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## Hospital Registration of Maternal Mortality in Iraq 2001-2007

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### Abstract

**Background:** Pregnancy and childbirth are the leading causes of death among women in many developing countries. In most developing countries, monitoring the level of maternal mortality rates and ratios seems to be very difficult. Ministry of Health, in its effort to improve the registration system through the cooperation between Maternal and Child Health Section (Directorate of Public Health and Primary Health Care), Department of Health and Vital Statistics (Directorate of Planning and Resource Development) and the World Health Organization (WHO), implemented a special maternal mortality inquiry form for hospital registrations of maternal deaths started on the year 2000.

**Aim of the study:** To evaluate the trend in maternal mortality registration during the period 2001-2007.

**Materials & Methods:** A review of records was performed during the first half of 2008, to study the trend of registering maternal mortality over the last seven years. All the reports received by the Ministry of health for the last seven years were reviewed to evaluate the progress in hospital registration of maternal deaths.

**Results:** The study revealed more than one and a half fold increase in the number of registered maternal deaths over the seven years period after implementing the special inquiry form, with marked variation in registration between different governorates and within the same governorate .

**Conclusions and Recommendations :**Implementing a special maternal mortality inquiry form, by the Ministry of Health, lead to noticeable improvement in registering maternal mortality in health facilities, yet further studies are recommended to review each case of death.

**Key wards:** Maternal death, maternal mortality ratio

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### Introduction

Pregnancy and childbirth are the leading causes of death among women in many developing countries. However, deaths of young adults are relatively rare events. Therefore, in a given geographical area and period of time there may not be a great many maternal deaths. The relative infrequency of maternal deaths in a short period (such as 1-2 years) has important consequences for monitoring maternal mortality, specially if the study population or sample is too small, where the number of deaths will not be large enough to yield reliable, stable estimates. This will make interpretation, especially of trends over time, difficult.<sup>[1]</sup>

New methods of estimating maternal mortality, such as "sisterhood" method, are more efficient and do not require sample sizes as large as those of conventional household surveys. But they are still limited in their ability to detect substantial changes over time.<sup>[2]</sup> One of the other limitations of sisterhood method is that it produces an estimate of maternal mortality that refers to a period of time approximately twelve years before the survey.<sup>[3]</sup> Such estimates therefore, are not useful for monitoring changes in response to programmes being implemented now.<sup>[1]</sup>

Registration of births and deaths (i.e. vital registration) is taken for granted in industrialized countries. In these countries, and in few developing countries, nearly all deaths are reported to the government. This is not the case, however, in most developing countries. One of the reasons why it is difficult (if not impossible) to register the death in

developing countries is that most deaths do not take place in health facilities, where health personnel would be required to report them. Many people (especially poor people) die at home or on their way to the hospital. These deaths are not recorded. Even where records are available, under reporting may be a serious problem because of poor record-keeping.<sup>[1]</sup>

Misreporting of maternal deaths which means that the death was reported, but was incorrectly classified, i.e. not recorded as a maternal death, is another problem. According to the Tenth International Classification of Disease (ICD-10) a maternal death is defined as " The death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and the site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management, but not from accidental or incidental causes."<sup>[4]</sup> Thus, in order to classify a death correctly as a maternal death, it is necessary to know not only that the woman died, but also that the cause and timing of death meets the specifications. The more complicated definition of maternal mortality thus facilitates misreporting. This has the same consequences for maternal mortality statistics as not reporting the death at all, i.e. underestimation.<sup>[4]</sup>

Determining the medical causes of death is much more difficult than determining timing of death. The fact that a death was maternal is often not noted for various reasons, both intentional and unintentional. Intentional misreporting of maternal deaths is common when death is due to

complications of illicitly induced abortion, to protect the reputation of the women or her family. Unintentional misreporting of maternal death is very common. Frequently, women die of obstetric complications in emergency wards or medical wards, as opposed to maternity wards. Consequently, the obstetric origin of bleeding or infection may not be noted. In some cases the health professionals attending the women know that the death was related to pregnancy, but this information is neither requested nor recorded. Such mistakes lead to massive underestimation even in developed countries. <sup>[5], [6]</sup>

