read the draft and provided input to the draft.. Both authors read the final version and approved it for publication for which both have accountability for its accuracy and integrity.

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REFERENCES

1. Alsaker, F.D. Puberty timing, overweight and psychological adjustment. Journal of early adolescence. 1992; 12.
2. Kloep, M. Love is all you need? Focusing on adolescents' life concerns from ecological point of view. Journal of adolescence. 1999; 22.
3. WHO. Global Accelerated Action for the health of adolescents (AA-HA!). Guidance to support country implementation. Geneva: WHO; 2017.
4. WHO. The global strategy for women's, children's and adolescents' health (2016-2030): Survive thrive transform. Geneva: WHO, United Nations Secretary-General EO.; 2015.
5. Wichstrom. The emergence of gender differences in depressed mood during adolescence: The role of gender intensified gender socialization. Development Psychology. 1999; 35(1).
6. Sommer M, Caruso BA, Sahin M, Calderon T, Cavill S, Mahon. A time for global action: addressing girls' menstrual hygiene management needs in schools. PLoS Med. 2016; 13:e1001962.
7. UNICEF. Guidance on Menstrual Health and Hygiene. New York: UNICEF, Programme Division/WASH 3 United Nations Plaza ; March 2019.
8. Joyce Chinyama, Jenala Chipungu, Cheryl Rudd, Mercy Mwale, Lavuun Verstraete, Charity Sikamo, Wilbroad Mutale, Roma Chilengi and Anjali Sharma. Menstrual hygiene management in rural schools of Zambia: a descriptive study of knowledge, experiences and challenges faced by school girls. BMC Public Health. 2019 ; 19(16).
9. WHO/UNICEF. Meeting Report of JMP post-2015 Global Monitoring Working Group on hygiene. Washington DC: WHO/ UNICEF Joint Monitoring Programme, Post-2015 Working Group on Hygiene; 2012.
10. Mason L, Nyothach E, Alexander K, Odhiambo FO, Eleveld A, Vulule J, et al. We keep it secret so no one should know' - a qualitative study to explore young schoolgirls attitudes and experiences with menstruation in rural Western Kenya. PLoS One. 2013; 8: e7.
11. Montgomery P, Ryus CR, Dolan CS, Dopson S, Scott LM. Sanitary pad interventions for girls' education in Ghana: a pilot study. PLoS One. 2012; 7: e48274.
12. Van Eijk AM, Sivakami M, Thakkar MB, Bauman A, Laserson KF, Coates S, et al. Menstrual hygiene management among adolescent girls in India: a systematic review and meta-analysis. BMJ Open. 2016; 6: e010290.
13. Sisay, Teketo Kassaw Tegegne and Mitike Molla. Menstrual hygiene management and school absenteeism among female adolescent students in Northeast Ethiopia. BMC Public Health. 2014; 14:1118.
14. FMoE. Education statistics annual abstract 2008 E.C. Addis Ababa:; 2015/16.
15. Raj A, McDougal L, Jackson E. Community experiences with a school-based intervention to delay marriage among girls in Oromia Region, Ethiopia. Center on Gender Equity and Health. San Diego: University of California; 2017.
16. IIRR. Rapid project assessment and project planning recommendations for ODA: AYSRH Project consultative review workshop report. Addis Ababa:; 2015.
17. Therese Mahon, Anjali Tripathy and Neelam Singh. Putting the men into menstruation:the role of men and boys in community mensrual hygiene management. Waterline. January 2015; 34 (1).
18. Kalkidan Gugsa. Breaking the Silence on Menstrual Hygiene Advocacy Workshop Report. Addis Ababa: UNICEF; 30 May 2017.
19. Selamawit Tamiru. Girls in Control: Compiled Findings from Studies on Menstrual Hygiene Management of Schoolgirls. Ethiopia, South Sudan, Tanzania, Uganda, Zimbabwe. Addis Ababa: SNV; 2015.
20. FMoH. Menstrual Hygiene management Policy and Implementation Guideline. Addis Ababa:; 2016.
21. Vishna Shah, Helen M. Nabwera, Fatou Sosseh, Yamundao Jallow, Ebrima Comma, Omar Keita and Belen Torondel. A rite of passage: a mixed methodology study about knowledge, perceptions and practices of menstrual hygiene management in rural Gambia. BMC Public Health. 2019; 19(277).
22. PMA2020. Menstrual Hygiene Management Ethiopia. Addis Ababa: FMoH; 2017.
23. Shivaleela P. Upashe, Tesfalidet Tekelab and Jalane Mekonnen. Assessment of knowledge and practice of menstrual hygiene among high school girls in Western Ethiopia. BMC Women's Health. 2015; 15:84.
24. Meseret Abay Fisseha, Yigzaw Kebede, Hedija Yenus Yeshita. Menstrual Hygiene Practice and Associated Factors among Secondary School Girls in Wegera District, Northwest Ethiopia; a Cross-Sectional Study. Computational Biology and Bioinformatics. 2017; Vol. 5, No.
25. Tegegne, Teketo Kassaw, and Mitike Molla Sisay. Menstrual Hygiene Management and School Absenteeism among Female Adolescent Students in Northeast Ethiopia. BMC Public Health. 2014; 14, no. 1118.
26. Therese Mahon, Anjali Tripathy and Neelam Singhp. Putting the men into menstruation: The role of men and boys in community menstrual hygiene management. Waterlines. 2015 January; Vol. 34 No. 1.
27. Mason, L., Nyothach, E., Alexander, K., Odhiambo, F.O., Eleveld, A., Vulule, J., Rheingans, R., Laserson, K.F., Mohammed, A., Phillips-Howard, P.A. 'We Keep It Secret So No One Should Know' – a qualitative study to explore young schoolgirls attitudes and expereinces with menstruaiton in Rural Western Kenya. PLoS ONE. 2013; 8(11).
28. UN. Millenium Development Goal 3: Where do we stand? New York: UN; 2012.

