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REGULAR ARTICLE

How do lesbian couples compare with heterosexual *in vitro* fertilization and spontaneously pregnant couples when it comes to parenting stress?

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ABSTRACT

Aim: To study parenting stress in lesbian parents and to compare that stress with heterosexual parents following *in vitro* fertilisation (IVF) or spontaneous pregnancies.

Methods: This survey took place during 2005–2008 and was part of the Swedish multicentre study on gamete donation. It comprised 131 lesbian parents, 83 heterosexual IVF parents, who used their own gametes, and 118 spontaneous pregnancy parents. The participants responded to the questionnaire when the child was between 12 and 36-months-old and parenting stress was measured by the Swedish Parenting Stress Questionnaire (SPSQ).

Results: Lesbian parents experienced less parenting stress than heterosexual IVF parents when it came to the General Parenting Stress measure ($p = 0.001$) and the subareas of Incompetence ($p < 0.001$), Social Isolation ($p = 0.033$) and Role Restriction ($p = 0.004$). They also experienced less parenting stress than heterosexual spontaneous pregnancy couples, according to the Social Isolation subarea ($p = 0.003$). Birth mothers experienced higher stress than co-mothers and fathers, according to the Role Restriction measure ($p = 0.041$).

Conclusion: These are reassuring findings, considering the known challenges that lesbian families face in establishing their parental roles and, in particular, the challenges related to the lack of recognition of the co-mother.

INTRODUCTION

Parenthood is often a very longed for and fulfilling life experience. However, parenting can also be stressful. Parenting stress has been described as one dimension of mental health in studies of parents of infants and toddlers (1).

Östberg et al. (1) defined parenting stress as stress resulting from the conflict between parental resources and the demands of the parental role. Antenatal depression and postnatal depression (2) have been described as factors that have an impact on parenting stress. Parenting stress may affect the family environment and thus influence parenting behaviour, the child–parent relationship (3) and the intimate couple relationship (4).

Recently, Graham and Barnow (5) studied stress and social support in same-sex and opposite-sex couples. They found that, irrespective of sexual orientation, social support from family and friends was directly related to well-being. Ostberg and Hagekull (3) argued that social support has a major, and not merely a moderating, effect on parental stress. Moreover, mothers with lower educational attainment, increased number of children and of a younger or older maternal age than the average (1) have been found to experience more stress. For fathers, poor social support, lower economic status and low relationship satisfaction have been identified as risk factors for increased parental stress (6).

Divorce and separation rates are high among new parents and may add stress to the experience of parenting (7). Many of the divorces in Sweden take place during the first child's

Key notes

- This study compared the parental stress experienced by 131 lesbian parents, 83 heterosexual IVF parents, who used their own gametes, and 118 spontaneous pregnancy parents.
- Lesbian parents appeared to be well adjusted to parenting, but some aspects of parenting differed between lesbian parents and heterosexual parents, for example, the co-mother's role.
- Health care professionals need to acknowledge the lesbian co-mother as a parent and involve her in caregiving and counselling.

first 18 months (4). Alhborg and Strandmark (4) studied first-time parents' experiences of their intimate relationship. They found that, although parenthood was highly desired by the couples, the couples were unaware of, and not well prepared for, the demands of parenthood and the strain on their relationship that the arrival of the new baby would bring.

The psychological burden of undergoing IVF treatment has frequently been reported to be stressful to the couple (8,9), and may affect the couple's early adjustment to parenthood (10).

Empirical studies of parenting in lesbian two mother families have agreed that there are some differences between lesbian parents and heterosexual families. Compared to heterosexual fathers, lesbian co-mothers are more committed as parents, spend more time with their children and less on employment, report higher levels of emotional involvement and show lower levels on limit setting during observations of the parent–child relationship (7). Nevertheless, lesbian mothers and co-mothers face unique potential challenges to parenting, not least those arising from the common lack of recognition in society for two mother families (11) and the difficulties that this may cause for the co-mother.

