Naskah Kajian

Pregnancy Related Infection in Indonesia

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Abstract

Indonesia adalah negara kepulauan terbesar di dunia. Jumlah populasi di Indonesia adalah 237.512.352 (Juli 2008). Kematian dan kesakitan ibu masih merupakan masalah utama di Indonesia. Indonesia tidak memiliki sistem statistik vital untuk mengumpulakn informasi secara langsung mengenai indikator-indikator tersebut. Angka kematian ibu (AKI) di Indonesia lebih tinggi dibandingkan dengan sebagian besar negara-negara Asia Tenggara lainnya. AKI di Indonesia mengalami penurunan dari 390 kematian per 100.000 kelahiran hidup pada tahun 1994 menjadi 307 keamtian per 100.000 kelahiran hidup pada tahun 2002-2003. Penyebab utama kematian ibu di Indonesia adalah perdarahan, diikuti oleh eklamsia, infeksi, komplikasi aborsi, dan persalinan memanjang. Wanita hamil dan janin yang dikandungnya rentan terhadap banyak penyakit infeksi. Beberapa diantaranya mungkin serius dan mengancam jiwa ibu, sedangkan yang lainnya dapat mengakibatkan efek pada neonatus. Infeksi-infeksi teratogenik yang dibahas pada artikel ini adalah syphilis, cytomegalovirus, rubella, varicella, measles, mumps and parvovirus. Infestasi parasit yang signifikan terjadi selama kehamilan dengan distribusi yang mendunia. Beberapa agen secara umum lebih sering ditemukan di daerah tropis dan daerah yang belum berkembang di dunia. Melalui kerangka kerja visi Indonesia sehat 2010, sebuah strategi nasional bernama Making Pregnancy Safer (MPS) telah dicanangkan sebagai kelanjutan dari program pemerintah Safe Motherhood untuk mempercepat penurunan angka kesakitan dan angka kematian ibu dan bayi.

Keyword: ***kematian ibu, kehamilan, infeksi, kebijakan Indonesia***

Background

Indonesia is an archipelago in South-east Asia consisting of 17,000 islands (6,000 inhabited) and the equator. Indonesia is in fact the world's largest archipelagic state. The largest islands are Sumatra, Java (the most populous), Bali, Kalimantan (Indonesia's part of Borneo), Sulawesi (Celebes), the Nusa Tenggara Islands, the Moluccas Islands, and Irian Jaya (also called West Papua), the western part of New Guinea. Its neighbor to the north is Malaysia and to the east is Papua New Guinea. The population of Indonesia is 237,512,352 (July 2008 est.).[1,2]

Maternal mortality and morbidity are still major health problems in Indonesia. Indonesia does not have the vital statistics systems to directly collect information on these indicators. Various studies on maternal mortality have shown a relatively high maternal mortality; 450/100,000 live births as per National Household Health Survey known as *Survei Kesehatan Rumah Tangga* (SKRT) in seven provinces (1985), 404/ 100,000 live births as per SKRT in 27 provinces (1992), 384/100,000 live births as per SKRT 1995, and 390/100,000 live births as per Indonesia Demographic and Health Survey (IDHS) 1994. All the surveys

showed that in a 10-year period, there has been only a small change in maternal mortality ratios (MMR).[3,4]

The MMR in Indonesia underwent a decline from 390 deaths per 100,000 live births in 1994 to 307 deaths per 100,000 live births in 2002-2003. Nonetheless, as a result of complications during childbirth or unattended childbirths, around 20,000 mothers still die every year. With the current trend, it will be difficult to achieve the MMR target. BPS projects that the MMR will drop only to 163 deaths per 100,000 live births by 2015, while the target is 102.[5]

Maternal mortality in Indonesia is high compared to most South-East Asian countries. In 2005, when Indonesia's estimated MMR was 262 per 100,000 live births, in Malaysia it was 39 per 100,000 and in Singapore it was 6 per 100,000. The lifetime risk of a mother dying related to childbirth in Indonesia is estimated to be 1 in 65, as compared to 1 in 1,100 in Thailand.[6,4]

Among the annual five million deliveries in Indonesia, an estimated of 20,000 women die due to complications related to pregnancy and delivery. With the current trends, the Millennium Development Goal (MDG) target is unlikely to be achieved unless extra efforts are made to reduce the MMR.[4]