PERINATAL AND MATERNAL OUTCOMES OF OLIGOHYDRAMNIOS IN THIRD TRIMESTER PREGNANCY: A CROSS SECTIONAL COMPARATIVE STUDY AT FELEGEHIWOT COMPREHENSIVE SPECIALIZED HOSPITAL AND TIBEBE GHION SPECIALIZED HOSPITAL , BAHIR DAR, NORTH WEST ETHIOPIA, 2019

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ABSTRACT

INTRODUCTION: Oligohydramnios is commonly defined as an amniotic fluid index (AFI) ≤ 5 cm. It is considered a risk factor for adverse fetal and maternal outcomes.

OBJECTIVE: To compare perinatal and maternal outcomes among oligohydramnios and non-oligohydramnios pregnancies.

METHODS: A cross sectional comparative study with prospective facility based follow up study was done. The sample size is calculated to be 51 and 102, 1:2 for oligohydramnios and non-oligohydramnios, respectively.

RESULTS: The Cesarean delivery rate in women with oligohydramnios was 61%, compared to 22% in non-oligohydramnios group, which was statistically significant (P < 0.001). Five minutes Apgar score <7 was observed in 20 (40%) neonates in oligohydramnios and 16(15%) in non-oligohydramnios, which was statistically significant (p = 0.002). NICU admission was required for 14 (27 %) versus 11(10 %) babies in oligohydramnios and non-oligohydramnios, respectively; this is found to be statistically significant (p = 0.011). There was no difference in birth weight and need of neonatal resuscitation in both groups. The risk of adverse neonatal outcome was not related to GA at delivery, C/S, parity, age and antenatal follow up.

CONCLUSIONS: Oligohydramnios has a significant correlation with adverse perinatal and maternal outcome.

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INTRODUCTION

Amniotic fluid (AF) surrounds the fetus after the first few weeks of gestation. It has a protective function for the fetus and the umbilical cord from trauma and compression. It also has anti-bacterial effects and provides the necessary conditions for normal development of fetal organ. Oligohydramnios is the decrease in the amniotic fluid with a four quadrant amniotic fluid index(AFI) less than 5 cm or amniotic fluid in one pocket less than 2 cm (1)

Common causes for Oligohydramnios were idiopathic (56%) and PIH (24%). Most common reason to perform caesarean was fetal distress. Oligohydramnios was related to higher rate of growth retardation and neonatal intensive care unit admission(2).

Oligohydramnios is thought to complicate 0.5% to 5.5% of all pregnancies, depending on the definition that is used and the population under study (3).

Amniotic fluid is assessed by amniotic fluid Index (AFI) by adding the depth in centimeters of largest vertical pocket in each four quadrants(4). In 2005 Leeman et al. reported oligohydramnios occurred in about 1 % to 5 % of pregnancies at term (5). In the absence of fetal anomalies, placental insufficiency has been proposed as a main etiology of reduced amniotic fluid volume. (6).

In obstetrics practice, lack of amniotic fluid at term is thought to be associated with a number of adverse ante partum, intra partum and perinatal maternal pregnancy outcomes. This includes a greater risk for non-reactive non-stress tests, increased risk for labor inductions, fetal heart rate decelerations in labor, meconium stained amniotic fluid, cesarean delivery for fetal labor intolerance, increased risk of stillbirth, NICU admissions, low Apgar scores and neonatal deaths (7).

In Ethiopia, there is no documented study on maternal and Perinatal outcome of oligohydramnios at third trimester pregnancy and its associated factors. Hence, this study was done to find out the impact of oligohydramnios on maternal and perinatal outcome at FHCSH and TGSH, northwest Ethiopia. It will be a bench for more advanced study on oligohydramnios.

METHODS AND MATERIALS

STUDY AREA AND PERIOD

The study was conducted in Felege Hiwot Comprehensive Specialized Hospital(FHCSH) and Tibebe Ghion Specialized Hospital(TGSH) from April 1 to August 30,2019.

Study design

A cross sectional-comparative study was conducted at FHCSH and TGSH.

Study population

All Third trimester pregnant women who were admitted to FHCSH and TGSH, maternity/high risk and labor ward with the diagnosis of oligohydramnios.

Inclusion and Exclusion criteria

Inclusion criteria: Women with singleton pregnancies ≥ 28 weeks of gestation with AFI less than 5 cm .

Exclusion criteria: Rupture of membrane confirmed by sterile speculum examination, multiple gestation, congenital anomalies and polyhydramnios were excluded from this research.

Sample size determination

A double population proportion formula using the assumptions of 95% confidence level and 5% margin of error was done used to estimate the sample size. Low birth weight rate with oligohydramnios and non-oligohydramnios was 37.33% and 16.4 4% respectively (Uma Mohanraj, S. Udaya Aruna. 2017)(34). Substituting the above assumption in the formula, the required sample size is calculated to be 51 and 102 with ratio of 1:2 for oligohydramnios and non-oligohydramnios respectively. All admitted within study periods were included.

Study Variables

Dependent Variable: perinatal and maternal outcomes

Perinatal outcome: IUFD, ENND, NICU admission, 5th minute Apgar score <7, low birth weight, need of resuscitation

Maternal outcome: mode of delivery.

Independent variables

- Socio-demographic variables: age, residence, level of education, marital status, occupation
- Obstetric factors: Parity, ANC status, gestational age, PIH, amniotic fluid volume and unknown cause.

Data collection

Data was collected by a pretested well-structured checklist, which was composed of three main parts; the socio-demographic data, the obstetric factors, and the perinatal and maternal outcomes. Data was collected by a four trained midwives and one resident.

