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RESEARCH ARTICLE

MATERNAL AND PERINATAL OUTCOMES AMONG ECLAMPTIC PATIENTS ADMITTED TO AL-THAWRA HOSPITAL, SANA'A CITY, YEMEN

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ABSTRACT

Introduction: Eclampsia is a potentially fatal disorder of pregnancy with a significant maternal and fetal morbidity and mortality rate.

Objective: To investigate the incidence of eclampsia and its maternal and perinatal outcome of eclamptic patients admitted to Al-Thawra Modern General Hospital.

Methods: A descriptive, cross-sectional study was carried out from April 2015 to March 2016. Data were collected as a face to face interview with eclamptic patients or their relatives. The questionnaire was used to collect data regarding present and past medical history. Data were analyzed using SPSS.

Results: Out of 11923 deliveries, 62 women were suffered from eclampsia representing an incidence rate of 5.2 cases per 1000 deliveries. Eclampsia was more common among primigravida (61.3%) especially among age group twenties (59.6%). More than two third of patients came in the antepartum period (64.5 %) with estimated gestational age of more than 37 weeks. Thirty-five of eclamptic women (56.5%) delivered by cesarean section, while seventeen patients (27.4%) delivered vaginally. Most of the eclamptic patients (87.1%) were illiterate or with a primary school education and had either low antenatal care visits or have not received any at all. There was5 maternal death, given a case maternal fatality of 8% with a maternal mortality rate from eclampsia of 42/100 000. About thirty-one percent had at least one serious complication. Of 21 perinatal death, given perinatal mortality rate 33.9%, of which 12 (19.4%) were early neonatal death and 9 (14.5%) were stillbirth. The leading causes of early neonatal death were prematurity and birth asphyxia.

Conclusion: The frequency of eclampsia and it is associated morbidity is still high due to bad maternity health services and lower coverage of antenatal care.

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INTRODUCTION

Eclampsia is defined as the occurrence of convulsions and/or coma with signs of preeclampsia during pregnancy or postpartum in pregnant women and not caused by epilepsy or other convulsive disorders. Its incidence varies widely from 1 in 100 to 1 in 3448 pregnancies (Richards *et al*., 1986; Moller *et al*., 1986). The incidence of eclampsia and its complications have decreased significantly in developed countries, while it's still high in developing countries (Abalos *et al*., 2014; Knight, 2005).

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In developed countries, the incidence has changed significantly, e.g in theunitedkingdom, the incidence have decreased from 4.9 cases per 10 000 maternities to 2.7 cases per 10 000 births (Knight, 2005; Douglas and Redman, 1994). Pregnancy complicating eclampsia is a rare, however life-threatening obstetrics complications and is associated with increased risk of maternal morbidity and mortality (Douglas and Redman, 1994; Khan *et al*., 2006; Mattar and Sibai, 2000; López-Liera, 1992). It is estimated that about 13% of maternal mortality is associated with hypertensive disorders of pregnancy, particularly eclampsia. Maternal mortality is asensitive indicator of the status of women, their access to health care and the adequacy of the health care system in responding to their need (World Health Organization, 1998). Eclampsia and its associated morbidity and mortality

areincrease in women with maternal age over 35 years, nulliparity, multiple pregnancies, poor socioeconomic conditions and poor education (Alves *et al*., 2013; Duckitt and Harrington, 2005; Schneider *et al*., 2011). Also, eclampsia is associated with increased perinatal mortality and morbidity including prematurity, intrauterine growth retardation, and fetal hypoxia (Abalos *et al*., 2014). There is astrong relation between eclampsia and antenatal care, eclampsia was inversely related to antenatal care. Eclampsia is a preventable disease if the patient gets regular effective antenatal care. Increased prenatal care visits during the third trimester facilitate early detection of preeclampsia may prevent most eclampsia preceded by hypertension and proteinuria (Sibai *et al*., 1993). In Yemen, there are no systematically collected population-based data that allow measuring the incidence of eclampsia, morbidity and mortality rate.

Aim & objective

The objective of this study was to investigate the incidence of eclampsia and its maternal and perinatal outcome of eclamptic patients admitted to Al-Thawra Modern General Hospital.

