



NEWS, VIEWS AND COMMENTS

One of the aims of this section of the journal is to offer a platform for the publication and exchange of information by organisations that are involved in care and problems in and around families with multiples. The next three contributions come from such organisations. In issues to come this will be a regular recurring contribution to this section. In the present issue Rebecca Moskwinski will tell something of COMBO; Susan Griffith informs the reader about the National (US) Organization of Mothers of Twins Clubs (NOMOTC), and Yukiko Amau writes on the Japanese mothers of twins association: the JATM.

What is COMBO?

COMBO stands for Council of Multiple Birth Organizations. It was founded at the third conference of the International Society for Twin Studies (ISTS) in 1980 and consists of multi-national organisations of parents of multiples as well as other advocates of multiple birth infants, children and adults. COMBO supports the aims of ISTS to further research and public education in all fields related to twins and twin studies, for mutual benefit of the twins and their families and of scientific research in general.

COMBO underwent a vital reorganisation at the 9th ISTS Congress this year. A Chairman was elected as well as a Vice-Chair who will serve as Secretary. Three directors will serve under them: an Editorial Director, a Program Director, and a Membership Director with an international team to support each of these directors, forming working groups.

COMBO has been concerned with examining and influencing the development of resources on an international scale to help meet the unique needs of multiples and their families. To this end, the 'Declaration of Rights and Statement of Needs of Twins and Higher Order Multiples' was developed in 1995, adopted by COMBO, endorsed by ISTS at the 8th International Twin Congress and published in the first

issue of Twin Research. It is hoped that this document will serve as a benchmark for use in all countries to help develop policies and procedures for dealing with multiple birth families and their needs.

The various advocates and organisations that make up COMBO have much to share with each other and the scientific community. Each has spearheaded programmes and projects that assist multiples and their families in different ways. It is hoped that the sharing of these numerous ideas and studies in these pages will help to spark interest in developing additional studies and resources by other organisations as well as the scientific community. Included in this issue are articles from the National Organization of Mothers of Twins Clubs, Inc. (NOMOTC) on their Multiple Birth Data Base, and the Japanese Association of Twins' Mothers, on some of their recent activities. In future issues, various organisations will share their methods of implementing the 'Declaration of Rights...' in their own countries. Many organisations have research projects they will report on in this journal.

Further, it is our intention to summarise twin-related research for use by COMBO members to help them to better understand these studies. The COMBO organisations can share this cutting-edge research with their membership. We hope these aims will be successful in helping to promote scientific study and mutual understanding between scientists, researchers, and multiples and their families.

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Multiple Birth Database

The National Organization of Mothers of Twins Clubs, Inc. (NOMOTC) – one of the many national COMBO organisations – has one of the largest databases of mothers of multiples and their chil-

dren in the United States and possibly in the world. This 'Multiple Birth Data Base' was initiated in 1987 by NOMOTC. NOMOTC was founded in 1960 for the purpose of educating parents, researchers, educators and the general public to help them better understand the unique aspects of child development relating to multiple birth children. NOMOTC currently has over 20 000 members across the United States of America.

Over 12 000 mothers of multiple birth children have completed a 'Multiple Birth Data Form' (MBDF) to become part of this database. This represents over 22 000 multiple birth children! The MBDF is a two-page questionnaire completed by respondents who are asked questions about themselves, the multiples' father, their multiple pregnancy and their multiple children.

At present, the MBDF serves two main purposes. It is used by the Research Department of NOMOTC to assist them in finding participants for professional research studies. For example, if a researcher is studying hypertension in twin pregnancies, NOMOTC can locate mothers who have had this problem and send them information about the study.

Secondly, the Executive Office of NOMOTC is often called by casting agents looking for twins (usually identical) to be used in filming a television show or a movie. They may ask for 'one-year-old, blond, female identical twins in the New York City area'. The MBDF can help us find the type of twins needed for these shows or movies. The baby in 'Baby's Day Out', a movie released by Twentieth Century Fox studios, was found through NOMOTC's database!

Currently, approximately ten researchers contact NOMOTC's Executive Office each year to search our database, and 30 requests from casting agents are received each year. Over 600 MBDFs are sent in to the Executive Office each year by mothers of multiples. Recently, approximately 1900 entries to the database were studied for NOMOTC by Stacey Allen, a graduate student in Computer Science at the

University of Kentucky. Since these were the first entries in this database, there was a wide range of age of multiples, whilst most of the newer entries contain mainly newborn and very young multiples.

