

When the mother is a child: the impact of child marriage on the health and human rights of girls

Anita Raj^{1,2}

► An additional appendix is published online only. To view these files please visit the journal online (<http://adc.bmj.com>)

¹Department of Community Health Sciences, Boston University School of Public Health, Boston, Massachusetts, USA

²Department of Medicine, Boston University School of Medicine, Boston, Massachusetts, USA

Correspondence to

Dr Anita Raj, Department of Medicine, Boston University School of Medicine, 801 Mass Avenue, 3rd Floor, Boston, MA 02118, USA; anitaraj@bu.edu

Accepted 6 July 2010

Child marriage (marriage before age 18 years) is an internationally recognised health and human rights violation disproportionately affecting girls, globally. Although the practice of girl child marriage has decreased substantially over the past 20 years,^{1–3} it remains strikingly pervasive in some world regions, particularly South Asia and Sub-Saharan Africa where up to 50–70% of girls in some countries are married prior to age 18 years². However, the practice is not limited to these areas of the world. Parts of Latin America and Eastern Europe report rates of child marriage greater than 10–20% among females,² and even high development nations see some cases of child marriage.⁴ Currently, over 60 million women and girls worldwide are affected by child marriage.^{1 2}

SOCIAL AND CONTEXTUAL VULNERABILITIES TO GIRL CHILD MARRIAGE

Although girl child marriage is a global concern, a review of the literature on this phenomenon (see online appendix for methods) documents clear social vulnerabilities that heighten risk for child marriage at national and individual levels. Studies consistently show that marriage of minor aged girls is more likely to occur in rural and impoverished areas with low access to healthcare^{1–3 5–15}; regional conflict and instability further exacerbate these vulnerabilities.^{16 17} However, the primary contextual factor heightening risk for girl child marriage is gender inequity, often characterised, at least in part, by lower access to education and employment opportunities for females relative to males.^{1 4 5 17} Across national contexts, it is the poorest and least educated girls who are most vulnerable to early marriage,^{1–3 5–15 18} and even among girls receiving an education, early marriage appears to impede continuation of that education.¹⁹

Expanding on this issue of gender inequity and girl child marriage, studies also document associations between early marriage of girls and other types of gender-based oppression, including forced marriage and family violence. Generally, the marriage of minor girls is arranged by parents, other family members or local leaders, sometimes with consent and sometimes without.^{4 5 11 17 20} In addition to forced marriage, girls married as minors are also more likely to experience violence from their natal family,⁶ their husband,^{3 8 13 14 21–26} and their in-laws.^{1 3 5 8 14 25} Heightened risk for such abuse is not surprising as those marrying as adolescents are more likely to have an older husband, to contend with dowry

or bride price issues, to reside with in-laws, to have limited mobility and to report greater control over decision-making by both husband and in-laws.^{1 3–5 7 8 14 17 20–25 27 28}

PHYSICAL AND MENTAL HEALTH CONSEQUENCES OF GIRL CHILD MARRIAGE

While these issues clearly highlight child marriage as an issue of social and gender inequities, this literature review (see appendix for methods) also documents it as a health concern for young mothers and their offspring. Due to early pregnancy and childbirth, in conjunction with lower access to healthcare among adolescent wives, girls marrying as minors are at substantially greater risk for maternal and child morbidity and mortality.^{1 3 5 8 9 11 12 16 29–32} Adolescent mothers are more likely than delivering adult women to experience pregnancy complications (eg, pregnancy-induced hypertension, spontaneous abortion) and delivery concerns (eg, obstructed labour, fistula), as well as maternal mortality.^{5 8 9 11 12 13 33–37} These maternal concerns then in turn increase risk for neonatal death and stillbirth, premature and low birth-weight infants, and infant and child morbidity and mortality.^{1 3 5 8 9 11 12 31 34 38–47} Further, even into adulthood, those married as minors are more likely to use no contraception in early marriage, have unplanned pregnancy, have a greater number of children, and experience low spacing between children,^{1 3 5 7 8 31 48} factors again linked to increased likelihood of poor maternal, infant and child health outcomes.^{3 48 49}