Worries about the lack of a genetic link to the offspring in assisted reproduction families, and its effect on parent–child relationships, have been expressed. However, Golombok et al. (12) concluded that it appears that the absence of a genetic and or gestational link between parents and their child does not have a negative impact on parent–child relationships or the psychological well-being of mothers, fathers or children at the age of three.

There is limited information about the parenting experiences of different groups of parents. However, a recent and comprehensive review of the literature regarding the development and adjustment of children whose parents are the same gender, documented that was no association between the parents' sexual orientation and the child's emotional, psychosocial and behavioural development (13). Instead, many other factors were more likely to affect the psychosocial development and adjustment of the children. These included poverty, parental depression, parental substance abuse, divorce, domestic violence and the financial support families received from public policy and programmes (13).

The aim of this study was to investigate parental stress among lesbian couples and to identify predictors for parental stress among lesbian donor conception parents, heterosexual IVF parents and parents with a spontaneous pregnancy.

PARTICIPANTS AND METHODS

The Swedish study of gamete donation is a prospective longitudinal study that aims to investigate psychosocial and medical aspects of conception with donated gametes. This multicentre study includes studies of both the donors and the recipients of donated gametes, as well as a comparison group of heterosexual couples using IVF treatment with their own gametes. Participants were recruited from all fertility clinics performing gamete donation in Sweden, the university hospitals in Stockholm, Göteborg, Uppsala, Umeå, Linköping, Örebro and Malmö. Participants were recruited consecutively during 2005–2008. For recipients, the longitudinal study consisted of data collection at three time points: when they started treatment (T1), 2 months after treatment (T2) and about 3 years after successful treatment (T3) when the child was between 12 and 36 months old.

Sample and data collection

This study includes data collected at (T3) from lesbian sperm recipient couples and heterosexual couples who underwent successful IVF treatment with their own gametes that resulted in the birth of a child. In addition, couples with a spontaneous pregnancy were included for comparisons. The couples with a spontaneous pregnancy were approached for study participation in May 2008 when their child was approximately 1 year old.

Inclusion criteria for this study were that the subjects would be able to read and understand Swedish well enough to answer the questionnaire, had answered 29 or more of the 34 SPSQ items and that the child would be their first joint biological child. The inclusion of parents is shown in Figure 1. The response rates were as follows: lesbian birth mothers 89.6%, lesbian co-mothers 80.5%, heterosexual birth mothers 82.7%, heterosexual fathers 77%, spontaneous pregnancy mothers 42.2% and spontaneous pregnancy fathers 48.4%.

An analysis of the responders and nonresponders between T1 and T3, revealed that lesbian responders were younger (mean 33,7; SD 4,4) than nonresponders (mean 35.6; SD 5.4) $p = 0.001$. It also found that a greater percentage of heterosexual IVF couples (57.8%) had a university degree than the nonresponding individuals (44.2%) $p = 0.032$. When we compared the included and excluded primipara parents, we found that the lesbian muliparas were older (mean 38.0; SD 3.6) than the primiparas (mean 33.5; SD 4.4) $p = 0.016$. There were no differences in age between the included primiparas and excluded multiparas in the heterosexual and spontaneous pregnancy couples.

The comparison of educational level between included primiparas and excluded multiparas revealed only one difference. The percentage of individuals with a university degree in the spontaneous pregnancy group was higher among the primipara parents (66.9%) than the mulitpara parents (53.1%) $p = 0.024$.

The questionnaire was distributed by mail together with a prepaid return envelope and a covering letter stating the purpose of the study and guaranteeing confidentiality. The partners in the couples received one questionnaire each and were asked to complete the questionnaire individually. Two reminders were sent to nonresponders.