The type of multiples in this subset of the database included 1854 sets of twins, 38 sets of triplets and three sets of quadruplets. Over 90% of their mothers were members of NOMOTC, and about 1% were adoptive mothers of multiples. Eighteen of the mothers of multiples (MOMs) had two sets of multiples, one had three sets, and one had four sets!

About two-thirds of the MOMs were between the ages of 26 and 35 when the multiples were born; 14% were between the ages of 36 and 40; and about 5% were 41 or older. For 40% of the MOMs, the multiple pregnancy was their FIRST pregnancy. About three-quarters of the MOMs had their multiple pregnancy diagnosed in the first or second trimester, but almost 8% did not find out until the time of delivery that they were having more than one baby. About one-fifth of the MOMs had taken birth control pills within 6 months prior to their multiple pregnancy, and 15% had taken fertility drugs. A little less than 1% of the multiple pregnancies were the result of in vitro fertilisation.

About 20% of the MOMs gained more than 50 pounds during their multiple pregnancy; 47% gained 31–50 pounds; and 22% gained 21–30 pounds. About half of the MOMs had Caesarian (C)-sections, whilst 3% had one child vaginally and the second twin by C-section delivery. About one-third of the twins were delivered by C-section, but 80% of the triplets and ALL of the quadruplets were delivered by C-section.

About 46% of the multiples were delivered at 8.5–9 months' gestation, 28% at 8–8.5 months, 13.7% at more than 9 months, 11% at 7 months, and less than 2% at 6 months or less. In 64% of the deliveries, the time between the births of the multiples was less than 5 minutes. About half of the MOMs had no complications. However, 22% had premature labour or delivery; 18% had high blood pressure or toxæmia; 5% had bleeding problems and 1% placenta previa.

The multiples represented in this section of the Multiple Birth Data Base were born between the years of 1943

and 1990, with the majority being born between 1974 and 1988. The types of multiples were: 22.5% boy/girl twins, 18.6% identical girls, 18.1% fraternal boys, 17.6% identical boys, 16.6% fraternal girls, 1.9% triplets, and 0.2% quadruplets.

About two-thirds of the twins weighed between 5 and 7 pounds each at birth, whilst the majority of the triplets weighed between 3 and 5 pounds each, and the quadruplets weighed between 1 and 3 pounds each. About 15% of the twins weighed 7–10 pounds each at birth.

Almost two-thirds of the twins were breastfed for any length of time, whilst 34% of the triplets were breastfed, and none of the quadruplets were breastfed.

Since over 90% of the respondents were members of NOMOTC, this is not considered to be a random study. Because dues are required for membership, the lower socio-economic classes may be under-represented.

Recently, the approach to pregnancy and delivery of mothers of multiples has changed, with much more bedrest prescribed, increase weight gains advised, and a higher number of C-sections being performed. There has also been a huge increase in the birth rate of twins and especially higher-order multiples (triplets, quadruplets, and so on) mainly due to advances in treatment of infertility and aging of the maternal population. It would be most interesting to compare the data in this segment of the Multiple Birth Data Base with more recent entries that reflect the newer trends.

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The Japanese Association of Twins' Mothers (JATM)

JATM was founded in 1968 with only 23 mothers of twins and will be celebrating its 30th anniversary in November of this year. Meanwhile, it became a nation-wide organisation with a membership approaching 4000. The annual membership fee is 4000 Yen and the registration fee is 2000 Yen. JATM

receives no support from firms on a commercial basis. About one half of its members are parents in the process of bringing up infant twins under the age of 5. Most members under such circumstances are seeking helpful information and companionship through the club. Other members, such as mothers working as staff leaders, have formed a Senior Group, after their twins have grown up and started their own lives. The major activities in the last five years include the following.

Opening of a new office Until March 1996, the office of JATM was located at the private residence of Mrs Amau, the founder. In April 1996, a new independent office was opened, equipped with a computer system to cope with the increasing number of members. Several volunteer members work three days a week at the office and more young members are joining in the work.

Starting of 'Twinline' In April 1994, a telephone consultation service called 'Twinline' was begun with the cooperation of 40 members. The hours each member's home telephone was available were listed in the newsletters. These calls were mainly requests for simple information. In January 1997, 'Twinline' was also set up at the JATM office with specialist members answering calls. As a result, consultations now include such serious problems as mental stress caused by bringing up twins, and how to handle them. The specialists have added a new and helpful dimension to 'Twinline'.

