Management of third stage labour following vaginal birth in Iran: A survey of current policies

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A B S T R A C T

Objective: this study was aimed to provide information on policies for the practice of managing the third stage of labour in Iran, including discussion of related systematic evidence.

Design: this survey used a standard questionnaire to obtain information about prevention and early treatment of postpartum haemorrhage from all geographical areas in Iran, in 2010.

Setting: the survey included maternity units from 23 provinces, covering 129 out of a total of 560 maternity units in Iran.

Participants: at least one public hospital, one private hospital and one rural birth facility unit were included from each province. Questionnaires were completed by the unit’s senior midwife with support from the unit’s lead obstetrician.

Findings: all the units who were approached responded to the study including 69 public hospitals, 32 private hospitals and 28 rural birth facility units. The rate of active management of the third stage of labour was 57 per cent, although answers to individual components of management indicated a higher rate for active interventions than expectant management. Ninety-four per cent of the responding centres indicated oxytocin administration, 71 per cent apply early cord clamping and 65 per cent apply controlled cord traction. A lack of standard definition for postpartum haemorrhage was reported in 18 per cent of units.

Key conclusions: a high rate of active management was reported in Iran with variation in its different components which is in line with the international findings. These policies were mainly congruent with the existing systematic evidence except for timing of cord clamping.

Implications for practice: there is a need for improvement in locally sensitive policy development, continuing education, establishing accurate auditing systems and ensuring access to facilities such as blood banks and products in rural units. Efforts to reduce maternal mortality and morbidity and investigations into their causes should be extended to factors beyond the third stage of labour care clinical components.

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Introduction

Postpartum haemorrhage is a major cause of maternal mortality across the world, mainly in developing countries (World Health Organisation, 2007). Although several other factors contribute to the mothers’ safety during birth such as maternal malnutrition and poor health, poverty and available facilities such as transfer, access to blood transfusion and intensive care, third stage of labour care is considered a crucial step in preventing postpartum haemorrhage related mortality and morbidity (Lalonde et al., 2006).

The two major care approaches for the third stage of labour include active management and expectant management. According to the International Confederation of Midwives and International Federation of Gynecology and Obstetrics (Lalonde et al., 2006), active management should be offered to all women, including administration of uterotonics, (delayed) cord clamping, controlled cord traction and uterine massage (Lalonde et al., 2006). Expectant management is commonly considered as no or...
minimum intervention, allowing the separation of the placenta without using any pharmacological agents. This approach relies on naturally circulating oxytocin at birth, stimulating uterine contraction. Usually no uterotonics, cord clamping or early cord cutting is applied and the placenta is expelled by maternal efforts (Rogers et al., 1998). In some cases they may use nipple stimulation by putting babies to the breast (Bullough et al., 1989) and/or using an upright position aided by the gravity forces in the separation and delivery of the placenta (Thilaganathan et al., 1993). In an explorative study of midwives who used active management in at least 30 per cent of births, the majority of them described the expectant management of the third stage of labour as a ‘watchful waiting’ with no intervention necessary (Begley et al., 2012). Although there is variation in the details of each approach; the whole package of active management has been shown to be effective in reducing postpartum haemorrhage (Begley et al., 2011).

It is reported that postpartum haemorrhage accounts for 30 per cent of maternal mortality in Iran (Ministry of Health, Reproductive Health, Internal publication, May 2005, Tehran, Iran). According to the International Confederation of Midwives and the International Federation of Gynecology and Obstetrics (Lalonde et al., 2006), with appropriate management of the third stage of labour based on the existing evidence, a considerable number of maternal deaths can be avoided. Exploring baseline information on the existing policies for managing the third stage of labour can be helpful for comparative purposes and for identifying areas in which further improvements need to be made.

This study was designed to provide an overview of current strategies for care in the third stage of labour in Iran and comparing it with the existing systematic evidence in the field.

