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POSTPARTUM HEMORRHAGE IN IRAN

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Iran, located in the Middle East, is one of the world's oldest cultures. Although Iran is presently considered to be amongst the so-called developing countries, it was once a renowned center of wisdom and science, boasting such famous names as Avecenna whose thoughts and works influenced much of the world for centuries.

In 2005, the official 'Statistical center of Iran' cites Iran's population as 60 055 488. The number of registered live births 961 572 in 2005[1]. During these years, approximately two-thirds of births took place in urban areas and one-third in rural communities, villages or in the countryside. The 1996 live birth rate per 100 000 population was 37.4, placing Iran in a transitional zone between developing countries (200 per 100 000) and industrialized nations (20 per 100 000).

Due to the desire of Iran's government to achieve the United Nations Millennium Development Goals and to identify the main causes of mortality among neonates and mothers which would affect strategies toward public health promotion, a National Committee of Maternal & Neonatal Mortality Reduction was formed in 1995. In addition, a Reproductive Age Mortality Survey (RAMOS) was designed by the Maternal Health Unit of Iran's Ministry of Health & Medical Education to deal with every reported case of death related to obstetric complications. Some of the information collected and disseminated by this committee is presented below.

During 1996, a total of 382 deaths were recorded as being directly related to obstetric complications. The main causes for these deaths were hemorrhage, eclampsia, cardiovascular disorders and puerperal infections. Most hemorrhagic events occurred during the intrapartum or postpartum periods, highlighting the importance of essential obstetric care. These observations are entirely compatible with those from other developing countries, where poor availability and access to medical services are considered the primary causes of maternal mortalities.

Between 1997 and 2000, the annual numbers of reported obstetric deaths were 162, 170, 214 and 212, respectively. Because these numbers are considerably less than those reported in the 1996 survey, they suggest, but do not prove, a possible inadequacy of that survey system and the potential for underreporting. In any event, the main causes of deaths had equal proportions in the years under consideration.

Despite these limitations, the surveys yielded the following findings:

(1) During 2000, 24.5% and 31.5% of deaths, respectively, occurred among women older than 35 years of age and those with at least four pregnancies.

(2) As many as 57% of the women who died in 2000 had either basic or no education whatsoever, a circumstance that was more prominent in rural populations.

(3) Approximately two-thirds of deaths during 2000 took place among the rural population, a figure which accentuates the importance of creating health-care facilities in underprivileged regions.

(4) Despite a decrease from 44% in 1996 to 19.5% in 2000, delivery by inexperienced and less than fully trained birth personnel ('Ghabele' in the local language) remains an important factor associated with maternal mortality and morbidity during this time interval.

(5) Whereas 43% of deaths occurred in the hospitals in 1996, this number reached 68.5% in 2000, a change which might be indicative of either declining quality of services in hospitals or increased hospital admissions.

The shortcomings of the survey system between 1996 and 2000 led to the evolution of a revised national system called the National Maternal Mortality Surveillance System in 2000, which was a dynamic surveillance system of inputs, interpretations and feedbacks. The main characteristics of this system included a standard definition of pregnancy-associated deaths, regional surveillance systems, reliance on national registration systems that recorded every death, questionnaires regarding the circumstance of every death, acquiring data from multiple sources, timely gathering of information, precise recognition of causes of death (especially preventable), dissemination of results and feedback and, finally, the design and use of appropriate interventions to resolve shortcomings.

Utilizing the new surveillance system, the total number of reported deaths between 2001 and 2004 showed a significant increase compared to previous reports, a change which may be indicative of a higher adequacy and reliability of the new system. During 2001, 2002, 2003 and 2004, a total of 222, 308, 332 and 278 cases of maternal mortality were reported. Table 1 shows the main results of this survey.

The main causes of maternal deaths were as follow: hemorrhage (34.8%), eclampsia (16.7%), embolic events (10%), infection (9.1%), cardiovascular events (6.2%), other causes (12.5%), and unknown (10.7%)[2].

As mentioned previously, these statistics (extracted from Maternal Health Unit of Iran's Ministry of Health & Medical Education publications) only represent registered cases of maternal mortality and the actual rates might be higher. Moreover, deaths due to hemorrhagic events are primarily attributable to poor access or unavailability of health-care facilities or delayed referral, which usually happens in the rural and underprivileged areas. Deaths due to obstetric hemorrhagic events in urban areas, where appropriate medical services are readily available, are rare and are primarily due to delayed referral from underprivileged areas.

One more important factor in the areas with poor access or unavailability of medical services is the high prevalence of puerperal infections as a leading cause of maternal death. Delayed diagnosis and limited access to antibiotics are possible contributing factors. Moreover, in a survey between 1998 and 2000, tetanus vaccination coverage among pregnant women was only 80%[2]. So, in the deprived areas, it is estimated that maternal mortality due to infectious etiologies is only second to hemorrhagic events and surpasses eclampsia. Moreover, these patients usually carry a more unfavorable prognosis as compared to those with hemorrhagic events due to late referral and limited therapeutic options.