At the commencement of treatment (T1) 157 of 165 lesbian couples (95.2%) chose to conceive with an identity-release donor, which means that the donor's identity will be

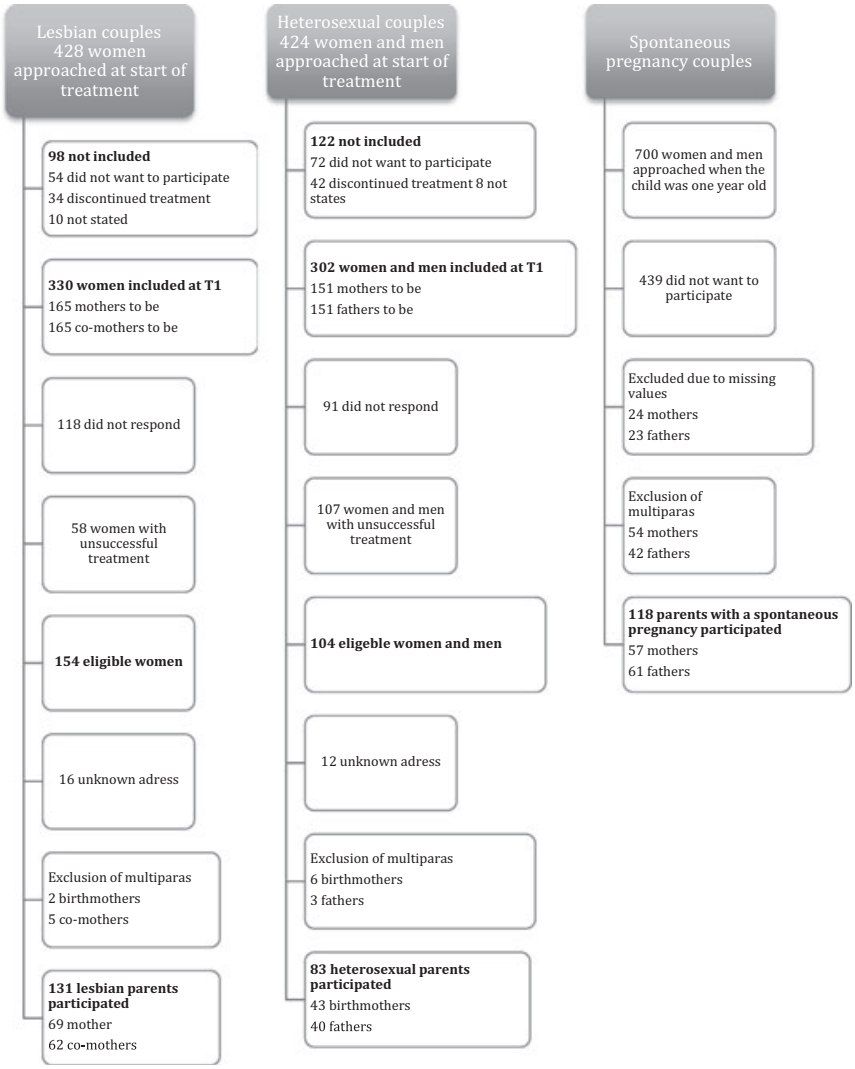

Figure 1 Flowchart of included and excluded participants.

available to the donor-conceived child when he or she has reached maturity or adulthood. The parents of the donor-conceived child have no information about the donor identity. When they undertake donation treatment in Sweden, both of the lesbian women in a couple have full legal parental rights and obligations. The lack of a third party, a known donor, in the lesbian relationship means that the lesbian couples are autonomous in parenthood. The heterosexual couples used their own gametes when they underwent IVF treatment to conceive and had a biogenetic link to their offspring. From this point of view, IVF conception is similar to nonassisted conception where both parents have a biogenetic link to the offspring. Hence, the relationship of heterosexual IVF couples is also not affected by a third party, nor is the relationship of the couples with a spontaneous pregnancy. Our aim, when study the parenting stress in lesbian parents, was to compare them with other parents who conceived with their own gametes, striving to create as 'clean' and as natural groups as possible. These similarities provide rationales for the comparisons between the couples.

Demography

Demographic data from participating individuals at time point 3 are displayed in Table 1. There were no age difference between lesbian birth mothers and heterosexual IVF mothers ($p = 0.200$) or between lesbian birth mothers and spontaneous pregnacy mothers ($p = 0.152$), however, heterosexual IVF mothers were older than spontaneous pregnancy mothers ($p = 0.017$). Lesbian co-mothers were younger than heterosexual fathers ($p = 0.038$). There were no age differences between lesbian co-mothers and spontaneous pregnancy fathers or between heterosexual fathers and spontaneous pregnancy fathers ($p = 0.624$; $p = 0.107$ respectively).