In addition to these maternal and child health concerns, there is also documentation of a mental health impact of child marriage. Research from Africa and South Asia have found that girls engaged or married as minors are at increased risk for depression and suicidality, in great part to its link with varying forms of gender-based violence (eg, forced marriage, spousal violence), as described above.^{12 17 20} There is some small but growing evidence that child marriage may increase female risk for HIV and other *sexually transmitted infections* (STIs), as adolescent wives are more likely than adult wives or unmarried adolescents to engage in unprotected sex, to have less access to sexual health information and to report greater difficulty in negotiating condom use or refusing sex with their male partner (A Raj, unpublished data).^{7 50–53} Research assessing direct associations between child marriage and HIV/STI is limited to sub-Saharan Africa, but these studies do indicate significant associations between child marriage and HIV.^{11 12 50 51}

GRADIENT OF SOCIAL AND HEALTH RISKS BY AGE AT MARRIAGE: ANALYSIS OF INDIA AS A CASE EXAMPLE

While the above literature review offers important insight into social vulnerabilities attached to early marriage of girls, as well as the health impact of such early marriage and related early childbirth, the review does not highlight gradients of risk based on age at marriage. For these analyses, we utilised data from the National Family Health Survey (NFHS-3), a surveillance focused on maternal and child health concerns among a nationally representative sample of women in India. India was chosen for analysis given its high rate of child marriage in the context of legislation against the practice.

Current NFHS-3 analyses were restricted to ever married 20–24 year olds (n=14 628) to provide a sample reflective of current conditions in India but with sufficient time to compare marriage and childbirth experiences of those marrying as adults (20–24 years) relative to those marrying as children (<14 years), adolescents (15–17 years) and late adolescents (18–19 years). (See online appendix⁵⁶ for details on methods, measures and data analysis procedures.) As highlighted in tables 1–3, analyses assessed associations between age at marriage and social vulnerabilities (rural residence, poverty and education), gender inequities and violence (older husbands, physical or sexual violence from husbands, son preference), healthcare utilisation (antenatal care, spacing contraceptive use, sterilisation), fertility control indicators (rapid repeat childbirth, multiple unwanted pregnancies) and infant/child mortality. Analysis of association between age at marriage and HIV serostatus was also conducted; these findings are not in the tables.

Findings reveal that among married 20–24-year-old females in India, 9.6% report marriage prior to age 14 years and only 10% report marriage at age 20–24 years. An additional 25% report marriage at 13–15 years; 32.1% report marriage at 16–17 years; and 23.4% report marriage at 18–19 years. Sociodemographic vulnerabilities are normative for the population as a whole; 73% of women resided in rural areas, and more than one-third (39%) had received no formal education. Notably, 15% of those marrying at 20–24 years relative to 65% of those marrying at less than age 14 years had no formal education. In terms of gender inequities, 15% of the total sample reported a husband aged ≥ 10 years; one-third (35%) reported a history of physical or sexual abuse from husbands; and more than one-fifth (22%) reported son preference. Reproductive healthcare utilisation was low. No antenatal care for at least one pregnancy was reported by 17% of women; no spacing contraceptive use was reported by 80% of women and female sterilisation was reported by an additional 13% of women. Notably, only 1% of those married at 20–24 years reported sterilisation relative to 29% of those married prior to age 14 years. More than one-quarter of women (28%) reported rapid repeat childbirth, though <4% reported a history of multiple unwanted pregnancies.