Hemorrhagic events have been the most common cause of maternal mortality in Iran and the postpartum hemorrhage is the most frequent type. Unfortunately, there are no official population-based statistics about postpartum hemorrhage, and only two cross-sectional studies in university-based hospitals described postpartum hemorrhage. Although these studies might not reflect an exact view of postpartum hemorrhage in Iran, they might be helpful in some aspects.

In the first study by Sadeghi and colleagues, among 18 134 women undergoing delivery, 141 patients with postpartum hemorrhage were identified in Tehran's Akbarabadi and Firoozgar hospitals in 1993. This represents a frequency of 1%. Of these occurrences, 90% occurred in patients undergoing normal spontaneous vaginal delivery and 10% in patients undergoing Cesarean section. About two-thirds of cases of postpartum hemorrhage occurred in the first and second pregnancies. While 91% of cases were early cases of postpartum hemorrhage, 9% were late. Approximately two-thirds of cases of postpartum hemorrhage were mild, and one-third was either moderate or severe.

The etiologies of postpartum hemorrhage in this study were uterine atony (38%), retained products of conception (38%), lacerations (8%), prolonged stage 3 of labor (4%), puerperal infection (1.4%), uterine rupture (1.4%), placenta accreta/increta (1.4%), hematoma (1.4%), etc.

Table 1 Characteristics of maternal mortality in Iran, 2000–2004

	Percentage of women			
	2001	*2002*	*2003*	*2004*
Age				
> 18 and < 35 years	76	71	77	71
< 18 years	1	2	3	2
> 35 years	20	25	20	27
Residency of mother				
Urban	42	44	45	44
Rural	58	56	55	56
Timely report of death	36	80	92	88
Proposing a plan to prevent similar deaths	32	76	62	57
Applying the plan to prevent similar deaths	n/a	53	45	50
Identifying preventable causes of death	n/a	76	66	63
Number of pregnancies ≥ 5	29	30	20	24
Pregnancy interval < 3 years	10	16	20	23
High-risk mother since start of pregnancy	60	73	67	71
Death during pregnancy	15	16	18	9
Death during delivery	4	8	4	9
Death after delivery	80	75	76	78
Mother delivered at home	36	22	20	15
Mother delivered at hospital	61	73	78	78
Maternal death at home	19	11	9	9
Maternal death on way to hospital	10	11	13	10
Maternal death in hospital	69	75	73	80
Mother delivered by obstetrician	46	56	56	69
Mother not delivered by obstetrician	36	36	40	25
Mother delivered by herself	17	7	4	6
Mother delivered by normal spontaneous vaginal delivery	57	48	52	43
Mother delivered by Cesarean section	42	50	48	55
Delayed family decision causing death	19	38	37	36
Delayed referral causing death	5	23	29	32
Delayed hospital treatment causing death	74	37	39	37

No predisposing factor was found in 62% of patients, but in 13% and 9%, respectively, induction and multiparity were recognized as predisposing factors, especially in those with uterine atony. Approximately two-thirds of patients received more than one treatment. Most patients with uterine atony were successfully treated with uterine massage and oxytocin, whereas most of those with retained products of conception were treated with dilatation and curettage (D&C). Six patients (4.2%) who underwent emergency hysterectomy included two cases of placenta accreta, two cases of uterine rupture, one case with uterine atony and one case with placenta accreta and uterine rupture[3].

It is important to note that this study was conducted 13 years ago; at that time, ultrasonography was not available in the centers, and those suspected of having retained products of conception would undergo D&C without imaging documentation. In addition, poor management of the third stage of labor may have been a contributing factor.

The second study by Beigi and colleagues investigated 74 cases of early moderate to severe

postpartum hemorrhage among 5601 patients undergoing delivery in Tehran's Arash hospital between 2001 and 2002[4]. Here, a frequency of 1.3% postpartum hemorrhage was observed over 3 years. The most common etiologies were uterine atony (60%), lacerations (23%) and retained products of conception (16%). Of those patients with postpartum hemorrhage, 77% and 70%, respectively were between 20 and 35 years of age and between 38 and 40 weeks of gestational age. Nulliparity and multiparity were almost evenly distributed, and two-thirds of patients underwent normal spontaneous vaginal delivery, in contrast to 32% who underwent Cesarean section. Four patients delivered macrosomic babies (5.4%). Multiple gestation was present in two patients (2.7%) but polyhydramnios was present in only one of them. One patient had a previous history of postpartum hemorrhage. The duration of labor was normal in 88% of patients, prolonged in 11% and short in 1%. One-third of patients were induced by oxytocin and no induction method was used in the remaining two-thirds.

Approximately 40% of the cases of postpartum hemorrhage in this study were referred patients, primarily from satellite districts. Although no maternal mortality was observed, referred patients usually carried a more unfavorable prognosis[4].

Whereas it is recognized that neither of these studies reflect an exact picture of postpartum hemorrhage in Iran, they reflect the presence of postpartum hemorrhage in three university-based hospitals of the capital. In this regard, they complement literature from other parts of the world where population-based statistics are absent. They also reflect the actual problems that exist in developing countries in the recent past that are continuing to the present day.

References

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