The co-mothers and fathers had a lower level of education than mothers ($p = 0.002$). There were no differences in the level of educational between the couples ($p = 0.887$) (data not shown).

Table 1 Demographic data of participating couples

Variable	Lesbian ART parents, n = 131				Heterosexual IVF parents, n = 83				Spontaneous pregnancy parents, n = 118			
	Mothers, n = 69		Co-mothers, n = 62		Mothers, n = 43		Fathers, n = 40		Mothers, n = 57		Fathers, n = 61	
	n	%	n	%	n	%	n	%	n	%	n	%
Age												
Mean (SD)	33.20 (3.75)		33.85 (4.99)		34.11 (3.54)		35.70 (3.82)		32.94 (3.93)		34.29 (4.59)	
<35 years	28	40.6	25	40.3	19	44.2	24	60.0	13	22.8	28	46.0
≥35 years	40	58.0	37	59.7	24	55.8	16	40.0	36	63.2	27	44.2
Missing	1	1.4							8	14.0	6	9.8
Education												
≤12 years	25	36.2	32	51.6	13	30.2	20	50	16	28.1	25	41.0
>12 years	44	63.7	29	46.7	30	69.7	18	45	41	71.9	36	59.0
Missing		1				2						

Two lesbian couples gave birth to twins after sperm insemination. In the heterosexual IVF parents and spontaneous pregnant parents there were only singletons. In the group of spontaneous pregnant parents, 70% (n = 83) of pregnancies were planned, 13% (n = 15) unplanned and data from 17% (n = 20) is missing.

Measures

Parenting stress

Parenting stress was assessed using the Swedish Parenting Stress Questionnaire (SPSQ). The SPSQ is a validated and standardised inventory designed for Swedish conditions (1). The SPSQ inventory is based on parts of the Parent Domain of the American Parenting Stress Index (14). This self-reported inventory is designed to yield a measure of the parental experiences of stress related to their parenthood. The inventory consists of 34 items divided into five subareas. General parenting stress was defined as mean SPSQ sum score (1,15). The SPSQ score can range from one to five, with one indicating no/low stress and five indicating high stress. The items are divided into five subareas of parenting stress. General parenting stress is the mean of all the subareas together. The subarea incompetence consists of 11 items, including 'More difficult than expected to be a parent' and 'Feeling comfortable being a parent'. Role restriction, with five items, is concerned with life restrictions arising because of the parents' responsibilities, with items such as 'No private time' and 'Child takes all time'. Social isolation uses seven items to examine feelings of loneliness and the availability of social contacts when needed: 'More contact with other parents' and 'Feelings of loneliness'. Spouse relationship problems, with five items, concerns partnership issues such as 'More problems in relationship with spouse' and 'less support than expected from spouse'. Health problems uses four items to measure parental physical health including, for example 'More infections than before' and 'Feeling good physically'.

Statistics

In testing for group differences in background data Pearson's Chi^2-test was used on categorical data. Students *t* -tests were used for continuous data. All statistical tests performed were two-tailed with $p < 0.05$ considered statistically significant and IBM SPSS version 20 (IBM Corporation, Armonk, NY, USA) was used for all analysis.

A hierarchical multivariate linear regression was performed with variables entered in blocks in a predetermined order. The rationale for using the predetermined order in this study was to see whether or not and how the coefficients changed when adjusted for demographic factors. Block 1 included the variable Couple (lesbian, heterosexual IVF, spontaneous pregnancy). Block 2 included the variables, Parent (mother, co-mother/father), Education (≤12 years, >12 years) and Age (<35 years, ≥35 years).

Missing data on single items were random and there were no correlations between missing data and certain subareas.

