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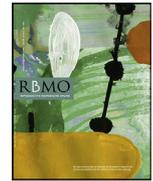
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ARTICLE

Unmet support needs in donor sperm treatment: consequences for parents and their donor-children



BIOGRAPHY

Anne M. Schrijvers completed her Master's degree at the faculty of Social and Behavioral Sciences, University of Amsterdam, the Netherlands. She works as a counsellor at the Center for Reproductive Medicine of the Amsterdam UMC and her PhD project is about psychosocial counselling and informal support in donor sperm treatment.

Anne M. Schrijvers^{1,2,*}, Kees-Jan Kan², Fulco van der Veen¹, Marja Visser¹, Henny M.W. Bos², Monique H. Mochtar¹, Floor B. van Rooij²

KEY MESSAGE

Unmet needs for psychosocial counselling, peer support and friends/family support for parents and children's mental health are indirectly related through the mental health of the parents. Awareness among network organizations and healthcare providers of parents' unmet support needs and how these may affect their donor-children should be increased.

ABSTRACT

Research question: Are unmet needs for psychosocial counselling, peer support and friends/family support in parents directly and/or indirectly related to the mental health of parents and their donor-children?

Design: A cross-sectional sample of 214 parents participated in this quantitative study via an online questionnaire. The sample comprised mothers and fathers in a heterosexual relationship ($n = 85$), mothers in a lesbian relationship ($n = 67$) and single mothers ($n = 62$). Parents were recruited via three Dutch fertility clinics and four network organizations. Unmet support needs were measured with an adapted version of the Unmet Needs for Parenting Support questionnaire, changing the original items into items about donor conception. The items were derived from a qualitative study and checked by experts in donor conception. The parents' mental health was measured with the Adult Self Report and the donor-children's mental health with the Child Behaviour Checklist. A multigroup mediation analysis was conducted to explore relationships between parents' unmet support needs and their child's mental health, with the parents' mental health as a possible mediator.

Results: There were no direct relations between parents' unmet support needs and the mental health of donor-children. Unmet needs for psychosocial counselling, peer support and friends/family support for parents and children's mental health were indirectly related through the mental health of the parents: 0.074 (CI 95% = 0.013–0.136; $P = 0.017$), 0.085 (CI 95% = 0.018–0.151; $P = 0.036$) and 0.063 (CI 95% = 0.019–0.106; $P = 0.013$), respectively.

Conclusions: We recommend that fertility clinics, network organizations and authorities for infertility counsellors make their support available to parents for extended periods after their treatment. Further qualitative studies are necessary to assess how to relieve unmet support needs during donor sperm treatment.

¹ Amsterdam UMC, University of Amsterdam, Department of Obstetrics and Gynaecology, Center for Reproductive Medicine Amsterdam, The Netherlands

² University of Amsterdam, Research Institute of Child Development and Education Amsterdam, The Netherlands

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KEY WORDS

Donor sperm treatment
Friends/family support
Mental health
Peer support
Psychosocial counselling
Unmet needs

INTRODUCTION

Donor sperm treatment (DST) has psychosocial implications that are unique for donor-conceived families. Heterosexual couples may have concerns about how to disclose donor conception to their child and about the impact that non-genetic parenthood may have on the relationship between the child and the social father (Isaksson *et al.*, 2012; Wyverkens *et al.*, 2017). Lesbian couples may worry about the process of bonding the child with the non-genetic mother and the mockery of their children because of their mother's sexual orientation (Bos and Gartrell, 2010; Hayman *et al.*, 2015). Single women may have concerns about the absence of a second caregiver and a male role model for their child (Graham, 2018).