The chief cause of maternal death in Indonesia is bleeding, followed by eclampsia, infection, and the complications of abortion and prolonged labour. These deaths occured more in births handled by traditional birth attendants rather than by medically trained health-care professionals.[6]

Another important factor of maternal mortality is, sepsis often occurs due to poor hygiene during delivery or untreated sexually transmitted infections. It accounts for 10 per cent of maternal deaths in Indonesia, as compared to 15 per cent globally. Early detection of infection during pregnancy, clean delivery and proper post-partum care are crucial to address the problem of sepsis. Prolonged labour accounts for 9 per cent of maternal deaths in Indonesia, as compared to 8 per cent globally.[4]

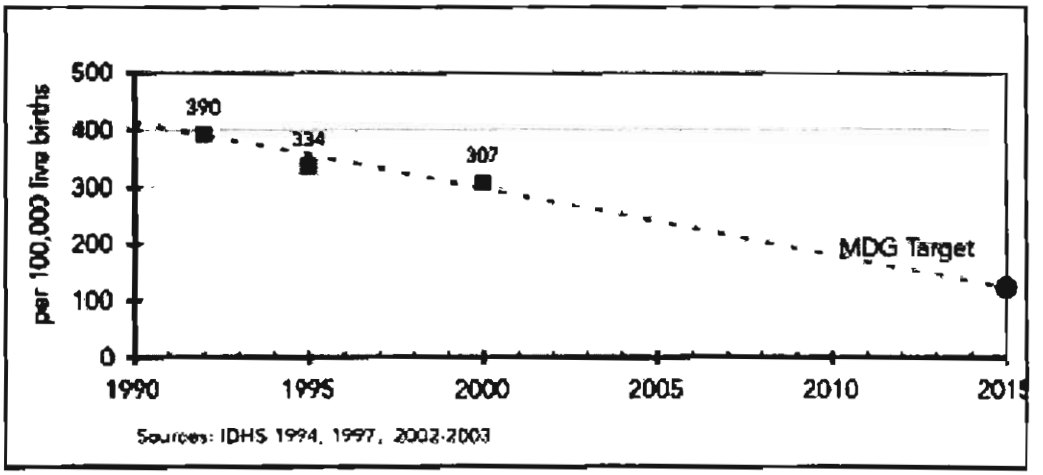

Figure 1. Maternal mortality ratio (MMR) trend in Indonesia [4]

The risk of maternal mortality can be aggravated by anaemia and infectious diseases such as malaria, tuberculosis, hepatitis and HIV/AIDS. In 1995, the prevalence of anaemia was alarmingly high-51 per cent among pregnant mothers and 45 per cent among post-partum mothers. Anaemia in pregnant mothers affects both the mother and the child, increasing the risk of miscarriage, prematurity and low birth weight, and often contributing to maternal and infant mortality. Chronic energy deficiency is another contributing factor in maternal mortality. In 2002, 17,6 per cent of women at reproductive age suffered from chronic energy deficiency.[7] The socio-economic status of the family, education level, culture and access to transportation and health facilities also influence maternal morbidity and mortality. These factors create the so-called "Three Delays": the first, a delay in detecting danger signs during pregnancy, delivery and post-partum stages and in making decisions to access maternal and neonatal health services; the second, a delay in reaching health facilities due to geographical conditions and lack of transportation; and the third, a delay in receiving adequate health services.[4]

Addressing complications during childbirth is one of the keys for reducing MMR. The three primary interventions that are recommended are improving antenatal services, attendance of healthcare workers during childbirth, and provision of basic, as well as comprehensive services, for obstetric emergencies. In case of antenatal services, aside from increasing the frequency of visits, improvements in the quality of services are also needed. The services should cover routine pregnancy examinations and the provision of iron tablets and vitamin A capsules to mothers during and after pregnancy.[4]

Immunological Changes in Pregnancy

The pregnant woman and her fetus are susceptible to many infectious and infectious diseases. Some of these may be serious and life-threatening for the mother, whereas others may have a profound impact on neonatal outcome by virtue of a high likelihood of fetal infection.[8]

There is much speculation concerning possible effects of decreased immune system during pregnancy. These effects are engendered by maternal tolerance for the foreign – tissue antigens of the semiallogeneic fetal 'graft'. Although there are subtle changes in circulating immunoglobulin levels in pregnancy these appear to be of no consequence.[7]