RESULTS

SPSQ-scores are displayed in Table 2. The analyses revealed significant differences in parenting stress between the couples with lesbian parents reporting the lowest levels of parenting stress (lesbian vs heterosexual $p = 0.001$; lesbian vs spontaneous pregnacy $p = 0.015$) Table 3 displays the comparison between birth mothers and co-mothers and fathers, showing that diverse patterns of parenting stress were found. The greatest differences were found amongst the birth mothers and the lesbian birth mothers reported lower scores than heterosexual IVF-mothers on General parenting stress ($p = 0.002$), Incompetence ($p < 0.001$) and Role Restriction ($p = 0.007$) and lower scores than spontaneous pregnancy mother in the subarea Social isolation ($p = 0.042$) (Table 4). Heterosexual IVF mothers reported higher parenting stress than did spontaneous pregnancy mothers as concerns these three

Table 2 Parenting stress in Lesbian ART couples, Heterosexual IVF-couples and couples with spontaneous pregnancy

	Lesbian ART couples, n = 131		Heterosexual IVF couples, n = 83		Spontaneous pregnancy couples, n = 118				
Variable	M	(SD)	M	(SD)	M	(SD)	p-value*	p-value**	p-value***
General parenting stress	2.26	0.44	2.48	0.48	2.30	0.55	0.001	0.484	0.015
Subscales									
Incompetence	1.85	0.56	2.16	0.58	1.92	0.65	0.000	0.411	0.007
Role restriction	3.23	0.70	3.52	0.70	3.15	0.79	0.004	0.402	0.001
Social isolation	1.84	0.58	2.02	0.63	2.08	0.72	0.035	0.003	0.505
Spouse relationship problems	2.03	0.92	2.11	0.73	2.09	0.75	0.481	0.596	0.790
Health problems	2.73	0.79	2.86	0.82	2.56	0.78	0.222	0.107	0.010

Comparisons between groups, regarding mean value on each scale, are based on Independent sample *t*-test.
SD = Standard Deviation.
M = Mean.
*Comparison between Lesbian ART couples and Heterosexual IVF couples.
**Comparison between Lesbian ART couples and Spontaneous pregnancy couples.
***Comparison between Heterosexual IVF couples and Spontaneous pregnancy couples.

Table 3 Parenting stress in Lesbian ART couples, Heterosexual IVF-couples and Spontaneous pregnancy couples

	Lesbian birth mothers, n = 69		Heterosexual mothers, n = 43		Spontaneous pregnancy mothers, n = 57				
Variable	M	(SD)	M	(SD)	M	(SD)	p-value*	p-value**	p-value***
General parenting stress	2.27	0.43	2.56	0.46	2.33	0.61	0.002	0.102	0.539
Incompetence	1.84	0.53	2.30	0.59	1.93	0.76	<0.001	0.248	0.438
Role restriction	3.29	0.65	3.64	0.64	3.23	0.80	0.007	0.153	0.649
Social isolation	1.81	0.56	1.95	0.63	2.06	0.78	0.240	0.072	0.042
Spouse relationship problems	2.09	1.01	2.11	0.71	2.03	0.82	0.946	0.300	0.731
Health problems	2.69	0.76	2.95	0.83	2.67	0.82	0.100	0.968	0.903
	Lesbian co-mothers, n = 62		Heterosexual fathers, n = 40		Spontaneous pregnancy fathers, n = 61				
Variable	M	(SD)	M	(SD)	M	(SD)	p-value****	p-value*****	p-value******
General parenting stress	2.25	0.46	2.41	0.48	2.28	0.48	0.687	0.040	0.208
Incompetence	1.87	0.60	2.00	0.52	1.90	0.53	0.713	0.001	0.383
Role restriction	3.16	0.75	3.38	0.75	3.07	0.78	0.530	0.006	0.051
Social isolation	1.86	0.59	2.09	0.63	2.10	0.66	0.036	0.446	0.917
Spouse relationship problems	1.96	0.79	2.12	0.76	2.13	0.68	0.198	0.656	0.955
Health problems	2.76	0.82	2.77	0.80	2.46	0.74	0.034	0.099	0.056