Regression analyses reveal that with younger age at marriage there are increased socioeconomic vulnerabilities and greater gender inequities including spousal violence. (See table 1.) Additionally earlier age at marriage was associated with lower likelihood of antenatal care and spacing contraceptive use but increased likelihood of sterilisation by young adulthood; rapid repeat child birth, multiple unwanted pregnancies and

Table 1 Age at marriage and its associations with sociodemographic and gendered vulnerabilities among ever married 20–24-year-old women in India (N=14 682)

	Sociodemographic vulnerabilities			Gendered vulnerabilities		
	Rural Residence OR (95% CI)	Poorest quintile OR (95% CI)	No formal education OR (95% CI)	Older spouse – 10+ years OR (95% CI)	Spousal violence ever ¹ OR (95% CI)	Son preference OR (95% CI)
Age at marriage:						
20–24 years	Ref	Ref	Ref	Ref	Ref	Ref
18–19 years	1.5 (1.3 to 1.6)	2.4 (2.0 to 2.9)	2.3 (2.0 to 2.6)	1.4 (1.2 to 1.7)	2.01 (1.8 to 2.3)	1.5 (1.3 to 1.8)
16–17 years	1.9 (1.8 to 2.1)	4.4 (3.6 to 5.3)	4.2 (3.7 to 4.8)	1.5 (1.3 to 1.8)	3.23 (2.8 to 3.7)	2.0 (1.8 to 2.3)
14–15 years	2.6 (2.3 to 2.9)	7.0 (5.8 to 8.5)	8.3 (7.3 to 9.5)	2.2 (1.9 to 2.6)	4.15 (3.6 to 4.8)	2.8 (2.5 to 3.3)
<14 years	3.0 (2.6 to 3.5)	8.3 (6.7 to 10.4)	11.2 (9.5 to 13.2)	3.1 (2.6 to 3.8)	4.94 (4.2 to 5.9)	2.7 (2.2 to 3.2)

¹analysis restricted to a subsample of ever married women 20–24 years who were selected and agreed to participate in the IPV module of the National Family Health Survey-3 (n=10 625).

Table 2 Age at marriage and its associations with reproductive healthcare utilisation and fertility control among married 20–24-year-old women in India (N=14 682)

	Reproductive healthcare			Fertility control	
	No antenatal care ^{1*} OR (95% CI)	No spacing contraceptive use OR (95% CI)	Female sterilisation OR (95% CI)	Rapid repeat childbirth [†] OR (95% CI)	Multiple unwanted pregnancies OR (95% CI)
Age at marriage:					
20–24 years	Ref	Ref	Ref	Ref	Ref
18–19 years	1.7 (1.4 to 2.2)	0.89 (0.8 to 1.0)	5.4 (3.79 to 7.69)	2.2 (1.9 to 2.7)	1.8 (1.2 to 2.8)
16–17 years	2.6 (2.1 to 3.2)	1.03 (0.9 to 1.2)	12.8 (9.1 to 18.0)	3.4 (2.9 to 4.1)	2.4 (1.6 to 3.7)
14–15 years	3.9 (3.1 to 4.9)	1.25 (1.1 to 1.4)	22.4 (15.9 to 31.5)	5.1 (4.2 to 6.1)	2.9 (1.9 to 4.5)
<14 years	4.6 (3.6 to 6.0)	1.52 (1.3 to 1.8)	33.2 (23.3 to 47.4)	6.2 (5.1 to 7.6)	2.6 (1.6 to 4.3)

*No antenatal care is indicative of no care for at least one reported pregnancy.

[†]Rapid repeat childbirth is birth to children with less than 2 years' spacing between them.

¹analysis restricted to subsample of ever married women 20–24 years who have given birth (n=11 635).

increased likelihood of infant and child mortality were also more likely among those marrying at younger rather than majority ages. (See tables 2 and 3.) These findings are consistent with those outlined above, but expand upon this work, highlighting the increased risk occurring for minor aged girls marrying at very young ages.

