

Multiple Pregnancy: a blessing or a curse?

R Pingili, V Bamigboye, K Jegede

Citation

R Pingili, V Bamigboye, K Jegede. *Multiple Pregnancy: a blessing or a curse?*. The Internet Journal of Gynecology and Obstetrics. 2007 Volume 9 Number 2.

Abstract

Multiple pregnancy rates have increased phenomenally since the mid-1980s in many countries such as the US and UK. This increase is largely due to the use of assisted reproductive technologies (ART) and the increase in maternal age at conception. Multiple pregnancies are associated with increased health risks for the mother; pre-eclampsia, gestational diabetes, peripartum haemorrhage, and for the infants: prematurity, low birth weights, cerebral palsy and developmental disorders. Not only are there health risks, but also financial, social, psychological and ethical implications. This article summarizes the medical, economic, social and psychological arguments against multiple births based on a review of the literature, as well as discussing some options on how to prevent multiple pregnancies in the future.

INTRODUCTION

In November 1997, the world's first set of surviving septuplets - the McCaughey Septuplets¹ were born to delighted parents Bobbi and Kenny McCaughey in Des Moines, Iowa. The babies- Kenneth, Alexis, Natalie, Kelsey, Nathan, Brandon and Joel, were delivered nine weeks premature by caesarean section and required intensive medical care in a neonatal intensive care unit (NICU) after birth. Their births resulted in an unprecedented level of media attention both in the United States and worldwide. To date, all the septuplets are still alive, although two children- Alexis and Nathan, developed cerebral palsy as a result of being born prematurely². The increased costs of looking after the septuplets have been offset by the generous donations and offers of support to the family over the years, of which included a house, childcare assistance and even university scholarships². The septuplets are now 9 years old and are still the object of media scrutiny and public fascination. This story ended successfully, but one must bear in mind that this case does not represent the majority of families living with multiples who are struggling to cope and who do not get as much media coverage.

A more typical case is of the Frustaci septuplets³ - four boys and three girls, born in May 1985 to Sam and Patti Frustaci. Unlike the McCaugheys, their situation quickly became a story of heartbreak as one of the septuplets was stillborn, and three more of the infants died soon after. Further bad news occurred when the three surviving infants were then diagnosed with cerebral palsy and as being mentally

retarded. Since then family has been through an ordeal of lawsuits⁴, coping with the children's handicaps, financial difficulties due to the increased living and medical expenses and the invasive media attention.³

More often than not these cases end in tragedy with few of the infants born actually surviving into adulthood, and those that do more likely to have disabilities and medical conditions that severely impact on them and their families' quality of life.

These sensationalised stories of multiple births are very indicative of the very real public health epidemic that we are facing. Since the mid 1980s, there has been a phenomenal increase in the observed rates of multiple pregnancies.⁵ In the US alone, between 1981 and 1997 the rates of twin gestations increased by 45% and triplets increased by 358%.⁶ There are corresponding increases observed in Europe also, rates in England and Wales increased by 41% for twins and 273% for triplets during a similar time period⁶ (1982-1997). France and Canada also reported notable increases in the rates of their multiple gestations.⁶ Due to recent change in HFEA (The Human Fertilisation and embryology Authority) guidelines⁷ which restrict the number of embryos to no more than two, there has been a reassuring stabilisation in the rate of triplets,⁸ although the rate for twins remains unaffected, still continuing to rise despite increasing awareness of the risks associated with this state and universal consensus that this too, constitutes a high risk outcome.

These astounding increases in multiple gestation rates can be

explained by social shift in women's attitudes to childbearing which has resulted in more and more women choosing to postpone childbearing in favour of work and career commitments. This delayed childbearing has resulted in an increased maternal age at conception^{5,9} – one of the predisposing factors for conceiving multiples and need to use infertility treatments such as ovulation induction, IVF and ICSI⁹ – as fertility decreases with age.