To cope with these implications, parents value support from counsellors, peers – parents in the same situation – and their social network during several stages of parenthood (Shehab *et al.*, 2008; Visser *et al.*, 2016). In psychosocial counselling, parents value discussing when and how to disclose donor conception to the child, to get scripts on how to do so and to reflect on their considerations about non-genetic parenthood and the worries they may have about the impact of future contact with the donor on family relationships (Isaksson *et al.*, 2012; Visser *et al.*, 2016). Peer support, in particular discussing how other parents have disclosed donor conception to their child, has been shown to normalize their non-traditional family situation, reduce feelings of isolation and stigmatization and make parents feel more comfortable about disclosure (Blyth *et al.*, 2010; Crawshaw *et al.*, 2014). Supportive family and friends are known to make it easier for parents to disclose the origin of conception to the child and to lessen feelings of stigma and taboo (Indekeu *et al.*, 2013; Shehab *et al.*, 2008).

These needs for support from counsellors, peers, family and friends are not always fulfilled. Some parents experience shortcomings in psychosocial counselling as counsellors have only explored their thoughts on donor conception instead of offering relevant advice and guidance (Visser *et al.*, 2016). Some parents do not know how to get in contact with peers, feel unsupported by their friends and family and occasionally

even receive negative reactions from their social network (Indekeu and Lampic, 2018; Indekeu *et al.*, 2013; Visser *et al.*, 2016).

There is a lack of knowledge on the relationship between unmet needs for psychosocial counselling, peer support and friends/family support, i.e. 'unmet support needs', and the mental health of parents and their donor-children. In the context of DST, the authors recently completed a quantitative study investigating unmet counselling needs in women in heterosexual relationships, women in lesbian relationships and single women who opted for DST (Schrijvers *et al.*, 2020). This study, set up to describe unmet counselling needs and mental health in the intended parents and to explore the relationship between unmet needs and mental health, found that more than half of the intended parents had missed psychosocial counselling on topics such as choosing a sperm donor and non-genetic parenthood. Intended parents had more mental health problems if they had more unmet needs (Schrijvers *et al.*, 2020).

As the mental health of children is related to the mental health of their parents, the presence of unmet support needs in parents may also have – directly or indirectly through the parents' mental health – negative consequences for the mental health of donor-children (Mensah and Kiernan, 2018). The aim of this study was therefore to examine whether unmet needs for psychosocial counselling, peer support and friends/family support in parents are directly and/or indirectly related to the mental health of parents and their donor-children. The present study builds further on the authors' earlier similar work on unmet needs in intended parents (Schrijvers *et al.*, 2020).

MATERIALS AND METHODS

Ethical approval

All procedures fitted with the ethical standards of the Helsinki Declaration of 2013. The study was registered at the Dutch Trial Register under code number NTR5340 (registered 30 July 2015). The medical Ethics Committee of the Amsterdam UMC affirmed (reference number NL53349.018.15; approved 31 July 2015) that the participants in this study would not be subjected to any risks.

Practice of DST in the Netherlands

In the Netherlands, men and women in heterosexual relationships, women in lesbian relationships and single women are eligible for DST. In 2004, a law – Wet Donorgegevens Kunstmatige Bevruchting (the Act on Artificial Insemination Donor Data) – was implemented that prohibited DST with spermatozoa from anonymous donors. Since then, fertility clinics have registered the following information about the donor at the Stichting Donorgegevens Kunstmatige Bevruchting (Foundation for Artificial Insemination Donor Data): medical background relevant for the development of the offspring, identifiable information – name, date of birth, residence – and non-identifiable information such as physical characteristics, educational background and social background. The law allows parents to obtain non-identifiable information about the donor after birth of their child. Donor-children can obtain this information from the age of 12 years, and identifiable information about the donor from the age of 16. If donor-children request identifiable information about the donor at the Stichting Donorgegevens Kunstmatige Bevruchting or wish to meet the donor, they can make use of guidance by social workers from Fiom, a foundation that provides information and support in the search for one's genetic origin.

In a consensus paper on assisted reproductive medicine with donor gametes and surrogacy, the Nederlandse Vereniging voor Obstetrie en Gynaecologie (Dutch Society of Obstetrics and Gynecology) encourages clinics to offer pre-treatment psychosocial counselling by a counsellor specialized in reproductive medicine on at least the following topics: the selection of the donor, the implications of the Wet Donorgegevens Kunstmatige Bevruchting Act, when and how parents can disclose donor conception to their offspring and the impact of DST on the family structure (NVOG, 2016).