Notably however, and unlike findings from sub-Saharan Africa described above, current analyses did not document significantly greater risk for HIV among young wives who marry as minors. Relative to those marrying at age 20–24 years, females were no more likely to have HIV if they married at age 18–19 years (OR 1.0, 95% CI 0.5 to 1.8), significantly less likely to have HIV if they married at age 16–17 years (OR 0.2, 95% CI 0.1 to 0.5) and less likely (though not significant) to have HIV if they married at age 14–15 years (OR 0.5, 95% CI 0.2 to 1.1) or at less than age 14 years (OR 0.2, 95% CI 0.02 to 1.2). (Note: data not presented in the tables. Analyses restricted to a subsample of ever married women 20–24 years who were selected and agreed to participate in the HIV testing component of the NFHS-3– n=2408.) Differential findings are in part likely a consequence of the substantially lower rate of HIV in India relative to Africa; HIV seroprevalence for this nationally representative sample of females was only 0.2%. More importantly, India's HIV epidemic is predominantly urban where child marriage is a more rural phenomenon, and this too may be resulting in this trend toward lower risk for HIV among those marrying as minors in India. More research across more nations is needed to provide greater clarity on the role of early marriage in the HIV epidemic. Nonetheless, these findings as well as the above literature review demonstrate child marriage as a social and gendered vulnerability for girls with a major impact on maternal and child health. (See figure 1 for graphic representation of these associations.)

WHY DOES THE PRACTICE CONTINUE?

Such clear social and health costs of girl child marriage would seem a deterrent to continuation of the practice, but it remains entrenched in many cultures and nations, as seen in figure 1. Justifications for the practice, as reported by those arranging such marriages, include the economic and social or honour-related costs attached to having unmarried girls in the family.^{4 17 28} Economically, girls can be viewed as a financial burden on families, due to both dowry and their assumed or actual inability to bring income to the family in some cultures.^{4 17} Also, assumptions are that younger females are more subservient relative to adult brides, and this will create more 'harmony' in marriage.^{4 17} Related to this, many cultures holding norms of child marriage also fear that delaying marriage will increase girls' risk for premarital sex, either by choice or via

sexual assault, rendering them unmarriageable.^{4 17} Some even fear that unmarried females become prone to promiscuity and even prostitution, in the absence of a husband.^{4 17} Sadly, such views can be reinforced as unmarried women in some countries are in fact more vulnerable to sexual assault and prostitution in the absence of male protection and other economic alternatives.¹⁷ In such contexts, continuation of the practice may not only make sense to parents but may appear to be the responsible thing to do.

IMPLICATIONS FOR POLICY

Although this literature is sobering there is potential for modification of the practice through policy and practice. As noted above, rates of child marriage have reduced over time and these reductions are at least in part due to stronger policies and social norms against the practice.^{1–3} However, many nations maintain laws allowing the practice, by exception (eg, China's law allowing marriage of minors with parental consent) or decree (eg, Yemen's lack of a legal age for marriage).⁴ Hence, broader legal restrictions to the practices of forced and girl child marriage are needed globally. These must meet an international standard of acceptability but be offered at the national level and without exception or provision; registration of marriages can help inhibit both forced and child marriages.⁴ While such policy change is important, it is also inadequate given that certain nations with legal restrictions against the practice continue to see high rates of child marriage (eg, India), and given that these practices are steeped in cultural tradition and context.^{4 54} Previous research suggests the potential utility of involving community and religious leaders and police to educate communities, particularly men, against the practice²⁰; unfortunately, use of such practices does not appear to be widespread nor have they been evaluated. More work is needed to implement and examine the utility of such social and community-based approaches.

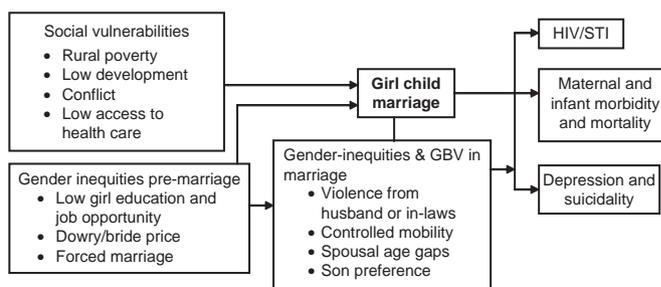


Figure 1 Model of social vulnerabilities to child marriage and its health impact.

