Human Resource Management in Developing Countries: 
The Role of the Economic, Psychological, and Social 
Factors in Maternal Mortality 

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Abstract 

This study tests the influence of seven indicators, which relate to health system resources, health service coverage, demographics, and socio-economic statistics in European, Eastern Mediterranean, and African countries to find the major causes of a high Maternal Mortality Rate (MMR) in African countries. Quantitative data from fifteen countries in three regions, European, Eastern Mediterranean, and African were evaluated with consideration being given to seven indicators that show the demographic, socioeconomic status and health service coverage in each country. Analysis of data found that there is a huge gap even between a European country with a comparatively high MMR and an African country like Chad, with a lower MMR compared to other countries in Africa. This study also shows that the most causes of MMR could be prevented by providing health care facilities such as professional midwifery care and access to hospital care.

This article also demonstrates that there are several applicable interventions that are very useful and suitable for implementation in low-income countries. The author shows that MMR would decrease if WHO, World Bank, NGOs, or some industrial countries help developing countries to implement effective interventions. These interventions will save the lives of more than 250,000 mothers each year. In addition, sending obstetricians as health keepers to African countries is also recommended. The author believes that by sending skilled obstetricians, midwives, and health professionals to train native people, and by giving loans for implementing basic emergency services, the MMR can be decreased in developing countries, particularly in Africa.
Introduction

Maternal mortality is one of the most important problems in the world, and so is addressed in the MDGs. These goals were established in 2000 by 189 heads of state. The MDGs are meant to reduce the MMR by 75% between 1990 and 2015 (UNICEF, 2010). UNICEF (2008, p. 47) defines MMR as the “Annual number of deaths of women from pregnancy-related causes per 100,000 live births”. According to UNICEF (2008, p. 47) more than 500,000 women die each year in the world due to pregnancy-related causes, most of which are preventable. In addition, there is a considerable difference between MMR in developed and developing countries. About 99 percent of maternal deaths occur in developing countries and about half of them are in Sub-Saharan Africa (UNICEF, 2008, p. 4).

Moreover, lifetime risk is one of the indicators, as it shows a country’s overall maternal health situation in terms of both the maternal mortality ratio and the total fertility rate (probable number of births per woman during her reproductive years). Based on the UNICEF (2008, p. 47) definition, lifetime risk is “the probability of becoming pregnant and the probability of dying as a result of that pregnancy accumulated across a woman’s reproductive years”. UNICEF’s report in 2008 reveals that Ireland has the lowest MMR in the world; in Ireland “women have a 1 in 47,600 lifetime risk of dying during pregnancy or from a birth-related cause, whereas women in Niger face a 1 in 7 lifetime” (UNICEF, 2008, p. 7).

The death of women during their reproductive years not only has significant economic consequences, but also a negative impact on their children, family, and ultimately their communities and the world as a whole. They are trapped in a vicious cycle; more than 250,000 women die due to a lack of accessible maternal healthcare services due to terrible economical situations and their deaths make the problem worse (UNICEF, 2008, p. 4). Their deaths cause numerous economical, psychological, and social problems. More research is needed to determine the fundamental problems which consequently result in developing countries lagging behind the MDG’s goal. Is there any way to save the lives of more than a quarter of a million women who die from pregnancy related causes? Considering that maternal mortality is preventable, what are the obstacles in African countries? WHO’s latest data show that 54 European countries have an average MMR of 24.33, which is the lowest compared to Eastern Mediterranean and African countries; the average MMR in Eastern Mediterranean countries is 312.66, and in African countries the average MMR is 604.10 (WHO, 2010). Therefore, in order to find the major causes of a high MMR in African countries, several indicators, which relate to health system resources, health service coverage, demographics, and socio-economic statistics in European, Eastern Mediterranean, and African countries are examined in this paper.

Literature Review

Maternal Mortality Ratio (MMR) is one of the most important health issues in the world. In African countries, the MMR is nearly 50 times higher than in developed countries (Ronnsmans & Graham, 2006, p.1190). Significant high MMRs in African countries and the considerable
negative impact of MMRs on families, communities, and world as a whole, show the necessity of finding the causes and solutions for reducing MMR. According to Mpembeni et al. (2007, p.2) more than 75% of maternal deaths are related to “direct obstetric causes such as hemorrhage, abortion, sepsis, ruptured uterus and hypertensive diseases of pregnancy”. Also, Ronsmans and Graham (2006) identify obstetric hemorrhage as the main medical cause and HIV/AIDS as the leading cause of death in pregnancy in African countries. They state that in Sub-Saharan Africa, almost 500 deaths per 100,000 live births are related to severe bleeding, hypertensive diseases, and infections. Most of these causes could be prevented by providing professional midwifery care and access to hospital care.