In Iraq, as in other developing countries, maternal mortality was usually underestimated, and the official rates depend on surveys rather than other registrations. Ministry of Health, in its effort to improve their registration system through the cooperation between Maternal and Child Health Section (Directorate of Public Health and Primary Health Care), Department of Health and Vital Statistics (Directorate of Planning and Resource Development) and the World Health Organization (WHO), implemented a special maternal mortality inquiry form for hospital registrations of maternal deaths on the year 2000, and eventually all professionals responsible for registration and prevention of maternal deaths (all over Iraq except Kurdistan region) were trained to record, supervise and study the deaths one by one. This form was revised and improved later to include more information regarding maternal mortality. <sup>[7]</sup>

#### **Aim of the study**

To evaluate the trend in maternal mortality registration during the period (2001-2007).

#### **Materials and Methods**

A review of records was performed during the first half of 2008, to study the trend of registering maternal mortality over the last seven years. All

Maternal mortality reports received by the Maternal and Child Health Section (Directorate of

Public Health and Primary Health Care), from 2001-2007 were studied. Numbers of maternal deaths registered each year all over Iraq were studied in an effort to evaluate the progress in registration over this time period and compare them with those registered in the Department of Health and Vital Statistics in the Ministry of Health within the same time period.

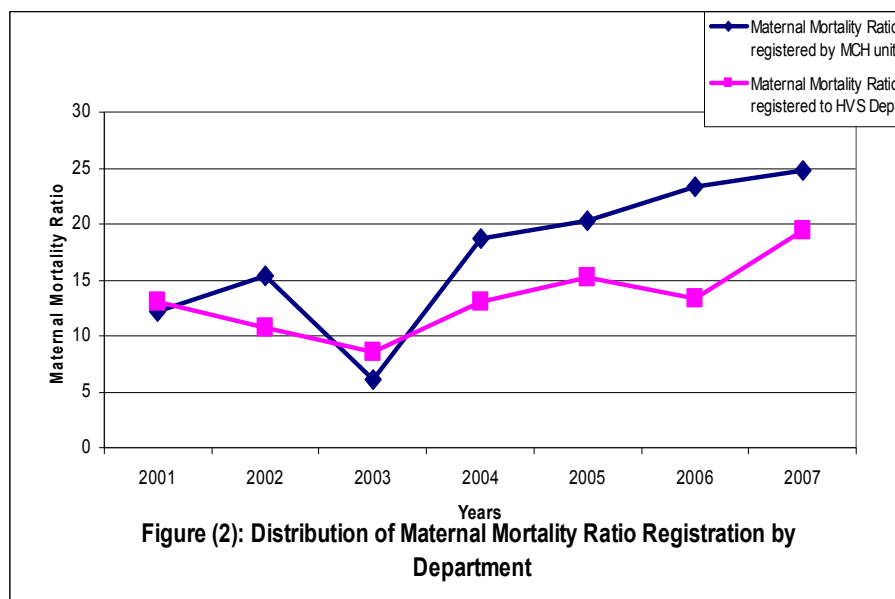
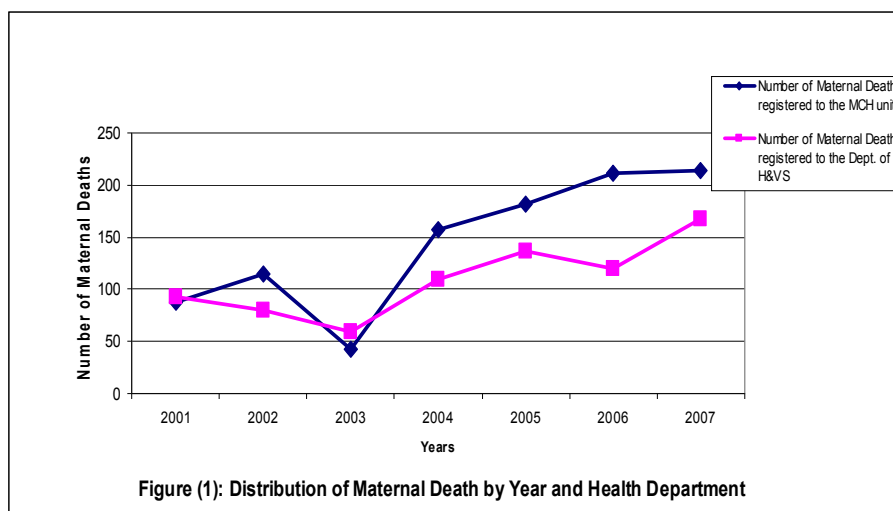
#### **Results and Discussion:**

