

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 The barriers at health system level include : lack of national policy or protocol exclusively on preeclampsia.; very outdated management guidelines and protocols; poor drug procurement process and distribution; shortage of drugs (magnesium sulphate); restrictive protocol for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 globally¹. 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 constraints².

Pre-eclampsia and eclampsia is usually managed at higher centers³. Appropriate referral protocols with adequate pre-referral care at first level health facilities are also important⁴. 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 2008⁸. In the most recent national survey (2016), preeclampsia was the third leading cause of death accounting for 11% of all direct maternal deaths⁹.

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)

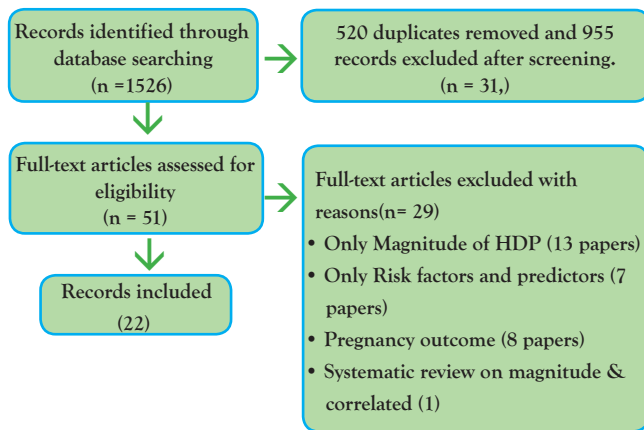
1.2 Inclusion criteria

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 field notes.

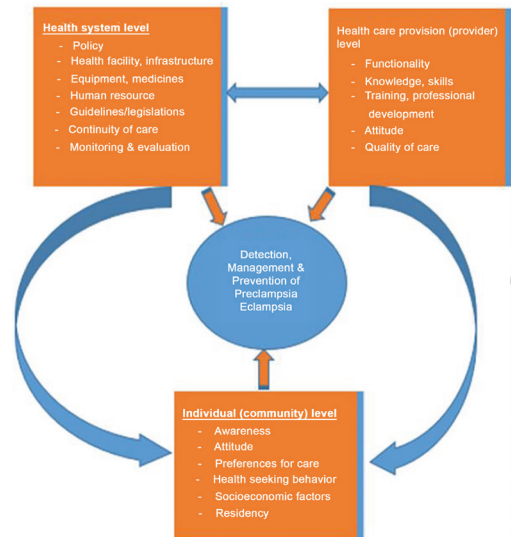


Figure 1: Framework for analysis of Facilitators & barriers to the clinical care & prevention of preeclampsia

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: policy²; legislations²; Standard Treatment Guidelines (STGs)⁴; protocol¹; Training materials on Emergency Obstetric care².

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 framework (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 documents ¹¹⁻¹⁸
	EmONC facilities	Met need for EmONC low (33%) Poor infrastructure (ICU, beds)	EmONC Survey 2016 ⁹ IDIs
	regulations	Drugs not registered 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 provided is 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	Alternative cultural remedies	1 Article ²⁷ IDI
	And myths	Preeclampsia thought to be caused by evil spirits	
	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 Ethiopia¹¹. There is a functional procurement system in place with 97% of facilities having drugs/supplies being through the MoH⁹. 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 percent⁹.

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 2003-2014¹⁰. But despite the presence of these professionals and HEWs, most obstetric services and procedures were highly dependent on obstetricians/gynecologists⁹.

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 centers¹². 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 emphasized¹³. 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 time¹⁶

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/eclampsia¹⁷. The training manual for HEW also includes the diagnosis and early referral of preeclampsia¹⁸. 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 the Health 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 survey⁹. 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 guidelines⁹

‘..... 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 disproportionately 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 diazepam²⁴.

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 2008²¹, 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 CEmONC⁹. '... 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 facilities²¹.

The study in Gondar revealed that 50% of women with emergency obstetric complications failed to seek care from a skilled birth attendant²⁹. 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 Eclampsia²⁷. 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-eclampsia³⁰

'.... 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 Gynecologists¹⁰. 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 successful⁶. Experience from four developing countries regarding the feasibility of community level interventions for preeclampsia, 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 services⁷

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 preeclampsia²⁶. 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 facilities³¹. 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 ensure 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 service³⁴.

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 services³². 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 reported³⁵. 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 considered³³. 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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