Recruitment

The recruitment of parents to this study – men and women in heterosexual relationships, women in lesbian relationships and single women who had all had a child via donor conception – was part of a broader research project on the (unmet) support needs and mental health of sperm donors, (intended) parents and donor-conceived offspring,

TABLE 1 ITEMS DERIVED FROM QUALITATIVE STUDY

Items
1. I want to know if I can tell my child that he/she is a donor-child.
2. I want to know at which age I can tell my child that he/she is a donor-child.
3. I want to know how I can tell my child that he/she is a donor-child.
4. I want to know which characteristics my child has in common with the donor.
5. I want to know how the donor looks like.
6. I want to know something about the character of the donor.
7. I want to know something about the genetic characteristics of the donor.
8. I want to know what kind of questions I can expect from my child.
9. I want to know how the contact between my child and the donor could be.
10. I want to know how the first contact between my child and the donor could be arranged.
11. I want to know if it is possible that my child keep contact with the donor.
12. I want to know how my child can contact half-siblings.
13. I want to know if the contact between the child and the non-biological parent will be influenced by the contact with the donor.
14. I want to know what it means for the non-biological parent if our child seeks contact with the donor.
15. I want to know how I can talk with my family about the decision to have a donor-child.
16. I want to know how I can talk with my friends about the decision to have a donor-child.
17. I want to know how I can talk with my surroundings about the decision to have a donor-child.
18. I want to know where I can find answers on my questions.

and was completed between October 2015 and June 2017.

The parents in this study were recruited via three Dutch fertility clinics and four network organizations. The three fertility clinics distributed information letters about this study in their waiting rooms. The information letters included, for example, information about the aim of the study, the researcher's contact information and the fact that the data would be used confidentially. The network organizations placed announcements of the study with the e-mail address of the first author on their website and Facebook pages. The network organizations were Freya, a Dutch special interest association for involuntary childlessness, Stichting Donorkind, a special interest group for donor-children and semen donors, and Stichting meer dan Gewenst, an organization for homosexual and lesbian (intended) parents. Parents contacted the first author by e-mail, received an informed consent form and, after giving informed consent, received a link to the online questionnaire. All parents with a partner were asked whether the partner could also be contacted for invitation to the study.

For this particular study, parents were included if they – or their partner – had been inseminated after 2004 at a Dutch

fertility clinic and their oldest donor-child was at least 1.5 years of age.

Questionnaire

Unmet support needs of parents

To measure unmet needs for psychosocial counselling, peer support and friends/family support of parents who had a child after DST, the structure – magnitude, stressfulness, wishes for and support used – of a validated instrument, the Questionnaire Unmet Needs for Parenting Support (VOBO) was used, with the original items replaced by items about DST (*Bertrand et al., 1998; Van Stel et al., 2012*). The items were derived from a qualitative study on the counselling experiences of parents who had a child after DST (*Visser et al., 2016*). These items were presented to two gynaecologists, one psychologist and four counsellors working in the field of DST to establish whether the items were well formulated and to check whether any items should be added to cover all the implications of donor conception. All 18 items are included in [TABLE 1](#). The questionnaire was previewed by experts in the field of DST: three members of network organizations for intended parents and donor-conceived offspring, two gynaecologists specialized in gamete donation, two social scientists and one fertility counsellor. No substantial

changes were made to the questionnaire as the experts had no comments on it.

To assess parents' unmet needs for psychosocial counselling, peer support and friends/family support in the previous 12 months, the stepwise procedure of the Questionnaire Unmet Needs for Parenting Support was used. Parents were requested to indicate – per item – if they needed support on the item (yes or no), if they perceived this need for support as stressful (not stressful, stressful or very stressful), if they needed support from counsellors (yes or no), peers (yes or no) or friends/family (yes or no), if they had support from counsellors (yes or no), peers (yes or no) or friends/family (yes or no) on this item, and – if they had support – whether the support from counsellors (yes or no), peers (yes or no) and friends/family (yes or no) met their needs. Parents had an unmet need for psychosocial counselling on an item if they found the need for support on an item (very) stressful and they needed support from counsellors on this item, and if they had not received support from counsellors on this item.

