

HIGHER ORDER MULTIPLES – SOCIOECONOMIC IMPACT ON FAMILY LIFE

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Abstract

Aims: Assisted reproduction led to an enormous increase of multifetal gestation. Apart from the obstetrical risks the physical, psychological and socioeconomic problems in families after the birth of higher order multiples often lack attention.

Study Design: Anonymous questionnaires were sent to 92 families who had delivered higher order multiples at our hospital (1983–1998). In a retrospective analysis (rate of return: 70%) the study group included 54 families with triplets, nine families with quadruplets and one family with quintuplets. The questionnaire was divided into three sections: a joint section to be answered by both parents together, and two identical sections for each separately.

Results: Most parents suffered from severe physical and psychological exhaustion mainly caused by worries about the multiples' development, handicaps and acute and chronic diseases as well as by personal and by financial problems. Nearly all of the families had to rely on additional manpower and on financial support. The inability to cope with the "self-inflicted" family-situation as a consequence of "optional" infertility treatment led to feelings of guilt.

Conclusions: Aside from psychological guidance, the need for personnel aid as well as financial and material support in families after the delivery of higher order multiples is striking.

Key words: Divorce, family life, financial burden, infertility treatment, higher order multiples, quadruplets, quintuplets, socioeconomic sequels, triplets.

INTRODUCTION

According to the hypothesis of Hellin the probability of higher order multiples in Europe amounts to 1:85² for triplets, 1:85³ for quadruplets and 1:85⁴ for quintuplets [9]. Assisted reproduction and hormone treatment have led to a far higher incidence of multifetal gestation (Fig. 1) and, as a consequence, to an increase of infants threatened by long-term defects caused by both premature birth and enduring need for intensive care [12]. Apart from increased morbidity and mortality of the premature infants and the mothers, the strain

of caring for three or more neonates at the same time represents an enormous physical and psychological challenge for parents and families [2, 8].

Most studies concerning multifetal gestation in connection with infertility treatment focus on the fetal and maternal outcome. Physical and psychological strain as well as social changes and economic burdens in these families are barely analyzed.

The aim of this study is to extend the view from the mere obstetric and pediatric perspective to a more holistic approach and focus on the manifold strains which higher order multiples bring to family life.

METHODS

Between January 1st 1983 and December 31st 1998, 108 women gave birth to higher order multiples at our hospital. 85% of the mothers (92/108) delivered triplets, 11% (12/108) quadruplets and 4% (4/108) quintuplets. After exclusion of families due to children's death or putting children up for adoption (no multifetal-family-situation) or families' refusal of at-

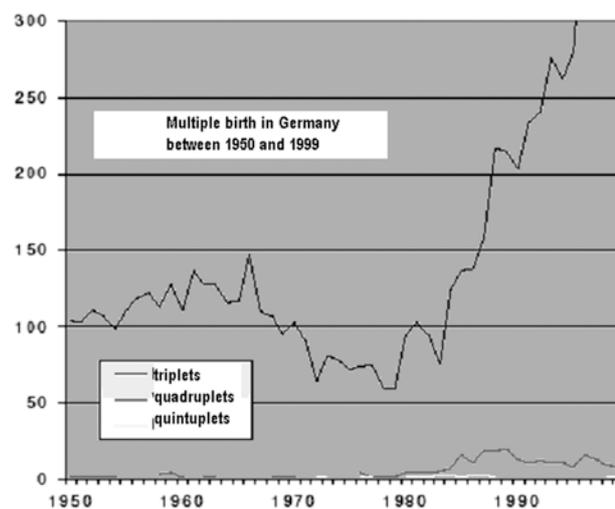


Fig. 1. Incidence of higher order multiples in Germany between 1950 and 1999 [modification from 17].

Table 1. The anonymous questionnaire consisting of three separate parts of questions.