Data Processing and Analysis

Data was entered in to Epi data version 3.1 then export to SPSS version 23 software packages for analysis. Descriptive statistics such as frequency and percentage was done. Bi variable logistic regression was used to determine the association between each independent variable and the outcome variable by p-value and OR. The association between dependent and independent variables further undergo multivariable logistic regression and interpreted by using the OR with 95% CI and p-value of <0.05.

Ethical clearance

Ethical clearance was obtained from the Ethical Review Board of college of medicine and health sciences, Bahir Dar University. Informed consent was taken and confidentiality was maintained when handling each case.

Results

5.1 Socio-demographic characteristics of the respondents

A total of 153 mothers and their records were reviewed and making the response rate of 100%.

Table 1 Sociodemographic characteristics of pregnant women who were admitted to obstetric and gynecologic ward, TGSH and FHCSH

Variables	Category	Oligohydramnios (n=51) No.(%)	Normal(n=102)No.(%)	P value
Age	Upto 20	7(13%)	9(9)	
	21-25	15(30)	30(29)	0.5
	26-30	17(33)	32(32)	
	>30	12(24)	31(31)	
Residence	Urban	29(57)	46(45)	0.6
	Rural	22(43)	56(55)	
Marital status	Single	4(8)	3(3)	0.98
	Married	47(92)	99(97)	
Occupation	Housewife	27(53)	67(66)	0.2
	Govt employee	9(17)	23(22)	
	Merchant	13(26)	9(9)	
	Other	2(4)	3(3)	
Educational status	Cannot write and read	17(33)	43(41)	
	Can read and write	5(10)	17(17)	0.16
	Elementary	5(10)	16(16)	
	Secondary	9(17)	13(13)	
	College and above	15(30)	13(13)	

Current and past Obstetrics factors

Oligohydramnios: From total of 51 mothers, 51% were primigravida,48(94%) had ANC follow up, 48(74%) were admitted at 37-42 weeks and 7(14%) were diagnosed to have hypertension.

Non-oligohydramnios: From total of 102 mothers, 32% were primigravida, 96% had ANC follow up,70 (69%) were admitted at 37-42 weeks .

Post term was seen among 16 % in oligohydramnios group versus 10 % in non-oligohydramnios. In the present study, 70 % cases are unknown.(Table 2)

Table 2 Obstetrical factors of pregnant women who were admitted to obstetric and gynecologic ward, TGSH and FHCSH

Variables	Category	Oligohydramnios No. (%)(n=51)	Normal(n=102) No. (%)
Gravidity	Primi	26(51)	33(32)
	2-4	14(27)	41(40)
	>=5	11(22)	28(28)
antenatal care follow up	NO	3(6)	4(4)
	YES	48(94)	98(96)
Gestational age	28-37 week	1(2)	13(13)
	37-42 week	38(74)	70(69)
	>=42weeks	8(16)	10(10)
	Unknown	4(8)	9(8)
Hypertension	YES	7(14)	10(10)
	NO	44(86)	92(90)
Other factors	Abruption placenta	5(10)	
	Medication(ACEI,ARB,NSAIDS)	1(2)	2(2)
Unknown cause		36(70)	88(86)

Maternal and perinatal outcome

As regards to mode of delivery, it was observed that 61% had C/S delivery in oligohydramnios group which was higher compared to the non-oligohydramnios group (22%) . In addition, 60% of those with oligohydramnios had Apgar score > 7. Birth weight were normal in oligohydramnios and non-oligohydramnios (71% versus 80 % respectively). There were no neonatal deaths in oligohydramnios group, but there was 2% ENND in non-oligohydramnios. NICU admission is greater in oligohydramnios than no oligohydramnios (27% and 10%, respectively) (Table 3).

Table 3 Maternal and perinatal outcome pregnant women who had admitted to obstetric and gynecologic ward, TGSH and FHCSH

Variables	Category	Oligohydramnio (n=51) No.(%)	Normal(n=102) No.(%)
Birth weight	1000-2499grams	15(29)	21(20)
	≥2500grams	36(71)	81(80)
Five minute Apgar less than 7	Yes	20(40)	16(15)
	No	31(60)	86(85)
Need for resuscitation	Yes	18(35)	16(15)
	No	33(65)	86(85)
NICU admission	Yes	14(27)	11(10)
	NO	37(73)	91(90)
ENND	Yes	0	2(2)
	No	51(100)	100(98)
Mode of delivery	Vaginal	20(39)	80(78)
	C/S	31(61)	22(22)

5-min APGAR score <7 was observed in 20 (40%) neonates in oligohydramnios (p = 0.002) and 16(15%) in non oligohydramnios. The results confirmed that those with oligohydramnios were nearly four times higher odds for less than 7 APGAR score at five minutes compared to those with no oligohydramnios (COR: 3.48; 95%CI: 1.59-7.53) .

Low birth weight was found in 12(23%) in oligohydramnios Versus 18 (18%) in non-oligohydramnios women; this is not statistically significant (p = 0.589).

NICU admission was required for 14 (27 %) versus 11(10 %) babies in oligohydramnios and no oligohydramnios, respectively; this is found to be statistically significant (p = 0.011). There was 2% ENND in non oligohydramnios ,this is not statistically significant.