Knowing the causes of a problem help us to find a way to solve the problem. Industrial countries decreased their MMR by providing “long-term investment in midwifery” (Ronsmans & Graham, 2006, P.1192). By controlling hemorrhaging during pregnancy, which is the major cause of mothers’ death, the MMR will be decreased dramatically. Controlling bleeding during or after delivery is mainly dependent on having trained professionals present during delivery and also having timely access to hospitals. In addition, providing effective and timely interventions by skilled personnel can prevent many maternal deaths. Therefore, skilled birth attendants and access to hospitals are considered the two main priorities in the World Health Organization Statistical Information System. Comparing the percentage of births attended by skilled health personnel in five African countries and five European countries that have the highest MMR in their region shows that the lowest percentage in European countries is 97%, but in African countries it is 14% (WHO, 2010a). The lowest number of hospital beds (per 10,000 people) in European countries is 43% and in African countries is 4% (WHO, 2010a). These statistics reveal that these two indicators should be improved in African countries.

Access to basic emergency services and skilled health personnel are two major interventions that African countries need to improve. Fournier et al. (2009) implemented a maternity referral system in the Kayes region in Mali to show the effect of accessing comprehensive emergency obstetric care. The result showed that this intervention will considerably reduce the number of maternal deaths. In addition, it “can be implemented in low-income countries without major external funding” (Fournier et al., 2009, p.30). They also add that this program is useful for rural areas where most maternity death occurs. Therefore, such an effective, low expense program would improve the MMR in African countries.

Although other factors such as biological, geographic, economic, and social differences are linked to maternal mortality, research shows that accessibility to an emergency center with trained personnel is a significant factor in lowering MMR. As Fournier et al. (2009) state, there are some applicable interventions, which are very useful and suitable for implementation in low-income countries. If WHO, World Bank, NGOs, or some industrial countries help these countries to implement these interventions, obviously MMR would decrease. These interventions will save the lives of more than 250,000 mothers each year.

As it can be seen, it is possible and also feasible to decrease the MMR in African countries by sending skilled obstetricians, midwives, and health professionals to train native people, and by
giving loans for implementing basic emergency services, the vicious cycle can be stopped. Saving the lives of mothers will certainly have additional benefits, such as decreasing the amount of orphans, as well as the decreasing poverty and the negative psychological consequences of maternal death. With some preventative measures, it would be possible for African countries to reach their fifth goal of MDGs, which is to reduce MMR to 75% by 2015.

Methods

The intention of this study is to identify the causes of high MMR in African countries, as well as to suggest possible solutions. Therefore, a quantitative approach has been used to obtain maternal mortality data. Since it is not possible to contact the governments of all of these countries, WHO, which is the most reliable source and has the latest information, has been used as a secondary source in obtaining data. It is not expected to find completed information even in WHO. A limitation of this paper is the incompleteness of information due to some governments’ reluctance to provide complete information, as well as weak systems of tracking and recording data. However, in this article, the author strives to use the complete information as much as possible. The MMR of three different regions, Africa, the Eastern Mediterranean, and Europe have been derived from the latest version of WHO’s statistics. There are some difficulties in obtaining accurate information about maternal deaths even in countries with advanced statistical systems. Consequently, the study was narrowed to five countries in each region, which had the highest MMR as well as a complete report.