Part 1: Answered by both parents together

- Fertility treatment
- Material support and additional manpower for the family
- Financial load of the family and financial support
- Housing situation of the family and its changes
- Everyday problems outside the house
- Elder and younger siblings of the multiples
- Kindergarten- and school-time of the multiples

Parts 2 and 3 (identical confidential in terms of partnership): Answered individually by mother and father

- School and professional education of the parents
 - Professional changes after the multiples' delivery
 - Leisure activities after the multiples' delivery
 - Physical state of the parents after the multiples' delivery
 - Psychological state of the parents after the multiples' delivery
 - Relationship after the multiples' delivery
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tendance at the study (15%, 16/108), the remaining collective comprised 92 families. These families received an anonymous questionnaire which was subdivided into three sections: a joint section to be answered by both parents together, and two identical confidential sections to be answered by each parent separately (Table 1). The rate of return was 70% (64/92). All mothers sent back their part of the questionnaire (confidential information), and 92% of fathers (59/64) responded. Three fathers refused attendance, one couple was divorced and the father also refused attendance and one father had deceased. Thus 64 families with higher order multiples entered the final analysis, including 54 families with triplets (84%), nine families with quadruplets (14%) and one family with quintuplets (2%). Data calculation was performed using the Windows Microsoft Excel 97.

RESULTS

Fertility treatment: 81% (52/64) of the multifetal pregnancies studied resulted from assisted reproduction. Before the treatment was induced 73% (38/52) of the later parents were informed about the risk of a multifetal pregnancy following fertility treatment, but only 56% (29/52) were especially counseled on the specific risks (e.g. preterm delivery) and long term consequences (children's morbidity and mortality) of a multifetal gestation.

The multiples' development and health: As higher order multiples are always born preterm the infants' immaturity, adverse effects of the intensive care and variable complications affect long-term development and health of the multiples [18]. At the time of the interrogation 62% (67/108) of the children were too small and 70% (76/108) did not reach the appropriate body-weight according to their age. 51% (97/191) faced more than 3 respiratory tract infections a year and

19% (39/203) had to cope with chronic diseases as neurodermatitis, asthma or seizures. 7% (14/203) of children suffered from severe mental handicaps (cerebral palsy). 42% (53/125) had a delay in their physical and 41% (51/125) in their mental development. 6% (13/203) were reliant on walkers or on a wheelchair. 31% (62/203) were diagnosed with ametropia, 4% (8/203) with impairment in hearing and 11% (23/203) with a speech disorder (stutter, complete muteness). 5% (11/203) had to take drugs constantly while 27% (53/197) needed a long-term specialized treatment.

Kindergarten/School: At the time of the questioning the children's median age was 10 years (2-17) and 50 of the children attended or already had completed kindergarten. The mean age at entering kindergarten of the multiples' - four years - was one year later than the general recommendation for children to enter kindergarten in Germany (three years of age). 34% (17/50) of the multiples were separated into different kindergarten-groups or sent to different institutions. The reasons for these separations were the decision of the parents (37%, 6/17) or the recommendation of the kindergarten staff (22%, 4/17) in order to support the children's individualities or to consider the diverging stages of development (19%, 3/17).

At the same time, 42 multiples already went to school. The mean age at enrollment was seven years compared to the age of six years, the general recommended age for children to begin with school in Germany [15]. 40% (17/42) were separated into different classes or schools due to diverging stages of development (25%, 4/17), the need for special schools for physically or mentally handicapped children (22%, 4/17) or due to parental decision (19%, 3/17) in order to promote the multiples' individuality. 43% (18/42) of the multiples had difficulties at school, e.g. learning disability (45%, 8/18) or developmental delay compared to singletons of the same age (36%, 6/18).

Socioeconomic situation: The mean level of the professional education of the multiples' parents was above the German average [16]. 65% (40/62, two did not answer this question) of the mothers had finished a professional examination and 94% (59/63, one did not answer this question) practiced their profession before the multiples delivery. 37% (22/59) discontinued their job for a mean period of 6.5 years. The remaining 63% (37/59) stayed at home permanently. 55% (32/58, one did not answer this question) of the fathers had finished a professional examination and all of them (58/58, one did not answer this question) practiced their profession before the multiples birth (Table 2). 10% (6/59) interrupted their job for a time span of mean 5.6 months, but no father stayed at home permanently. The mothers' monthly income amounted 1.250 € before and 500 € after the multiples' delivery. The fathers earned an average of 1.500 € before and 2.250 € per month at the time of the study due to professional promotion (46%, 26/57, one did not answer this question) or extra work (47%, 27/57, one did not answer this question). Therefore, parents were able to care for their children with a constant overall family income (2.750 € per month) compared

Table 2. Results of part 2 and 3 of the questionnaire (confidential information in terms of partnership).