M = Mean.
SD = Standard Deviation.
*Comparison between Lesbian birth mothers and Heterosexual mothers.
**Comparison between Lesbian co-mothers and Heterosexual fathers.
***Comparison between Lesbian birth mothers and Spontaneous pregnancy mothers.
****Comparison between Lesbian co-mothers and Spontaneous pregnancy fathers.
*****Comparison between Heterosexual mothers and Spontaneous pregnancy mothers.
******Comparison between Heterosexual fathers and Spontaneous pregnancy fathers.

measures: General parenting stress (p = 0.040), Incompetence (p = 0.001) and Role restriction (p = 0.006),

Comparisions between co-mothers and fathers showed a difference in the subarea social isolation were spontaneous pregnancy fathers had higher scores than lesbian co-mothers (p = 0.032).

The results were confirmed in the hierarchical analyses where the lesbian couples had the lowest stress scores. The

Table 4 Significant predictors of parenting stress; Hierarchical linear regression (Lesbian couples reference)

	General parenting stress block 1		Incompetence block 1		Role restriction block 1		Social isolation block 1		Spouse relationship problems block 1		Health problems block 1	
Variable	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value
Couple type												
Heterosexual	0.23 (0.09–0.36)	0.001	0.31 (0.14–0.48)	<0.001	0.29 (0.08–0.50)	0.006	0.20 (0.02–0.38)	0.033	0.09 (−0.14–0.32)	0.445	0.11 (−0.11–0.34)	0.324
Spontaneous	0.05 (−0.08–0.18)	0.442	0.08 (−0.08–0.24)	0.322	−0.07 (−0.27–0.12)	0.447	0.25 (0.09–0.41)	0.003	0.07 (−0.14–0.29)	0.499	−0.16 (−0.37–0.05)	0.128
Lesbian	Reference		Reference		Reference		Reference		Reference		Reference	
	General parenting stress block 2		Incompetence block 2		Role restriction block 2		Social isolation block 2		Spouse relationship problems block 2		Health problems block 2	
	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	p-value	B (95% CI)	P-value
Couple type												
Heterosexual	0.23 (0.09–0.37)	0.001	0.32 (0.15–0.48)	<0.001	0.30 (0.09–0.51)	0.004	0.20 (0.02–0.38)	0.033	0.08 (−0.15–0.32)	0.481	0.11 (−0.11–0.34)	0.320
Spontaeous	0.06 (−0.71–0.17)	0.400	0.09 (−0.07–0.25)	0.322	−0.07 (−0.26–0.12)	0.495	0.23 (0.07–0.40)	0.007	0.08 (−0.14–0.30)	0.464	−0.15 (−0.36–0.06)	0.149
Lesbian	Reference		Reference		Reference		Reference		Reference		Reference	
Parent												
Mother	0.06 (−0.04–0.09)	0.204	0.10 (−0.04–0.24)	0.153	0.17 (0.01–0.34)	0.041	−0.08 (−0.23–0.06)	0.269	0.06 (−0.13–0.24)	0.561	0.12 (−0.06–0.30)	0.196
Co-mother/ Father	Reference		Reference		Reference		Reference		Reference		Reference	
Education												
>12 years	−0.02 (−0.14–0.19)	0.723	−0.10 (−0.24–0.04)	0.161	0.00 (−0.17–0.17)	0.976	0.09 (−0.06–0.24)	0.226	−0.04 (−0.23–0.15)	0.663	−0.02 −0.21–0.16)	0.821
≤12 years	Reference		Reference		Reference		Reference		Reference		Reference	
Age												
>35 years	0.02 (−0.10–0.13)	0.754	0.05 (−0.09–0.19)	0.475	0.10 (−0.06–0.27)	0.221	−0.05 (−0.20–0.09)	0.474	−0.07 (−0.26–0.12)	0.492	0.02 (−0.17–0.20)	0.875
≤35 years	Reference		Reference		Reference		Reference		Reference		Reference	

B = Beta-coefficient (β).
95% CI = 95% Confidence interval for Beta (β).