Methods

This descriptive survey of policies on the third stage of labour care and practice related facilities was conducted in 2010. The data collection tool was a questionnaire adapted from the ‘European project on obstetric haemorrhage reduction: attitudes, trial and early warning system (EUPHRATES)’ with permission (Winter et al., 2007) and translated into Persian (the official language in Iran). The questionnaire was translated by one of the co-authors and tested by five practitioners to ensure it was understandable prior to administration. The main questions related to cord clamping and cutting, the use and timing of uterotonic drugs; applying controlled cord traction; the length of time before placenta is manually removed. The questionnaire asked the respondents about the unit’s overall policy and practice on each intervention being used always, sometimes, rarely or never. Questions about the existence of written policies, facilities and level of activities in the preceding year were also included. The questionnaire included two separate sections for the management of the third stage of labour following vaginal birth as well as after caesarean section, the results from the former section is presented in this article.

The project was granted approval by Ahvaz University Ethics Committee which had the role of the Principal Investigator in Iran.

Setting

Iran is a middle income country with considerable improvements in its maternal and child health over the last few decades (Azemikhah et al., 2009; UNICEF, 2010a). Iran has a total population of above 73 million people (World Bank, 2010) with 71 per cent urbanised, an annual growth rate of 0.7 per cent and total fertility rate of 1.7 (Azemikhah et al., 2009). On average half of women undergo caesarean section in Iran (Ostovar et al., 2012) and in private hospitals the rate of caesarean section is as high as 80–100 per cent in some units (Ahmad-Nia et al., 2009).

More than 97 per cent of delivery care is provided by skilled birth attendants and about 96 per cent of births are ‘institutional deliveries’ (UNICEF, 2010a) meaning they take place in maternity units either in public (governmental) hospitals, private hospitals or in rural birth facility units. The main difference between a rural birth facility unit and other maternity units is that they include a midwife (and other skilled health-care workers) but an obstetrician may not be available. In both public and private hospitals’ maternity units, midwives are involved in intrapartum care but obstetricians are the lead care providers. Midwives generally provide the care during labour and deliver women but in private hospitals the latter is usually exclusively done by obstetricians (Soltan and Sandall, 2012).

Participants

Out of 31 provinces in Iran (Statistical Centre of Iran, 2006), 23 were included in the study via convenience sampling where attempts were made to include all geographical areas.

There are 560 maternity units in Iran, 129 of which were approached for this survey.

As the postal system is not reliable and not commonly used in Iran, the questionnaires were distributed by research co-ordinators in 23 provinces and the completed questionnaires were collected by the research co-ordinators and handed to the lead research co-ordinator at Ahvaz University for data entry and analysis. It was ensured that at least one public hospital, one private hospital and one rural birth facility unit were represented from each province. The questionnaires were completed by the unit’s senior midwife with the support of the lead obstetrician in that unit.

Data were analysed using the Statistical Package for the Social Sciences (SPSS, version 17). The study was funded by the World Health Organisation which had no further role in the conduct of this study. All data were treated confidentially.

Findings

Table 1 shows the range of included provinces in relation to their geographical locations and population density. All geographical areas were represented in the study including all highly populated provinces. A total of 129 maternity units which were approached, took part in the study including 69 public hospitals, 32 private hospitals and 28 rural birth facility units. Due to ethical consideration and to maintain confidentiality the names of provinces rather than cities are provided.

The number of responding units to the question about the number of births during the study year varied, including 138,691 normal vaginal births (n = 112), 110,520 caesarean births (n = 114) and 1492 instrumental births (n = 107).

Participants’ responses are presented below, under two main headings of ‘Prevention of postpartum haemorrhage’ and ‘Early treatment of postpartum haemorrhage’ after vaginal birth.

Prevention of postpartum haemorrhage

Table 2 summarises responses for strategies for the prevention of postpartum haemorrhage and different components of the third stage of labour care, in different settings. Fifty-seven per cent of respondents stated that they use active management for...
third stage of labour care which is inconsistent with the level of interventions applied during the third stage of labour. For example, all the units answered that they use a type of prophylactic uterotonic during this stage as shown in Table 2.

Table 1
This presents different geographical areas in Iran and included provinces (Statistical centre of Iran, 2006).