	Mothers	Fathers
School and professional education of the parents		
No school examination (diploma)	3%	3%
Professional examination	65%	20%
University and specialized study	55%	41%
Professional changes after the multiples' delivery		
Practising a profession before/ after the multiples' birth	94 / 37%	100 / 100%
Professional position after birth:		
• Equal	56%	47%
• Better	25%	46%
• Worse	19%	7%
Leisure activities after the multiples' delivery		
Spare time before/ after the multiples' birth:	20 / 5 hours	20 / 5 hours
Restriction of activities:		
• Fatigue	31%	26%
• Lack of time	23%	28%
• Retreat of friends	14%	13%
Physical and psychological changes after the multiples' delivery		
Physical/ psychological state after birth:		
• Equal	53 / 38%	52 / 46%
• Better	3 / 13%	10 / 24%
• Worse	44 / 49%	38 / 30%
Chronic diseases:		
• Back pain	27%	24%
• Fatigue	20%	12%
• Insomnia	14%	10%
Present mood:		
• Well-balanced, happy, satisfied	45%	55%
• Indifferent, unstable, restless	23%	23%
• Anxious, aggressive, despairing	32%	22%
Changes in partnership after the multiples' delivery		
Relationship/ sexuality after birth:		
• Equal	40 / 35%	49 / 37%
• Better	27 / 5%	20 / 7%
• Worse	33 / 60%	31 / 56%
Improvement in relationship:		
• Support by partner	35%	23%
• Enrichment by children	31%	43%
Deterioration of relationship:		
• No time for each other	38%	42%
• More arguments than before	19%	32%
Deterioration of sexuality:		
• Fatigue	42%	30%
• Her/ his loss of libido	25% / 5%	28% / 17%

to the time before pregnancy. On the other hand 2.750 € per month (multiple family earnings) were clearly below the German average of households with five persons (1991: 3.667 € 1998: 4.300 €) [13].

After the multiples' delivery, 98% (63/64) of the families received financial support and personnel aid (Table 3). 12% (6/52; 12 did not answer this question) of the families experienced the continuous presence of other persons rather troublesome than helpful.

The housing space available to the families became to narrow after the children's delivery. The mean housing space in the multiples' families of 26 m² per person was far below the German average of 39.3 m²; hence 19% (8/42; 22 did not answer this question) of the parents were discontent with their present living conditions, mainly due to lack of housing space (88%, 7/8) or due to a bad environment (13%, 1/8) [14]. The mean number of persons per household in our families counted 5, which was much higher than the

German average of two persons per family unit [13]. Therefore a change of housing conditions became necessary for 73% (47/64) of the families (Table 3).

Simple but essential out-of-home routines such as shopping turned out to be a serious problem for most families, caused by handling with one or even two multiples' buggies additionally to the shopping trolley or keeping an eye on three to five infants while shopping; thus an additional person was always necessary. 81% (52/64) never or only rarely went shopping with their children. Problems mentioned particularly were big effort (42%, 11/26), the oversized baby-strollers (35%, 9/26) and lack of babysitting (8%, 2/26).

Since the multiples' delivery, 21% (13/63; one did not answer this question) of the families had not been on vacation. The median time until a holiday became possible amounted three years (1–7) after the birth of the children. The reasons given were financial restrictions (31%, 4/13), inadequate accommodation (23%,

Table 3. Results of part 1 of the questionnaire.

Support of families with higher order multiples		
Material support	30% 28%	Baby food Baby-care products – diapers (14%), clothes (10%)
Source of support	53% 20% 17%	Companies for baby-care products Friends Relatives
Additional manpower	65% 62% 12%	Relatives, friends, neighbours Assistance engaged by health-insurance, mother and child-foundation (“Landesstiftung für Mutter und Kind”) and community Problems with presence of guests in the family, different persons to whom the multiples relate closely, interference in upbringing and household
Financial situation of families with higher order multiples		
Mean additional costs	1. and 2. year 3. and 4. year	600 € per month 500 – 525 € per month
Recurring support	81% 13%	Governmental child support: 300 – 900 € per month Governmental housing support: 50 – 200 € per month
Non-recurring support	46% 71% 100%	Mother and child-foundation – “Landesstiftung für Mutter und Kind” (450 – 1.000 €) Diverse institutions and foundations (150 – 3.750 €) Relatives and friends (500 – 5.000 €)
Housing situation of families with higher order multiples		
Mean housing space	Before delivery After delivery	100 m ² 130 m ²
Housing conditions	73% 13% 14%	Change (mean 130 m ²) – move (37%), rebuilding (31%), new building (5%) No change for financial reasons (mean 98 m ²) No need for change (mean 150 m ²)

3/13) and outstanding organization and effort (23%, 3/13).