The MMR of five countries in each region was evaluated with consideration being given to seven indicators that show the demographic, socioeconomic status and health service coverage in each country. Therefore, adolescent fertility rate\(^1\), adult literacy rate\(^2\), antenatal care coverage\(^3\), birth attended by skilled health personnel\(^4\), birth attended by skilled health personnel in rural area, birth attended by skilled health personnel in urban area, and hospital beds per 10,000 population are considered as the most important indicators involving in maternal mortality. The WHO identifies these indicators as the criteria for assessing the health service status in countries. Antenatal care coverage is an indicator that shows the use of health care during pregnancy (WHO, 2010\(^b\)). Using health care and receiving on time interventions are vital for mothers and infants. Antenatal care is recommended by WHO at least four times, stressing the importance of receiving helpful, necessary maternal health interventions (WHO, 2010\(^b\)). Adult literacy rates and available hospital beds show the demographic and health service coverage, which are fundamental indicators in assessing health. According to the WHO, births attended by skilled health personnel are “key to lowering maternal deaths” (WHO, 2010\(^b\)).

\(^{1}\) “The annual number of births to women aged 15-19 years per 1,000 women in that age group” (WHO, 2010\(^b\)).

\(^{2}\) “The percentage of population aged 15 years and over who can both read and write with understanding a short simple statement on his/her everyday life” (WHO, 2010\(^b\)).

\(^{3}\) “The percentage of women aged 15-49 with a live birth in a given time period that received antenatal care four or more times” (WHO, 2010\(^b\)).

\(^{4}\) “The proportion of births attended by skilled health personnel” (WHO, 2010\(^b\)).
2010\textsuperscript{b}). In addition, WHO indicates that all mothers “should have access to skilled care during pregnancy and childbirth in order to prevent, detect, and manage complications related to pregnancy” (WHO, 2010\textsuperscript{b}). Since most maternal death occurs in rural areas, births attended by skilled health personnel in rural and urban areas are assessed too.

Obtaining the maternal mortality information is difficult even in developed countries because of misclassification of causes and the sensitivity of cases of induced abortion in some regions (Ronsmans & Graham, 2006). In addition, because of weak written reporting systems, especially in developing countries, the information is less reliable (Ronsmans & Graham, 2006). Moreover, most maternity deaths occur in developing countries. However, WHO is the only resource that contains the latest and the most reliable data. So, this opportunity is used to strengthen this study. In addition, for obtaining completed data, in each region, five countries, which have the highest MMR and completed information, have been selected. Then, an effective literature review determines the causes of high MMR in African countries and also identifies ways of reducing high MMR in this region. In addition quantitative approach, the writer has applied an average as a specific tool to analyze descriptive statistics.

Results

Evaluating the MMR of the Eastern Mediterranean, Europe and Africa shows that Africa has the highest MMR compared to two other regions. In Africa, Mauritius has the lowest MMR (15) and Sierra Leone has the highest (2100). In the Eastern Mediterranean, the MMR in Kuwait is the lowest (4) and in Afghanistan it is the highest (1800). In Europe, the lowest MMR is in Ireland (1) and the highest is in Tajikistan (170) (WHO, 2010\textsuperscript{a}). This shows a significant gap in the MMR in Africa and Europe.

Since some countries did not submit complete data, those with the highest MMR and complete data were selected to compare their demographic, socioeconomic status and health service coverage. Therefore, adolescent fertility rate, adult literacy rate, antenatal care coverage, birth attended by skilled health personnel, birth attended by skilled health personnel in rural areas, birth attended by skilled health personnel in urban areas, and hospital beds per 10,000 people were compared regarding the MMR in each country. In Africa, Sierra Leone has the highest MMR; however, since it does not have all of the information, it was not selected for this study. Chad with MMR of 1500 was selected since all necessary information was available. Due to the above reasons, Kyrgyzstan has been selected although Tajikistan has the highest MMR in Europe.

Despite its incomplete information, Afghanistan was selected because of the high differences between its MMR (1800) and that of Sudan (450), the other country in Eastern Mediterranean region, which has the complete information. Table 1 shows comparison of data about these seven indicators in Chad (Africa), Tajikistan (Europe), and Afghanistan, which are obtained from WHO (2010\textsuperscript{a}).
Table 1 shows that the adolescent fertility rate in Afghanistan and Chad, is respectively 5.6 and 7.1 times more than Kyrgyzstan. Also, the low percentage of births attended by skilled health personnel is the most important factor that leads to high MMR in Afghanistan and Chad, 14% compared to 98% in Kyrgyzstan. This data shows that there is a huge gap even between a European country with a comparatively high MMR and an African country like Chad, with a lower MMR compared to other countries in Africa. In fact Sierra Leone has the highest MMR (2100), but Chad was chosen because Sierra Leone does not have all of the information.