<table>
<thead>
<tr>
<th>Geographical area</th>
<th>Provinces categorised based on population*</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>2,000,000 &lt; Population &lt; 6,000,00001</td>
</tr>
<tr>
<td></td>
<td>500,000 &gt; Population &lt; 2,000,00002</td>
</tr>
<tr>
<td>North</td>
<td>Mazandaran, Gilan</td>
</tr>
<tr>
<td>North East</td>
<td>Razavi Khorasan</td>
</tr>
<tr>
<td>North West</td>
<td>East Azarbaijan, West Azarbaijan</td>
</tr>
<tr>
<td>East South</td>
<td>Sistan &amp; Baluchestan</td>
</tr>
<tr>
<td>South West</td>
<td>Fars, Khuzestan</td>
</tr>
<tr>
<td>Central</td>
<td>Tehran, Isfahan</td>
</tr>
<tr>
<td></td>
<td>Alborz, Hamadan, Markazi, Qazvin, Qom, Yazd, Zanjan, Chahar Mahal va Bakhtiari, Semnan</td>
</tr>
</tbody>
</table>

* The provinces are ordered horizontally according to their population density.
01 Tehran has above 13 million citizens.
02 Not included in the convenience sampling.

Table 2
Policies in the management of the third stage of labour for the prevention of postpartum haemorrhage.

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Active management*</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>Administration of prophylactic uterotonic**</td>
<td>40 58</td>
<td>19 59</td>
<td>14 50</td>
<td>73 57</td>
</tr>
<tr>
<td>At the birth of anterior shoulder</td>
<td>6 9</td>
<td>2 6</td>
<td>0 8</td>
<td>6 6</td>
</tr>
<tr>
<td>Immediately after baby’s birth</td>
<td>30 43</td>
<td>12 37</td>
<td>8 29</td>
<td>50 39</td>
</tr>
<tr>
<td>After placental delivery</td>
<td>23 33</td>
<td>13 41</td>
<td>8 29</td>
<td>44 34</td>
</tr>
<tr>
<td>Type of prophylactic uterotonic†</td>
<td>66 96</td>
<td>30 94</td>
<td>25 89</td>
<td>121 94</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>22 32</td>
<td>17 53</td>
<td>7 25</td>
<td>46 36</td>
</tr>
<tr>
<td>Methergine</td>
<td>10 14</td>
<td>4 12</td>
<td>1 4</td>
<td>15 12</td>
</tr>
<tr>
<td>Syntometrine</td>
<td>57 86</td>
<td>22 79</td>
<td>15 16</td>
<td>94 79</td>
</tr>
<tr>
<td>Route of Oxytocin**</td>
<td>3 4</td>
<td>3 11</td>
<td>4 16</td>
<td>10 8</td>
</tr>
<tr>
<td>Intravenous infusion</td>
<td>6 9</td>
<td>3 11</td>
<td>6 24</td>
<td>19 13</td>
</tr>
<tr>
<td>Intramuscular</td>
<td>52 75</td>
<td>20 62</td>
<td>20 71</td>
<td>92 71</td>
</tr>
<tr>
<td>Cord clamping**</td>
<td>9 13</td>
<td>8 25</td>
<td>4 14</td>
<td>21 16</td>
</tr>
<tr>
<td>Immediately after birth</td>
<td>5 7</td>
<td>9 28</td>
<td>1 4</td>
<td>15 12</td>
</tr>
<tr>
<td>After cord pulsation stops</td>
<td>47 68</td>
<td>16 50</td>
<td>21 75</td>
<td>84 65</td>
</tr>
<tr>
<td>Cord drainage**</td>
<td>6 9</td>
<td>6 19</td>
<td>5 8</td>
<td>17 13</td>
</tr>
<tr>
<td>Controlled cord traction**</td>
<td>6 9</td>
<td>6 19</td>
<td>5 8</td>
<td>17 13</td>
</tr>
<tr>
<td>Baby’s position before cord clamping**</td>
<td>38 55</td>
<td>18 56</td>
<td>11 39</td>
<td>67 52</td>
</tr>
<tr>
<td>In the arms of delivery staff above vaginal level</td>
<td>2 3</td>
<td>0</td>
<td>2 7</td>
<td>4 3</td>
</tr>
<tr>
<td>In the arms of delivery staff below vaginal level</td>
<td>14 20</td>
<td>7 22</td>
<td>9 32</td>
<td>30 23</td>
</tr>
<tr>
<td>In the arms of delivery staff at various levels regardless of vaginal level</td>
<td>9 13</td>
<td>1 3</td>
<td>1 4</td>
<td>11 9</td>
</tr>
<tr>
<td>3rd stage care is based on**</td>
<td>6 9</td>
<td>5 16</td>
<td>4 14</td>
<td>15 12</td>
</tr>
<tr>
<td>Written hospital/local policy</td>
<td>11 16</td>
<td>3 9</td>
<td>11 39</td>
<td>25 19</td>
</tr>
<tr>
<td>Personal experience</td>
<td>2 3</td>
<td>4 12</td>
<td>0 6</td>
<td>5 5</td>
</tr>
<tr>
<td>University education</td>
<td>20 29</td>
<td>6 19</td>
<td>5 18</td>
<td>31 24</td>
</tr>
<tr>
<td>Reference books</td>
<td>18 26</td>
<td>8 25</td>
<td>2 7</td>
<td>28 22</td>
</tr>
<tr>
<td>How long do you wait before considering manual removal of placenta?**</td>
<td>1 1</td>
<td>3 10</td>
<td>3 12</td>
<td>7 6</td>
</tr>
<tr>
<td>About 15 minutes†</td>
<td>51 76</td>
<td>24 83</td>
<td>19 79</td>
<td>94 78</td>
</tr>
<tr>
<td>15–30 minutes†</td>
<td>3 4</td>
<td>1 3</td>
<td>2 8</td>
<td>15 12</td>
</tr>
<tr>
<td>90–180 minutes†</td>
<td>12 18</td>
<td>1 3</td>
<td>0 4</td>
<td>3 3</td>
</tr>
</tbody>
</table>