The measurement of 'total unmet needs for psychosocial counselling' took the sum of the items on which parents had an unmet need, which implies that scores could range from 0 to 18; the score was 0 if parents had unmet needs for psychosocial counselling on 0 items and 18 if parents had unmet needs for psychosocial counselling on all 18 items. The same stepwise procedure was used to calculate parents' unmet needs for peer support and unmet needs for friends/family support.

Mental health of the parents

The parents' mental health was measured with a Dutch version of the Adult Self Report (ASR), a validated questionnaire for the assessment of behavioural and emotional problems (*Achenbach and Rescorla, 2003*). Parents were asked to indicate for 123 items whether the feeling or behaviour was: 0 'not true', 1 'sometimes true' or 2 'often true'. Following the scoring rules of the Achenbach System of Empirically Based Assessment (ASEBA) manual, a total T-score was calculated for each participant. This score indicates total problem behaviour, so the lower this score, the better the person's mental health. The total T-score could range from 25 to 100. Total T-scores of 60 and higher

were considered as representing clinical mental health problems (Achenbach and Rescorla, 2003). The internal consistency of this scale was assessed using Cronbach's alpha.

Mental health of the children

The mental health of donor-children was measured by asking parents to fill in the Dutch version of the Child Behavior Checklist (CBCL) 1.5–5 or the Dutch version of the CBCL 6–18, depending on the age of their oldest child (Achenbach and Rescorla, 2001). The former questionnaire consisted of 100 items, the latter of 113 items. Both have been validated for the assessment of behaviour and emotional problems (Achenbach and Rescorla, 2001). As with the ASR, items are scored 0 'not true', 1 'sometimes true' and 2 'often true'. With the help of the ASEBA manual a total *T*-score was calculated. The lower this score, the better the person's mental health. The total *T*-score of the CBCL 1.5–5 could range from 28 to 100; the total *T*-score of the CBCL 6–18 could range from 24 to 100. Total *T*-scores of 60 and above were considered to represent clinical mental health problems (Achenbach and Rescorla, 2001). The internal consistency of both versions of the CBCL was assessed using Cronbach's alpha.

Data analysis

A three-stage statistical analysis was applied to investigate the relationships between unmet needs for psychosocial counselling, unmet needs for peer support, unmet needs for friends/family support, the mental health of the parents and the mental health of their children. In the first stage, Spearman rank correlations were derived between these variables. Because the sample included three family types and the research design yielded nested data – parents within families – their standard errors were corrected for this clustering. The correction was accomplished in R using R packages *lavan* and *lavan.survey* (The R Foundation, Austria) with type of family and family number as clustering variables.

In the second stage, for each of the three unmet support needs – unmet needs for psychosocial counselling, unmet needs for peer support and unmet needs for friends/family support – a partial mediation model was fitted to explore in what way parents' unmet needs related to the mental health of their children. Unmet needs were included

as a predictor of the mental health of both the parents and their children, and the parents' mental health was included as a predictor of the mental health of their children. In this way the direct and indirect effects of unmet support needs on the children's mental health could be separated. As in the first stage, a correction for the standard errors was applied, with type of family and family number as clustering variables.

The third stage of the analysis explored whether there was heterogeneity across the different family types. To this end, the mediation model was respecified as a multigroup model in R package *OpenMx*, with the three family types as the grouping variable. If heterogeneity was present, the observations obtained for the biological mothers and those obtained for their partners were distinguished. As this pairing generated missing data, the authors allowed – in heterosexual and lesbian couples – the parents' unmet support needs to predict the scores of their partners, using the full information maximum likelihood as an estimator. Residuals were allowed to correlate freely between pairs. Heterogeneity was tested by comparing the fit of a fully saturated model with the fit of a model in which the path coefficients were assumed to be of equal strength, while means and residual (co)variances were still allowed to vary over the groups. Under the null hypothesis, this resulted in a log-likelihood ratio test with a statistic that follows a chi-squared distribution with 12 degrees of freedom. A significant result denoted the presence of heterogeneity.