Bacteria, viruses, or parasites may gain access transplacentally during the viremic, bacteremic, or parasitemic stage of maternal infection. They may also cross the intact membranes. Fetal infections may develop early in pregnancy to produce obvious stigmata at birth. Conversely, organisms may colonize and infect the fetus during labor and delivery. Thus, preterm rupture of membranes, prolonged labor, and manipulations may increase the risk of neonatal infection.[8]

Various antibodies have been demonstrated in the umbilical cord blood. Active immunity in the mother may be attempted to protect her against a specific disease or to protect the newborn infant.[7]

Pregnancy does not alter the susceptibility of the woman to infection by viral or microbial agents. The effect of the infection depends on the virulence of invaders and the resistance of the patient. In general, pregnancy does not alter resistance, the exception being anterior poliomyelitis.[5]

Studies of many viral and microbial infections show that there is a positive correlation between the severity of the mother's infection and the effect it has on the fetus.

The more severe the infection, and the earlier it occurs in pregnancy, the greater is the risk of abortion or stillbirth. This applies whether the infection is due to influenza, measles, rubella, poliomyelitis, smallpox or to bacterial infections such as enteric fever, cholera or pneumonia. With potent chemotherapeutic and antibiotic agents available, severe infections due to bacteria are rare, but no decline has occurred in the incidence of viral infections.[9]

In the consideration of fetal disease, placental permeability is of the greatest importance. The transfer of substance from mother to fetus has been shown to be a very complex process. According to Eastman, whether or not a substance traverses the placental barrier depends upon the following factors:

1. The type of placenta concerned, a circumstance which varies with the species of animal
2. The stage of pregnancy
3. The molecular weight of the substance in question
4. The selective activity which the placenta appears to exhibit in relation to certain substances.[10]

Viral Infections

Examination of the abortus or stillbirth occurring after an infection does not always produce the recovery of the infective agent, and the abortion in these cases must have been due to indirect effects of the organism, perhaps by altering the oxygenation of the placental blood, or by reducing nutrient exchange through the placenta.[9]

Viral infections occurring during pregnancy may be manifested by clinical signs or may occur without any observable effect. Such infections have two effects on the pregnancy, the indirect effect, which has been mentioned, and the direct effect due to the multiplication of the organism in the maternal system, the development of a viraemia and the subsequent invasion of, and multiplication in, the placental trophoblastic cells. The final stage is the passage of the virus to the fetal circulation and the invasion of fetal organs.[9]

Certain infection, whether primarily acquired or reactivated during pregnancy, are of special concern. These infections are important because of their teratogenic effects or the morbidity and mortality with which they are associated in neonates. The teratogenic infections covered in this article are syphilis, cytomegalovirus, rubella, varicella, measles, mumps and parvovirus.[11]

a. Syphilis

Congenital syphilis has become more of a problem in recent years, owing to the dramatic increase in the number of cases of syphilis. Pregnancy in a woman with syphilis may have any of the following outcomes: late abortion after the fourth month of pregnancy, stillbirth, a congenitally infected infant, or a healthy uninfected infant. There is no difference in presentation or diagnosis of syphilis in pregnant women. Prevention of congenital syphilis requires prompt treatment of mothers who have syphilis as well as aggressive screening for syphilis in high-risk populations.[11]

b. Cytomegalovirus (CMV)

CMV is thought to be the most common congenital infection in humans. Rates of seropositivity in the adult population range from 35 % to close to 100 %, depending on the population studied. Ninety percent infants with infection will be asymptomatic at birth, but manifestations of infection such as sensorineural hearing loss, chorioretinitis, mental retardation, and neurologic deficits will develop later in 10-20% of infants.[11]

c. Rubella

Rubella in pregnant women is similar to that in non-pregnant women; the likelihood of subclinical infection is similar as well. Spontaneous abortion occurs in 4-9% and stillbirths in 2-3% of pregnancies complicated by rubella infection.[11]

d. Varicella

The incidence of varicella infection as a complication in pregnancy is estimated to be about 0.01 – 0.7 cases/1,000 pregnancies. Varicella infection in adults is more severe than in children. Pregnant women may have a more severe form of the disease than nonpregnant women. Varicella-zoster virus (VZV) infection can have several effects on a pregnant woman and her fetus. Intrauterine infection with VZV can occur, rarely leading to congenital anomalies.[11]

e. Measles, Mumps and Parvovirus

Measles infection complicated 6-40/100,000 pregnancies. There appears to be an increased risk of stillbirth, abortion, prematurity, and low birth weight in infants born to mothers who had infection while pregnant. Mumps infection occurs less frequently than measles during pregnancy, with an incidence of 0.8-10 cases/100,000 pregnancies. Mumps in pregnant women is similar to mumps in nonpregnant women. Transplacental infection does occur, but it is very rare. Parvovirus causes erythema infectiosum in childhood and aplastic crises in patients with hemolytic anemia. It is an uncommon infection during pregnancy, and an uncommon cause of stillbirth in women who have been exposed to the virus.[11]