n: Total number of units.
* The proportion of units in which the answer to this component of care has been ‘always’.
** Total is not always 100% due to missing data for this question.
† There are overlaps among the use of different uterotonic.
‡ Syntometrine and Methergine were administered intramuscularly.
§ One unit stated 3–5 minutes.

Prophylactic use of uterotonic drugs: Table 2 shows that 94 per cent of the units administer oxytocin as a uterotonic agent, which 39 per cent of units used immediately after the baby’s birth and 34 per cent of units used it after the delivery of the placenta.
In further analysis, out of 44 units in which the prophylactic uterotonics are administered after the delivery of placenta, only 19 (43 per cent) described their practice as expectant and the remaining (57 per cent) stated they use active management of the third stage of labour.

Seventy-nine per cent of units in this survey have been administering oxytocin via an intravascular infusion, 8 per cent using it intramuscularly and about 13 per cent using it both intravascular and intramuscularly. The overlap between the percentage of various types of uterotonics indicates in some instances more than one uterotonics is being used.

*Controlled cord traction:* This is stated to be carried out in 65 per cent of the units, the highest rate of controlled cord traction was reported to be in the rural facilities (75 per cent) whereas cord drainage is only practiced in a small proportion of responding units (12 per cent), the highest rate being in the private units (28 per cent) compared to the other two types of units.

*Position of the neonate before cord clamping:* In a small proportion of units (13 per cent) the neonate is placed on the mother’s abdomen immediately after birth, whereas in the majority of units the neonate is held by the delivery staff, in more than half of them (52 per cent) at the same level as the mother.

Only 19 per cent of the units were using a written national policy (Ministry of Health, National Safe Pregnancy Program, 2010, Tehran, Iran) the highest rate being stated by the rural birth facility units’ staff (39 per cent) compared to the other two settings (public: 16 per cent and private: 9 per cent). Only 12 per cent of the respondents have stated they have written local policies, the highest rate being reported by the private hospitals (16 per cent).

As shown in Table 2, 78 per cent of the units considered manual removal of the placenta, if it is not delivered 15–30 minutes after the birth of the baby. Although a high proportion consider a period of around 30 minutes to be appropriate to initiate manual removal of placenta, a small proportion either wait less than 15 minutes (6 per cent) or more than 90 minutes (3 per cent). Only 8 per cent of the rural birth facility units considered manual removal of placenta in more than 30 minute, with none waiting more than 60 minutes.