Siblings: Altogether, 64 families of our study had 231 children (mean three children per family). 33% (21/64) of the families had children (28) next to the multiples. 21 older and seven younger than the multiples. 52% (11/21) of the older siblings developed problems after the multiples’ birth, in particular negligence (36%, 4/11), jealousy (27%, 3/11), increased attachment to the parents (18%, 2/11) or aggressions (9%, 1/11). Means to overcome these difficulties included more integration of the older siblings in the multiples’ care (45%, 5/11) and exclusive activities just with these siblings (27%, 3/11). 63% (12/19; two did not answer this question) of the parents with older siblings reported the development of more independence and responsibility in these, after the multiples’ births.

Parents: The parents’ average age at the multiples’ delivery was 31 years (23–40) for mothers and 34 years (27–50) for fathers.

Asked about their physical situation, 61% (39/64) of mothers and 47% (28/59) of fathers suffered from chronic diseases (Table 2). Continuous medication was

needed by 23% (15/64) of mothers and by 15% (9/59) of fathers. At least one stay in hospital was necessary for 44% (28/64) of the mothers and 37% (22/59) of the fathers. 44% (27/62; two did not answer this question) of the mothers felt worse compared to their physical state before the multiples were born, compared to 38% (22/58; one did not answer this question) of the fathers.

The parents’ psychological state after the multiples’ birth worsened for 49% (31/63; one did not answer this question) of mothers and 31% (18/59) of fathers. The main reasons for psychological distress were impaired development of the children (30% of mothers, 28% of fathers), the own or the partners health state (24% of mothers, 28% of fathers), problems in partnership (15% of mothers, 12% of fathers) and the financial situation of the family. Psychological therapy was needed by 8% (5/64) of the mothers and 5% (3/59) of the fathers, due to depression, work overload and anxiety state. Handicaps of the multiples showed a deep impact on the parents’ physical and psychological state. Mothers of handicapped multiples felt physically “worse compared to times before delivery” in 79% (11/14) judged against 33% (16/48) of mothers with healthy multiples, as did 64% (9/14) of fathers with handicapped in contrast to 30% (13/44)

of fathers with healthy multiples respectively. The psychological state of mothers with handicapped multiples was "worse compared to times before the multiples" in 73% (11/15) versus 42% (20/48) of mothers with healthy multiples. Fathers answered this question positive in 43% (6/14) when a handicapped child was present in the family compared to 27% (12/45) in families with only healthy infants.

Concerning the relationship between the parents, 32% (20/63; one did not answer this question) of mothers and 31% (18/59) of fathers considered their partnership as deteriorated since the multiples' birth. 59% (38/63) of mothers and 56% (33/59) of fathers deplored an impairment of their sexuality (Table 2). 2% (1/64) of mothers and 5% (3/59) of fathers had extramarital affairs. 5% (3/60; four did not answer this question) of couples separated or were divorced since their multiples were born.

The parents' leisure activities were substantially reduced after the multiples' births (Table 2). While before delivery mothers met with friends six times and fathers eight times per month, those events were reduced to one and two times per month after the children's birth respectively. The parents especially missed time for their partner and their relationship (26% of mothers, 29% of fathers) and for overall leisure (25% of mothers, 19% of fathers), relaxing at home (15% of mothers, 13% of fathers) and physical fitness (11% of mothers, 18% of fathers).

DISCUSSION

Analyzing the outcome and consequences of multifetal deliveries, the physical, psychological and socioeconomic stress imposed on the families represents as seriously underestimated [5, 20].

Concerning fertility treatment most of the higher order multiple pregnancies studied resulted from assisted reproduction. Only half of the parents had been informed sufficiently about the risk of a multifetal pregnancy and especially about the associated risks and complications of premature birth prior to infertility treatment. In fact, most couples undergoing fertility treatment underestimated the risk of a multiple pregnancy and the deep desire for a child outbalanced the concerns about long-term consequences [6, 10].

Multiples' development and health: The multiples' immaturity at birth combined with consequences and complications of the intensive care accounts for a fragile immune system and a tendency to respiratory infections, for mental and physical retardation and/or permanent handicaps. The actual incidence of retardation and handicaps is difficult to quantify, as for example speech disorders, behavioral deficits, learning disabilities, etc. just show at the accordant stage of development. Thus, the total incidence of handicaps has to be assumed far higher, as many multiples were one to three years of age at the time of the questioning. Frequent acute infections, chronic diseases and particularly physical and mental handicaps require an accurate medical attendance – from both parents and the physicians – and special therapies. The additional care

places time-demanding strain on the parents, as well as extra costs for special treatment.