Table 3 Age at marriage and its associations with infant and young child mortality among ever married 20–24-year-old women in India who have given birth (N=11 635)

	Neonatal mortality (<1 month)		Postneonatal infant mortality (1–12 months)		Child mortality (1–5 years)	
	Deaths per 1000	Crude OR (95% CI)	Deaths per 1000	Crude OR (95% CI)	Deaths per 1000	Crude OR (95% CI)
Total sample	84/1000	–	32/1000	–	19/1000	–
Age at marriage:						
20–24 years	28/1000	Ref	14/1000	Ref	1/1000	Ref
18–19 years	61/1000	1.84 (1.30 to 2.60)	21/1000	1.92 (1.08 to 3.40)	7/1000	11.26 (1.52 to 83.63)
16–17 years	86/1000	3.00 (2.16 to 4.16)	35/1000	3.26 (1.89 to 5.61)	13/1000	22.04 (3.04 to 159.66)
14–15 years	101/1000	3.90 (2.80 to 5.42)	41/1000	4.63 (2.69 to 7.98)	31/1000	47.59 (6.61 to 342.59)
<14 years	153/1000	6.01 (4.23 to 8.56)	44/1000	5.46 (3.04 to 9.80)	56/1000	84.39 (11.63 to 612.17)

Gender-equity approaches to inhibit girl child marriage offer promise, as gender inequities help maintain the practice of girl child marriage. As noted above, there can be social and economic benefits for families who marry girls as minors and for girls marrying so young. Without improved status of and educational and employment opportunities for women and girls, such benefits for families and girls will be maintained and child marriage will continue. Recent studies from Ethiopia and Malawi document the utility of supporting girls' retention in school as a means of reducing girl child marriage and pregnancy^{54 55}; retention efforts used by these programmes included community awareness, family support and payment to girls retained in school.^{54 55} Findings document the utility of a gender-equity approach in reducing girl child marriage. Microfinance efforts, employment quotas and support against gender-based violence, including sexual assault and spousal violence, may also prove useful.

WHAT CAN BE DONE TO SUPPORT THOSE ALREADY MARRIED AS MINORS?

While prevention of girl child marriage is vitally important, support for those marrying as minors remains a necessity. Certainly, girls should be supported legally and financially to leave such marriages if they choose; however, for many this will not be a safe or viable option. In such cases, social and health services must be available for this vulnerable population of young wives. Adolescent and maternal and child health services must be expanded to meet the unique needs and vulnerabilities of those married and giving birth as minors. These services, including access to longer-term contraception, emergency contraception and abortion, must be integrated with family planning education and HIV/STI counselling, testing and treatment. Skilled birth attendants need to be available regardless of level of development or conflict in a region. Providers serving this population must be trained to address domestic violence and sexual assault cases, socially and medically, and with recognition that these forms of gender-based violence are more pervasive among adolescent wives. So too, must male partners be included in these efforts, as they may have greater control over fertility or family planning relative to their young wives.

CONCLUSION

Child marriage is a continuing practice in many world regions, affects largely rural girls of lower educational status and increases both social and medical risks for these very young mothers and their children. Although the practice of girl child marriage has reduced substantially in the past 20 years,^{2 3} its persistence in some nations continues due to absence of national law (eg, Yemen) or legal enforcement (eg, India), as well as due to tradition and cultural acceptability, often entrenched in patriarchal and paternalistic ideologies about women. Reducing rates of child marriage and its health impact will require legislation and legislative enforcement against the practice combined with community-level and social change approaches to improve status and opportunity for women and girls. While efforts move toward elimination of girl child marriage globally, services such as sexual and reproductive health provision integrated with gender-based violence prevention efforts, tailored to the vulnerable adolescent wife must run in parallel. This issue is after all about vulnerable children and their own children.

