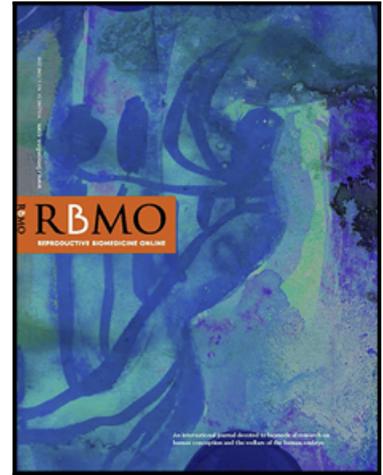


Journal Pre-proof

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

A.M. Schrijvers , K.J. Kan , F. van der Veen , M. Visser ,
H.M.W. Bos , M.H. Mochtar , F.B. van Rooij

PII: S1472-6483(21)00608-8
DOI: <https://doi.org/10.1016/j.rbmo.2021.12.009>
Reference: RBMO 2874



To appear in: *Reproductive BioMedicine Online*

Received date: 11 June 2021
Revised date: 8 November 2021
Accepted date: 10 December 2021

Please cite this article as: A.M. Schrijvers , K.J. Kan , F. van der Veen , M. Visser , H.M.W. Bos , M.H. Mochtar , F.B. van Rooij , Unmet support needs in donor sperm treatment: consequences for parents and their donor-children, *Reproductive BioMedicine Online* (2021), doi: <https://doi.org/10.1016/j.rbmo.2021.12.009>

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo editing, typesetting, and review of the resulting proof before it is published in its final form. Please note that during this process changes will be made and errors may be discovered which could affect the content. Correspondence or other submissions concerning this article should await its publication online as a corrected proof or following inclusion in an issue of the journal.

© 2021 Published by Elsevier Ltd on behalf of Reproductive Healthcare Ltd.

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

A.M. Schrijvers^{1,2}, K.J. Kan², F. van der Veen¹, M. Visser¹, H.M.W. Bos², M.H. Mochtar¹, F.B. van Rooij²

¹ Amsterdam UMC, University of Amsterdam, Department of Obstetrics and Gynaecology, Center for Reproductive Medicine, Meibergdreef 9, Amsterdam, the Netherlands

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

Correspondence to: A.M. Schrijvers

Amsterdam UMC, University of Amsterdam, Department of Obstetrics and Gynaecology
Centre for Reproductive Medicine, Q4 room 142, Meibergdreef 9, 1105 AZ Amsterdam,
The Netherlands. Telephone: +31-205665720 / Fax: +31-20-6963489

E-mail: a.m.schrijvers@amsterdamumc.nl

ABSTRACT

Research Question: Are unmet needs for psychosocial counselling, peer support and friends/family support in parents directly and/or indirectly related to 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. We measured unmet support needs with an adapted version of the Questionnaire Unmet Needs for Parenting Support and changed the original items into items about donor conception. The

items were derived from a qualitative study and checked by experts in the field of donor conception. We measured mental health of parents with the Adult Self Report and mental health of donor-children with the Child Behaviour Checklist. We conducted a multigroup mediation analysis to explore the relations between unmet support needs of parents and mental health of their child, with mental health of parents 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 of parents and children's' mental health were indirectly related through the mental health of parents, respectively .074 (CI 95% = .013, .136), .085 (CI 95% = .018, .151) and .063 (CI 95% = .019, .106).

Conclusion:

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 in donor sperm treatment.

Key words: donor sperm treatment, psychosocial counselling, peer support, friends/family support, unmet needs, mental health

Introduction

Donor sperm treatment (DST) involves psychosocial implications which are unique for donor-conceived families. Heterosexual couples may have concerns how to disclose donor conception to their child and about the impact 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 (Visser *et al.*, 2016; Shehab *et al.*, 2008). In psychosocial counselling, parents value to discuss 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 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 disclosed donor conception to their child, has been shown to normalize their non-traditional family situation, to reduce feelings of isolation and stigmatization and to 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 had 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, or feel not supported by their friends and family and occasionally even get negative reactions

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

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 mental health of parents and their donor-children. In the context of DST, we recently completed a quantitative study investigating the unmet counselling needs in women in heterosexual relationships, women in lesbian relationships and single women who opt for DST (Schrijvers *et al.*, 2020). This study, set up to describe unmet counselling needs and mental health in 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). Since 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 mental health of parents - 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 mental health of parents and their donor-children. With the present study we build further on our earlier similar work on unmet needs in intended parents (Schrijvers *et al.*, 2020).