Improvement in the content of newsletters Newsletters are published five times a year. Usually they are over 50 pages long. Since the operating expenditure of JATM is covered solely by membership fees, publication of newsletters takes up 53% of annual revenue. The content of newsletters is articles contributed by members on topics announced in previous newsletters, usually consisting of two to three topics in each newsletter. Reports on various lecture and discussion meetings held by JATM are also included to enrich the contents.

Publication of newsletters in English In November 1997, the long-cherished desire to publish newsletters in English was fulfilled with the cooperation of our members. We send these

newsletters to clubs in English-speaking regions that had sent us their newsletters. We hope to publish English newsletters as often as possible. With our progress in recent years, JATM is looking forward to an exciting future of helping multiple birth families with continued progress in the years to come.

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Multiple Birth Watch

Quadruplets were born to a 55-year-old woman last April. The Associated Press reported on 23 April 1998 that quadruplets (three girls and one boy) had been born to a 55-year-old woman at the Birch Hospital for Women in San Diego, California, five days earlier. According to a spokesman from the American Society for Reproductive Medicine, the woman, who requested that her name be withheld, is believed to be the oldest woman in the United States ever to give birth to quadruplets. The hospital would not disclose the infants' weights, but did reveal that the babies were two months premature and were delivered by Caesarean section. A local television station reported that one of the babies weighed only 10 ounces (280 grams) and was in critical condition. The new mother was not married and had been impregnated by in vitro fertilization. The ethics of fertility treatment for older and unmarried women has been a topic for vigorous debate, and this new case triggered considerable additional controversy. Sadly, on 28 April, Reuters News Service reported that one of the premature neonates, a 10-ounce girl, had died after being disconnected from life support.

From reading the news one is left feeling that there is a competition to produce the largest litter at the latest possible age. Agence France-Press reported on 2 June 1998 that a 52-year-old Australian woman had given birth to triplets (two girls and a boy) five weeks prematurely on 28 May at Adelaide's Women's and Children's Hospital. The new mom, Wendy Kenyon of South Australia, was believed to be the oldest person to give multiple birth in

Australian history. The birth followed from an in vitro fertilization of donor eggs of a friend. The health of the newborns was not reported, but there were no suggestions of any problems.

In the U.S., the state of Iowa has recently become an international hot-spot for multiple birth. Of course, the birth of the McCaughey septuplets in Iowa last November drew tremendous media attention. More recently, but with somewhat less fanfare, the Association Press reported on 10 April 1998 of the birth of two sets of quadruplets in two days at the University Hospital in Iowa City. This event would have been noteworthy, but it was made more so by the fact that the four girls born to Kimberly and Daniel Grady were genetically identical (monozygotic). Identical quadruplets are extremely rare. Dr. Jerome Yankowitz, head of the University Hospitals' division of maternal and fetal medicine, was quoted as saying, "The odds are at least 1 in 100 million and possibly greater." Unfortunately, the four girls were born 14 weeks premature and none weighed as much as two pounds (900 grams). I have no further information on their health status.

Predictably, the fraternal quadruplets were born to a couple (Jody and Mike Eastridge) undergoing treatment for fertility problems (in this case by in vitro fertilization), whereas the identical quadruplets were a natural event. Monozygotic (MZ) twinning and MZ higher-order births (triplets, quadruplets, etc.) do not occur markedly more often in most forms of infertility treatment. Dizygotic (DZ) twinning and polyzygotic (PZ) higher-order multiple births are much more common in in vitro fertilization and in women taking fertility-enhancing drugs. This is because the drugs increase the number of eggs a woman produces, and multiple eggs may lead to multiple, genetically distinct offspring. In in vitro fertilization, multiple embryos (usually two to six) are implanted to increase the probability that at least one will be successful. The fertility drugs and in vitro techniques have little or no effect on the probability that a zygote will split to form multiple, genetically identical (MZ) offspring. Thus, while the rate of higher-order multiple birth has increased dramatically in recent years, the rate of higher-order MZ multiple birth has been relatively stable.

