

The Success Story of Reducing Maternal Mortality in Saudi Arabia

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Abstract: The Kingdom Saudi Arabia (KSA) is the second largest Arab country, with a population estimated at 32.9 million, growing at 2%, in 2015. The maternal mortality in the Kingdom of Saudi Arabia has been substantially reduced within a reasonably short period. The maternal mortality rate in the year 1990 was 40 per 100,000 live births but it was drastically reduced to 12 in the year 2015. This is an example to many countries with unacceptably high maternal deaths. Poor antenatal care, hypertensive disorders of pregnancy and obstetric haemorrhage are the leading causes of maternal deaths. In KSA, rapidly changing attitude of women towards childbirth is occurring through progressively increasing female education and community health programmes in the region. Further reduction of maternal mortality rates in the community is envisaged through greater patient acceptance of medical advice, family spacing and proficient obstetric services. The quantitative and qualitative development of health services has led to improvement of maternal healthcare indicators. The MMR in Saudi Arabia will very soon match the developed countries with advanced health facilities. This article reveals the improvements in general improvement in socio-economic condition, increase in the female literacy rate, shifting from home delivery to hospital delivery, skilled care during pregnancy, labour and puerperium and contraceptive practice and reduction in fertility rate are the key factors contributed in improving the maternal health care in Saudi Arabia.

Keywords: Maternal death, maternal mortality rate, maternal mortality ratio, Kingdom of Saudi Arabia.

INTRODUCTION

The Maternal Mortality Rate (MMR) in the Kingdom of Saudi Arabia (KSA) in the year 1990 was 40 per 100,000 births but it was reduced to 28.4 per 100,000 live births during the twenty-year period from 1983 to 2002 [1]. It was further reduced in the subsequent years. In the year 2008, it was 24 and came down to 12 in the year 2015[2].

This is a remarkable achievement. This article analyses factors contributed to the drastic reduction of maternal mortality in Kingdom of Saudi Arabia.

Maternal death or maternal mortality

Saudi Arabia is the second largest Arab country, with a population estimated at 32.9 million, growing at 2%, in 2015[3]. The population density is 14.6 inhabitants per square kilometre, with 83% of the Saudi population living in urban areas. Youth below 30 years old accounted 54% of the total population in 2017, compared to 67% in 2000. The nationals made up 65.7% of the population in the country in 2015 [4].

The Saudi unemployment rate had reached around 5.6% in the second half of 2015, with women facing the biggest share of unemployment at 21.4% compared to only 2.4% for men. In addition, cultural restrictions have made it difficult for Saudi women to enter into the workforce, where women national unemployment rate registered 33.8% in the second half of 2015 compared to only 5.3% for men[5]. However, the government has attempted to create more job opportunities for women by adjusting the work environment.

Maternal death or mortality is defined by the World Health Organization (WHO) as the death of a woman while pregnant or within 42 days of termination of pregnancy, irrespective of the duration and site of the pregnancy, from any cause related to or aggravated by the pregnancy or its management but not from accidental or incidental causes[6].

Maternal mortality is the quality index and reflects the health care of the country [7]. Maternal mortality data reflect the health care status of any given country in general and the efficiency of health care to

women in particular [8]. Maternal mortality is an important indicator which reflects the health status of a community. It can be calculated by

- Maternal mortality ratio (MMR),
- Maternal mortality rate (MMRate), and
- Life time risk of maternal death.

(a)The maternal mortality ratio (MMR) is calculated by dividing recorded (or estimated) number of maternal deaths by total recorded (or estimated) number of live births in the same period and multiplying by 100,000. The measurement requires information on pregnancy status, timing of death (during pregnancy, childbirth, or within 42 days of termination of pregnancy), and cause of death. The MMR is a key performance indicator for efforts to improve the health and safety of mothers before, during, and after childbirth per country worldwide.

The maternal mortality ratio should not be confused with the maternal mortality rate (the number of maternal deaths in a population divided by the number of women of reproductive age).

(b)Maternal Mortality Rate, which is the number of maternal deaths (direct and indirect) in a given period per 100,000 women of reproductive age during the same time period. The maternal mortality rate captures the likelihood of both becoming pregnant and dying during pregnancy or the puerperium (six weeks after delivery).

