Maternal mortality, descriptive study in ninava city

Intisar – Abdula – Jabbar , Sundus – Saihood

Abstract

More than 500,000 women died from complications related to pregnancy or childbirth in 2000 in developing countries, but 99% of those maternal deaths were preventable . The aim of this paper was to analysis MMR in Nineveh city in the year 2007. Data concerning maternal deaths collected from the reports issued by Committee of Confidential Inquiry for Maternal Deaths were analyzed regarding the maternal age ,parity , direct and indirect causes of deaths , rate of deaths in side and out side hospital, level of care available at delivery, distance women need to arrive to health facilities, mode of transport. 43 maternal deaths among 95526 deliveries during the study period . MMR was estimated to be 45/100000 live births. The age range was between 20-42years there were 22(84.8%) cases >30,most of them(44.9%) were grand multiparous (parity >5).). Direct causes of maternal deaths were accounting 36cases(83.7%) of deaths, indirect causes were present in four cases (9.3%). Unknown causes found in three cases. The leading direct causes of maternal deaths were hemorrhage twenty four cases (55.8%) ,Hypertension nine (20.5%) ,pulmonary embolism three (6.9%). 21/24(75%) died from hemorrhage out side hospital after home births and three cases (6.9%) from ante partum haemorrhage in side hospital . The level of care available at delivery was estimated, 40% attended by traditional birth attendants(TBA), 33% by lady health visitors, 10% by doctors and to 17% no level of care was available. The distance women needed to arrive to the hospital was between 10 and 100 KM. Majority of the cases (sixteen)transported by private car. Hypertension complicated pregnancy is the second direct cause of death . Nine cases (20.6%) died from hypertension complication .Six cases (66.6%) in side health institute from cerebrrevascualr accident ,pulmonary oedema ,coagulation failure. Three cases(33.6%) out side health institute before delivery from eclamptic fits. The present study conclude that, although registrations of maternal deaths is improved in our locality, still the direct avoidable causes of maternal deaths (haemorrhage , hypertension, pulmonary embolism) are the major causes of deaths. Also, the present study recommend that, strong policies to reduces these causes were needed in term of activation of basic emergency obstetrics care. There must strategies to reduce avoidable causes by: First, by ensuring availability of health professionals trained and experienced in obstetric complications may significantly reduced maternal mortality. Second by, traditional birth attendant should be trained not to cause complications, rather recognize complications and not to manage complications on their own and should be motivated to make referrals. Third by, existing health services should be improved and emergency obstetrical care should be available to all women round the clock. Equipping the existing basic health units and rural health centres with Basic emergency obstetric care (BEOC) includes: injectable antibiotics, anticonvulsants and oxytocics Misoprostole , O negative blood products. And the fourth by, repeated and closely spaced pregnancies should be discouraged and contraceptive prevalence needs to be increased in culturally conservative areas.

Key word : CCEMD confidential inquiry of maternal deaths, MMR Maternal mortality ratio. TBA traditional birth attendance .SBA skilled birth attendance. BEOC, Basic emergency obstetric care

Introduction

More than 500,000 women died from complications related to pregnancy or childbirth in2000 ,but 99%of these deaths were preventable, according to the (UNFP) United Nation Population Fund's

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"State of World Population 2005" report. (1) Ninety-nine per cent of maternal deaths occur in developing countries, primarily in Africa and South Asia.(2) unfortunately Iraq is one of these countries were the health services is still inadequate and poor . sanctions and war have caused severe damage to the Iraqi health care system, leaving the country with limited access to medicines, equipment and supplies. This decline, combined with increasing poverty and poor nutrition ,deterioration of security situation(3).The MMR as estimated by UNICEF at 2007 is 84/100000 live births but in reality it may be higher because of under registration of deaths and absence of cause of death information . (4)

Globally ,around 80% of all maternal deaths are direct result of complication arising during pregnancy ,delivery, purperium .They are usually due to one of five major causes. Bleeding is the major causes of death usually occurring postpartum(45% of post partum deaths occur with 24 hours),infection, eclampsia ,obstructed labor and complications of unsafe abortion. (20%) of death due Indirect causes such as malaria ,anemia , AID,HIV and cardiovascular.(5)

All these causes can be prevented by strengthening primary health care and intrapartum health care ,improving facilities to deal with obstetric emergencies, improved referral systems from peripheral unit. Skilled provisional personal most available since most of deliveries are conducted at home.(6)

Aim of this study was to analyse causes of maternal deaths and to identify preventable factors leading to maternal mortality in Nineveh city. Nineveh city is the second governorates in Iraq , with population around 3.2500000.