coefficients for couple type changed only marginally when demographic variables were entered into the second block in the hierarchical analysis. In block 1, the lesbian ART couples displayed lower levels of General parenting stress than the heterosexual IVF couples (significant $p = 0.0001$) and in the subareas, Incompetence (significant $p < 0.001$), Role restriction (significant $p = 0.006$) and Social isolation (significant $p = 0.033$) and lower stress than the spontaneous pregnancy couples in the subarea Social isolation (significant $p = 0.003$). Block 2 displayed associations with couple type and stress in the same subareas as in block 1 when adjusted for demographic variables. Being the birth mother was associated with higher parenting stress than being a co-mother or a father in the subarea Role restriction (significant $p = 0.042$). Comparing heterosexual IVF parents with spontaneous pregnancy parents, heterosexual IVF parents experienced more stress on General parenting stress (significant $p = 0.034$) and in the subareas Incompetence (significant $p = 0.037$) and Health problems (significant $p = 0.028$) (data not show).

DISCUSSION

The main finding in this study was that the lowest parenting stress was reported by the lesbian parents, which is the group of parents that in many countries other than Sweden do not have access to assisted reproduction and/or are not allowed to adopt children. The mean general parenting stress score reported by the lesbian couples in this study was similar to what has previously been reported for Scandinavian samples. For instance, Östberg et al. (1) reported a general parenting stress score of 2.52 from 1081 mothers, Widarsson et al. (16) 2.41 for mothers and 2.30 for fathers and Skreden et al. (17) 2.39 for mothers and 2.30 for fathers.

The present results show that lesbian parents reported lower parental stress related to feelings of incompetence as a parent and social isolation in comparison with heterosexual parents following IVF treatment. These findings may be explained by the fact that lesbian couples are more egalitarian in their roles than heterosexual couples (30–33) and share childcare more equally (7). It has been suggested that the concept of primary and secondary caregiver does not exist in lesbian parents (18) and that same-sex couples may be more effective than their heterosexual counterparts in their ability to navigate conflicts (19) and to work harmoniously on joint tasks (20). Some authors have suggested that lesbian couples might benefit from the presence of two women in the couple and that lesbian couples are able to operate more easily in terms of equality because partners in lesbian couples create their relationships without reference to traditional gender roles (21). Marital satisfaction has been found to be one of the most important predictors of an individual's psychological well-being during the transition to parenthood (22) and previously we have reported high relationship satisfaction in this group of lesbian couples at the commencement of assisted reproduction (23). Moreover, it has also been suggested that women are better support providers than men and that the ability of female partners to provide better support than male partners may explain lower levels of conflict in lesbian couples (24). Taking these aspects together, it is reasonable to believe that they contribute to explaining why the lesbian couples in this study report lower experience of parenting stress than the groups with which they were compared.

Disclosure about sexual orientation or 'to be out' has been described as a key factor to receiving social support for lesbian women and lesbian women who 'are out' are more likely to align with friends and receive social support (25,26).

Although we did not investigate social support from different sources in this study, one can assume that, as the lesbian couples in this study were living in committed relationships and starting families, they 'are out' and are living in contexts where they receive good social support.

Not surprisingly and in accordance with other studies (1,16,17) parenthood was perceived as role restricting by parents in this study, although less so for the Lesbian ART parents. All parents had scores above the scale midpoint, ranging between 3.07 and 3.64 in this subarea. As has been found previously (16,17), we found that birth mothers experienced more stress than co-mothers and fathers in the subarea Role Restriction. Lesbian women probably are more egalitarian in their parental roles and in sharing the parental leave. Although heterosexual couples in Sweden are relatively egalitarian in sharing parental leave, it is primarily the birth mother who stays at home with the baby during the first year (27). If this was the case for the lesbian parents in this study, this could be one explanation for the higher experience of role restriction in lesbian birth mothers compared to lesbian co-mothers.

Child caretaking problems have previously been found to be related to the mothers' experience of stress (3,28). However, in this study we did not investigate the associations between the mothers' stress and her perception of the child. Given that lesbian-led families divide and share household labour and child care more equally compared to heterosexual families (7), this could be another explanatory factor for lower parenting stress among lesbian couples.