Time management: The time parents spent with each of their children playing or use for corporal affectionateness had to be divided through the number of infants. As time is always short parents tend to feed all multiples, if only one is hungry, to put all to bed, although only one is tired. Further developed children are therefore slowed down, which is reflected in delayed smiling, crawling, talking, etc. Friends and strangers, but also the parents themselves, tend to treat the multiples rather as a unity than as single persons, which complicates the multiples' individualization.

Kindergarten/School: Aside from physical disabilities, children born as higher order multiples show more difficulty socializing, more developmental delays and behavioral problems than singletons [3]. In our study, the children entered kindergarten or school one year later than recommended by the German school system. This was due to developmental delay of the multiples compared to term-born children. The multiples' separation into different groups or different institutions - in order to meet their different stages of development and to advance their individuality - increased with the change from kindergarten to school. Differences in development became apparently more obvious with the multiples' age. Almost half still had severe school problems.

Socioeconomic situation: The professional education of the parents was clearly above the German average [16]. This selection might be caused by the older age of the couples and the necessary financial background to afford the "expensive" assisted reproduction.

Although the fathers earned more after the multiples' birth as a result of professional promotion and/or extra work, the monthly family income was clearly under the German average of households with five persons. While prior to their multifetal pregnancy the couples financially belonged to the higher middle class, they experienced a significant descent after birth of their children, caused by the change from double to single income and the simultaneous rise of family size.

The sudden growth of the family with its exaggerated needs of three to five babies at once (e.g. cots, buggies for multiples, clothes, diapers, food, toys), the necessary care for multiple children at once and the coping with household and/or job represented an enormous financial and personnel problem for the parents; virtually all of them had to rely on external support (Table 3).

Preparing a household for multiple neonates requires more space, which meant moving to a bigger flat or a house or the conversion for two third of the families, as well as multiple sets of baby-furnishings and clothing, the financing of a personnel aid or a bigger car adapted to the new size of the family. Combined with the left out salary of the mothers this represents a big economic burden to the parents and cannot be handled without financial support. So far Germany does not offer a reliable system of financial support for families with higher order multiples. Therefore, the

parents were dependent on individual information given by physicians, hospitals and other parents of multiples. Beside the financial load for the families the society bears the enormous costs (220.000 \$ per family with higher order multiple gestation compared to 20.000 \$ for a twin-family) for the stay in the hospital with intensive care [3, 11].

Almost all families in our study received material support, especially by companies of baby-care products. This did not cover by far the needs of the families, but made the start into a new exhausting period of life easier. The parents felt ambivalent about this support. On the one hand they were grateful for material and financial aid, on the other hand they suffered from the position as “petitioners” and the multiples’ “commercialization”, as well as from the awareness not to be able to cope with this “self-inflicted” situation. Tending to fulfill all needs of the children simultaneously and managing a suddenly enlarged household overwhelms a single person, as Bryan puts it: “It is not just exhausting: there are not enough hours in the day” [1]. Additionally, most mothers are exhausted from a tiring pregnancy and delivery, and often are not prepared for the new situation at home. All families were reliant on personnel support either from relatives, friends or by professionals (household assistance). The permanent presence of “strangers” in the families, to many different persons as guardian for the multiples and dissents between the parents and the nannies caused some parents to perceived this support rather a strain than a helpful assistance.

Although many families had moved into larger homes or apartments, the families in our study group still lived in homes sized far below the German per head average [14].

Higher order multiple families have to cope with everyday problems outside of home. Most parents rarely or never went shopping with the multiples. For these excursions, a second person was obligatory, either to care for the children or to take over the purchases. Parents perceived sensationalism, curiosity and lacking cooperation of others. Similar reasons as well as financial restrictions made it also difficult or even impossible for the families to go on holiday.

Siblings: One third of the couples had children prior or after the multiples. For the older siblings the multiples birth represented a serious alteration of their position within the family and a permanent change in parental attention. To counteract thereby arising neglect, jealousy or aggressions, integration in the multiples’ care and exclusive interaction with the siblings was important. When these mechanisms were implemented in family life the long-term development of two thirds of the older siblings reached a status of more independence and responsibility.