The rate is a compound measure of the level of fertility and risks associated with each pregnancy. Any intervention lowering fertility will automatically lower the maternal mortality rate but not necessarily the ratio [9].

(c)Lifetime risk of maternal death, which considers the probability of female infants growing up to adulthood and eventually dying of maternal causes (i.e. cumulative loss of life due to maternal death over the female life course). The latter takes into account competing causes of death in the estimation of risk and provides a summary measure of the impact of maternal mortality [10].

From 1990 to 2015, the global MMR decreased 30.6% from 280.4 (95% uncertainty interval (UI): 262.6–299.0) to 194.7 (172.6–233.2) In the year 1990 there were 579,000 births, 270 maternal deaths the MMR was 40. In the year 2000, 566,000 births, 130 maternal deaths and the MMR were 23. In the year 2015, there were 619,000 births, 72 maternal deaths and the MMR was drastically reduced to 12 [11].

Contributory factors causing maternal deaths in ksa

The maternal mortality in the Maternity and Children Hospital, Riyadh, during the years 1978-1980 was 52 per 100 000 births, when the total births were 55 428. The main avoidable factor was failure by the patient to seek medical care. Much could be done to reduce deaths due to hemorrhage by improving blood transfusion facilities in the peripheral hospitals. Adequate health education, especially of rural women and their midwives, is a crucial factor in improving the maternal death rate for the country as a whole [12].

During the three year study period 1410H and 1412H (35 months on the Gregorian calendar) and covered hospitals all over the Kingdom of Saudi Arabia, there were 880,248 deliveries and 155 maternal deaths, giving a maternal mortality ratio (MMR) of 17.6 per 100,000 births. Direct deaths were 105 (68%); indirect deaths were 34 (22%) and nonmaternal deaths were 16 (10%). The highest number of deaths occurred among the illiterate females (76%) and among the unskilled (67%) and economically underprivileged with a family income of less than SR 2000 per month (38%) [13].

A three year maternal mortality survey in Saudi Arabia has identified the various epidemiologic risk factors for maternal deaths. Unbooked, uneducated and economically underprivileged females were at increased risk of maternal death, especially more than 7th pregnancy, were found to be at increased risk of maternal death. The deaths were mostly due to hemorrhage, pulmonary embolism and uterine rupture. In Saudi Arabia, there are contradictory risk factors for maternal death; e.g. low female literacy rate, early marriage and unregulated high fertility [14].

Increasing maternal age, parity, low socioeconomic status, hemorrhage, pulmonary embolism, ruptured uterus and hypertensive disorders of pregnancy, in that order [15]

In a twenty-year survey at the King Faisal University Hospital, Al-Khobar, Eastern Saudi Arabia, the leading cause of death was haemorrhage in seven (43.75%) patients, followed by pulmonary embolism in four (25%) and general anaesthesia in two (12.5%) mothers. The risk factors noted were maternal age 35 years and parity 5 coupled with iron deficiency anaemia. The main avoidable factors were failure of the patients to seek timely medical care and to follow medical advice. More than half the number of direct obstetrical causes of death was thought to be preventable. A rapidly changing attitude of women towards childbirth is occurring through progressively increasing female education and community health programmes in the region. Further reduction of maternal mortality rates in the community is envisaged

through greater patient acceptance of medical advice, family spacing and proficient obstetric services[16].

The most dominant cause of maternal deaths in Saudi Arabia was obstetric haemorrhage. Together with haemorrhage due to uterine rupture and abortion, it contributed to 43% of direct maternal deaths. Advanced age and high parity were specific risk factors for deaths due to haemorrhage. Females of 35 years and over contributed to 38% of deaths due to haemorrhage and an equal number was contributed by grand multipara (more than para 5). Although the association of haemorrhage with age and parity has not been confirmed by some studies Saudi Arabia showed a prevalence of anaemia is 41.3% in 2008 in the eastern province [17].

The advancing gestational age is significantly increased the risk for anemia, which is similar to the findings in the other study in conducted in Saudi Arabia [18]. In Saudi Arabia, approximately 26% of females delivered at home [19].