Moreover 35 % of newborn was in need for resuscitation in oligohydramnios compared to 15% of no oligohydramnios group. But this is not statistically significant (p=0.076)

TABLE 5.Bivariate analysis of factors associated with low APGAR score of newborn

Variables	Category	APGAR		COR(95% CI)	P value
		Less than 7(n=36) No.(%)	>=7(n=117) No.(%)		
Occupation	Housewife	25(70)	69(60)	4.140(.65-26.2)	.132
	Govt employee	5(14)	27(22)	8.100(1.0-61.5)	.043
	Merchant	3(8)	19(16)	9.500(1.0-82.7)`	.041
	Other	3(8)	2(2)	1	
Educational status	Cannot write and read	16(44.5)	44(37)	1.100 (0.4-2.9)	.852
	Can read and write	2(5.5)	21(18)	4.200(0.79-22)	.091
	Elementary	6(17)	14(11)	.933(0.26-3.22)	.915
	Secondary	4(11)	8(17)	1.80(0.46-7.00)	.396
	College and above	8(22)	20(17)	1	
Gravidity	Primi	15(41.7)	44(37.6)	1	
	2-4	7(19.3)	48(41)	1.64()	268
	>=5	14(39)	25(21.4)	3.84()	.010
Amniotic fluid volume	Oligohydramnios	20 (55.6)	31(26.5)	3.46(1.59-7.52)	0.002
	Non oligohydramnios	16(44.4)	86(73.5)		

Table 6 Bivariate analysis of factors associated with newborn who need resuscitation

Variables	Category	Need of resuscitation		OR(95% CI)	P value
		Yes (n=34) No.(%)	NO(n=119) No.(%)		
Occupation	Housewife	23(67.4)	71(60)	2.26(.71-7.15)	.162
	Govt employee	4(11.8)	28(23.2)	2.05(.55-7.56)	.281
	Merchant	3(9)	19(16)	.08(.009-.76)	.028
	Other	4(11.8)	1(0.8)	1	1
Gravidity	Primigravida	8(23.5)	51(43)	3.984(1.4-10.6)	.006
	2-4	11(32)	44(37)	2.500(.99-6.2)	.0528
	>=5	15(44.5)	24(20)	1	
Amniotic fluid volume	Oligohydramnios	7(20.5)	44(37)	2.263(.91-5.6)	.079
	Non oligohydramnios	27(79.5)	75(63)	1	

Table 7. Bivariate analysis of factors associated with newborn who need NICU admission

Variables	Category	NICU admission		OR(95% CI)	P value
		YES(n=25) No.(%)	NO(n=128) No.(%)		
Occupation	Housewife	13(52)	81(63)	9.3(1.4-61)	.020
	Govt employee	4(16)	28(22)	10.5(1.3-83)	.026
	Merchant	5(20)	17(13.3)	5.1(.65-39)	.119
	Other	3(12)	2(1.7)	1	
Marital status	Single	3(12)	4(3)	4.22(.88-20.20)	071
	married	25(88)	124(97)	1	
Educational status	Cannot write and read	9(36)	51(40)	2.26(.76-6.65)	.139
	Can read and write	1(4)	22(17)	8.80(1.01-76)	.049
	Elementary	4(16)	16(12.5)	1.60(.40-6.28)	.501
	Secondary	3(12)	19(15)	2.53(.58-10.9)	.215
	College and above	8(32)	20(15.5)	1	
Amniotic fluid volume	Oligohydramnios	3(12)	4(3)	3.13()1.30-7.52	.011
	Non oligohydramnios	22(88)	124(97)		

Cesarean delivery was higher in the oligohydramnios group (61%), compared to the non oligohydramnios group (22%). In current study, statistically significant (P =0.001)

Women with oligohydramnios were nearly seven times more likely to have cesarean section to deliver the baby than non oligohydramnios, (AOR: 6.53; 95 CI: 2.82-15.2)

After adjusted for the effect of occupational status , residence, educational status and gestational age; increased C/S rate that remained significantly associated with only oligohydramnios

Table 8, multivariable analysis of factors associated with mode of delivery of pregnant women who were admitted to Obstetric and gynecologic ward, TGSH and FHCSH

Variables	**Category**	**Mode of delivery**		**OR(95% CI)**	**AOR(95 CI)**	**P value**
		CD(n=53) No.(%)	Vaginal delivery(n=100) No.(%)			
Occupation	Housewife	26(49)	68(68)	1		
	Govt employee	16(30.2)	16(16)	0.25(0.05-1.1)		0.21
	Merchant	10(18.9)	12(12)	0.73(0.177-3.0)		0.06
	Other	1(1.9)	4(4)	2.49(0.196-31)		0.66
Residence	Urban	30(56.7)	45(45)	1		
	Rural	23(43.3)	55(55)	1.59 (0.81-3.12)		0.17
Educational status	Cannot write and read	17(32)	43(43)	3.37(1.32-8.59)		011
	Can read and write	43(81)	18(18)	4.80(1.38-16.6)		013
	Elementary	7(12)	13(13)	2.47(0.75-8.10)	.	134
	Secondary	8(15)	14(14)	2.33(0.74-7.34)	.	148
	College and above	16(30)	12(12)	1		
Gestational age	28-37 week	4(7.5)	10(10)	1.111(0.25-5.80)		.901
	37-42 week	34(64)	74(74)	.967(0.27-3.33)		.958
	>=42weeks	11(21)	7(7)	283(0.06-1.28)	.	102
	Unknown	4(7.5)	9(9)	1		
Amniotic fluid volume	Oligohydramnios	31(58.5)	20(20)	5.63 (2.7-11.7)	6.53 (2.82-15.2)	0.00 01
	Non oligohydramnios	22(41.5)	80(80)	1		

Table 9. Multivariable analysis of factors associated with adverse neonatal outcome, pregnant women who were admitted to Obstetric and gynecologic ward, TGSH and FHCSH, 2019