DISCUSSION

MATERNAL RISKS AND COMPLICATIONS

Pregnancy related complications are more common in women pregnant with multiples as compared to singletons. The minor symptoms of pregnancy such as nausea, heartburn, fatigue and backache are exaggerated due to the mechanical and hormonal effects of multiple pregnancies. This results in prospective mothers to be hospitalised for bed rest¹⁵ for prolonged periods before the birth of multiples increasing their risk for thromboembolism. Studies have shown that adverse outcomes such as pre-eclampsia, iron deficiency and folate deficiency anaemia, gestational diabetes, antepartum and postpartum haemorrhage are more common in women carrying multiple gestations.^{16,17,18} The higher the order of multiple pregnancy the more likely is the mode of delivery to be by caesarean section this carries a mortality, at 1 in 100,000,²⁰ not to mention the added risks of infection, bleeding needing transfusion and associated risks of this, thrombo-embolism, injury to bladder, bowel which may eventually effect the quality of life²⁰. Even in today's world of good obstetric care and improved outcomes, mothers of multiples still fare worse with the maternal mortality rate being three times higher¹⁸ in women with multiples than in women with singleton pregnancies.

FETAL RISKS AND COMPLICATIONS

It is a well-proven fact that multiple gestation infants are significantly more likely to be born prematurely when compared to their singleton counterparts.²¹ The mean length of gestation for twins, triplets and quadruplets is 35 weeks, 33 weeks and 29 weeks respectively, which is much reduced when compared to the mean for singletons at 39 weeks.²² Premature infants are more likely to develop hypothermia, hypoglycaemia, Respiratory distress syndrome, necrotising enterocolitis, intraventricular haemorrhage which may be fatal. Apart from prematurity, studies have also shown that the infants suffer from intrauterine growth restriction and growth discordance. . The American National Centre for Health Statistics²⁴ in 1997, reported that 90% of triplets and

higher-order multiples weigh less than 2500g compared to only 6% of singletons. Twins have a 4-fold increase and triplets a 6-fold increase in perinatal mortality as compared to singletons.²⁵ Guyer et al. reported that 16% of all neonatal deaths occurred in multiples and that multiples were seven times more likely to die within the first year of life. Not only do multiples have higher perinatal mortality rates but they also have higher stillbirth rates²⁷ and an increased risk of being admitted to a neonatal intensive care unit.²¹ Even if multiple gestation infants survive the immediate postnatal period, they continue to have an increased risk for long-term developmental problems and physical disabilities.^{28,29,30} Cerebral palsy is one of the well-researched complications associated with multiple gestations and premature birth, and has up to a 6-fold and 20-fold increase respectively in twin and triplet pregnancies compared to singleton pregnancies.³¹

PSYCHOSOCIAL CONSIDERATIONS

Having multiples has effects on family dynamics and the ability of the parents to cope. Parents are faced with the incredible task of having to simultaneously meet the demands of the multiples and their older siblings. This may lead to mothers having to leave paid employment in order to be able to care for their children.³² Considering the increased costs of medical bills, childcare and home-help, the loss of added income may very well put further financial stresses on a family. Many studies have reported higher rates of depression in mothers, parental stress³² and marital disharmony in parents with multiples³³ when compared to couples with singleton births. The difficulties of raising multiples may be further multiplied if the children are physically or mentally challenged as this will place even more demands on the family. Child abuse³⁵ is more prevalent in multiples and their siblings. Older children may often feel neglected due to decreased attention from parents. This may lead to the older child growing to resent his/her younger siblings, manifesting in troubling behaviours,³⁶ aggressive or regressive behaviours such as soiling or bedwetting in a bid to divert some of the lost attention back on themselves. These families may have to face a social stigma due to the “unnaturalness” of having multiples³⁷.

ECONOMICAL IMPLICATIONS

Medical and technological advances and improvements in obstetric care have led to improved survival rates for multiple gestation infants, but the technologies required to bring about this outcome have resulted in exorbitant medical costs. In their work, Callahan et al.³⁸ quoted that healthcare

costs for a triplet infant is \$36,588 and a twin infant is \$18,974. This is twice and thrice respectively as expensive compared to the cost of a singleton infant, at just \$9845. These increased costs are due to the need for more intensive monitoring of these infants and the complex medical and surgical procedures that are increasingly being performed in order to decrease mortality and improve their prognosis.

Even after the neonatal period, there is often still a burden on healthcare as these children are more likely to have disabilities and special needs that require ongoing paediatric care and specialist therapies, with recent work by Henderson et al estimating that the costs of care for 5 years for twins and triplets respectively being twice and eight times that of singletons.³⁹

Families are very much impacted financially. Not all families with multiples receive as much help as the McCaughey's, they are more likely to face a much tougher struggle with fewer donations and dwindling offers of help.¹²

MULTIFETAL REDUCTION

Countries such as the UK and Germany have guidelines that specify the maximum number of embryos to be transferred during IVF cycles.⁷ These guidelines are only voluntary and some infertility centres choose to ignore these guidelines and employ approaches that increase multiples in their efforts to achieve competitive pregnancy rates. This leads to a remedial instead of preventative approach being taken and multifetal reduction offered to parents with high-order multiples.