Social customs of early marriage, unregulated high fertility, a high proportion of elderly grand multipara and lower literacy rate among females are generally considered as epidemiologic high risk factors for maternal mortality. Socio-Cultural Factors- socio-cultural factors affect maternal mortality in large scale. Culture and religion do not only exert significant impact on women socio-economic status but also influence their treatment seeking behaviour pattern even during childbirth [20].

Another interesting study found that employed pregnant women in Saudi Arabia, and particularly those with inflexible work environments, more often have inadequate antenatal care and poor pregnancy outcome when compared with housewives with the same level of education .Based on these findings, the authors recommended that maternity health care providers require specific training programs on occupational medicine to help improve employed pregnant women's health [21].

WHAT ARE THE KEY ACTIVITIES WHICH REDUCED MATERNAL DEATHS IN SAUDI ARABIA?

The significant factors that improved the maternal health in Saudi Arabia are:

- General improvement in socio-economic condition
- Increase in the female literacy rate
- Shifting from home delivery to hospital delivery
- Skilled care during pregnancy, labour and puerperium
- Contraceptive practice and reduction in fertility rate

General improvement in socio-economic condition.

There is a remarkable increase from a \$42 billion GDP in 1970 to the astounding \$753.8 billion in 2014. This is an evidence of the Saudi success story. The \$927 per capita income was symptomatic of the 1970 economy, the rise of this figure to \$54,000 in 2016 demonstrates the forward-thinking plans that the Saudi government has implemented to raise living standards. The Kingdom is a model of successful and inclusive educational strategy. In 1970, only 8 % of the adult population of Saudi Arabia was literate. By 2014, over 94.4 percent of Saudi citizens were considered literate by United Nations standards. Health expenditure in the Kingdom has more than doubled in the past decade to match the Kingdom's 400 hospitals, 2,075 primary health centres, and 850 private clinics. The government's plan is to proceed with the construction of 56 new and 51 replacement hospitals and 750 primary health centers in the coming five years. The introduction of the internet in 1999 set in motion the change process for Saudi society and women in particular. It provided them with knowledge, entertainment and a private place [22]

Increase in the female literacy rate

The keen efforts exerted by the State in the area of eradication of male and female illiteracy have led to the reduction of male illiteracy rate to (9.10%) in 1999, while it was (13.76%) in 1997; and female illiteracy rate to (29.85%) in 1999, while it was (34.33%) in 1997. Thereupon, total illiteracy rate has become (19.47%), previously was (23.92%) . The number of illiterates aged 10-14 years was reduced from 27596 in 1993 to 9617 in 1999. It is expected that illiteracy will be totally eradicated by the year 2025[23].

The new social, political and economic climate in Saudi Arabia is a sign of a healthy socio-cultural development. They have been transferred from being dependent on the family system to being independent individuals. . The initiatives currently underway also recognize the role of Saudi women in the economic, political and social development of the Kingdom.

Saudi Arabia has made significant strides in the education sector. Adult literacy rates soared to 94.8% in 2015, up from 79.4% in 2000. In the same context, primary enrolment rates increased from 93.1% in 2005 to 108.7% in 2014 and the Gender Parity was maintained at the primary level. Remarkably, tertiary gross enrolment rates witnessed a considerable growth from 22.2% in 2000 to 61.6% in 2014, the highest rate among the Arab countries, as a result of the Government commitment to promoting education, especially at the tertiary level. Besides, the tertiary Gender Parity Index (GPI) scored 1.0 in 2014.[24]

Over 50 percent of Saudi university graduates are women at present and the Kingdom will continue to develop their talents

- Shifting from home delivery to hospital delivery Until the beginning of 1990s, around 80 to 90% of Saudi women in rural areas and 40% in urban areas gave birth at home with untrained female relatives. This preference was influenced by several factors. Female education was limited. Most of the women do not aware the risks to women and babies. In addition, women of the low socio-economic status and could not pay for additional services. There were linguistic and cultural barriers between women and nurses or nurse midwives who worked at the Primary Health Care [25].
- Skilled care during pregnancy, labour and puerperium.