Variables	Category	Composite perinatal outcome		AOR(95% CI)
		Bad(n=101) No.(%)	Good(n=52) No.(%)	
Age	Upto 20	11(11.8)	4(7.7)	1
	21-25	32(31.7)	13(25)	.58(0.12-2.80)
	26-30	32(31.7)	18(34.7)	1.51(0.27-8.22)
	>30	26(27.8)	17(32.6)	2.44(0.34-17.22)
Educational status	Cannot write and read	39(39)	21(40)	3.7(0.34-4.8)
	Can read and write	12(12)	11(21)	5.1(0.14-3.3)
	Elementary	4(4)	6(11.5).	2.5(0.24-6.54)
	Secondary	13(13)	9(17)	4.7(0.04-1.68)
	College and above	23(22)	5(10.5)	1
Gravidity	Primi	43(42.6)	16(30.8)	3.39(0.32-3.30)
	2-4	31(30.7)	24(68)	3.42(0.04-1.78)
	>=5	27(26.7)	12(23.2)	1
Gestational age	28-37 week	12(12)	2(3.8)	3.97(0.69-22.8)
	37-42 week	68(67)	40(77)	1.37(0.15-12.19)
	>=42weeks	15(15)	3(5.8)	7.12(0.88-57)
	Unknown	6(6)	7(13.4)	1
Amniotic fluid	Oligohydramnios	42(42)	9(17)	4.13(1.44-11.85)
	Non oligohydramnios	59(58)	43(83)	1

DISCUSSION

Assessment of amniotic fluid volume during the antenatal period is considered a helpful tool in determining who is at risk for adverse neonatal outcome .Hence, this study was undertaken to assess the value of oligohydramnios in mode of delivery and neonatal outcomes.

In current study maximum number of women who had oligohydramnios (n=51) belonged to age of 21-30 years (68%) which is comparable to the study of Sita Ghimire, in Nepal [26]

Most of the primigravida (51%) had oligohydramnios. Similar result was obtained in a study done by Rooplekha Chauhan, India where it was 59%.Sita Ghimire also reported that incidence of oligohydramnios was more in primigravida (58.0%) [26]

In present study caesarean section was done in 61 % of oligohydramnios. Percentage of caesarean section in different studies done by Lei et al, hou et al, kanur were 89.9 %, 38%, 48 %, respectively. We noted a 7-fold higher caesarian section rate in oligohydramnios as compared non oligohydramnios [7, 12,27].

In addition Hamed A, Egypt observed that CS done in 42% in oligohydramnios group and 20% in non oligohydramnios group with statistically significant increase in rate of CS in oligohydramnios group.[33]

The difference could be explained by the fact that deficient quality resources of ante partum and intrapartum fetal monitoring in the present study setting might influence the rate of detection of all the parameters of fetal heart rate tracing. CS was mostly the best option to overcome the adverse effect on the perinatal outcome.

Concerning the neonatal outcome, our study showed statistically significant low Apgar score in oligohydramnios (40% versus. 15%) when compared with non oligohydramnios group. Similar results were observed by Bachhav et al showed that 34 % in the oligohydramnios group and 10 % in the no oligohydramnios group (p = 0.0003) [31]

Ghimire, et al who noted an APGAR score of < 7 at 5 min in (20 versus 7%) compared with no oligohydramnios,

and also by Sreelakshmi U et al. who noted an APGAR score of < 7 at 5 min in(21 versus 9%) (28, 29) .

This difference of above mentioned results could be attributed to the available better intrapartum fetal assessment facilities in developed countries. Our result was higher that might be because of lack of CTG to detect signs of hypoxia earlier in oligohydramnios.

In the current study, neonatal admission was found to be significantly higher in oligohydramnios (27 versus 10 %) group when compared with non oligohydramnios group. In Kensal et al study it was 28% of the babies who required NICU admission. This is consistent with a study conducted by Panda et al.2016, NICU admission among babies in oligohydramnios versus no oligohydramnios was (24 %) versus (12 %). Similar study also revealed that Statistical significant difference was noted between the two groups (p=0.003*) (33)

But admission to NICU were not statistically different in the oligohydramnios group from the normal group (23 versus 16%)in Sreelakshmi U et al. Int J Reprod Contracept Obstet Gynecol. 2018,this difference may need further study.[12, 28, 30]

The current study has also demonstrate that 29 %versus 20% neonates had birth weight is less than 2.5 kg (p =0.22) with no statistical significant difference with respect to low birth weight with oligohydramnios. In addition, study by Bachhav et al. low birth weight was 17 % in oligohydramnios.

There were no neonatal deaths in oligohydramnios group, but there was 2% ENND in non oligohydramnios, this may be attributed to the study design and small sample size. It needs further study.

In contrast study by Uma Mohan raj, birth weight< 2.5 kg, the oligohydramnios group against control group (37.33 versus 16.44) in was significant.[34]

Study by Amany Hamed also showed, no statistical significant difference (p=0.26). The discrepancy among various studies addressing this birth weight has been attributed to the study design, sample size and its characteristics in- addition to meticulous care and attention provided for oligohydramnios patients during the antenatal period (7, 31-33)

Conclusions; An amniotic fluid index of ≤ 5 cm detected was an indicator of poor perinatal outcome. There is a significant association between the severity of oligohydramnios and fetal outcome in term of low Apgar score and NICU admission. There was an increased adverse maternal outcomes in terms of rate of Cesarean section

Strength of study; As I mentioned before, it is the first study in Ethiopia, it is the bench for more advanced research in this topic.

Limitations of study; Our study design cross-sectional comparative.our survey only included tertiary hospitals, it excluded people who live in certain rural areas .Our results especially ,the neonatal outcomes, may be better than those from primary hospitals. The use of back up surveillance methods like scalp blood sampling and acoustic stimulation would have altered the outcome. Some useful information was missing, such as non-stress test and umbilical cord PH. We only had information about immediate perinatal morbidity and mortality until time of discharge from the hospital, and therefore, some outcomes might be underestimated.

Recommendation;

Early detection of oligohydramnios and its management may help in reducing the rate of caesarean deliveries. Vaginal delivery and caesarean section should be well balanced by avail CTG in labor ward, so that unnecessary maternal morbidities are prevented.