RESULTS

Inclusion and characteristics

Four hundred and forty parents contacted the project coordinator to participate in the broader research project. Of these, 95 (22%) did not participate in this study because they had no time or did not respond after two reminders. A total of 345 parents started the online questionnaire. Of these, 131 parents were excluded as they did not meet the inclusion criteria for this specific study or did not complete the questionnaire. In total, 214 parents' questionnaires were eligible for analysis.

As 35 parents – 20 heterosexual men and women and 15 lesbian women – had participated with their partner, the questionnaires from 214 parents

represented 179 children. Mothers' unmet needs for psychosocial counselling, peer support and friends/family support were not significantly correlated to their partners' unmet needs for psychosocial counselling, peer support and friends/family support: 0.308 (95% confidence interval [CI] = –0.028 to 0.582), 0.152 (95% CI = –0.191 to 0.462) and –0.053 (95% CI = –0.379 to 0.286), respectively. The characteristics of the parents and their children are summarized in TABLE 2. Sixty-five children were born to a father–mother family, 52 to a two-mother family and 62 to a single-mother family. The mean age of the children was 3.6 years (SD 2.01).

Unmet needs for support

The internal consistency of the total unmet needs for psychosocial counselling, peer support and friends/family support was sufficient to high, at 0.86, 0.79 and 0.67, respectively. An overview of the unmet support needs of parents is presented in TABLE 3. On average, parents had unmet needs for psychosocial counselling on 1.42 items (SD 2.52), unmet needs for peer support on 0.71 items (SD 1.60) and unmet needs for friends/family support on 0.07 item (SD 0.45).

Unmet needs for psychosocial counselling were mostly on item 3 (how to tell the child that he or she was donor-conceived; $n = 28$, 13%) and on item 18 (where to find trustful answers to their questions about DST; $n = 33$, 15%). Unmet needs for peer support and for friends/family support were mostly on these same two items: $n = 18$ (8.4%) and $n = 18$ (8.4%) respectively for peer support, and $n = 3$ (1.4%) and $n = 2$ (0.93%) respectively for friends/family support.

Mental health of the parents

The internal consistency of the ASR total problem behaviour scale was high (Cronbach's $\alpha = 0.95$). On average, parents had low levels of mental health problems ($M = 41.79$, SD 10.56). Ten parents (4.7%) had clinical mental health problems. Of these, three were in a heterosexual relationship, four were in a lesbian relationship and three were single.

Mental health of the children

The internal consistency of the CBCL 1.5–5 and CBCL 6–18 total problem scale was high, at 0.92 and 0.95, respectively. On average, parents reported low levels of mental health problems in their children ($M = 40.93$, SD 8.76). Four children had clinical mental health problems (2.2%);

TABLE 2 CHARACTERISTICS OF PARENTS AND THEIR CHILDREN

Characteristics	n	%	Mean	SD
Parent characteristics ^a	214	-	-	-
Had their child				
In a heterosexual relationship	85	40	-	-
Father	23	27	-	-
Mother	62	73	-	-
In a lesbian relationship	67	31	-	-
Non-biological mother	21	31	-	-
Biological mother	46	69	-	-
As a single woman	62	29	-	-
Age (years)	-	-	37.5	4.55
Child characteristics	179	-	-	-
Gender				
Male	80	45	-	-
Female	99	55	-	-
Born in a				
Father–mother family	65	36	-	-
Two-mother family	52	29	-	-
Single mother family	62	35	-	-
Age (years)	-	-	3.6	2.01

^a Thirty-five parents had participated with their partner; therefore, data are presented for a total of 214 parents and 179 donor-children.

one was born within a father–mother family, one within a two-mother family and two within a single mother family.