Parasitic Infestations

Significant parasitic infestations occur during pregnancy with a worldwide distribution. Such agents are generally more common in tropical and underdeveloped areas of the world. The range of protozoas and helminthes that infest human is vast.[12]

The nutritional status of most pregnant women in the tropics and underdeveloped areas is borderline. Parasitic disease may significantly interfere with the nutrition of these women and may result in a worsening of the impaired fetal growth. Another factor leading to poor outcome may be that malnutrition is associated with immunodeficiency, and thus the susceptibility of pregnant women to bacterial and viral infectious and their recognized consequences for the fetus and newborn is increased.[12]

Infections in The Tropic

Helmint infestations – hookworm disease

Endemic infections by helmints are almost universal amongst rural dwellers in the tropics and subtropics, and the most serious of these is hookworm disease. Two types of hookworm are found, *Ancylostoma duodenale* and *Necator americanus*, in the gut the worms attach to the villi by suckers, and feed on blood obtained from the villi which, after passing through their bodies, is excreted into the lumen of the bowel. Hookworm infestation is a cause of iron deficiency anaemia, and this is particularly serious in pregnancy.[9]

Malaria

Exacerbation or relapse of malaria in a partially immune female is particularly common during pregnancy, and each attack may precipitate abortion or the onset of premature labour. The fetus is protected by the placenta in most cases, although large numbers of immobilized parasites may be found in the placenta, particularly if the infection is by *P. falciparum*. Occasionally in non-immune patients, congenital

Tabel 1. Parasitic Ifestations which May Occur in Pregnant Women [12]

Protozoan agents	
Entamoeba histoytica	*Leishmania donovani*
Giardia lamblia	*Leishmania tropica*
Plasmodium falciparum	*Leishmania braziliensis*
Plasmodium vivax	*Leishmania Mexicana*
Plasmodium malariae	*Trypanosoma cruzi*
Plasmodium ovale	*Trypanosoma brucei*
Trichimonas vaginalis	*Toxoplasma gondii*
Pneumocystis carinii	*Babosia species*
Helmints	

• Intestinal nematodes (roundworms)
  • *Ascaris lumbricoides*
  • *Trichuris trichuria*
  • *Enterobius vermicularis*
  • *Ancylostoma duodenale*
  • *Necator Americanus*
  • *Strongyloides stercoralis*
• Tissue nematodes
  • *Trichinella spiralis*
  • *Wuchereria bancrofti*
  • *Brugia malayi*
	• Trematodes (flukes)
	  • *Schistosoma mansoni*
	  • *Schistosomiasis japonicum*
	  • *Schistosomiasis haematobium*
	• Cestodes (tapeworm)
	  • *Taenia saginata*
	  • *Taenia solium*
	  • *Diphyllobothrium latum*
	  • *Hymenolepis nana*
	  • *Echinococcus granulosis*

transmission of malaria occurs. Any pregnant women developing a high fever in a malarial area should be suspected of having the infection.[9]

There is an increased prevalence of infection among pregnant women and also an increase in density of parasitaemia, both inversely related to the time of antimalarial IgG, suggesting that the pregnant state may inhibit the host's ability to respond. Haemolytic anaemia, with jaundice and splenomegaly, is common in pregnancy and is often a cause of death. Acute renal insufficiency is a not uncommon complication. Abortions and stillbirths may be precipitated and childbirth may awake a latent malaria infection. There is a relationship between low birth weight and malarial infection of the placenta.[13]

Treatment of malaria must not be held with during pregnancy and pregnant women in endemic areas should be protected by chemoprophylaxis for at least three months of pregnancy.[13]

Indonesia Policies and Programmes

Reducing maternal morbidity and mortality has become a central priority in health sector development, as stated in the National Development Programme (Propenas). Its components include: improving reproductive health services, communicable disease control and basic and referral health services; and reducing chronic energy deficiency and anaemia among women of reproductive age during pregnancy, delivery and the post-partum period.[5]