For researcher, further study with large sample size and better study design in different institution is recommended.

Further study also recommended on Perinatal and maternal outcome of Isolated oligohydramnios at term.

ACRONYMS

ANC	Antenatal care
ANRS	Amhara National Regional State
AOR	Adjusted odd ratio
CI	Confidence interval
COR	Crude odd ratio
ENND	Early neonatal death
FHCSH	Felege Hiwot Comprehensive Specialized Hospital
GA	Gestational age
IO	Isolated oligohydramnios
IUFD	Intrauterine Fetal Death
IUGR	Intrauterine Growth Restriction
LUST CS	Lower uterine segment transverse cesarean section
NICU	Neonatal Intensive Care Unit
PIH	pregnancy induced hypertension
TGSH	Tibebe Ghion Specialized Hospital

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REFERENCES

1. Adel NM, Abd-ElGawad EA, Abdel Hakeem AKA. Diagnostic value of four dimensional ultrasound in detection of fetal causes of oligohydramnios: An observational study. The Egyptian Journal of Radiology and Nuclear Medicine. 2017; 48(4):1141-7.
2. Bhat S1 KV. Study of effect of Oligohydramnios on maternal and fetal outcome IJMDS. 2015; 4(1).
3. Brzezinski-Sinai NA, Staversusky M, Rafaeli-Yehudai T, Yitshak-Sade M, Brzezinski-Sinai I, and Imterat M, et al.: journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstet. 2018:1-9.
4. Purvi K Patel, Dipa S Pitre, Harshita Gupta. pregnancy outcome in isolated oligohydramnios at term ;National Journal of Community Medicine Vol- 6(2) Apr – Jun 2015
5. Lawrence Leeman David A. Isolated oligohydramnios at term,is induction indicated; The Journal of family practice. 2005; 54(1).
6. Rhoades JS, Stout MJ, Macones GA, Cahill AG. Effect of Oligohydramnios on Fetal Heart Rate Patterns during Term Labor Induction. American journal of perinatology. 2018.
7. Hou L, Wang X, Hellerstein S, Zou L, Ruan Y, Zhang W. Delivery mode and perinatal outcomes after diagnosis of oligohydramnios at term in China. J Maternal Fetal Neonatal Med. 2018:1-181.
8. Bhagat M, Chawla I. Correlation of amniotic fluid index with perinatal outcome. Journal of obstetrics and gynecology of India. 2014; 64(1):32-5.
9. Tahmina S, Prakash S, Daniel M. Maternal and perinatal outcomes of induction of labor in oligohydramnios at term . The journal of maternal-fetal & neonatal medicine : the official journal of the European Association of Perinatal Medicine, the Federation of Asia and Oceania Perinatal Societies, the International Society of Perinatal Obstet. 2018:1-101.
10. Naveiro-Fuentes M, Prieto AP, Ruiz RS, Badillo MPC, Ventoso FM, Vallejo JLG. Perinatal outcomes with isolated oligohydramnios at term pregnancy. Journal of perinatal medicine. 2016; 44(7):793-8.
11. LANGER DMSaO. Oligohydramnios: use and misuse in clinical Management. Ultrasound Obstet Gynecol 2001; 18:411-9.
12. Kansal R, Bansal I, Singla D, Agrawal N, Thami G. Oligohydramnios maternal & fetal outcome in pregnant females. Asian Pacific Journal of Health Sciences. 2017; 4 (2):235-40.
13. Biradar K, Shamanewadi A. Maternal and perinatal outcome in oligohydramnios: study from a tertiary care hospital, Bangalore, Karnataka, India. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016:2291-4.
14. Rossi AC, Prefumo F. Perinatal outcomes of isolated oligohydramnios at term and post-term pregnancy: a systematic review of literature with meta-analysis. European journal of obstetrics, gynecology, and reproductive biology. 2013; 169 (2):149-54.
15. Shrem G, Nagawkar SS, Hallak M, Walfisch A. Isolated Oligohydramnios at Term as an Indication for Labor Induction: A Systematic Review and Meta-Analysis. Fetal diagnosis and therapy. 2016; 40(3):161-73.
16. Sahin E, Madendag Y, Tayyar AT, Sahin ME, Col Madendag I, Acmaz G, et al. Perinatal outcomes in uncomplicated late preterm pregnancies with borderline oligohydramnios. J Maternal Fetal Neonatal Med. 2018; 31 (23):3085-8.
17. ManiSha SharMa, D K BhaGwani k. Maternal and Perinatal Outcome in Pregnancies with Oligohydramnios in Third Trimester Indian Journal of Neonatal Medicine and Research. 2016 July, Vol-4(3): OO01-OO05.
18. Mangal PuriKanika SharmaLow amniotic fluid index and intranatal and perinatal outcome in term pregnancy International Journal of Medical and Health Research, medicalsciencejournal.com Vol- 3(11): November 2017; 129-134
19. 1 Dr. Mangal Puri DKS. Low amniotic fluid index and intranatal and perinatal outcome in term pregnancy International Journal of Medical and Health Research ISSN: 2454-9142 Impact Factor. 2017; 3(11).
20. Sita Ghimire AG, Saugat Chapagain, Sumitra Paudel. Pregnancy outcome in cases of oligohydramnios after28 weeks of gestation.Int J Adv Med Health Res 2016; 3)
21. Nesa Asnafi1, Zinatossadat Bouzari2, 3*, Maede Mohammadnetadj4. Oligohydramnios and Pregnancy Outcome: Ten-Year Review. IBBJwinter 2015; 1(1).
22. Charu Jandial* SG, Sudhaa Sharma, Manju Gupta**.Perinatal Outcome after Antepartum Diagnosis of Oligohydramnios at or Beyond 34 Weeks of Gestation. 2007;9.
23. Zhang J, Troendle J, Meikle S, Klebanoff MA, Rayburn WF. Isolated oligohydramnios is not associated with adverse perinatal outcomes. BJOG: An International Journal of Obstetrics and Gynaecology. 2004; 111(3):220-5.
24. Mohamed AHG. Pregnancy Outcome among Patients with Oligohydramnios and Suggested Plan of Action. IOSR Journal of Nursing and Health Science (IOSR-JNHS). 2015;4 (15).
25. Radha Devi Dhakal1 DDP. Oligohydramnios associated factors among pregnant Women: a cross-sectional study from Bharatpur, Nepal. Medical Science 2017; Sep, Vol-5(3. 2017; 5(3).esog
26. Chauhan R, Sahni S, Dubey A. A study on fetal outcome in patients with oligohydramnios. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2019; 8(2):665.