Provenance and peer review Commissioned; internally peer reviewed.

REFERENCES

1. **United Nations Children's Fund (UNICEF)**. Progress for Children. Protecting Against Abuse, Exploitation and Violence. Child Marriage, 2007. http://www.unicef.org/progressforchildren/2007n6/index_41848.htm (accessed 15 Jan 2010).
2. **United Nations Children's Fund (UNICEF)**. The State of the World's Children: Maternal and Newborn Health, 2009. <http://www.unicef.org/sowc09/docs/SOWC09-FullReport-EN.pdf> (accessed 15 Jan 2010).
3. **United Nations Children's Fund (UNICEF)**. Early Marriage: Child Spouses. *Innocenti Digest*. No. 7, 2001. <http://www.unicef-icdc.org/publications/pdf/digest7e.pdf> (accessed 15 Jan 2010).
4. **Warner E**. Behind the wedding veil: child marriage as a form of trafficking in girls. *Am Univ J Gen Soc Policy Law* 2004;**12**:233–71.
5. **International Council for Research on Women (ICRW)**. New Insights on Preventing Child Marriage: A Global Analysis of Factors and Programs, 2007. <http://www.icrw.org/docs/2007-new-insights-preventing-child-marriage.pdf> (accessed 15 Jan 2010).
6. **Gökçe B**, Ozsahin A, Zencir M. Determinants of adolescent pregnancy in an urban area in Turkey: a population-based case-control study. *J Biosoc Sci* 2007;**39**:301–11.
7. **Raj A**, Saggurti N, Balaiah D, *et al*. Prevalence of child marriage and its effect on fertility and fertility-control outcomes of young women in India: a cross-sectional, observational study. *Lancet* 2009;**373**:1883–9.
8. **United Nations Population Fund (UNFPA)**. State of the World Population – Child Marriage Fact Sheet, 2005. http://www.unfpa.org/swp/2005/presskit/factsheets/facts_child_marriage.htm (accessed 15 Jan 2010).
9. **Mehra S**, Agrawal D. Adolescent health determinants for pregnancy and child health outcomes among the urban poor. *Indian Pediatr* 2004;**41**:137–45.
10. **Forum on Marriage and the Rights of Women and Girls (FORWARD)**. Early Marriage and Poverty: Exploring Links for Policy and Programme Development, 2003. <http://www.swaasthya.net/pdf/Early%20Marriage%20%20Poverty%20-%20publication.pdf> (accessed 26 August 2010).
11. **Nour NM**. Health consequences of child marriage in Africa. *Emerging Infect Dis* 2006;**12**:1644–9.
12. **Nour NM**. Child marriage: a silent health and human rights issue. *Rev Obstet Gynecol* 2009;**2**:51–6.
13. **Santhya KG**, Jejeebhoy SJ. Sexual and reproductive health needs of married adolescent girls. *Econ Polit Wkly* 2003;**38**:4370–7.
14. **Santhya KG**, Jejeebhoy SJ. Early marriage and HIV/AIDS: risk factors among young women in India. *Econ Polit Wkly* 2007;**42**:1291–7.