Patients and Methods

Data concerning maternal deaths for the year 2007 were collected from the reports of maternal deaths issued by the CCEMD. Special maternal deaths form designated from Iraqi ministry of heaths was sent to all primary health's center ,hospitals ,all place were there is care provider and they inform to registered any maternal deaths occur and to send the form to the committee . The form included questionnaires related to maternal deaths. The questioner completed by obstetrician or health care provider attending the mother before death. The committee arranges meeting after every registered maternal deaths any where in the city. It discuses the factors affecting maternal with those who attended the delivery ,any person can give information for the deaths, families .In addition source of information's from autopsies .

Data concerning maternal deaths were analyzed regarding the maternal age ,parity ,direct and indirect causes of deaths , rate of deaths in side and out side hospital they were informed to register any maternal deaths to committees , level of care available at delivery, distance women need arrive to health facilities, modes of transport.

Results

A total of 95526 deliveries took place during the year 2007 , there were 43 maternal deaths with MMR 45/100000 live births. Direct causes of deaths were present in 36 cases accounting (83.7%) of maternal deaths ,indirect causes were present in 4 cases (9.3%) and unknown causes present in 3cases(6.9%). Figure (1) shows the main causes of maternal deaths. Haemorrhage 24(55.8%) ,hypertension 9(20.9%),pulmonary embolism3(6.9%) were the main direct causes of deaths. Figure 2- shows the direct causes of maternal death. Figure (2) show the direct causes of deaths.

21/24(75%) died from hemorrhage out side hospital after home births and 3cases (6.9%) from ante partum haemorrhage in side hospital . The level of care available at delivery was estimated, 40% attended by traditional birth attendants(TBA), 33% by lady health visitors, 10% by doctors and to 17% no level of care was available. The distance women needed to arrive to the hospital was between 10 and 100 KM.

Majority of the cases (16)transported by private car. These results shows in tables from (2,3,4,5,)

Hypertension complicated pregnancy is the second direct cause of death . 9 cases (20.6%) died from hypertension complication .6cases(66.6%) in side health institute from cerebro vascular accident ,pulmonary oedema ,coagulation failure. 3cases(33.6%) died out side health institute before they delivered from eclamptic fits.

Table (6) show indirect causes of maternal deaths 2 of them were due to receiving incompatible blood ,one mother from cardiac disease ,one due to sepsis .

Unknown causes of deaths seen in table (7). 3cases (6.9%).2 of them died before delivery at home and the third after C/S deaths.

The age range was between 20-42years there were 22(84.8%) cases >30,most of them(44.9%) were grand multiparous (parity >5) as in tables (8&9).

Discussion

MMR in our study is relatively low comparable to a recent study published in Iraq in corporation with the WHO which estimated the MMR for 2007 was 84/100000 live births(6) and to the MMR in countries near by Iraq (Turkey ,Iran ,Egypt) were the rate varies between 70-80/100000 live births..(5,7) This differences because our study reflect the mortality ratio in Nineveh city only and not conclusive for Iraq or probably from under registration of maternal deaths. There is no systematic mechanism of data collection death in our city and death certification by causes is not accurate , not all deaths were reported to the MCH specially after home birth ,in rural areas and place far from center not registrated as maternal deaths.

At 2006 application of CCEMD started in most of governorate including our city as strategies to improve maternal deaths registration. The objectives of the committee to review factors contributing to maternal mortality during prenatal, delivery and postnatal periods through discovering the process that each mother has followed until her deaths (8) .