Materials and methods

Ethical approval

All procedures fit with the ethical standards of the Helsinki Declaration of 2013. The study was registered at the Dutch Trial Register under code number NTR5340. The medical Ethics Committee of the Amsterdam UMC affirmed 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 [Act on Artificial Insemination Donor Data] – was implemented that prohibited DST with sperm of anonymous donors. Since then, fertility clinics register the following information about the donor at the Stichting Donorgegevens Kunstmatige Bevruchting [Foundation 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 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 [Foundation Artificial Insemination Donor Data], or wish to meet the donor, they can make use of guidance by social workers of 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, implications of the Wet Donorgegevens Kunstmatige Bevruchting [Act on Artificial Insemination Donor Data] 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 for this study - men and women in heterosexual relationships, women in lesbian relationships and single women who 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 - 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 i.e. information about the aim of the study, contact information of the researcher and that the data should 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 page. 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, they received a link to the online questionnaire. All parents with a partner were asked whether the partner could also be contacted for invitation in the study.

For this particular study, we included parents 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 we used the structure - magnitude, stressfulness, wishes for and used support - of a validated instrument – Questionnaire Unmet Needs for Parenting Support (VOBO) - and replaced the original items by items about DST (Bertrand *et al.*, 1998; Van Stel *et al.*, 2012). We derived items from a qualitative study on counselling experiences of parents who had a child after DST (Visser *et al.*, 2016). We presented these items 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 if items should be added to cover all implications in donor conception. All eighteen items are included in Table I. The questionnaire was previewed by experts in the field of donor sperm treatment: three members of network organizations for intended parents and donor-conceived offspring, two gynecologists specialized in gamete donation, two social scientist and one fertility counsellor. We made no substantial changes to the questionnaire as the experts had no comments to our questionnaire.

To assess parents' unmet needs for psychosocial counselling, peer support and friends/family support in the previous 12 months, we used the stepwise procedure of the Questionnaire Unmet Needs for Parenting Support. We requested parents 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), friends/family (yes or no), if they had support from counsellors (yes or no), peers (yes or no) and friends/family (yes or no) on this item, and – if they had support - whether 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.

To measure 'total unmet needs for psychosocial counselling' we 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. We used the same stepwise procedure to calculate parents' unmet needs for peer support and unmet needs for friends/family support.

Mental health of parents

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

Mental health of children

We measured mental health of donor-children 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 assessment of behavior 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 help of the ASEBA manual we calculated a total T-score. The lower this score, the better one'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. We considered total T-scores of 60 and higher as clinical mental health problems (Achenbach and Rescorla, 2001). Internal consistency of both versions of the CBCL was assessed by Cronbach's alpha.

Data analysis

We applied a three stage statistical analysis to investigate the relations between unmet needs for psychosocial counselling, unmet needs for peer support, unmet needs for friends/family support, mental health of parents and mental health of their children. In the first stage, we derived the Spearman rank correlations among these variables. Because the

sample included three family types and the research design yielded nested data - parents within families -, we corrected their standard errors for this clustering. The correction was accomplished in R using R packages lavaan and lavaan.survey 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, unmet needs for friends/family support -, we fitted a partial mediation model to explore in what way parents' unmet needs relate to the mental health of children. We included unmet needs as predictor of both the mental health of parents and their children, and the mental health of parents as predictor of mental health of their children. This way we could separate between direct and indirect effects of unmet support needs on the children's mental health. Like in the first stage, we applied a correction for the standard errors with type of family and family number as clustering variables. In the third stage, we explored if 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 grouping variable. If present, we distinguished between the observations obtained in the biological mothers and those obtained in their partners. As this pairing generated missing data, we let – in heterosexual and lesbian couples - the parents' unmet support needs predict the scores of their partner, using full information maximum likelihood as 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 loglikelihood ratio test with a statistic that follows a chi-square 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 for participation in the broader research project. Of these, 95 (21%) did not participate in this study because they had no time or did not respond after two reminders. Three hundred and forty-five parents started our online questionnaire. Of these, we excluded 131 parents 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 to be analyzed.