15. **Mensch B**. Trends in the timing of first marriage. Presentation at the WHO/UNFPA/Population Council Technical Consultation on Married Adolescents. Geneva, Switzerland, 2003.
16. **Kottegoda S**, Samuel K, Emmanuel S. Reproductive health concerns in six conflict-affected areas of Sri Lanka. *Reprod Health Matters* 2008;**16**:75–82.
17. **Raj A**, Gomez CS, Silverman JG. Multi-sectorial Afghan Perspectives on Girl Child Marriage: Foundations for Change Do Exist in Afghanistan. *Violence Against Women* (In Press).
18. **Rahman MM**, Kabir M. Do adolescents support early marriage in Bangladesh? Evidence from study. *JNMA J Nepal Med Assoc* 2005;**44**:73–8.
19. **Lloyd CB**, Mensch BS. Marriage and childbirth as factors in dropping out from school: an analysis of DHS data from sub-Saharan Africa. *Popul Stud (Camb)* 2008;**62**:1–13.
20. **Raj A**, Gomez C, Silverman JG. Driven to a fiery death—the tragedy of self-immolation in Afghanistan. *N Engl J Med* 2008;**358**:2201–3.
21. **Kishor S**, Johnson K. *Profiling domestic violence: a multi-country study*. Calverton, Maryland, USA: ORC Macro, 2004.
22. **UNICEF**. *Early marriage: a harmful traditional practice. A statistical exploration*, 2005. New York: UNICEF. http://www.unicef.org/publications/files/Early_Marriage_12.lo.pdf (accessed 15 Jan 2010).
23. **Bruce J**. Married adolescent girls: human rights, health, and developmental needs of a neglected majority. *Econ Polit Wkly* 2003;**38**:4378–80.
24. **World Health Organization (WHO)**. WHO Multi-Country Study on Women's Health and Domestic Violence Against Women. Initial results on Prevalence, Health Outcomes and Women's Responses, 2005. http://www.who.int/gender/violence/who_multicountry_study/en/ (accessed 15 Jan 2010).
25. **World Health Organization (WHO) and United Nations Population Fund (UNFPA)**. Married Adolescents: No Place of Safety, 2006. http://whqlibdoc.who.int/publications/2006/9241593776_eng.pdf (accessed 15 Jan 2010).
26. **Raj A**, Lawrence D, Saggurti N, *et al*. Association between adolescent marriage and marital violence in young adulthood in India. *Int J Gynaecol Obstet* 2010;**110**:35–9.
27. **Mikhail SLB**. Child marriage and child prostitution: two forms of sexual exploitation. *Gen Dev* 2002;**10**:43–9.
28. **Ertem M**, Kocturk T. Opinions on early-age marriage and marriage customs among Kurdish-speaking women in southeast Turkey. *J Fam Plann Reprod Health Care* 2008;**34**:147–52.
29. **Raj A**, Saggurti N, Winter M, *et al*. The impact of maternal child marriage on morbidity and mortality of children under 5 in India: cross-sectional study of a nationally representative sample. *Br Med J* 2010;**340**:b4258.