Our study shows that there was clear improvement in the registration of maternal mortality for the year 2007(the MMR 45/100000) in comparable to the registration for the years 2003-2005 were MMR (8.6/100000), (20.3/100000) ,(22.5/100000) respectively(4,9). Figure (3): Shows MMR from the years 2003-2007.

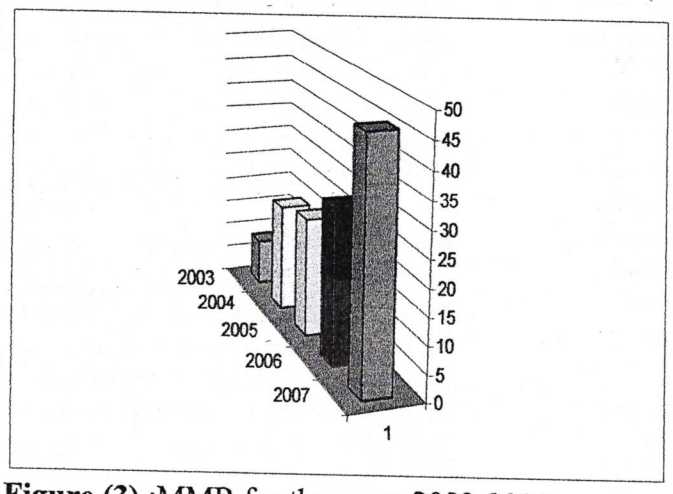

Figure (3) :MMR for the years 2003-2007

And despite this improvement in maternal mortality registration the pattern of maternal mortality causes did not change over the years. Haemorrhage, hypertensive disorders are still the major direct causes of maternal deaths(10).

In this study haemorrhage was the first direct causes of deaths(55.8%). 24/43 mothers died from haemorrhage, 18/24 died from postpartum hemorrhage after home births, 6/24 died from ante partum hemorrhage because of ruptured uterus and morbid adherent placenta.
Among women died from bleeding (41.6%) were attended by TBA , (18.3%) cases attended by mid wife and (8.3%) women had no care. (75%) of deaths occurred out side health institute. The far distance need the women to arrive the hospital varies between 10-100km. Although the nearest distance was 10 km, there is delay in arriving women to hospital were (75%) of cases transferred by private car majority of them arrived hospital in delayed state of shock. There is delay in mobilization of blood product as O negative blood not always available with under estimation of blood loss. The duration between admission and deaths 10minute-3 hours.
We read from our results there is three delays contributing for maternal deaths, delay in seeking care, delay in reaching care and delay in receiving care .
At level one 41.6% of home deliveries attended by TBA and (33.3%) by lay midwife which are usually permanent residence at the area or may be a family member, there is low coverage of skilled deliveries and immediate postpartum care. Our figures about SBA not agreed with figures of WHO at 2006 were the rate of coverage of skilled birth attended 89%. This figures available for SBA may be overestimates as health providers classified as skilled birth attendants they often do not have the necessary skills and back-up to function as effective skilled birth attendants. the definition of skilled birth attendant has not been uniform within country. If maternal mortality reduction is the goal, then skilled attendance should take precedence over TBA (11). This can be achieved by Successful efforts to improve provider performance. Strengthen the performance of front-line providers to provide a safe birth, These front-line providers included midwives, nurses, and general practitioners (9).We can get benefit from experiment of other nation by application of the strategies of short(2 to 4 week) team training based on protocols for normal birthing, life saving skills and family-centered maternity care and requiring demonstrated competency, improved practices up to 3 years post-training in Bolivia, Guatemala, Indonesia, Viet Nam, Morocco, and the Ukrainian , and even up to 8 years in Nigeria, according to independent evaluators(9,10,11).
At level 2 transport facilities to a referral centre was not always available , Considering access barriers such as a lack of roads and transport, security situation . The time taken to reach a facility would be a better indicator of physical access than population per facility. Functioning health systems with an enabling environment that ensures adequate supplies, equipment, and infrastructure as well as an efficient and effective system of communication, referral, and transport are essential to averting the risks of maternal mortality(11,12). In this study (75%)of cases were transport by private car the nearest distance women needed to arrive hospital was 10Km which is not afar distance but still there is delay in reaching health services.
At level 3 it was evident that all women who died from bleeding were not transfused adequately , amount of blood loss either under or not detected and delayed in mobilization of blood product ,time needed to transfer blood were 1-3hours. O Negative blood not always available and in some area , blood bank is far way from hospitals so delay in mobilization blood product will be result .