MATERIAL AND METHODS

A descriptive, cross-sectional study was carried out in the obstetrics and gynecology department, at Al-Thawra Modern General Hospital (AMGH),Sana'a city over one year period from April 2015 to March 2016.The hospital is a teaching and referral hospital in Yemen. It provides primary, secondary and tertiary health care. The department of obstetrics and gynecology has all facilities that servethe patient including blood bank, laboratory and a well expert staff. Our study population included all pregnant women admitted to AMGH for delivery during the study period. Women with convulsions and preeclampsia in pregnancy or during labor or in puerperium were included in the study. Data were collected as a face to face interview with eclamptic patients or their relatives used questionnaire. Past history of hypertension, proteinuria, edema of the lower limb and past obstetrics history were taken. Temperature, pulse, blood pressure gestational age, time passed after delivery, convulsion in relation to partand their nature, headache, vomiting, visual defect, jaundice, pallor, abdominal pain, proteinuria, lower limb swelling, renal problems, and bleeding per vagina were recorded. Physical examination of the lungs for pulmonary edema, aheart for abnormal sounds or murmurs, nervous system for abnormal reflexes, abdominal examination for fetus presentation, liquor amount, and vaginal examination for pelvic capacity, thedegree of cervical dilatation, effacement, and station of presenting part were performed. Mode of delivery (vaginal/abdominal route) was decided according to the bishop score, patient's status, and fetal condition.

Patients after delivery were observed in intensive care unit for one-two days and followed up for ten days. All patient with convulsion due to other causes i.e. epilepsy were excluded. Eclampsia was defined (Douglas and Redman, 1994) according to the criteria used in 1992. Any woman with convulsion(s) during pregnancy or in the first 10 days postpartum, together with at least two of the following features within 24 hours of the convulsion(s): 1. Hypertension (a booking diastolic pressure of less than90 mmHg, a maximum diastolic of more than or equal to 90 mmHg and a diastolic increment of 25 mmHg). 2. Proteinuria (at least 1 protein in a random urine sample or 0.3 g in a 24-hour collection). 3. Thrombocytopenia (platelet count of less than 100×10^9/l). 4. Raised plasma alanine aminotransferase concentration (42iu/l) or an increased plasma aspartate aminotransferase concentration (42 IU/l). The seizures associated with eclampsia may appear before, during, or after labor. Time onset of convulsions was classified based in relation to part period: antepartum (convulsions appear before the onset of labor), intrapartum (convulsions appear during delivery), and postpartum (convulsions appear after delivery and before the end of puerperium).

Maternal education defined as the numbers of years of schooling. Education was classified according to UNESCO international standard classification[12]. Individuals allocated to one of five groups which correspond to the level of education expected after a given number of years of education: no education or illiterate(zero years of education); primary (between one and six years of education); lower secondary (between seven and nine years of education); upper secondary (between 10 and 12 years of education); post-secondary/tertiary (more than 12 years of education). Maternal outcome was measured in terms of death or complications like cerebral hemorrhage, cardiopulmonary compromise, renal failure, and hematological disorders HELLP or disseminated intravascular coagulation (DIC). Perinatal morbidity (pre-term, low birth weight, IUGR) and mortality (stillbirths and neonatal deaths) were also recorded. Pregnancy care consists of prenatal (before birth) and postpartum (after birth) healthcare for expectant mothers. Prenatal care defined as dietary and lifestyle advice for pregnant woman received at the prenatal clinic, weighing, initial laboratory investigation and examination for problems of pregnancy by obstetrics.

Pregnant women who received prenatal care less than twice were classified into no or irregular prenatal care. Women who received health care during periodic prenatal visits carried babies to term, and then delivered at the hospital were classified as regular prenatal care. Data on maternal age, the level of education, parity, residence, time of onset of convulsions (antenatal, intrapartum, postpartum), antenatal care (ANC), mode of delivery, maternal and perinatal mortality and comorbidity were recorded. The Statistical Package for Social Sciences (SPSS) 18.0 was used for data processing and analysis. Descriptive statistics (percent and frequency) was used. The method for calculating incidence rate as a follows; number of new cases of eclampsia during a period of study divided on the number of the population multiplied by 1000. Maternal mortality rate was calculated as a follows; number of deaths assigned to pregnancy-related causes during a given time interval divided on the number of live births during the same time interval multiplied by 100,000. Results are presented in tables and graphs. The study was approved by the Ethics Committee of AMGH, Sana'a. Written consent was obtained from patients and their relatives.