The stark figures of the global burden of pregnancy – related deaths are now so well known that they can be repeated by rote without stopping to think about what can be done, to tackle what appears to be such an overwhelming problem. <sup>[8], [9]</sup> simply put, the numbers are these: each year, approximately eight million women suffer pregnancy- related complications and over half a million die. <sup>[10]</sup> The current study performed to evaluate the hospital registration of maternal mortality in Iraq after implementing the new maternal mortality inquiry form in the year 2000 revealed the following results:

Table (1) and Figure (1) showed the distribution of registered maternal deaths by year and health department. It was found that the hospital registration of maternal death increased from 87 cases in 2001 to 220 in 2007 with a change percent of 146 %, (increased by nearly one and a half fold); whereas the data reaching the Health and Vital statistics Department showed less than one fold increase for the same period of time, yet when the special inquiry form of maternal mortality was first implemented in the year 2001, death registration to the Department of Statistics was better (87 and 93 respectively), later the improvement was more obvious on the level of Maternal and Child Health (MCH) unit although the year 2003 ( the year of the 2<sup>nd</sup> Gulf war) showed a marked reduction in registration on the level of both departments. The same was true when maternal mortality ratio is estimated (table 2 and figure (2)).

Table (1): Distribution of Registered Maternal Mortality by Year and Health Departments 2001-2007

Year	Maternal Mortality Registered to MCH Unit Directorate of Public Health and Primary Health Care (MCH)	Maternal Mortality Registered to the Department of Health & Vital Statistic (H&VS)
2001	87	93
2002	115	80
2003	42	59
2004	157	109
2005	182	136
2006	211	120
2007	214	168



**Table (2): Distribution of Registered Maternal Mortality Ratio by Year and Health Departments 2001-2007**

Year	Maternal Mortality Registered to Maternal & Child Health Unit (MCH)		Maternal Mortality Registered to the Department of Health & Vital Statistic (H&VS)	
	No.	MMR*	No.	MMR*
2001	87	12	93	13
2002	115	15	80	11
2003	42	6	59	9
2004	157	19	109	13
2005	182	20	136	15
2006	211	23	120	13
2007	214	25	168	19

\* Maternal Mortality by 100000 Live Births

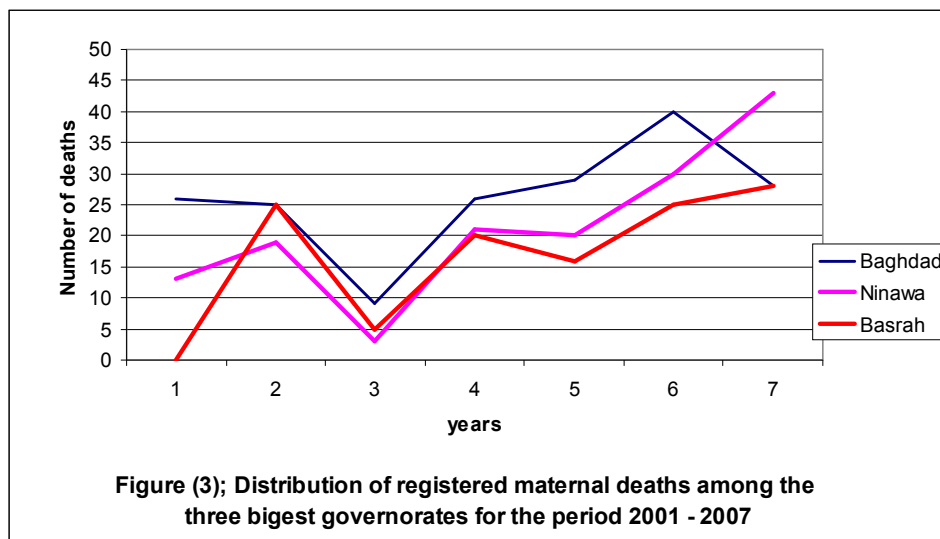
The registration of maternal deaths varied among different governorates, as shown from table (3) where the big governorates like Baghdad, Ninawa and Basrah registered more deaths than

other governorates, and the numbers are fluctuating within the same governorate through the last seven years as shown in figure (3).