To reach the target on MDG 4 and 5 (reduce child mortality and improve mater-

nal health), the government has implemented the following policies and strategies for reducing maternal morbidity and mortality:

1. Evidence and data. These include among others increasing the number and distribution of midwives in villages, doctors and specialists, with particular emphasis on rural isolation; improving the role of local community health clinics (Puskesmas); partnership with traditional delivery assistance and mid wives; and minimizing the negative factors that undermine national health efforts.[5]
2. Build effective partnerships through cross-program and cross-sector cooperation, and other partnerships to conduct advocacy that maximize the allocation of resources, and improve the planning and activity coordination. This is achieved through enhancing the role of communities; engage corporate social responsibility of corporation and the social role of NGOs; and improve and enhance the role of public and private partnership.[5]
3. Encourage women, family and community empowerment through knowledge improvement to assure healthy behavior and by using maternal and newborn baby healthcare services. Strategies to attain these targets has been done through continues education for women and families; encourage greater participation and awareness of husbands and male authorities; and greater access for women on health.[5]
4. Enhance program management through surveillance, monitoring, evaluation and financing, strengthening local capacity; sharing role and responsibility; continue to strengthen monitoring for health targets; and continue to improve human resources of health workers.[5]

Within the framework of the Healthy Indonesia 2010 vision, a national strategy called Making Pregnancy Safer (MPS) has been set up as a continuation of the Government's Safe Motherhood Programme to accelerate the reduction of maternal and neonatal morbidity and mortality. MPS promotes a systematic, integrated planning approach to clinical interventions and health systems, relying on partnerships between government institutions, donors, lenders, the private sector, communities and families. It emphasizes providing appropriate and continuous skilled care, with a focus on the availability of skilled birth attendants, and pays special attention to community-based actions to ensure women and newborns have appropriate access to care.[4]

The three key messages of MPS are that every delivery should be assisted by a trained health provider; every obstetric and neonatal complication should be managed adequately; and every woman of reproductive age should have access to services for preventing unwanted pregnancy and managing the complications of unsafe abortions.[4]

Special attention is needed for low-income and vulnerable groups in peri-urban and rural areas, as well as people in remote areas, particularly young women who do not have adequate access to health services. The Social Safety Net Programme, launched in 1998, ensured funding for basic service provision and will need to be maintained.[4]

The correlation between safe deliveries, a woman's educational level and her use of contraceptives is well known. Adequate reproductive health services for adolescents are also needed. Gender issues and reproductive rights for both men and women still need to be emphasized and promoted at all levels.[4]

Closing

Acute infections in pregnancy, labor and the puerperium tend to have more deleterious consequences than in non-pregnant individuals. Both maternal and fetal mortality are high. Part of the increased maternal death rate results from the superimposed stress and strain of abortion or

labor which often decrases the patient's natural defenses against the infection.[7]

The incidence of anomalies occurring after many infectious diseases confirm the importance of protecting expectant mothers from any infection, especially during the first eight weeks.[7]

Making Pregnancy Safer in Indonesia has three key principles: every delivery should be attended by a skilled birth attendant, every complication should be referred and managed appropriately, and all reproductive-age females should have access to contraceptives and post-abortion care. The Indonesian government has set a target to lower the maternal mortality rate to 125 per 100,000 live births by 2010.[6]

Antenatal care in Indonesia has shown a promising pattern. Based on IDHS 1994, 82 % of pregnant women received antenatal care and 61 % received antenatal care at least four times. Nevertheless antenatal care could only detect morbidity during pregnancy; it could not detect obstetric complications that would occur during delivery.[3]

Although a majority of pregnant women receive antenatal care from health providers, many women still rely on traditional birth attendants (TBAs) for their deliveries. This condition creates a double risk for women: the risk of obstetric complications which is difficult to predict, and the risk of death because of inadequate treatment of these complications.[3]

Overall, Indonesia is well on track in reaching the MDGs. However, there are targets where greater effort is needed by all the stakeholders to ensure that these important milestones are met. In the context of MDG 4 and 5 (reduce child mortality and improve maternal health), child mortality based on the infant mortality rate has shown a great deal of progress and is likely to be achieved.[5]

On the whole Indonesia's progress on MDGs in the last 15 years has been quite satisfactory. Some goals are more easily achieved than others. The issue of maternal and child mortality or MDG 4 and 5 are a few of those goals that could have been more readily resolved. However due to socioeconomic, financial, and environmental factors, efforts to achieving these goals has not been as steadfast as others.[5]

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