Bivariate relationships between unmet support needs and the mental health of the parents and their children

Bivariate correlations between unmet needs for support and the mental health of parents and their children are presented in [TABLE 4](#). Parents with more unmet needs for psychosocial counselling, peer support and friends/family support had significantly more mental health problems: r (degrees of freedom [df] = 212) = 0.17, $P = 0.012$; r (df = 212) = 0.19, $P = 0.005$; and r (df = 212) = 0.14, $P = 0.039$, respectively. Parents with more mental health problems had children with significantly more mental health problems: r (df = 121) = 0.44, $P < 0.001$. The correlations between unmet support needs and the mental health of the children were not significant.

Direct and indirect relationships between unmet support needs and the mental health of parents and their children

The results of the direct relationships between unmet support needs and

the mental health of the children, and the indirect relations via the parents' mental health, are presented in [FIGURE 1](#). There were no direct relationships between unmet needs for psychosocial counselling, peer support and friends/family support and the mental health of the children. Indirect relationships were statistically significant: parents with more unmet needs for psychosocial counselling, peer support and friends/family support had significantly more mental health problems and their children had significantly more mental health problems: 0.074 (95% CI = 0.013–0.136, $P = 0.017$), 0.085 (95% CI = 0.018–0.151, $P = 0.036$) and 0.063 (95% CI = 0.019–0.106, $P = 0.013$), respectively.

The heterogeneity test revealed that the relationship between unmet needs for psychosocial counselling and the mental health of the parents and their children, and the relationship between unmet needs for peer support and the mental health of the parents and children, differed statistically between the family types, but the sample sizes were too small for a substantive interpretation of differences.

DISCUSSION

This study was set up to understand any consequences of parents' unmet support needs for their own mental health and the mental health of their children. If parents had more unmet needs for psychosocial counselling, peer support and friends/family support, they also had more mental health problems. The unmet support needs and the mental health of the children were only indirectly related through the parents' mental health. The relationship between unmet needs for psychosocial counselling and the mental health of the parents and their children, as well as the relationship between unmet needs for peer support and the mental health of the parents and children, differed statistically between the family types.

A strength of this study is that the mediation modelling was able to detect significant associations between unmet support needs and the mental health of the children, whereas simply correlating the variables would have suggested that the variables were not significantly associated. A second strength is that parents in heterosexual relationships or lesbian relationships and single mothers were included, allowing the detection of whether or not differences exist between the three family types. A third strength is that well-validated instruments were used to measure the mental health of the parents and their children.

Despite the strengths of this study, its findings should be interpreted with some caution. First, the cross-sectional design did not allow any causal relationships between unmet support needs and the mental health of parents and their children to be detected. Second, because the samples were small, some of the variables were skewed, and hence point estimates imprecise, so replication using larger samples is recommended, preferably using longitudinal research designs. Moreover, larger sample sizes will also enable the differences in specific pathways to be tested between the three family types. Third, as parents were asked about their unmet needs for friends/family support, a distinction between family support and friends' support could not be made, which is a relevant distinction as parents more often talk about donor conception with friends than with family members ([Indekeu and Lampic, 2018](#)). Fourth, although the structure of a validated questionnaire

TABLE 3 UNMET SUPPORT NEEDS OF PARENTS

	Unmet needs for psychosocial counselling		Unmet needs for peer support		Unmet needs for friends/family support	
	<i>n</i>	%	<i>n</i>	%	<i>n</i>	%
Unmet needs on						
0 items	132	62	162	76	205	96
1–9 items	76	36	51	24	9	4.2
10–17 items	6	2.8	1	0.47	0	0
18 items	0	0	0	0	0	0
Items ^a						
1	6	2.8	4	1.9	1	0.47
2	18	8.4	13	6.1	2	0.93
3	28	13	18	8.4	3	1.4
4	11	5.1	3	1.4	1	0.47
5	6	2.8	1	0.47	0	0
6	13	6.1	1	0.47	0	0
7	21	9.8	1	0.47	0	0
8	24	11	14	6.5	1	0.47
9	23	11	12	5.6	1	0.47
10	25	12	14	6.5	1	0.47
11	17	7.9	8	3.7	1	0.47
12	25	12	12	5.6	1	0.47
13	25	12	14	6.5	1	0.47
14	24	11	14	6.5	1	0.47
15	3	1.4	2	0.93	0	0
16	1	0.47	1	0.47	0	0
17	1	0.47	1	0.47	0	0
18	33	15	18	8.4	2	0.93