New Statistics on Multiple Birth in the United States

In the last issue of *Twin Research* I reported on the availability of data from the National Center for Health Statistics (NCHS; <http://www.cdc.gov/nchswww/>) on multiple birth in the United States for 1995. The NCHS announced on 30 June 1998 that the data for 1996 are now available as part of their lengthy Report of Final Natality Statistics, 1996. To view the data, go to the web page at <http://www.cdc.gov/nchswww/releases/98news/98news/natal96.htm> and download the PDF file (you will need the Adobe Acrobat Reader program to view this file — download this free program from <http://www.adobe.com/prodindex/acrobat/readstep.html>). The report prints beautifully, but it is 100 pages long, so you might want to print selected pages. According to the report, "The number of twins born in 1996 increased 4 percent (100,750 compared with 96,736 for 1995), while higher order multiple births rose 19 percent to an unprecedented 5,939 (nearly 1,000 more compared with 4,973 in 1995). For comparison, there were approximately 1,000 total higher order multiple births in each year during the 1970s. The higher order multiple birth total included 5,298 triplets, 560 quadruplets, and 81 quintuplets and other higher order multiples. The twinning rate grew by 4 percent (from 24.8 to 25.9 per 1,000) and higher order multiple birth rate by 20 percent (from 127.5 to 152.6 per 100,000) from 1995/96. Since 1980, the twinning rate has risen slightly more than a third (from 18.9 per 1,000) and the higher order multiple birth rate has quadrupled (from 37.0 per 100,000)."

Multiple Birth in Armadillos

Genetically identical offspring are anomalies in nearly all animal species (there are a few exceptions among wasps, flatworms and aquatic invertebrates). Genetic diversity of offspring increases the probability that at least some will survive, so the strategy of producing more than one offspring from any single genome is a risky business — putting all of one's eggs in the same basket, so to speak. Those few species that regularly reproduce by

creating multiple genetically-identical offspring do it through a process called polyembryony in which a single embryo splits into two or more embryos. (MZ twinning in humans is also accomplished by polyembryony.) Amazingly, only one vertebrate, the armadillo, an American mammal, reproduces regularly by polyembryony. Six species of nine-banded armadillo always produce litters of four genetically identical offspring. The cellular mechanisms through which this remarkable feat is achieved are unknown, but recent research reported by Loughry and colleagues in the May-June 1998 issue of *American Scientist* (Vol. 86, No. 3, pp. 274-279) sheds some light on how natural selection may have led the armadillo to adopt this unusual reproductive strategy. Loughry and colleagues conducted a series of field studies to determine if armadillos might be benefitting from the altruistic behavior of their genetically identical litter mates. Five years of research led to the conclusion that there was little or no effect of altruism on the survival and reproductive success of armadillos. Anatomical studies of the female armadillo's reproductive tract seem to offer a more promising approach to understanding the evolution of polyembryony than do studies of armadillo behavior. The armadillo uterus is formed such that space allows

no more than one blastocyst to implant in the endometrium. This limitation constrains some species of armadillo to one offspring per birth, but in six species of nine-banded armadillo the growing embryo overcomes this limitation by splitting into four identical embryos. Of course, for the female armadillo's reproductive fitness, four offspring are better than one, even if the four are genetically identical. This explanatory theory for polyembryony in the armadillo was first presented by Gary Galbreath of University of Chicago in 1985, and it is the theory most favored by Loughry and colleagues. An abstract and two figures from Loughry et al.'s paper can be viewed at <http://www.amsci.org/amsci/articles/98articles/loughry.html> along with other information about armadillos and their reproductive habits.

Web Watch

All URLs (web addresses) presented in this author's News and Views articles are also presented as links in a web page at <http://taxa.psyc.missouri.edu/twinnews/> so that interested readers can "point and click" to get to the web-based materials instead of typing the URLs. In addition to these links, the web page includes links to some of the

news and journal sources cited in the paper.

The author also maintains an e-mail list called BGnews on which he transmits messages about news reports of new research findings in behavior genetics and twin research. Much of the news presented above was announced on the mailing list at the time it was first disseminated. To get an idea of what BGnews messages are typically like, browse the BGnews archives at <http://taxa.psyc.missouri.edu/bgnews/>.

If you would like to subscribe to this e-mail list, simply sent an e-mail message to mbmiller@taxa.psyc.missouri.edu with the single word 'subscribe' in the "Subject:" field, and no message text.

Readers with a general interest in twins might like to browse the web sites devoted to twins and twinning that have been indexed in the Yahoo! directory at http://www.yahoo.com/Society_and_Culture/Families/Multiple_Births/Twins/. From this site one may link to the web pages of several organizations for parents of twins, to sites offering products and services for twin families, a usenet news group for parents of twins, and much more.

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