Multifetal reduction creates a ethical issues to the doctors involved. The “lifeboat” analogy⁴⁰ in which the chances of survival and prognosis are improved by selective termination rather than the death or significant morbidity of all the fetuses is used to justify what would otherwise be seen as an objectionable procedure. Nevertheless, parents who have strong religious and ethical beliefs may still be opposed to this procedure. One must also note that the procedure itself carries an 8% risk of miscarriage of the entire pregnancy⁴¹ and the emotional impact of having to undergo a multifetal reduction is not to be understated. Parents are very deeply affected by multifetal reductions with up to a third still experiencing feelings of guilt, grief or depression up to 2 years after the procedure.⁴²

These issues bring up the question of whether multifetal reduction is really the solution to the problem of multiple

pregnancies. Despite evidence showing that it does improve outcome for multiple gestation infants,⁴¹ it seems that prevention of multiple pregnancy is a more sensible and preferable option than an emotionally and ethically challenging reduction.

IMPACT ON HEALTHCARE AND SOCIETY: THE BIGGER PICTURE

The increase in multiple births is straining already overburdened medical facilities with some hospitals having to expand their NICU (neonatal intensive care units) in order to cope.¹² Apart from healthcare systems, other institutions such as schools and social services also face similar challenges - especially if the children are disabled and have special needs.

PREVENTION OF MULTIPLE PREGNANCIES

In 2000, the European Society of Human Reproduction and Embryology (ESHRE) stated that “prevention is the most important means of decreasing multiple gestation rates”.⁴³ This has led to a number of alternatives being proposed. One option being put forward is to reduce the mean number of embryos transferred in IVF/ICSI cycles. The elective single-embryo transfer (eSET)⁴⁴ has been reported to reduce multiple pregnancy rates whilst not adversely affecting the overall pregnancy rates significantly, another option, the technique of blastocyst transfer,⁴⁵ involves culturing embryos for 5 days rather than the typical 3 days before transferring them to a woman's uterus. This allows the better selection of embryos that would be more likely to implant successfully, thereby reducing the need to transfer more embryos although more studies and reviews need to be performed to determine the validity of these approaches.

An option of pre-treatment counselling⁴⁷ of infertile patients has also been suggested and this seems like a very valuable strategy. Many infertile couples desire multiples as they are often ill-informed of the hazards associated with multiple pregnancy, or perceive these risks to be less than they are.⁴⁷ By providing couples with information from the outset about not only the medical risks to mother and children, but also the financial, psychological and social impact that multiples bring to the family, this will allow couples to make more informed choices.

The role of the media in propagating a distorted view of multiple pregnancies also needs to be examined. The media needs to be more responsible in the way it portrays multiple pregnancies and should aim not only to emphasise the

positive but the negative aspects associated with multiple pregnancies.

CONCLUSION

Multiple pregnancies, due to their rarity and novelty are a subject of fascination, with the general public as regarding them as medical miracles and some infertile couples desiring them. They are becoming less rare, due in part to the increasing maternal age at conception and the use of assisted reproductive technologies.

Contrary to media portrayal, the increase in multiples can not be a good thing for families and society, with the infants having higher mortality and morbidity. Mothers are faced with increased hospitalisation for reasons ranging from bed rest and obstetric monitoring to major medical conditions such as pre-eclampsia and peripartum haemorrhage.

Families are burdened, due to the increased demands and stresses placed upon them resulting in adverse consequences of increased parental dissatisfaction, financial strain, marital difficulties and child abuse.

Society and healthcare are faced with bearing and funding the increased demands that families with multiples place upon it, not only in the immediate period but in the long-term as well.

Due to the increasing problem that multiples represent, many in this field of medicine have championed a preventative approach to reducing multiples instead of the alternative of an ethically and emotionally charged multifetal reduction. A number of strategies and newly emerging techniques are suggested, some with more success than others- although more comprehensive research is needed. What is clear is that we all have our own part to play, right from the media to the couples themselves in reducing the incidence of what has been demonstrated to be an adverse outcome.