27. Kaur P, Desai D, Taraiya A. A study on the perinatal outcome in cases of oligohydramnios. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2016:98-109.
28. U S, Bindu T, T S. Impact of oligohydramnios on maternal and perinatal outcome: a comparative study. International Journal of Reproduction, Contraception, Obstetrics and Gynecology. 2018; 7 (8):3205.
29. Ghimire S, Ghimire A, Chapagain S, Paudel S. Pregnancy outcome in cases of oligohydramnios after 28 weeks of gestation. International Journal of Advanced Medical and Health Research. 2016;3 (2):68.
30. Panda S, Jayalakshmi M, Shashi Kumari G, Mahalakshmi G, Srujan Y, Anusha V. Oligoamnios and Perinatal Outcome. J Obstet Gynaecol India. 2017;67 (2):104-8.
31. Bachhav AA, Waikar M. Low amniotic fluid index at term as a predictor of adverse perinatal outcome. J Obstet Gynaecol India. 2014; 64(2):120-3.
32. Jayati Nath1 MJ, Rehana Najam.A Clinical Study on Oligohydramnios In The Third Trimester Of Pregnancy With Special Emphasis On The Perinatal Outcome. Journal of Evolution of Medical and Dental Sciences 2013; 2013; 2(39).
33. Hamed A. Pregnancy Outcome among Patients with Oligohydramnios and Suggested Plan of Action. IOSR Journal of Nursing and Health Science (IOSR-JNHS). 2015.
34. Uma Mohanraj, S. Udaya Aruna. Maternal and Perinatal Outcome In Pregnancies With Oligohydramnios At Term; Journal of Research in Obstetrics, Gynecology and Infertility, Vol. 3(1) Jan-June, 2017.

A CASE OF NON-PUERPERAL UTERINE INVERSION IN REPRODUCTIVE AGE

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ABSTRACT

Non- puerperal uterine inversion is a rare clinical condition which most often occurs with tumor implanted at the fundus of the uterus. Leiomyoma is the commonest cause as a leading point for non-puerperal uterine inversion to occur. Unusual case report of non-puerperal uterine inversion caused by submucous leiomyoma is reported to 38 years old para 5 presented with vaginal bleeding and protruding mass per vagina with anemia and offensive discharge.

Uterine inversion was corrected abdominally by Haultain's procedure after vaginal myomectomy followed by abdominal hysterectomy. Both the ovaries were conserved.

KEY WORDS: uterine inversion, non-puerperal, leiomyoma

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INTRODUCTION

Uterine inversion is a condition in which the fundus collapses into the endometrial cavity, which can turn the uterus partially or completely inside out.[5] It is a rare entity experienced in two different conditions; puerperal or non-puerperal. So far only slightly over one hundred cases of non-puerperal uterine inversion are reported.[7] It is associated with the traction effect of mass lesions, such as benign sub mucosal leiomyoma.[3,4,7] It also occurs when other endometrial pathology exist in uterus such as endometrial carcinoma, sarcoma or endometrial polyp[1-7].

CASE PRESENTATION

A 38 years old para 5 who has heavy menstrual flow for the last two years presented with campy type suprapubic pain for three days before she witnessed protrusion of mass per vagina and the pain has significantly decreased after the protrusion per vagina. Associated with it was profuse vaginal bleeding of four days duration when she arrives to Tibebe Ghion specialized hospital. Before her arrival to our hospital she went to local health center after one day of her compliant of bleeding and protrusion of mass pre vagina. She was given crystalloid and referred to general hospital where she was transfused with three units of whole blood and intravenous ceftriaxone and metronidazole for three days was given and then she was referred to us. Up on referral her vital sign was; blood pressure 100/70 mm Hg, pulse rate 92 beats per minute, respiratory rate 24 and axillary temperature record of 36.4oC. Her complete blood count showed hemoglobin of 4g/dl before transfusion and 8g/dl after three units of whole blood transfusion. At our hospital on physical examination she was acutely sick looking, her vital sign was blood pressure 100/60 mmhg, pulse rate 98 beats per minute her conjunctiva was pale, and her abdominal examination was unremarkable. In her pelvic examination, there was prolapsed mass with dragging of the whole vagina out of introits which was necrotic with pussy discharge on it, there was 8x10cm isolated mass at the end of the protruded mass , see fig 1 through 5.