As thirty-five 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, respectively .308 (CI 95% = -.028, .582), .152 (CI 95% = -.191, .462) and -.053 (CI 95% = -.379, .286). Characteristics of parents and their children are summarized in Table II. Sixty-five children were born in a father-mother family, 52 in a two-mother family and 62 in a single-mother family. The average age of the children was 3.6 years ($SD = 2.01$). [Figure I and Table II near here]

Unmet needs for support

Internal consistency of the total unmet needs for psychosocial counselling, peer support and friends/family support was sufficient to high, respectively 0.86, 0.79 and 0.67. An overview of the unmet support needs of parents is presented in Table III. 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 friends/family support were mostly on the 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. [Table III near here]

Mental health of parents

Internal consistency of the ASR total problem behavior 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 them, three were in a heterosexual relationship, four were in a lesbian relationship and three were single.

Mental health of children

Internal consistency of the CBCL 1,5-5 and CBCL 6-18 total problem scale was high, respectively 0.92 and 0.95. 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%); 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 mental health of parents and their children

Bivariate correlations between unmet needs for support and mental health of parents and their children are presented in Table IV. Parents with more unmet needs for psychosocial counselling, peer support and friends/family support had more mental health problems. Parents with more mental health problems had children with more mental health problems. The correlation between unmet support needs and mental health of children were not significant.

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

The results of the direct relationships between unmet support needs and mental health of children and indirect relations via mental health of parents are presented in Figure I. There were no direct relationships between unmet needs for psychosocial counselling, peer support and friends/family support and the mental health of 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, respectively .074 (CI 95% = .013, .136), .085 (CI 95% = .018, .151) and 0.063 (CI 95% = .019, .106).

The heterogeneity test revealed that the relationship between unmet needs for psychosocial counselling and mental health of parents and their children and the relationship between unmet needs for peer support and mental health of parents and children did statistically differ between the family types, but the sample sizes were too small for a substantive interpretation of differences. [Table IV and Figure Ia, b and c here]

Discussion

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

A strength of this study is that the mediation modeling was able to detect significant associations between unmet support needs and mental health of children, whereas simply correlating the variables would have suggested the variables are not associated significantly. A second strength is that we included parents in heterosexual relationships, lesbian

relationships and single mothers, allowing us to detect whether or not differences between the three family types exist. A third strength is that we used well-validated instruments to measure mental health of parents and their children.

Despite the strengths of our study, our findings should be interpreted with some caution. First, our cross-sectional design did not allow us to detect any causal relationships between unmet support needs and mental health of parents and their children. Second, since samples were small, some of the variables skewed, hence point estimates imprecise, replication using larger samples is recommended, preferably using longitudinal research designs. Moreover, larger sample sizes will also enable us to test the differences in specific pathways between the three family types. Third, as we asked parents about their unmet needs for friends/family support, we were not able to make a distinction between family support and friends' support, which is a relevant distinction since parents more often talk about donor conception with friends than with family members (Indekeu and Lampic, 2018). Fourth, although we used the structure of a validated questionnaire to measure parents' unmet support needs, we changed the original items into items about donor conception. Since the internal consistency of the total unmet needs for psychosocial counselling, peer support and friends/family support was sufficient to high, we feel that our findings are robust to allow our conclusions.

In light of the generalizability of our findings it must be noticed that the children in this study were between 1 and 11 years old and were conceived with sperm from identifiable donors. Caution is needed when generalizing the results to families with older donor-children. Although we 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 (Wyverkens *et al.*, 2017; Skoog Svanberg *et al.*, 2020). In addition, it is plausible that parents who had a child after DST with sperm from an anonymous donor have other support needs and also have 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 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 do offer intended parents the possibility to come back for extended counselling, but most parents do not take up this offer, possibly because fertility clinic belongs to a different phase of their life (Visser *et al.*, 2019). In view of this, we recommend counsellors to specifically inform intended parents about how to get in contact to external fertility counsellors.”