RESULTS

Out of 11923 deliveries, 62 women were suffered from eclampsia representing an incidence rate of 5.2 cases per 1000 deliveries. Eclampsia was high among those who were in the twenties (59.6%) than in those who were more than 35 years (19.4%) Table1. During the study period, the majority of patients (61.3%) were nullipara, 14 (22.6%) patients had less than 5 children, and only 10 (16.1%) patients were grandmulti.

Table 1. Age distribution among eclamptic patients (n=62)

Age (in Year)	n(%)
< 20	7 (11.3)
20-30	37 (59.6)
31-35	6 (9.7)
>35	12 (19.4)

The majority of eclamptic patients (87.1%) had received either inadequate or no antenatalcare at all and 8 cases (12.9%) had regular antenatal care (Table 2). More than ninety percent of eclamptic patients (90.3%) were illiterate or just having primary school education and only 6 cases (9.7%) have more than primary education.

Table 2. Antenatal care among eclamptic patients (n=62)

Antenatal care	n(%)
Irregular	54 (87.1)
Regular	8 (12.9)

During our study, most of the eclampticpatient came from rural areas (80.6%) and only 12 (19.4%) cases came from urban areas. Most of the patients had eclampsia at estimated gestational age of ≥37 weeks (64.5%), whereas 22 cases (35.5%) were before 37weeks (Table3).

Table 3. Gestational age of eclamptic patients (n=62)

Gestational age	n(%)
≥37 week	40 (64.5)
< 37 week	22 (35.5)

About sixty-five percent (64.5%) of eclamptic patientscame with antepartum eclampsia, 19.4% with postpartum and only 16.1% of eclamptic mothers with intrapartum (Table 4).

Table 4. Time of onset of convulsion in relation to partum period (n=62)

Period	n (%)
Antepartum	40 (64.5)
Intra partum	10 (16.1)
Post-partum	12 (19.4)

Caesarean section was the commonest mode of labor carried out in 35 (56.5%) patients followed by spontaneous vaginal delivery in 17 (27.4%) patients and delivery by induction was performed in 10 (16.1%) patients (Table 5).

Table 5. Mode of delivery among eclamptic patients (n=62)

Mode of delivery	n (%)
Cesarean	35 (56.5)
Vaginal delivery	17 (27.4)
Induction delivery	10 (16.1)

Complications were observed in 19 (30.7%) eclamptic patients. About thirty-one percent of eclamptic patients had at least one serious complication. Pulmonary complications and renal failure both were seen in 5 (26.3%) patients. Pulmonary complications included pulmonary embolism (10.5%) and pulmonary edema (15.8%). The other maternal complications were HELLP syndrome (21.1%), abruption placentae (10.5%), DIC (10.5%), and cerebrovascular accident (5.3%) (Table 6).

Table 6. Complications of eclamptic patients (n=19)

Complications	n (%)
Pulmonary	5 (26.3)
Renal failure	5 (26.3)
Abruptions placentae	2 (10 5)
DIC	2 (10.5)
HELLP syndrome	4 (21.1)
CVA	1 (5.3)

Maternal death from eclampsia occurred in 5 cases with a case fatality rate of 8% with a maternal mortality rate from eclampsia of 42 cases per 100, 000. There was 21 perinatal death, given perinatal mortality rate 33.9%, of which 12 (19.4%) were early neonatal death and 9 (14.5%) were stillbirth. All of perinatal death except two cases occurred among women who had antepartum and intrapartum eclampsia. The most causes of early neonatal death (50%) was prematurity, followed by birth asphyxia (25%), meconium aspiration (16.7%), and intrauterine growth restriction (8.3%), (Table7). In antepartum eclampsia, the perinatal mortality was (35%) most of them early neonatal death and in intrapartum, most of them were stillbirth.

Table 7. Causes of early neonatal death (n=12)

Causes	n(%)
Prematurity	6 (50)
Birth asphyxia	3 (25)
IUGR	1 (8.3)
Meconium aspiration	2 16.7)

DISCUSSION

The incidence of eclampsia in this study was 5.2 cases per 1000 deliveries, which is similar to the figure reported for developing countries. Eclampsia in this study was more common in women in their twenties especially in women younger than 25 years and older than 35 years, primigravida, women with poor antenatal care, antepartum period, and illiterate women.