**Treatment of early postpartum haemorrhage**

All units stated that they practice uterine massage and about two thirds of them stated they catheterise the bladder and perform bimanual compression, if the woman is bleeding excessively after birth (Table 3).

**Table 4** presents the use of pharmacological agents when excessive bleeding occurs. Oxytocin seems to be the drug of first choice for the majority of units (86 per cent) and if the woman continues to bleed, 73 per cent stated they use methergine as a second drug in these circumstances. Almost one third of units stated the use of misoprostol and 14 per cent used other prostaglandins as their 2nd drug, in the treatment of postpartum haemorrhage. The pattern of use of pharmacological agents seems to be similar among the units in various settings (public, private and rural birth facility unit), so that in most of them oxytocin is the first drug, followed by methergine to control excessive blood loss. The overlap among the proportions of drug use indicates that units may administer these agents interchangeably, in some instances respondents named two drugs as their possible choices (e.g. first drug: oxytocin 86 per cent and methergine 17 per cent).

**Access to blood products and postpartum haemorrhage related routine data collection**

None of the participating units had data on the rate of postpartum haemorrhage or transfers and related mortality or morbidities. Other information, such as access to blood products and postpartum screening tests for anaemia, are summarised in Table 5. All the hospitals have blood banks either inside or accessible from outside hospitals (except for one hospital unit and that in 2 public and 2 private hospitals the answer to this question is missing) but 82 per cent of rural birth facility units do not have blood banks. Only 1 rural facility has a blood bank, 1 has it available outside and for 3 facilities, this question is not answered. Out of 29 rural birth facility units, 1 has standby O negative blood supplies and 4 rural facility units did answer this question. Lack of access to standby O negative blood supplies are in much lower proportions in public (3 per cent) and private (6 per cent) hospitals than the rural facilities (82 per cent). In 24 per cent of all the units maternal haemoglobin levels are usually assessed, about 6–24 hours after birth including 29 per cent, 28 per cent and 7 per cent in public hospitals, private hospitals and rural birth facility units, respectively.

**Discussion**

The results of this survey indicate that although there is a degree of variation, active management of the third stage of

**Table 3**

<table>
<thead>
<tr>
<th></th>
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<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Uterine massage*</td>
<td>68 99</td>
<td>31 97</td>
<td>27 96</td>
<td>126 98</td>
</tr>
<tr>
<td>Catheterise the bladder</td>
<td>46 67</td>
<td>20 62</td>
<td>21 75</td>
<td>87 67</td>
</tr>
<tr>
<td>Bimanual compression of the uterus</td>
<td>44 64</td>
<td>22 69</td>
<td>21 75</td>
<td>87 67</td>
</tr>
</tbody>
</table>

n: Total number of units.

* In the remaining proportion of units, this question was not answered.

**Table 4**

<table>
<thead>
<tr>
<th>Type of uterotonics drugs</th>
<th>Public hospital [n=69]</th>
<th>Private hospital [n=32]</th>
<th>Rural birth facility unit [n=28]</th>
<th>Total [n=129]</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>Oxytocin</td>
<td>61 88</td>
<td>24 75</td>
<td>26 93</td>
<td>111 86</td>
</tr>
<tr>
<td>1st choice</td>
<td>1 1</td>
<td>1 3</td>
<td>0</td>
<td>2 2</td>
</tr>
<tr>
<td>2nd choice</td>
<td>13 19</td>
<td>8 25</td>
<td>1 4</td>
<td>22 17</td>
</tr>
<tr>
<td>Mestergeine</td>
<td>50 72</td>
<td>21 66</td>
<td>23 82</td>
<td>94 73</td>
</tr>
<tr>
<td>1st choice</td>
<td>2 3</td>
<td>1 3</td>
<td>0</td>
<td>3 2</td>
</tr>
<tr>
<td>2nd choice</td>
<td>20 29</td>
<td>5 16</td>
<td>1 4</td>
<td>26 20</td>
</tr>
<tr>
<td>Misoprostol</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Other prostaglandins</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1st choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2nd choice</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

n: Total number of units.

* Some identified more than one uterotonics agent as their choices.
labour is most commonly used in Iran. This study provides an opportunity to identify examples of good practice and areas for policy and practice development for such a critical stage of intrapartum care.