30. **Khan YP**, Bhutta SZ, Munim S, *et al.* Maternal health and survival in Pakistan: issues and options. *J Obstet Gynaecol Can* 2009;**31**:920–9.
31. **Gupta N**, Jain S. Teenage pregnancy – causes and concerns. *J Indian Med Assoc* 2008;**106**:516, 518–19.
32. **Shen C**, Williamson JB. Maternal mortality, women's status, and economic dependency in less developed countries: a cross-national analysis. *Soc Sci Med* 1999;**49**:197–214.
33. **Gharoro EP**, Agholor KN. Aspects of psychosocial problems of patients with vesico-vaginal fistula. *J Obstet Gynaecol* 2009;**29**:644–7.
34. **Mahavarkar SH**, Madhu CK, Mule VD. A comparative study of teenage pregnancy. *J Obstet Gynaecol* 2008;**28**:604–7.
35. **Mayor S**. Pregnancy and childbirth are leading causes of death in teenage girls in developing countries. *BMJ* 2004;**328**:1152.
36. **Stewart CP**, Katz J, Khatry SK, *et al.* Preterm delivery but not intrauterine growth retardation is associated with young maternal age among primiparae in rural Nepal. *Matern Child Nutr* 2007;**3**:174–85.
37. **Smith GC**, Pell JP. Teenage pregnancy and risk of adverse perinatal outcomes associated with first and second births: population based retrospective cohort study. *BMJ* 2001;**323**:476.
38. **World Health Organization (WHO)**. Reduction of Maternal Mortality, a Joint WHO/UNFPA/UNICEF/World Bank Statement, 1999 – ISBN 92 4 156195 5. <http://www.who.int/reproductivehealth/publications/monitoring/9789241561952/en/index.html> (accessed 15 Jan 2010).
39. **Bhandari L**, Dutta S. Health Infrastructure in Rural INDIA. India Infrastructure Report, 2007. <http://www.iitk.ac.in/3inetwork/html/reports/IIR2007/11-Health.pdf> (accessed 15 Jan 2010).
40. **Abdullah K**, Malek MA, Faruque AS, *et al.* Health and nutritional status of children of adolescent mothers: experience from a diarrhoeal disease hospital in Bangladesh. *Acta Paediatr* 2007;**96**:396–400.
41. **Alam N**. Teenage motherhood and infant mortality in Bangladesh: maternal age-dependent effect of parity one. *J Biosoc Sci* 2000;**32**:229–36.
42. **Markovitz BP**, Cook R, Flick LH, *et al.* Socioeconomic factors and adolescent pregnancy outcomes: distinctions between neonatal and post-neonatal deaths? *BMC Public Health* 2005;**5**:79.
43. **Phipps MG**, Sowers M, DeMonner SM. The risk for infant mortality among adolescent childbearing groups. *J Womens Health (Larchmt)* 2002;**11**:889–97.
44. **Olausson PO**, Cnattingius S, Haglund B. Teenage pregnancies and risk of late fetal death and infant mortality. *Br J Obstet Gynaecol* 1999;**106**:116–21.
45. **Awasthi S**, Agarwal S. Determinants of childhood mortality and morbidity in urban slums in India. *Indian Pediatr* 2003;**40**:1145–61.
46. **Taffa N**. A comparison of pregnancy and child health outcomes between teenage and adult mothers in the slums of Nairobi, Kenya. *Int J Adolesc Med Health* 2003;**15**:321–9.
47. **Mashal T**, Takano T, Nakamura K, *et al.* Factors associated with the health and nutritional status of children under 5 years of age in Afghanistan: family behaviour related to women and past experience of war-related hardships. *BMC Public Health* 2008;**8**:301.
48. **Rayamajhi R**, Thapa M, Pande S. The challenge of grandmultiparity in obstetric practice. *Kathmandu Univ Med J (KUMJ)* 2006;**4**:70–4.
49. **Fronczak N**, Antelman G, Moran AC, *et al.* Delivery-related complications and early postpartum morbidity in Dhaka, Bangladesh. *Int J Gynaecol Obstet* 2005;**91**:271–8.
50. **Clark S**. Early marriage and HIV risks in sub-Saharan Africa. *Stud Fam Plann* 2004;**35**:149–60.
51. **Islugo-Abanihe UC**. Sociocultural aspects of HIV/AIDS infection in Nigeria. *Afr J Med Sci* 2006;**35**:45–55.
52. **Clark S**, Bruce J, Dude A. Protecting young women from HIV/AIDS: the case against child and adolescent marriage. *Int Fam Plan Perspect* 2006;**32**:79–88.
53. **Moore AM**, Singh S, Ram U. *Adolescent childbearing in India: current situation and recent trends*. New York: Alan Guttmacher Institute, 2009.
54. **Erukhar AS**, Muthengi E. Evaluation of Berhane Hewan: a program to delay child marriage in rural Ethiopia. *Int Perspect Sex Reprod Health* 2009;**35**:6–14.
55. **Baird S**, Chirwa E, McIntosh C, *et al.* The short-term impacts of a schooling conditional cash transfer program on the sexual behavior of young women. *Health Econ* 2009;**19**(S1):55–68.
56. **IIPS and Macro International**. India National Family Health Survey (NFHS-3) 2005-2006. Deonar, Mumbai and Calverton, Maryland, USA: International Institute for Population Sciences (IIPS) and Macro International, 2007.