Parents: Multifetal pregnancies mean greater physical strain to mothers to be than singleton pregnancies. Stress levels increase with the number of children. Preterm labour complicated 43% of triplet-, 71% of quadruplet- and 75% of quintuplet-pregnancies, while preterm premature rupture of membranes threatened 19% of triplet-, 43% of quadruplet- and 50% of quin-

tuplet-pregnancies respectively [18, 19]. Thus, most women were hospitalized for several weeks even before delivery and multiples were always delivered by cesarean section. After a troublesome pregnancy and operative delivery the mothers had to cope with the sudden enlarged household and the intensive care for three, four or five premature newborns. Time for recovery was short and in most cases less effective. Fathers were torn between working extra hours to finance the family’s needs and to help at home. Within a few days parents accumulated a chronic sleep deficit. Work at home and at the job combined with missing spare time exhausted both mothers and fathers. Thus many of the chronic diseases as backache, hypertonus, stomach trouble or headache traced back to long-term overload. The strain on the parents consisted of manifold aspects: Handicaps, diseases and developmental delays of the infants added to the psychological pressure lying on parents. Feelings of guilt, worries about the children’s further development and difficulties to accept handicaps of the infants were the major long term sequels of this enduring parental stress. Parents of handicapped multiples – and especially the mothers – felt by far more exhausted (physically and psychologically) compared to parents of healthy multiples.

After delivery two thirds of the mothers had abandoned their former professional activity to stay at home in order to care for children and household. On one hand fathers had the exclusive responsibility for the family’s increased financial requirements, on the other hand the “change of scenery”, social contacts and a job “beside the multiples” were advantages withheld from many mothers. This deficit in socialization contributed essentially to their emotional stress. According to Bryan’s quotation “Many mothers cannot take their babies out and become housebound and very isolated” [1], the mothers’ reengagement some years after delivery, if actually possible, did not happen only for financial, but often also for social reasons. A further source of stress, combined with the fact of the single-income-family-situation, were the permanent rising financial demands, which burdened especially the fathers.

Because of fatigue, lack of time and/or babysitter, most parents gave up leisure activities, leading to social isolation particularly in the first years. Many couples worried about their partnership, which suffered due to lack of private time together and time for their relationship, psychological pressure from the multiples’ demands and mere exhaustion. Consequently it did not surprise that one third of parents complained about a partnership-deterioration. More than half felt guilty for not spending enough time with their partner, but at the same time blamed the other for the deficiencies in their relationship and family life. Compared to data from the literature, only few of the couples (5%) analyzed in this study separated or were divorced during the study period. Beside that also the rate of 2% of mothers and 5% of fathers who confessed extramarital affairs was low compared to other investigations. Parents who had become pregnant via ART perceived their inability to manage the new situation as personal failure, since they had consciously taken the risk of multiples by opting for infertility treatment. Many cou-

ples had difficulties to ask for support in this “self-inflicted” situation from relatives or friends [4].

CONCLUSION

Similar to data from twin studies the birth of higher order multiples alters family life dramatically [20]. Delayed development of the children, illnesses, congenital handicaps and the therefore necessary intensive care and long term pediatric treatment, socioeconomic burdens (e.g. family income, housing space), chronic extensive work overload for both parents and worries about the partnership lead to severe physical and psychological exhaustion and parental separation/divorce. The presented data underline that socioeconomic burden and medical parental risks caused by a multifetal birth are extensively underestimated, and particular support to these families is indispensable. The assistance for these families should contain continuous additional manpower, financial support and help in terms of housing conditions. Furthermore, psychological care for parents as well as advice and consequent observation and support of the infants' development is crucial to these families [7]. Being aware of the medical and socioeconomic sequels of a multifetal pregnancy, primary prevention strategies (e.g. single embryo transfer) gain predominant importance. Furthermore, counseling about the risks of a higher order multiple pregnancy, already prior to the implementation of assisted reproduction techniques in the treatment of the infertile couple is essential, as the risks are considerably underrated by obstetricians and patients. In this context medical professionals are biased by their wish to satisfy their patient therapeutic desires as well as to realize their own (financial) goals, treating an infertile couple. Parents on the other hand, tend to push away their concerns about a multifetal pregnancy for their anxiety of treatment failure. Therefore clear information and the building up of sustaining structures, such as family support, financial assistance, home help, psychological treatment has to begin already at an early stage of pregnancy.

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