Information on the number of maternal mortality and morbidity related to the postpartum haemorrhage were not reported by the participants due to a lack of accurate auditing system. From other sources (Kamran Bagher-Lankarani, Ministry of Health, Women’s international report, 2010), almost one third of maternal mortality in Iran has been attributed to the management of postpartum haemorrhage. While the maternal mortality ratio (number/100,000 live birth) in Iran is lower than the surrounding countries such as Syria, Iraq and Pakistan (30 versus 65, 84 and 260 respectively), it is higher than those in the developed countries such as UK and US (12 and 24, respectively) (UNICEF, 2010a, 2010b).

The third stage of labour care has been the subject of several primary research studies and systematic reviews. Whilst there is strong evidence in support of the active management of labour as a whole package in reducing the risk of postpartum haemorrhage compared to expectant management (Begley et al., 2011), there is less certainty about some aspects of various components of active management (Soltani, 2008).

The discrepancy between the stated rate of active management of the third stage of labour (57 per cent) and the incidence of each component of the package (e.g. use of uterotonics being 79 per cent) in our study, may indicate a level of ambiguity about terminology of ‘active’ and ‘expectant’ management among respondents. It could be argued that those who administer prophylactic uterotonics after delivery of placenta may have described their practice as expectant management. This is not supported by our findings since only 43 per cent of those who used prophylactic uterotonics after delivery of placenta, stated to carry out expectant management of labour. This has educational implications around clear definitions for active and expectant management within training and existing policies.

In comparison with the EUPHRATES study (Winter et al., 2007) policy in the management of the third stage of labour in Iran has shown to be similarly variable. However the high rate of uteroton use compares well with the European countries where there was a policy of using them prophylactically in between 72 and 100 per cent of participating units except for Austria and Denmark where 55 and 57 per cent of the units, respectively, reported a policy of using them.

The observed variation in practice and policies concerning third stage of labour management could be attributed to the lack of consistency in the interpretation of existing evidence (Festin et al., 2003; Winter et al., 2007; Matar et al., 2010). In spite of the large number of existing randomised controlled trials and systematic reviews in this area, it remains unclear what component of the third stage of labour management package actually works (Keirse, 1998). Another important factor which may contribute to variation in practice may be a lack of commitment to producing clear and specific local guidelines to help practitioners in developing countries (Festin et al., 2003).

Six Cochrane systematic reviews investigated the effect of various agents for the prevention of postpartum haemorrhage (Cotter et al., 2001; McDonald et al., 2004; Liabsuetrakul et al., 2007; Novikova and Hofmeyr, 2010; Su et al., 2012; Tuncapel et al., 2012). Overall they indicate that oxytocin offers the best ratio of benefits versus side effects. Our findings suggested that oxytocin was used in the majority of the units in Iran (94 per cent) which differs from the findings from Syria (Matar et al., 2010) where Syntometrine was used more commonly (67 per cent). The higher use of oxytocin in Iran was in line with most European countries except for UK, Italy and Ireland in which the use of Syntometrine predominated (Winter et al., 2007).

Existing evidence, although limited, does not show a significant difference in the risk of postpartum haemorrhage between those who had uterotonics before, compared to those who had it after placental expulsion (Soltani et al., 2010). Administration of uterotonics after the delivery of placenta, keeps the third stage of labour care closer to an expectant management (at least in relation to the neonate) and there is potentially less risk of over-transfusion of placental blood to the baby with delayed cord clamping. In our study, 34 per cent of the units stated that they used uterotonics after placental delivery which similar to many European countries is relatively low (Winter et al., 2007). It compares with 91 per cent of Syrian units (Matar et al., 2010) and only three countries (Spain (69 per cent), Italy (76 per cent) and Portugal (77 per cent)) identified by Winter et al. (2007) where uterotonics were used after placental delivery in a higher percentage than our study units.

McDonald and Middleton (2008) and, Hutton and Hassan (2007) in their meta-analysis of randomised controlled trials showed a clear benefit in delaying cord clamping (at least 1 minute) for the newborn in reducing the risk of anaemia, extending to infancy.