To the best of our knowledge, our 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 we found a relationship between unmet support needs and 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 well as 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 one’s social network is highly relevant to these families as it helps 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 (Thorn and Daniels, 2003; Crawshaw and Montuschi, 2014).

To fulfill the unmet needs in parents, we believe that the first step should be to increase awareness among network organizations and health care providers of the unmet support

needs in parents and how this may affect their donor-children. This could be done by adding this evidence to the newly developed ESHRE guideline “*Good practice recommendations for information provision for those using and participating in reproductive donation*” (ESHRE, unpublished data). Given that almost 40% of all parents have unmet needs for psychosocial counselling it is not logical to only offer psychosocial counselling during the treatment phase and not during parenthood. In terms of practical implications, platforms such as Donor Conception Network in the United Kingdom, 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.

References

- Achenbach TM, Rescorla LA. Manual for the ASEBA Adult Forms and Profiles. Burlington, VT: University of Vermont Research Center for Children, Youth, & Families, 2003
- Achenbach TM, Rescorla LA. Manual for the ASEBA School-Age Forms and Profiles. Burlington, VT: University of Vermont Research Center for Children, Youth, & Families, 2001
- Bertrand RM, Hermanns JMA, Leseman PPM. Behoeftte aan opvoedingsondersteuning in Nederlandse, Marokkaanse, en Turkse gezinnen met kinderen van 0-6 jaar. *Tijdschrift voor Opvoeding, Vorming en Onderwijs* 1998;**8**:50-71.
- Blyth E, Langridge D, Harris R. Family building in donor conception: Parents’ experiences of sharing information. *J Reprod Infant Psych* 2010;**28**:116-127.
- Bos H, Gartrell N. Adolescents of the USA national longitudinal lesbian family study: Can family characteristics counteract the negative effects of stigmatization? *Fam Process* 2010;**49**:559-572.

- Graham S. Being a 'good' parent: single women reflecting upon 'selfishness' and 'risk' when pursuing motherhood through sperm donation. *Anthropol Med* 2018;**25**:249-264.
- Crawshaw M, Montuschi O. It 'did what it said on the tin'- Participant's views of the content and process of donor conception parenthood preparation workshops. *Hum Fertil* 2014;**17**:11-20.
- Hayman B, Wilkes L, Halcomb E, Jackson D. Lesbian women choosing motherhood: The journey to conception. *J GLBT Fam Stud* 2015;**11**:395-409.
- Indekeu A, Dierickx K, Schotsmans P, Daniels KR, Rober P, D'Hooghe T. Factors contributing to parental decision-making in disclosing donor conception: a systematic review. *Hum Reprod Update* 2013;**19**:714-733.
- Indekeu A, Lampic, C. The interaction between donor-conceived families and their environment: parents' perceptions of societal understanding and attitudes regarding their family-building. *Hum Fertil* 2018;**40**:14-23.
- Isaksson S, Gydsjo G, Skoog Svanberg A, Lampic C. Disclosure behaviour and intentions among 111 couples following treatment with oocytes or sperm from identity-release donors: follow-up at offspring age 1- years. *Hum Reprod* 2012;**27**:2998-3007.
- Mensah FK, Kiernan KE. Parents' mental health and children's cognitive and social development. *Soc Psychiat Epidemiol* 2010;**43**:1023-1035.
- Murray C, Golombok, S. Going it alone: solo mothers and their infants conceived by donor insemination. *Am J Orthopsychiatry* 2005;**75**:242-253.
- NVOG. Standpunt 'Geassisteerde voortplanting met gedoneerde gameten en gedoneerde embryo's, en draagmoederschap. 2016. Retrieved from <https://www.nvog.nl/kwaliteitsdocumenten/standpunten/attachment/standpunt-geassisteerde-voortplanting-met-gedoneerde-gameten-en-gedoneerde-embryo-juni-2016-addendum-12-6-2020/>.
- Schrijvers AM, van Rooij FB, de Reus E, Schoonenberg M, van der Veen F, Visser M, Bos, HMW, Mochtar MH. Psychosocial counselling in donor sperm treatment: unmet

needs and mental health among heterosexual, lesbian and single women.