**Discussion**

The high adolescent fertility rate in Chad (nearly 7 times more than Kyrgyzstan) means that more women in Africa become pregnant and give birth very early in their reproductive lives. Since these women are at a higher risk of complications and death during pregnancy and birth, there is a higher Maternal Mortality Ratio in Africa. The low rate of literacy is another reason for a high MMR in Africa, since literate people have a better understanding of how to care for themselves, and they also seek help when it is needed. As it can be seen in table 1, the adult literacy rate is 25.7% in Chad compared to 98.7% in Kyrgyzstan, which indicates the role of literacy in MMR.

Antenatal care coverage is another indicator of MMR, and is only 18% in Chad. This shows that only 18% of women access skilled care during pregnancy and childbirth. In fact, complications would be detected and prevented in only 18% of cases; the rest of women die due to lack of access to skilled care. Consequently, the low percentage of births attended by skilled health personnel, especially in rural areas, is the most important factor of high MMR in Africa.

According to Fournier et al. (2009, p.1) implementing comprehensive emergency obstetric care in six rural districts in Kayes will lead to lowering the risk of maternity death to half within two years. Also, this study proves that access to health centers and skilled health workers are the most important factors for decreasing MMR in African countries. In addition, this study shows that implementing comprehensive emergency obstetric care is applicable in other poor-countries in Africa. The study of Fournier et al. (2009, p.1) mentions that when birth attendants

<table>
<thead>
<tr>
<th>Table 1</th>
<th>MMR</th>
<th>AFR⁵</th>
<th>ALR⁶</th>
<th>ACC⁷</th>
<th>BASHP⁸</th>
<th>BASHPR⁹</th>
<th>BASPU¹⁰</th>
<th>HB¹¹</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kyrgyzstan</td>
<td>150</td>
<td>27%</td>
<td>98.7%</td>
<td>81%</td>
<td>98%</td>
<td>97.8%</td>
<td>99.2%</td>
<td>51</td>
</tr>
<tr>
<td>Afghanistan</td>
<td>1800</td>
<td>151%</td>
<td>28%</td>
<td>-</td>
<td>14%</td>
<td>-</td>
<td>-</td>
<td>4</td>
</tr>
<tr>
<td>Chad</td>
<td>1500</td>
<td>193%</td>
<td>25.7%</td>
<td>18%</td>
<td>14%</td>
<td>6.4%</td>
<td>45.6%</td>
<td>4</td>
</tr>
</tbody>
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⁵ AFR = Adolescent Fertility Rate  
⁶ ALR = Adult Literacy Rate  
⁷ ACC= Antenatal Care Coverage  
⁸ BASHP = Birth Attended by Skilled Health Personnel  
⁹ BASHP = Birth Attended by Skilled Health Personnel in Rural area  
¹⁰ BASPU = Birth Attended by Skilled Health Personnel in Urban area  
¹¹ HB = Hospital Beds per 10,000 population
are poorly qualified, they cannot detect obstetric complications on time. By contrast, properly trained health workers with adequate equipment are key factors in decreasing maternal death.

In addition to skilled birth attendance, the amount of hospital beds per capita is another important indicator that influences maternal death. Timely prevention would be possible when there are skilled personnel and adequate equipment. For example, when mothers experience hemorrhaging, access to a blood bank is crucial. Fournier et al. (2009, p.1) suggests that African countries should implement such interventions (implementing comprehensive emergency obstetric care) in their countries if they want to reach the MDGs. Comparing the cost of similar interventions (implementing comprehensive emergency obstetric care) with the cost of the death (more than 250,000 women each year in African countries), it is beneficial to implement this intervention. Since maternity death influences family, society, and also the whole world, lowering maternity death would help to decrease poverty in the world. To achieve the millennium development goal, it is recommended that assistance be given to implement comprehensive emergency obstetric care centers. Sending obstetricians as health keepers to African countries is also recommended. Health keepers could be volunteer obstetricians from different countries who go to African countries to train native midwives. As a last word, there are opportunities for further research about the effects of deploying volunteer health keepers, such as midwives, obstetricians, and nurses to the developing countries; analysing the results of these researches can help governments, NGOs, and other responsible organizations such as WHO, to implement appropriate and effective interventions to decrease MMR in Africa.

References