References

1. CNN Associated Press. Septuplets survive "miracle" birth. [News article online]. 1997 Nov 19 [cited 2007 July 15].
2. Wikipedia contributors. McCaughey septuplets. [Online article] last modified 2007 July 5 [cited 2007 July 15].
3. CNN Associated Press. Septuplets heartache: the Frustaci story. [News article] 1997 Nov 20 [cited 2007 July 15].
4. New York Times Associated Press. Clinic settles malpractice lawsuit by parents who had septuplets. [News article] 1990 July 12 [cited 2007 July 15].
5. Blondel B, Kaminski M. Trends in the occurrence, determinants, and consequences of multiple births. *Semin Perinatol.* 2002;26:239-49.
6. Blondel B, Kogan MD, Alexander GR et al. The impact of the increasing number of multiple births on the rates of preterm birth and low birthweight: an international study. *Am J Public Health.* 2002;92:1323-30.
7. Braude P, Muhammed S. Assisted conception and the law in the United Kingdom. *BMJ.* 2003;327:978-81.
8. Blickstein I, Keith LG. The decreased rates of triplet births: temporal trends and biologic speculations. *Am J Obstet Gynecol.* 2005;193:327-31.
9. Jewell SE, Yip R. Increasing trends in plural births in the United States. *Obstet Gynecol.* 1995;85:229-32.
10. Salat-Baroux J, Antoine JM. Multiple pregnancies: the price to pay. *Eur J Obstet Gynecol Reprod Biol.* 1996;65 Suppl:S17-8.
11. Doyle P. The outcome of multiple pregnancy. *Hum Reprod.* 1996;11 Suppl 4: 110-7.
12. Elster N. Less is more: the risks of multiple births. The Institute for Science, Law, and Technology Working Group on Reproductive Technology. *Fertil Steril.* 2000;74:617-23.
13. Ryan GL, Zhang SH, Dokras A, Syrop CH, Van Voorhis BJ. The desire of infertile patients for multiple births. *Fertil Steril.* 2004;81:500-4.
14. Gleicher N, Campbell DP, Chan CL et al. The desire for multiple births in couples with infertility problems contradicts present practice patterns. *Hum Reprod.* 1995;10:1079-84.
15. Elliott JP. Management of high-order multiple gestation. *Clin Perinatol.* 2005;32:387-402.
16. Cassell KA, O'connell CM, Baskett TF. The origins and outcomes of triplet and quadruplet pregnancies in Nova Scotia: 1980 to 2001. *Am J Perinatol.* 2004;21:439-45.
17. Blickstein I, Keith L. Iatrogenic multiple pregnancy. *Semin Neonato.* 2002;17:169-76.
18. Senat MV, Ancel PY, Bouvier-Colle MH and Bréart G. How does multiple pregnancy affect maternal mortality and morbidity. *Clin. Obstet. Gynecol.* 1998;41:79-83.
19. Bouvier-Colle MH, Varnoux N, Salanave B et al. Case-control study of risk factors for obstetric patients' admission to intensive care units. *Eur J Obstet Gynecol Reprod Biol.* 1997;74:173-7.
20. Peattie A. Caesarian section. In: Murray-Longmore J, Collier J, Brinsden M, editor. *Oxford Handbook of Clinical Specialities.* 7th ed. New York: Oxford University Press; 2006. p78-9.
21. Büscher U, Horstkamp B, Wessel J, Chen FC, Dudenhausen JW. Frequency and significance of preterm delivery in twin pregnancies. *Int J Gynaecol Obstet.* 2000;69:1-7.
22. American Society for Reproductive Medicine. Multiple gestation and multifetal pregnancy reduction. [Online Fact sheet] 1996 Sept [cited 2007 July 16].
23. Garite TJ, Clark RH, Elliott JP, Thorp JA. Twins and triplets: the effect of plurality and growth on neonatal outcome compared with singleton infants. *Am J Obstet Gynecol.* 2004;191:700-7.
24. National Center for Health Statistics. Multiple births multiply during past two decades. [Online Fact Sheet] 1997 Nov 13 [cited 2007 July 16].
25. Wimalasundera RC, Trew G, Fisk NM. Reducing the incidence of twins and triplets. *Best Pract Res Clin Obstet Gynaecol.* 2003;17:309-29.
26. Guyer B, MacDorman M, Martin J, Peters K, Strobino D. Annual summary of vital statistics-1997. *Pediatrics.* 1998;102:1333-49.
27. Fellman J, Eriksson AW. Stillbirth rates in singletons, twins and triplets in Sweden, 1869 to 2001. *Twin Res Hum Genet.* 2006;9:260-5.
28. Feldman R, Eidelman AI. Does a triplet birth pose a special risk for infant development? Assessing cognitive development in relation to intrauterine growth and mother-infant interaction across the first 2 years. *Pediatrics.*

2005;115:443-52.