Although the results of their reviews demonstrated a higher incidence of neonatal jaundice requiring phototherapy in the delayed cord clamping group compared to those who had early

Table 5
Information on access to blood products and routine postpartum screening for anaemia.

<table>
<thead>
<tr>
<th>Availability of following resources, 24 hours/day</th>
<th>Public hospital [n=69]</th>
<th>Private hospital [n=32]</th>
<th>Rural birth facility unit [n=28]</th>
<th>Total [n=129]</th>
</tr>
</thead>
<tbody>
<tr>
<td>Blood bankb</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>In the maternity unit/hospital</td>
<td>57 83</td>
<td>25 78</td>
<td>1 4</td>
<td>72 56</td>
</tr>
<tr>
<td>On call outside the hospital</td>
<td>10 14</td>
<td>4 12</td>
<td>1 4</td>
<td>15 12</td>
</tr>
<tr>
<td>Do not have</td>
<td>0 1</td>
<td>3 0</td>
<td>23 82</td>
<td>24 19</td>
</tr>
<tr>
<td>Standby O negative blood suppliesb</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>In the maternity unit/hospital</td>
<td>54 78</td>
<td>20 63</td>
<td>1 4</td>
<td>75 58</td>
</tr>
<tr>
<td>On call outside the hospital</td>
<td>9 13</td>
<td>8 25</td>
<td>0 0</td>
<td>17 13</td>
</tr>
<tr>
<td>Do not have</td>
<td>2 3</td>
<td>2 6</td>
<td>23 82</td>
<td>27 21</td>
</tr>
<tr>
<td>Assessment of maternal haemoglobin level at early postpartum periodb</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
<td>n %</td>
</tr>
<tr>
<td>In the maternity unit/hospital</td>
<td>20 29</td>
<td>9 28</td>
<td>2 7</td>
<td>31 24</td>
</tr>
</tbody>
</table>

n: Total number of units.

b Where the total percentages do not add up to 100%, it is due to missing data.

c In these units maternal haemoglobin is assessed routinely 6–24 hours after birth.
cord clamping, the risk of complicated polycythaemia was not
different between the two groups.

In Iran, 71 per cent of maternity units stated they practice
early cord clamping. This is comparable to 66–90 per cent of
maternity units in Belgium, France, Ireland, Italy, Portugal, the
Netherlands, Spain, Switzerland, and the UK (Winter et al., 2007).
In 65–74 per cent of units in Austria, Denmark, Finland, Hungary
and Norway there are policies promoting delayed cord clamping.

In our study, only 16 per cent of units practiced delayed cord
clamping despite explicit recommendations by the International
Confederation of Midwives and International Federation of Gyneco-
logy and Obstetrics (Lalonde et al., 2006; Winter et al., 2007). This
was reported to be even lower in Syria where only 4 per cent of
units stated they practice delayed cord clamping (Matar et al.,
2010). With the high risk of anaemia (Barooti et al., 2010) in Iran
this indicates a requirement for practice and policy development.

No randomised controlled trials were identified in a Cochrane
review of controlled cord traction with a focus on evaluation of
the effects of controlled cord traction on the management of the
third stage of labour (Peña-Martí and Comuníñ-Carrasco, 2007).
However a recent large randomised controlled trial (Gulmezoglu
et al., 2010) showed that omission of controlled cord traction
from the active management of the third stage of labour, leads
to very little, if any increased risk of severe haemorrhage. They
suggested that (with appropriate skills), controlled cord traction
is safe and its use should be continued in settings where it is part
of the routine practice.

Controlled cord traction after the signs of placental separation is
practiced in 65 per cent of the maternity units in Iran and in
12–90 per cent of European countries (Winter et al., 2007)
whereas 53 per cent of Syrian maternity units stated that they
do not practice controlled cord traction (Matar et al., 2010).

The evidence for cord drainage (Soltani et al., 2011) is also
limited, although it seems to be harmless with some benefits in
reducing the length of the third stage of labour. The policy on
applying cord drainage ranged from none in the Netherlands to 32
per cent in Belgium from European countries (Winter et al., 2007)
compared to 6 per cent in Syria (Matar et al., 2010) and 12 per
cent in our study.