RBMOnline 2020;**41**:885-891.

Shehab D, Duff J, Pasch LA, Mac Dougall K, Scheib JE, Nachtigal RD. How parents whose children have been conceived with donor gametes make their disclosure decision: contexts, influences, and couple dynamics. *Fertil Steril* 2008;**89**:179-187.

Skoog Svanberg A, Sydsjo G, Lampic C. Psychosocial aspects of identity-release gamete donation-perspectives of donors, recipients, and offspring. *Upsala J Med Sci* 2020;**125**:175-182.

Thorn P, Daniels, KR. A group-work approach in family building by donor insemination: empowering the marginalized. *Hum Fertil* 2003;**6**:46-50.

Van Stel HF, Staal IIE, Hermanns JMA, Schrijvers AJP. Validity and reliability of a structured interview for early detection and risk assessment of parenting and developmental problems in young children: a cross-sectional study. *BMC Pediatrics* 2012;**71**:12-71.

Visser M, Gerrits GJE, Kop F, Van der Veen F, Mochtar MH. Exploring parents' feelings about counseling in donor sperm treatment. *J Psychosom Obst Gyn* 2016;**37**:156-163.

Visser M, Gerrits GJE, van der Veen F, Mochtar MH. Counsellors' practices in donor sperm treatment. *Hum Fertil* 2019;**22**:255-265.

Wyverkens E, Provoost V, Ravelingien A, Pennings G, de Sutter P, Buysse A. The meaning of the sperm donor for heterosexual couples: confirming the position of the father. *Fam Process* 2017;**56**:203-216.



Anne Schrijvers completed her master degree at the faculty of Social and Behavioral Sciences at the University of Amsterdam. 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.

Key message

Unmet needs for psychosocial counselling, peer support and friends/family support of parents and children's' mental health are indirectly related through the mental health of parents. To fulfill the unmet needs in parents, we believe that the first step should be to increase awareness among network organizations and health care providers of the unmet support needs in parents and how this may affect their donor-children.

Journal Pre-proof

Figure I. Direct and indirect relation between unmet support needs and mental health in parents and their children

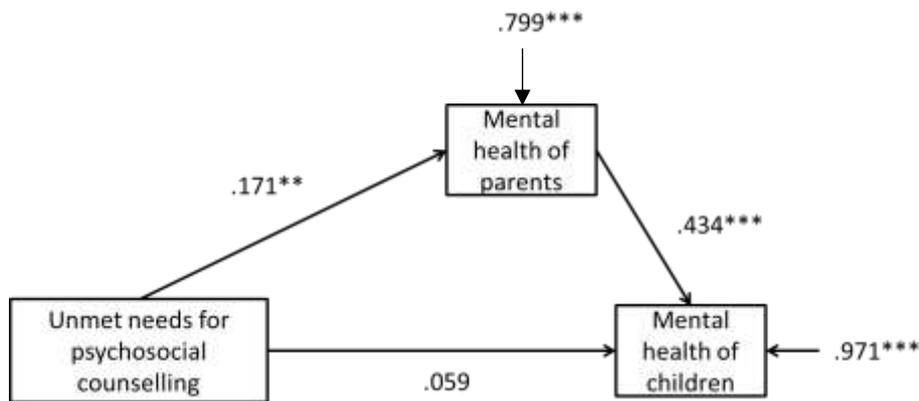


Figure Ia. Indirect effect: .074**, total effect: .133*. Assumption of equal paths across groups $\chi^2 = 32.84$, $df = 12$, $P = .001$, implying heterogeneity.