A diagnosis of anemia secondary to acute non puerperal uterine invasion due to delivered leiomyoma with super infection was made and after patient counseling about her condition and informed written consent was taken and blood prepared , she was taken to operation theater for surgery and vaginal myomectomy followed by Haultain's procedure was done to reduce the inversion but it was difficult to reduce it by usual technique and after incision was extended to body of the uterus , it was reduced by pushing the uterus vaginally and the text book description of Haultain's procedure abdominally; followed by total abdominal hysterectomy was done. After the surgery, she was kept on parenteral antibiotics, transfused with two more units of whole blood. On her 3rd post-operative day she developed superficial wound infection which was managed with wound care and discharged after 10 days of hospital stay with smooth condition. Pathology report indexed hemorrhagic infarct

Figure 1 – uterine inversion before myomectomy

Figure 2 - Inverted uterus after myomectomy

Figure 3- uterine inversion seen at laparotomy

Figure 4 - Inversion corrected by Haultain's procedure before hysterectomy

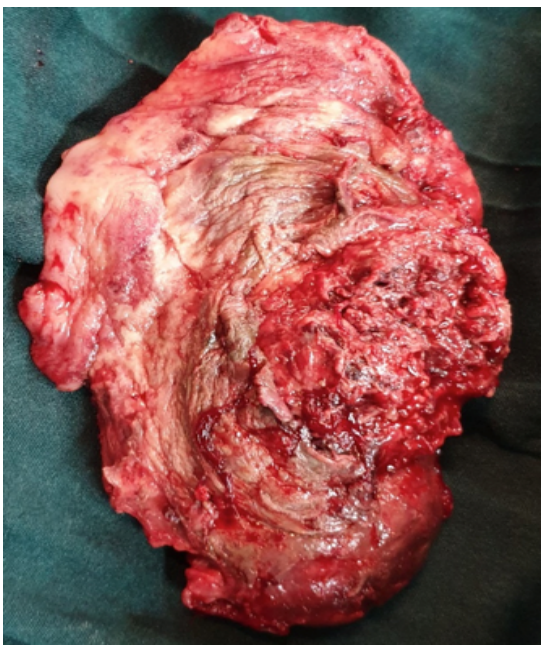

Figure 5 - Uterine specimen after total abdominal hysterectomy

DISCUSSION

Non-puerperal inversion of uterus is a rare clinical condition and hence it remains a diagnostic dilemma and treatment challenge. There are no exact figures on the incidence of it in the literature. Mivinyoglee et al reported that 97.4% of uterine inversions are associated with tumor, out of which 20% were malignant, while Takano et al found that 71.6% of cases were associated with leiomyoma[2]. Most cases of non-puerperal uterine inversion present after 45 years[3].

Based on the degree of uterine inversion, four distinct stages have been described [2,5].

Stage 1 - Inversion of uterus is intrauterine/incomplete. Fundus remains within the cavity.

Stage 2 - Complete inversion of the uterine fundus through the fibro muscular cervix

Stage 3 - Total inversion, where by the fundus protrudes through the vulva.

Stage 4- Vagina is also involved with complete inversion through the vulva along with inverted uterus

Clinical presentations of non-puerperal inversion include vaginal bleeding, mass descending through the introitus, lower abdominal pain, and urinary problem [1-6]. Clinical diagnosis of chronic uterine inversion is difficult, more so if inversion is incomplete. Diagnosis requires a high index of suspicion when tumor is palpable in vagina or seen out of introitus and uterine fundus is not palpable on bimanual examination. Ultrasound examination is the first line imaging investigation[7]. Ultrasound features include indentation of fundus and depressed longitudinal groove extending into the center of the inverted uterus. MRI is also helpful in diagnosis. U shaped uterine cavity, a thickened and inverted uterine fundus on sagittal section and a "bulls eye" configuration on an axial image are the described MRI findings of uterine inversion[2].

Surgical treatment depends on patients' fertility, stage of inversion and associated pathology. Many abdominal and vaginal surgical approaches have been described to correct inversion. Spinelli and Kustner are trans-vaginal repositioning techniques and the Huntington's, Haultain's and Dobbin's procedures are trans-abdominal techniques [2, 4, 6].

Haultain's procedure uses a vertical incision in the posterior portion of ring with gentle traction on the round ligaments. If a hysterectomy is to be performed, reposition is always done first, because hysterectomy on the inverted uterus is associated with difficulty in identification of the peritoneal pouches, and also associated with a greater risk of injury to the urinary bladder and ureters. In our case also, the same was followed.

CONCLUSION

Non-puerperal uterine inversion is an unusual condition. Clinical diagnosis is often not easy and sometimes this situation can prove to be fatal. A high index of suspicion is necessary for diagnosis when a large prolapsed fibroid is encountered, as the uterus perse may not be palpable on examination. Uterine inversion has a good outcome if diagnosed and managed timely. Repositioning of uterus alone may not be possible in all cases, leaving hysterectomy as the only option as in our case.

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REFERENCES

1. Zakari Muhammad et.al Chronic non-puerperal uterine inversion: Case series, Nigerian Journal of Basic and Clinical Sciences / Jul-Dec 2012 / Vol 9 | Number 2
2. Kalarani E et.al. , Nonpuerperal inversion of uterus secondary to leiomyoma in menopause: a rare case report, International Journal of Reproduction, Contraception, Obstetrics and Gynecology Kalarani E et al. Int J Reprod Contracept Obstet Gynecol. 2016 Aug;5(8):2859-2861
3. Setu Rathon et.al,Non Puerperal Uterine Inversion in A Young Female- A Case Report., Journal of Clinical and Diagnostic Research. 2014 Sep, Vol-8(9): OD01-OD02
4. Arezoo Esmailzadeh et.al, A large uterine leiomyoma leading to non-puerperal uterine inversion: A case report, Int J Reprod BioMed Vol. 15. No. 1. pp: 55-56, January 2017
5. Salmeh Dadgar et.al, Non Puerperal Uterine Inversion Due to Submucous Myoma: A Case Report, Journal of Family and Reproductive Health Vol. 12, No. 3, September 2018
6. Yong Jung Song et .al, Non-puerperal Uterine Inversion Presented with Hypovolemic Shock, Journal of Menopausal Medicine 2016; 22:184-187
7. MaMatha ShivanaGappa et.al, A Case of Acute on Chronic Uterine Inversion with Fibroid Polyp, Journal of Clinical and Diagnostic Research. 2013 Nov, Vol-7(11): 2587-2588

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