^a For a complete description of the items, see [TABLE 1](#).

was used to measure parents' unmet support needs, the original items were changed into items about donor conception. As the internal consistency of the total unmet needs for psychosocial counselling, peer support and friends/family support was sufficient to high, the authors feel, however, that the findings are robust to allow the conclusions that have been drawn.

In light of the generalizability of the findings it must be noted that the

children in this study were between 1 and 11 years old and had been conceived with spermatozoa from identifiable donors. Caution is needed when generalizing the results to families with older donor-children. Although the authors do not expect any differences in the relationship between unmet support needs and mental health, parents' needs for support might well change when their children can obtain identifiable information about the donor, and uncertainties about the position of the non-genetic parent may

be more acutely felt (*Skoog Svanberg et al., 2020; Wyverkens et al., 2017*). In addition, it is plausible that parents who had a child after DST with spermatozoa from an anonymous donor have other support needs and also other unmet support needs.

The vast majority of parents (96%) had no unmet needs for psychosocial counselling, peer support and friends/family support. In lesbian and heterosexual couples, a plausible

TABLE 4 SPEARMAN'S CORRELATIONS (AND THEIR P-VALUES) FOR THE UNMET SUPPORT NEEDS AND MENTAL HEALTH OF PARENTS AND THEIR CHILDREN

	Unmet needs for psychosocial counselling	Unmet needs for peer support	Unmet needs for friends/family support	Mental health of parents	Mental health of children
Unmet needs for psychosocial counselling	–				
Unmet needs for peer support	0.65 (<0.001)	–			
Unmet needs for friends/family support	0.19 (0.005)	0.25 (<0.001)	–		
Mental health of parents	0.17 (0.012)	0.19 (0.005)	0.14 (0.039)	–	
Mental health of children	0.13 (0.053)	0.11 (0.095)	0.07 (0.297)	0.44 (<0.001)	–