Maternal deaths associated with eclampsia (0.25%).(13) it was the second causes of maternal deaths(25.85%) in this study. Majority of the women died either from eclamptic fit or cerebrovacular accident Among the mothers died from pre-eclampsia 3(44.4%) had regular antenatal care during pregnancy and the others has irregular antenatal care .
The researchers recommended that all pregnant women should have access to effective prenatal care, and women who have high blood pressure and eclampsia should have access to magnesium

sulphate(12) which is the drug of choice for stop fit and prevent it recurrence in addition to antihypertensive drugs which is important to control blood pressure during pregnancy. The level of antenatal care women received is important for early detection of signs of pre-eclampsia but the greatest challenge remains is level of care mothers received at time of delivery and delay in seeking assistant increase rate of deaths due to pre-eclampsia .

Our teaching hospital is tertiary hospitals receives serious cases with complications from rural area , these cases arrived in delayed state ,most of them need to terminate the pregnancy by C/S and to referred to ICU and RCU.Uses of Mg sulphate is not guided in all health institute because the drug was not always available, most of health care providers was not well expertise with the use of this drug and it toxicity specially in the peripheral health institute .This may explain the high rate of deaths in side hospitals from pre-eclampsia.

In the 3 mothers were the cause of deaths is not identified because the clinical notes (evaluations and observations) were incomplete, not done or missing. In cases where the patient was declared dead on arrival, information regarding the events leading to death, were just not available specially death out side health institute . In addition autopsy to identify maternal deaths and to obtain qualitative information about the determinants of maternal is not done for any of that cases . The use of autopsy technique to identify causes of death is poor in our locality most of the families refuse the autopsy. There must be legislative laws to encourage the community not to refuse the autopsy if the cause of deaths is not clear . Deaths accept if the family refused autopsy..

There was increased frequency of maternal mortality with increasing age(84.8%) >30 years old and high parity (44.1%)>5. The use of contraception in our locality (13.7%)is poor because of socio-cultural factors , inequity in gender relations and reproductive rights(14). Keeping these two major factors in mind the need for increased contraceptive measures arises so that women's misery could be solved and we should not lose more mothers during pregnancy and childbirth. Improving the number of booked patients especially grand multigravidas, for early detection ,prevention and management of complication and there is a need for community education about female reproductive rights and promoting increase use of contraceptives in both sexes.(15)

Conclusion :

The causes and risk factors of maternal deaths are many and variable, Obstetrical haemorrhage and hypertensive disorders are still major causes of maternal deaths. There must strategies to reduce avoidable causes by:

Ensuring availability of health professionals trained and experienced in obstetric complications may significantly reduced maternal mortality.

Traditional birth attendant should be trained not to cause complications, rather recognize complications and not to manage complications on their own and should be motivated to make referrals.

Existing health services should be improved and emergency obstetrical care should be available to all women round the clock. Equipping the existing basic health units and rural health centres with Basic emergency obstetric care (BEOC) includes: injectable antibiotics, anticonvulsants and oxytocine Misoprostole , O negative blood products.

Repeated and closely spaced pregnancies should be discouraged and contraceptive prevalence needs to be increased in culturally conservative areas.