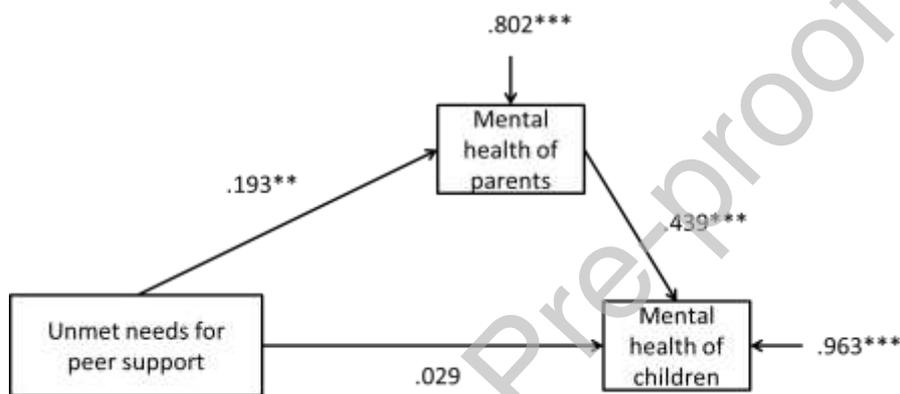


Figure Ib. Indirect effect: 0.085*, total effect: .114. Assumption of equal paths across groups $\chi^2 = 25.28$, $df = 12$, $P = .014$, implying heterogeneity.

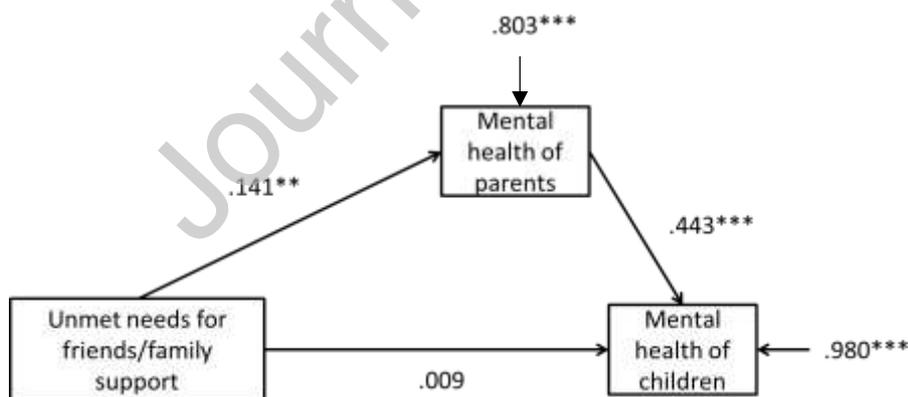


Figure Ic. Indirect effect: .063**, total effect: .072. Assumption of equal paths across groups $\chi^2 = 20.26$, $df = 12$, $P = .06$, implying homogeneity.

Note: * $P < 0.05$; ** $P < 0.01$; *** $P < 0.001$

Table I. 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 on 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.

Table II. Characteristics of parents and their children

Parent characteristics n = 214^a	n	%
Had their child in		
A heterosexual relationship	85	40
Father	23	27
Mother	62	73
A lesbian relationship	67	31
Non-biological mother	21	31
Biological mother	46	69
As a single woman	62	29
Age [mean, SD]	37.5	4.55
Child characteristics n = 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 [mean, SD]	3.6	2.01

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

Table III. Unmet support needs of parents

Unmet needs on	Unmet needs for psychosocial counselling		Unmet needs for peer support		Unmet needs for friends/family support	
	n	%	n	%	n	%
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*	n	%	n	%	n	%
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

* For complete description of the items see Table I.

Table IV. Spearman's correlations of unmet support needs and mental health of parents and their children

	1.	2.	3.	4.	5.
1. Unmet needs for psychosocial counselling	-				
2. Unmet needs for peer support	0.65**	-			
3. Unmet needs for friends/family support	0.19**	0.25**	-		
4. Mental health of parents	0.17*	0.19**	0.14*	-	
5. Mental health of children	0.13	0.11	0.07	0.44**	-

* $p < 0.05$; ** $p < 0.01$ (two-tailed).

Note: 1 = Unmet needs for psychosocial counselling, 2 = Unmet needs for peer support, 3 = Unmet needs for friends/family support, 4 = Mental health of parents, 5 = Mental health of children