29. Luke B, Keith LG. The contribution of singletons, twins and triplets to low birth weight, infant mortality and handicap in the United States. *J Reprod Med.* 1992;37:661-5.
30. Sutcliffe AG, Derom C. Follow-up of twins: health, behaviour, speech, language outcomes and implications for parents. *Early Hum Dev.* 2006;82:379-86.
31. Pharoah PO. Risk of cerebral palsy in multiple pregnancies. *Clin Perinatol.* 2006;33:301-13.
32. Glazebrook C, Sheard C, Cox S, Oates M, Ndukwe G. Parenting stress in first-time mothers of twins and triplets conceived after in vitro fertilization. *Fertil Steril.* 2004;81:505-11.
33. Garel M, Salobir C, Blondel B Psychological consequences of having triplets: a 4-year follow-up study. *Fertil Steril.* 1997;67:1162-5.
34. Pinborg A, Loft A, Schmidt L, Andersen AN. Morbidity in a Danish national cohort of 472 IVF/ICSI twins, 1132 non-IVF/ICSI twins and 634 IVF/ICSI singletons: health-related and social implications for the children and their families. *Hum Reprod.* 2003;18:1234-43.
35. Groothuis, JR, Altemeier WA, Robarge JP et al. Increased child abuse in families of twins. *Pediatrics.* 1982;70:769-73.
36. Bryan E. The impact of multiple preterm births on the family. *BJOG.* 2003;110 Suppl 20:24-8
37. Ellison MA, Hall JE. Social stigma and compounded losses: quality-of-life issues for multiple-birth families. *Fertil Steril.* 2003;80:405-14.
38. Callahan TL, Hall JE, Ettner SL, Christiansen CL, Greene MF, Crowley WF. The economic impact of multiple-

gestation pregnancies and the contribution of assisted-reproduction techniques to their incidence. *N Engl J Med.* 1994;331:244-9.

39. Henderson J, Hockley C, Petrou S, Goldacre M, Davidson L. Economic implications of multiple births: inpatient hospital costs in the first 5 years of life *Arch Dis Child Fetal Neonatal Ed.* 2004;89:542-5.
40. Berkowitz RL. Ethical issues involving multifetal pregnancies. *Mt Sinai J Med* 1998;65:185-90.
41. Miller VL, Ransom SB, Shalhoub A, Sokol RJ, Evans MI. Multifetal pregnancy reduction: perinatal and fiscal outcomes. *Am J Obstet Gynecol.* 2000;182:1575-80.
42. Pector EA, Smith-Levitin M. Mourning and psychological issues in multiple birth loss. *Semin Neonatol.* 2002;7:247-56.
43. Multiple gestation pregnancy. The ESHRE Capri Workshop Group. *Hum Reprod.* 2000;15:1856-64.
44. Lieberman B, Ali R, Rangarajan S. Towards the elective replacement of a single embryo (eSET) in the United Kingdom. *Hum Fertil (Camb).* 2007;10:123-7.
45. Marek D, Langley M, Gardner DK, Confer N, Doody KM, Doody KJ. Introduction of blastocyst culture and transfer for all patients in an in vitro fertilization program. *Fertil Steril.* 1999;72:1035-40.
46. Milki AA, Hinckley MD, Fisch JD, Dasig D, Behr B. Comparison of blastocyst transfer with day 3 embryo transfer in similar patient populations. *Fertil Steril.* 2000;73:126-9.
47. Grobman WA, Milad MP, Stout J, Klock SC. Patient perceptions of multiple gestations: an assessment of knowledge and risk aversion. *Am J Obstet Gynecol.* 2001;185:920-4.

Author Information

Radhika Pingili, MD

Furness General Hospital

Vincent Bamigboye, MRCOG

Furness General Hospital

Kofo Jegede

Medical Student, Furness General Hospital