A systematic review on pre-eclampsia and eclampsia performed in 2013, reported that the overall incidence of eclampsia was 0.28% (two cases per 1000 delivery) with wide variations across countries in the different regions. The incidence of eclampsia in this studywas13 case per1000 deliveries in Nigeria, 4 cases in India, and Pakistan, 8 cases in Angola and 5 cases in Niger, Cambodia, and Nicaragua[3]. Although the incidence of eclampsia in our study is similar to the figures reported from developing countries it's still higher than that reported in developed countries. However, it is possible that the apparent differences observed in the incidence are due better compliance with antenatal clinic attendance, easier access to obstetrics care, and a higher level of maternal education in developed countries as compared with developing countries (Tuffnell *et al*., 2005; McAlister and Baskett, 2006; Karlsen *et al*., 2011). Kazushi W *et al* reported eclampsia in 80% of primiparous women[16]. Authors confirmed that primiparity was important torisk factor for eclampsia. Another study also highlighted primiparity as an important risk factor for eclampsia (Abalos *et al*., 2014; Kullberg *et al*., 2002; Rani *et al*., 2009). These studies are consistent with our study. Eclampsia is closely related to low antenatal care attendance and low maternal education (McAlister and Baskett, 2006; Karlsen *et al*., 2011).

As with most published studies (Kazushi Watanabe *et al*., 2013; Kullberg *et al*., 2002; McAlister and Baskett, 2006; Mattar *et al*., 2000; Katz *et al*., 2000), eclampsia in the present work was associated with bad antenatal care (87 1%) and lower educational levels (90%). The incidence of eclampsia in developed countries has ranged from 38% to 53% in antepartum, 18% to 36% in intrapartum, and 11% to 44% in postpartum (Mattar *et al*., 2000; Katz *et al*., 2000; Chames *et al*., 2002; Lee *et al*., 2004; López-Liera, 1992). In this study, most of the patients developed convulsions in the antepartum period (64.5%), a similar findings reported in studies from developing countries where there arebad health care facilities and only 46% of women in low-income countries benefit from skilled care during childbirth (UNESCO, 1997) (Raji *et al*., 2016; Rani *et al*., 2009; World Health Organization, 2012).

We found intrapartum eclampsia in16.1%, similar results reported in developing countries (Alves *et al*., 2013; Swain *et al*., 2016). Eclampsia in intrapartum period could be due to raised blood pressure associated with labor; this reflects that these patients may receive less than optimum care which is responsible for the development of convulsion during labor. Most of the women in our series were delivered by cesarean which is lower than that reported by Lee *et al*. (2004) (79%), which is due to themajority of these women were primigravida with an unripe cervix in their early gestational age, as a consequence, the incidence of cesarean births is high. Eclampsia is associated with increased rates of maternal morbidities and it's responsible for nearly 50,000 annual maternal deaths[6]. In our study 30.7% of eclamptic women had life- threating complication including pulmonary (26.3%), renal insufficiency (26.3%), HELLP syndrome (21.1%), DIC (10.5%), abruptions placentae (10.5%), and CVA (5.3%).

Previous studies reported maternal complications ranged from 7 to 11% for DIC and 7 to 10% for abruption placentae (Douglas and Redman, 1994; Mattar and Sibai, 2000; López-Liera, 1992), which is consistent with our results. In this study, the proportion of others potentially serious conditions such as pulmonary, renal, neurologic disorders, and HELLP syndrome are similar to the finding that were observed by Abalos E *et al*. (2014). The proportion of maternal deaths due to eclampsia in the present series were 8%, a similar result found in studies from developing countries but a lower proportion of 1.6% reported in Japan and 0 to 1.8% found in developed countries (Richards *et al*., 1986; Moller *et al*., 1986; Knight, 2005; Douglas and Redman, 1994; Kazushi Watanabe *et al*., 2013; Mattar *et al*., 2000; Katz *et al*., 2000; Chames *et al*., 2002; López-Liera, 1992). Pregnancies complicated by eclampsia are also associated with increased rates of perinatal mortality and morbidities. The perinatal mortality in recently published literature (Douglas and Redman, 1994; Kullberg *et al*., 2002; Sibai, 1990) ranged from 5.6% to 11.8%. The reported perinatal mortality in the present study was 33.9%. This result is near that reported in studies from developing countries (Swain *et al*., 2016; El Nafaty *et al*., 2004; Barbosa *et al*., 2015; Onuh and Aisien, 2004; Hussein Attia Sharara, 2009) but it's higher than 0.14% reported in developed countries (Douglas and Redman, 1994; López-Liera, 1992; Barbosa *et al*., 2015). Additionally, our results were in agreement with Chesly L.C who reported that antepartum and intrapartum eclampsia carries much worse prognoses for the fetus than post-partum eclampsia birth (stillbirth rate 21%) and 103 (15%) were early neonatal death rate (Chelsey *et al*., 1968).