A wider implication of this can be that egalitarian division in roles, household labour and child care works as a protection against parenting stress and promotes the development of healthy parents. We know from previous studies that high workload, being a single parent, low social support, high maternal age and low income have all been found to be factors known to contribute to total parenting stress (6,15,28). However, not all of these factors applied for the subjects in this study because there were no single parents, the subjects were relatively young with mean ages between ≈33 and 35 and many of the subjects had a university degree and were cohabiting or married. The samples of lesbian and heterosexual IVF parents in this study consisted of couples requesting assisted reproduction. As such, the couples had all undergone a thorough psychosocial and medical investigation before being accepted for

assisted reproduction, and only psychologically healthy couples are offered assisted reproduction. Consequently, the sample in this study provides a selected sample of psychologically screened couples, which may affect the results. In a previous article, we reported good psychological well-being in this group of lesbian mothers-to-be (29). This may also explain the lesbian parents' perceptions of low parenting stress. Finally, in this study we found higher parenting stress amongst heterosexual IVF parents than among spontaneous pregnancy parents. This raises questions about the stressors of infertility treatment and their initial effects on parenting. As mentioned above, couples undergoing assisted reproduction are screened and only psychologically and medically healthy couples are offered the chance to proceed to assisted reproduction. Nevertheless, not only the threat of an unsuccessful treatment and a childless future, but also the treatment itself, have been reported to increase the psychological distress for childless couples undergoing assisted reproduction. However, Sydsjö et al. (30) studied relationship satisfaction in IVF couples after unsuccessful treatment. They did not find any negative impact of the stressors of IVF treatment on the couples' satisfaction with their relationship one-and-a-half-years after unsuccessful treatment. It appears that the stressors of the IVF crisis are ameliorating with time.

To date there is limited research of the effects of infertility treatment related anxiety and its potential relationship to parenting stress. Research in this field is strongly warranted.

Strengths and limitations

To make the groups comparable only parents without previous biological children were included. The study included a large sample of 332 parents (131 lesbian ART, 83 heterosexual IVF and 118 spontaneous pregnancy) and all displayed a high willingness from the couples to share their parenting experiences. Furthermore, the data on parenting stress from lesbian couples starting a family through the use of identity-release donor sperm are unique and provide health care professionals with valuable new knowledge about parenting stress. However, one major weakness of this study concerns the spontaneous pregnancy couples. The somewhat low response rate, the fact that they were sampled at just one site and were not studied in parallel with the other groups are weaknesses in this study. The children in the spontaneous pregnancy group were also younger than in the other two groups. Lower child age has been found to predict more general parenting stress and more role restriction (17). Yet, we find the comparisons of parenting stress between the three groups of parents to be valuable.

The Swedish Parenting Stress Questionnaire was designed for Swedish conditions and has demonstrated commendable psychometric validity and reliability (1,15). Although our results are in line with other similar studies using the SPSQ (1,3,16,17) one must bear in mind that the construction of the SPSQ was developed for parents with a heterosexual orientation and because of this the SPSQ inventory may carry heteronormative assumptions and consequently there is a risk that important aspects of lesbian parenting issues are ignored. However, to date there are no inventories constructed to fit homosexual parenting conditions. In the future, an important task for researchers in this field will be to develop and validate inventories without heteronormative assumptions.

Another limitation to this study is that we do not have any information about the health of the child. Parenting a child with health problems is known to be stressful. However, we do not have any reasons to believe that the child's health would differ between the groups.

IN CONCLUSION

This study shows that lesbian parents with children born after sperm donation treatment experienced less parenting stress than heterosexual IVF parents and parents with a spontaneous pregnancy. These are reassuring findings, considering the known challenges of lesbian two-mother families establishing new forms of parental roles, and the particular challenge related to the lack of recognition of the co-mother.

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DISCLOSURE OF INTERESTS

The authors have no interest to declare.

DETAILS OF ETHICAL APPROVAL

The study was designed according to the Helsinki declaration and The Regional Ethical Review board in Linköping, Sweden approved the study.

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