**Table (3): Distribution of registered maternal mortality among Health Directorate for the period 2001-2007**

Year Health Directorates	2001		2002		2003		2004		2005		2006		2007	
	MCH	HVS	MCH	HVS	MCH	HVS	MCH	HVS	MCH	HVS	MCH	HVS	MCH	HVS
Baghdad	26	31	25	30	9	13	26	31	29	34	40	26	28	23
Babylon	0	3	3	2	4	2	13	11	11	12	6	11	14	4
Wasit	2	0	0	0	0	2	3	5	1	9	0	5	6	9
Dewania	0	3	2	2	2	3	7	1	11	0	16	0	9	3
Kerkuk	5	2	7	5	3	1	10	10	7	16	9	16	10	6
Ninawa	13	11	19	16	3	6	21	6	20	6	30	5	43	42
Maysan	6	3	5	1	1	1	7	6	6	11	3	15	6	6
Thi-Qar	11	6	12	11	4	7	9	3	15	7	15	2	9	6
Basrah	0	4	25	2	5	5	20	15	16	20	25	28	28	24
Anbar	7	10	0	1	0	0	1	4	1	9	0	6	2	13
Diala	5	2	3	2	1	1	10	14	9	12	15	6	6	0
Salahdeen	0	0	0	0	1	6	3	0	9	0	5	0	3	0
Kerbala	2	2	4	1	0	1	9	3	5	0	7	0	4	10
Najaf	6	10	7	5	7	9	7	0	13	0	12	0	17	0
Muthana	4	6	3	2	0	2	4	0	10	0	7	0	7	0
Kurdistan Region	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	21	NA	NA	NA
Forensic Medicine	-	-	-	-	-	-	7	-	-	-	-	-	22	-
Total	87	93	115	80	40	59	150	109	163	136	211	120	214	168

- MCH; Refers to the Maternal and Child Health Unit, Directorate of public Health and Primary health Care, Ministry of Health, Iraq.
- HVS; Refers to the Department of Health and Vital Statistics, directorate of planning and Resource Development, Ministry of Health, Iraq.
- NA; Not available.



Although the registered numbers of maternal death were increasing after implementing the special form, still the numbers are away from the national numbers estimated by previous surveys; 117/ 100000 live births in 1990 according to Harvard University Study, 291/100000 live births in 1999 according to children and maternal mortality survey & 193/100000 live births in 2004 according to Iraq Living Condition survey 2004<sup>[11]</sup>, the same was found in other countries like in England and Wales, 22% of maternal deaths were missing from official reports during 1982-1984<sup>[1]</sup>, and in the City of Sao Paulo in Brazil, more than half of the maternal deaths were not officially reported in 1986<sup>[12]</sup>, this will highlight the fact that monitoring efforts to reduce maternal mortality cannot rely solely on counting changes in deaths but it must include information on the processes or pathways that culminate in a maternal death.<sup>[1]</sup>

Estimating maternal deaths is very important in understanding the magnitude of the problem, yet a number of different types of information and actions are needed to reduce maternal mortality, like information explaining the factors that directly cause or contribute to the problem and which can lead to the identification of potential solutions (determinants and interventions), and information on the basis of which efforts to reduce the problem can be planned, carried out and assessed.<sup>[9]</sup>

### Conclusions and Recommendations

1. Implementing a special maternal mortality inquiry form by the Ministry of Health lead to noticeable improvement in registering maternal mortality in health facilities, yet the numbers

are still far from that registered by previous surveys.

2. The maternal mortality inquiry forms contain valuable details and information about each maternal death, reviewing them is vital in understanding the underlying factors that led to the deaths and deciding the plans and actions to prevent them.
3. Further studies are recommended to highlight the underlying causes and determinants of maternal deaths.

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