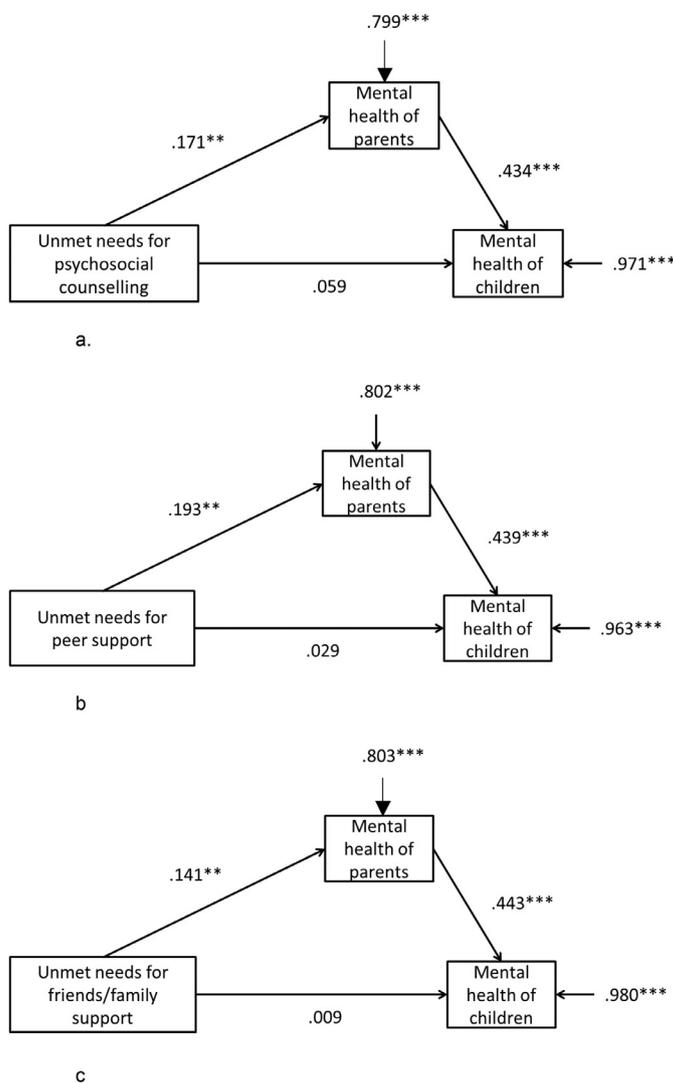


FIGURE 1 Direct and indirect relationships between unmet support needs and mental health in parents and their children. (a) Indirect effect: 0.074 ($P = 0.017$); total effect: 0.133 ($P = 0.044$). Assumption of equal paths across groups chi-squared = 32.84, $df = 12$, $P = 0.001$, implying heterogeneity. (b) Indirect effect: 0.085 ($P = 0.036$); total effect: 0.114 ($P = 0.231$). Assumption of equal paths across groups chi-squared = 25.28, $df = 12$, $P = 0.014$, implying heterogeneity. (c) Indirect effect: 0.063 ($P = 0.013$); total effect: 0.072 ($P = 0.084$). Assumption of equal paths across groups chi-squared = 20.26, $df = 12$, $P = 0.06$, implying homogeneity. * $P \leq 0.05$; ** $P \leq 0.01$; *** $P \leq 0.001$.

explanation may be that partner support reduces the need for friends/family support. In single women, it might be that most single women opt for DST after they have invested in stable social support networks that can provide practical and emotional support (Murray and Golombok, 2005). Most parents – regardless of family type – had an unmet need for support on the issue of disclosure, which means that additional guidance after birth on how to disclose donor conception to children is necessary. Counsellors currently offer intended parents the possibility to come back for extended counselling, but most

parents do not take up this offer, possibly because the fertility clinic belongs to a different phase of their life (Visser et al., 2019). In view of this, the authors recommend that counsellors should specifically inform intended parents about how to get in contact with external fertility counsellors.

To the best of the authors' knowledge, this study is the first exploring the relationship between parents' unmet support needs and mental health in the population of donor-conceived families. The fact that a relationship was found between unmet support needs and

the mental health of parents and their children is in line with the relationship that exists between unmet needs for psychosocial counselling and mental health in a population of intended parents who opted for DST (Schrijvers et al., 2020). That parents with more unmet support needs for support from peers, friends and family had more mental health problems, as did their children, might be explained by the importance that 'social connectedness' plays in these families. Feeling socially connected to other parents in the same situation or feeling supported by their social network is highly relevant to these families as it helps parents to normalize donor conception for themselves. Parents who experience difficulties in normalizing donor conception for themselves and who do not feel socially connected to others experience more difficulties with donor conception (Crawshaw and Montuschi, 2014; Thorn and Daniels, 2003).

To fulfil the parents' unmet needs, the authors believe that the first step should be to increase awareness among network organizations and healthcare providers of parents' unmet support needs and how these may affect their donor-children. This could be done by adding this evidence to the newly developed European Society for Human Reproduction and Embryology guideline 'Good Practice Recommendations for Information Provision for those Using and Participating in Reproductive Donation' (ESHRE, 2022). Given that almost 40% of all parents have unmet needs for psychosocial counselling it is not logical to offer psychosocial counselling only during the treatment phase and not during parenthood. In terms of practical implications, platforms such as Donor Conception Network in the UK, the Victorian Assisted Reproductive Treatment Authority in Australia and Landelijk Informatiepunt Donorconceptie in the Netherlands provide parents with trustworthy information including information about peer support and where to find specialized counsellors. Future studies using qualitative interviews or focus groups could provide deeper insight into how to reach out to parents with additional needs for support.

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