Conclusion

We concluded that,the frequency of eclampsia and it is associated morbidity in the present study is still high. Theincidence rate of eclampsia was 5.2 per 1000 deliveries. Eclampsia was high among those who were in the twentiesthan in those who were > 35 years. A case fatality rate was 8% with a maternal mortality rate of 42 per 100, 000 and the perinatal mortality rate was 33.9%.

Recommendations

We recommend that, the need for increased efficiency of available pregnancy related services in order to reduce pregnancy-related mortality and morbidity from eclampsia. Antenatal care and antenatal care interventions are beneficial ways to give women the greatest chance of having safer pregnancy.

Authors Contribution

IA: Study concept, Study designing, Data collection, analysis, Manuscript writing; RA: Literature search, Study concept, Study designing,Data collection, analysis, Manuscript writing; NA: Manuscript writing, Manuscript editing and review.

REFERENCES

Abalos, E., Cuesta, C, Carroli, G., Qureshi, Z., Widmer, M., Vogel, J. *et al*. 2014. Pre-eclampsia, eclampsia and adverse maternal and perinatal outcomes: a secondary analysis of the World Health Organization Multicountry Survey on Maternal and Newborn Health. *BJOG,* 121(Suppl. 1): 14–24.

Alves, E., Azevedo, A., Rodrigues, T., Santos, A.C. and Barros, H. 2013. Impact of risk factors on hypertensive disorders in pregnancy, in primiparae and multiparae. Ann Hum Biol 2013;40:377–84.

Barbosa, I.R., Silva, W.B., Cerqueira, G.S., Novo, N.F., Almeida, F.A. and Novo, J.L. 2015. Barbosa, Isabela Roberta Cruz. Maternal and fetal outcome in women with hypertensive disorders of pregnancy: the impact of prenatal care. Therapeutic Advances in Cardiovascular Disease, 9(4): 140-6.

Chames, M.C., Livingston, J.C., Invester, T.S., Barton, J.R. and Sibai, B.M. 2002. Late postpartum eclampsia: a preventable disease? *Am J Obstet Gynecol*, 186:1174–7.

Chelsey, L.C., Annitto, J.E. and Cosgrove, R.A. 1968. The familial factor in toxaemia of pregnancy. *Obstet Gynecol.,* 32:303-5

Douglas, K.A. and Redman, C.W. 1994. Eclampsia in the United Kingdom. *BMJ*, 309:1395–400.

Duckitt, K. Harrington, D. 2005. Risk factors for pre-eclampsia at antenatal booking: a systematic review of controlled studies. *BMJ 2005;* 330:565–7.

El Nafaty, A.U., Melah, G.S., Massa, A.A, Audu, B.M. and Nelda, M. 2004. The analysis of eclamptic Morbidity and Mortality in the Specialist Hospital Gombe, Nigeria. *J Obstet gynaecol.,* 24(2):142–147.

Hussein Attia Sharara, 2012. A review of eclampsia in Qatar: A twenty-year study (from January 1991-December 2009). *Qatar Medical Journal,* Vol. 2012 2, 6.

Karlsen, S., Say, L., Souza, J.P., Hogue, C.J., Calles, D.L. *et al*. 2011. The relationship between maternal education and mortality among women giving birth in health care

institutions: Analysis of the cross sectional WHO Global Survey on Maternal and Perinatal Health. *BMC Public Health,* 11: 606–616.

Katz, V.L., Farmer, R. and Kuller, J. 2000. Preeclampsia into eclampsia: toward a new paradigm. *Am J Obstet Gynecol,* 182:1389–96.