In order to be able to effectively deal with postpartum
haemorrhage and cover all eventualities, access to blood products
is essential. Lack of access to a blood bank or blood products in 82
per cent of rural facilities in our study, needs particular attention.
This is of a high significance when according to an internal report
on the causes of maternal death in a province in North East of Iran
(Khorasan) 24 per cent of maternal mortality has been attributed
to the limited access to blood products (Mansouri et al., 2005).

Considering the high compliance with the evidence on the use of
active management identified in this and other similar studies, it
is perhaps time for investigators and those advocating maternal
health to extend their remit in promoting better planning and
organisation of care and focusing more on the importance of
availability of facilities such as blood products, transfer and access
to emergency care than on each component of third stage of
labour. After all, as it has been highlighted previously there is a
great deal more to the third stage of labour care than adminis-
tration of a uterotonic agent (Keirse, 1998) or application of
various components of an active or expectant package of care.

Finally, another important issue to be emphasised, is that
information on the number of women experiencing haemorrhage
or its consequences was too difficult to collate as these are not
routinely collected. This was not likely to be due to a lack of
willingness to share information but was mainly due to a lack of
infrastructure in capturing and recording such information
systematically. Establishing auditing systems in maternity
units and emphasising the importance of such information in
allowing reflective opportunities to improve practice should be
promoted.

Strengths and limitations

For practical reasons this study used a convenience sampling
which may limit the generalisability of the results. Twenty three
provinces from all geographical areas were sampled including at
least one public, one private and one rural facility unit from each
area. This enabled a broad range of information to be gathered for
comparison with other studies. The challenges of data collection
in such a large country were overcome by using local research co-
ordinators in each area. The network of research co-ordinators
contributed to a full return of questionnaires.

Although Iran is a large country, due to an extreme climate
variation, some geographical areas (e.g. North or Central) are
more densely populated than others (e.g. East or South). Through
networking we have managed to cover all geographical areas
including all of the highly populated provinces as well as those
that are less populated and there is no evidence of substantive
variations for provinces which were not included in the study
compared to their counterparts in terms of demographic char-
acteristics or facilities (Table 1).

An advantage of the study was the nature of data which went
further than aspects of the components of the third stage of
labour management and included elements such as access to
blood products. This is paramount in the prevention of maternal
mortality and morbidity related to the third stage of labour
management. Another example is the decision about the timing
of manual removal of the placenta when there is excessive
bleeding. Considering the fact that some of rural birth facility
units are more than 30 minutes away from a major unit, any
policy development will need to make specific recommendations
based on the unit locations or access to resources.

This study also raises awareness of examples of good practice
in that 24 per cent of maternity units, routinely measure the
maternal haemoglobin level at the postpartum period. This is
important as the risk of anaemia is high in Iran (Mansouri et al.,
2005).

In terms of limitations, in line with other similar studies
(Winter et al., 2007; Matar et al., 2010), this study provides
information on the policies for the third stage of labour care.
However, in depth observation of practice are required to com-
plement these findings.

The other important findings, which also limited the scope of
this study, was the lack of existing collective record keeping on
maternal mortality and morbidity related to the third stage of
labour care and appropriate audit system to allow reflection on
practice in order to enhance the standard of care.

Conclusion and recommendations

In our survey of maternity units in Iran, majority of respon-
dents indicated the use of active management for the third stage
of labour care with some variation in its different components
which is in line with international findings.

The stated practice compared favourably with the existing
evidence in general. However, timing of cord clamping did not
seem to be congruent with recommendations by the International
Federation of Gynecology and Obstetrics and International Con-
federation of Midwives (Lalonde et al., 2006). In addition, lack of
knowledge about national policies (81 per cent) or lack of
existence of local guidelines (88 per cent) is of concern. These
indicate the need for development and implementation of clear,
specific and locally applicable guidelines and infrastructure to inform practitioners through continuing education.

Above all, more attention should be given to the planning and organisation of care in terms of access to facilities such as blood banks in rural facilities.

The routine data collection and storage, creating robust reporting and auditing systems, would enable reliable reviewing of practices for the improvement of services. Further observational research is required to investigate the causes of maternal mortality in relation to the management of the third stage of labour including and beyond its clinical components.

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References