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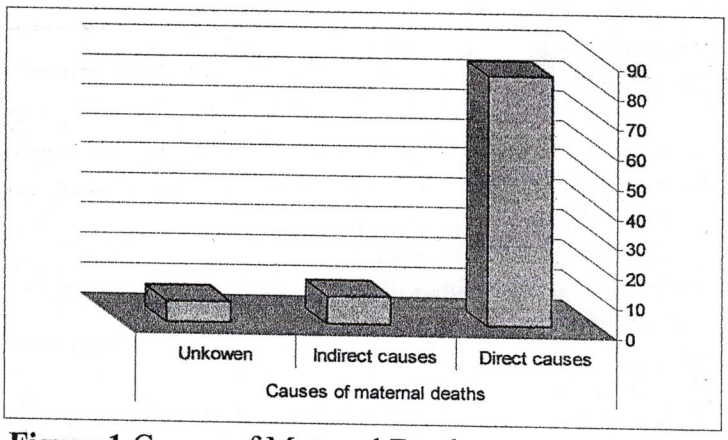

Figure 1:Causes of Maternal Deaths

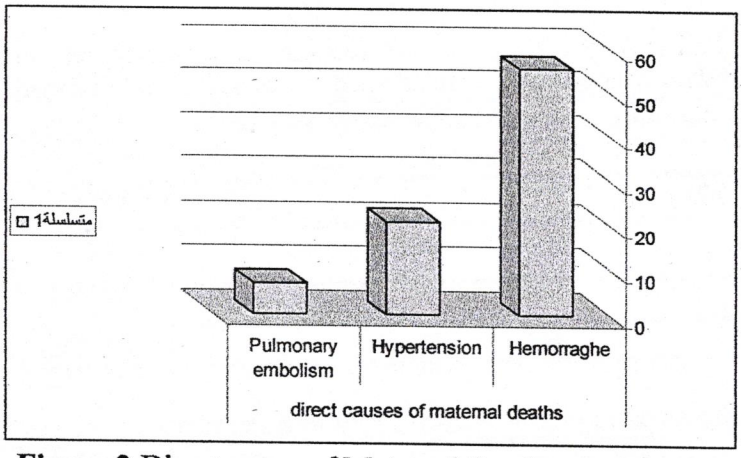

Figure 2:Direct cause of Maternal Deaths

Table -1: Distribution of maternal death according to the place of deaths.

Causes of maternal deaths	Rate of deaths inside health institutions	Rate of deaths out side health institutions	Total
Hemorrhage	3cases(12.5%)	21cases(75%)	24
Pre-eclampsia	6cases(66.6%)	3cases(33.6%)	9

Table-2: Distribution of maternal deaths according to the level of care available at time of delivery for women whose died from haemorrhage .

Level of care	No.	%
TBA	10	41.6%
Lay Midwife	6	33.3%
Doctor	6	18.6%
Non	2	8.3%
Total	24	100

Table -3:Distribution of maternal deaths according to the distance from hospital between 10-100km

Kilometres	Total No.of death from hemorrhage	%
10-40	8	33.3%
40-70	10	41.6%
70-100	6	25%

Table -4:Distribution of maternal deaths according to mode of women transport

Method of Transport	No.	%
Private care	18	75%
Ambulance	6	25%
total	24	100%

Table-5: Distribution of deaths according to time need for arrival to health institute

Numbers	Duration between admission and deaths by hours	%
12	4	50%
6	2	25%
4	Not mentioned	16.6%
2	6	8.3%

Table -6: Distribution of maternal deaths according to indirect causes.

Indirect Causes	No	%
Receiving incompatible blood	2	4.6%
sepsis	1	2.3%
Cardiac disease	1	2.3%
Total	4	9.2%

Table -7: Distribution of maternal deaths according to unknown causes

Unknown Causes of deaths	No	%
Before delivery	2	4.6%
After caesarean delivery	1	2.3%
Total	3	6.9%

Table -8:Distribution of maternal deaths according to maternal age

Age group	No	%
18-30	20	46.5%
31-40	21	84.8%
>40	3	6.9%

Table -9:Distribution of maternal deaths according to parity

Parity	No.	%
Primigravidas	2	4.6%
Multigravidas	16	37.2%
Grand Multigravidas	19	44.18%
Great Grand Multigravidas	4	9.3%
unknown	4	9.3%