Kazushi Watanabe, Yoshikatsu Suzuki and Tamao Yamamoto, 2013. The incidence of eclampsia in Japanese women. Hypertens Res Pregnancy, 1:31-34.

Khan, K.S., Wojdyla, D., Say, L., Gulmezoglu, A.M. and Van Look, P.F. 2006. WHO analysis of causes of maternal death: a systematic review. Lancet 2006; 367:1066–74.

Knight, M., 2007.UKOSS. Eclampsia in the United Kingdom 2005. *BJOG* 2007; 114:1072–1078.

Kullberg, G., Lindeberg, S. and Hanson, U. 2002. Eclampsia in Sweden. Hypertens. *Pregnancy*, 21:13–21.

Lee, W., O'Connell, C.M. and Baskett, T.F. 2004. Maternal & Perinatal Outcomes of Eclampsia: Nova Scotia 1981-2000. *J Obstet Gynecol Can,* 26(2):119–123.

López-Liera, M. 1992. Main clinical types and subtypes of eclampsia. *Am J Obstet Gynecol,* 166(1 Pt 1):4–9.

Mattar, F. and Sibai, B.M. 2002. Eclampsia VIII: Risk factors for maternal morbidity. *Am J Obstet Gynecol*., 182:307-12.

McAlister, C. and Baskett, T.F. 2006. Female education and maternal mortality: a worldwide survey. *Journal of Obstetrics Gynaecology Canada,* 28(11):983-990.

McAlister, C. and Baskett, T.F. 2006. Female education and maternal mortality: a worldwide survey. *J Obstet Gynaecol Can,* 28:983–990.

Moller, B. and Lindmark, G. 1986. Eclampsia in Sweden,1976–1980. Acta Obstet Gynecol Scand, 65:307–14.

Onuh, S.O. and Aisien, A.O. 2004. Maternal and fetal outcome in eclamptic patients in Benin City, Nigeria. *J Obstet Gynaecol,* 24:765–768.

Raji, C., Poovathi, M. and Nithya, D. 2016. Prospective study of fetomaternal outcome in eclampsia in atertiary care hospital. *In J Report Contracept Obstet Gynecol* 2016; (12):4329-4s334.

Rani, S.S., Anshu, D. and Nanda, S. 2009. Maternal and Perinatal Outcome in Severe Pre-eclampsia and Eclampsia. J SAFOG (South Asian Federation of Obstetrics and Gynecology) 1(3):25-8.

Richards, A.M., Moodley, J., Graham, D.L. *et al*. 1986. Active management of the unconscious eclamptic patient. *Br J Obstet Gynaecol.,* 93:554.

Schneider, S., Freerksen, N., Maul, H., Roehrig, S., Fischer, B. and Hoeft, B. 2011. Risk groups and maternal–neonatal complications of preeclampsia current results from the national German Perinatal Quality Registry. *J Perinat Med* 39:257–65.

Sibai, B.M. 1990. Eclampsia. VI. Maternal-perinatal outcome in 254 consecutive cases. *Am J Obstet Gynecol.,* 163:1049–55.

Sibai, B.M., Caritis, S.N., Thon, E., Klebanoff, M., McNellis, D., Rocco, L., *et al*. 1993. Prevention of preeclampsia with low-dose aspirin in healthy nulliparous women. The National Institute of Child Health and Human Development Network of Maternal-Fetal Medicine Units. *N Engl J Med.,* 329:1213– 18.

Swain, S., Singh, S., Das, L. and Sahoo, B. 2016. Maternal and perinatal outcome of eclampsia in a tertiary care centre. *Int J Reprod Contracept Obstet Gynecol.* 5(2):384-390.

Tuffnell, D.J., Jankowisz, D., Lindow, S.W., Lyon,s G., Mason, G.C., Rusell, L.F. and Walker, J.J. 2005. Outcomes of severe preeclampsia/eclampsia in Yorkshire 1999/2003. BJOG: *An International Journal of Obstetrics and Gynaecology,* 112: 875-880.

UNESCO International Standard Classification of Education.[http://www. unesco. org/ education /information/nfsunesco/doc/isced_1997.htm].

World Health Organization, 1998. The world health report 1998: life in the 21st century; a vision for all. Geneva WHO, 97.

World Health Organization, 2012. Fact Sheet. May 2012.

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