The proportion of pregnant women provided with healthcare by health professionals increased from 90% in 2000 to 98% in 2010.[26]

A survey in 1995 documented the preferences of 6306 Saudi women, who gave birth over five years in hospital or at home, as well as how often antenatal and postnatal care were attended by those women and who was in attendance at the birth. All of these variables were measured in relation to the women's age, their level of education, their husband's level of education, rural or urban residency, and geographical location. The findings of this survey revealed that Saudi women's attendance at antenatal care was 86% overall, where 37% of the women had one to two visits and 25% of them had three or four visits; that 85% of these visits were attended by the physician, and 30% of women thought they did not need antenatal care even though some of them attended anyway. Additionally, 86% of births were at the hospitals and 90% were attended by physicians or nurses, while 88% of postnatal care was offered by physicians [27].

The quantitative and qualitative development of health services has led to improvement of maternal healthcare indicators. The proportion of pregnant women provided with healthcare by health professionals increased from 90% in 2000 to 98% in 2010. The proportion of births attended by health professionals increased from 88% to 97%. Maternal mortality per 100,000 live births declined from 48 to 14 over the same period.

Contraceptive prevalence

The use of modern contraceptive methods had increased in Saudi Arabia. In a study of 215 women, it

was found that 36% were using oral contraceptives and 20% were on IUCD. In other words 56% were using modern methods [28].

Adoption of policies of a low fertility rate, the control of timing and spacing of pregnancies, and greater access to family planning can help to reduce the maternal mortality rate by reducing the number of pregnancies. Women need access to medical and social services. Interventional medicine is essential in order to provide rapid access to emergency obstetrical care, including treatment of hemorrhages, infections, hypertension, and obstructed labor. It is also important to ensure that skilful health care provider e.g. a midwife or doctor is attending every delivery. They should be supported by life-saving interventions, facilities like anaesthesia and surgery and transportation to medical centers.

Total fertility rate (TFR) This entry gives a figure for the average number of children that would be born per woman if all women lived to the end of their childbearing years. TFR is a more direct measure of the level of fertility. TFR in Saudi Arabia was 7 per woman in the year 1961, 6 in 1980, 4 in the year 2000 and the estimated TFR in the year 2017 was 2.09 per woman [29].

The way forward

The MMR in Saudi Arabia compares favourably with that of developed countries and the oil-producing Gulf states. Improving the number of booked patients, especially older grand multiparas, increasing the availability of banked blood and adopting a positive approach towards life-saving surgery are likely to reduce maternal deaths.

Efforts must therefore be made on the part of health care providers, hospital managers, individuals, and government to maintain the current downward trend in our maternal mortality ratio. This can be done by setting up a confidential inquiring into maternal deaths, increase beds in the ICU of this hospital, and ensuring availability of health professionals trained and experienced in obstetric complications may significantly reduce maternal mortality in Saudi Arabia

The health care system in Saudi Arabia is governed by the Ministry of Health (MOH). It constitutes public and private sectors, in which public hospitals are managed by either the ministry of health or other government agencies. MOH hospitals provide free healthcare services for the citizens of Saudi Arabia.

The Ninth Development Plan adopted a number of objectives to improve maternal health. These objectives include, inter-alia, the following: continuing to enhance health care programs and provide high-

quality health care to the pregnant mothers during and after the period of pregnancy, achieving universal access to reproductive health care, ensuring that all births are attended by health professional, immunizing all mothers against neonatal tetanus, and promoting health awareness programs. In light of these directions of the Ninth Plan and the health programs under way, the MDG5 is expected to be achieved ahead of the target year [30].

The government of the Kingdom of Saudi Arabia (KSA) has recently announced its vision for 2030. This vision is organised into a number of themes: a vibrant society, a thriving economy and an ambitious nation. The vision highlights the goals to be achieved by that year. One of the key goals is improving the quality of health services delivered to the community from the capacity of a developing country to the level of a modern economy. This will improve the health care significantly and reduces the maternal mortality substantially

CONCLUSION

The maternal mortality in KSA had significantly reduced due to the increased female literacy rate, organised antenatal care, pregnancy and delivery care by skilled health workers and the commitment of the devoted government to improve the health of the nation. The MMR in Saudi Arabia will very soon match the developed countries with advanced health facilities.

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