OXFORD

human reproduction update

Human Reproduction Update, 2024, **30(4),** 488–527

https://doi.org/10.1093/humupd/dmae010

Advance Access Publication Date: April 30, 2024

Parents' disclosure to their donor-conceived children in the last 10 years and factors affecting disclosure: a narrative review

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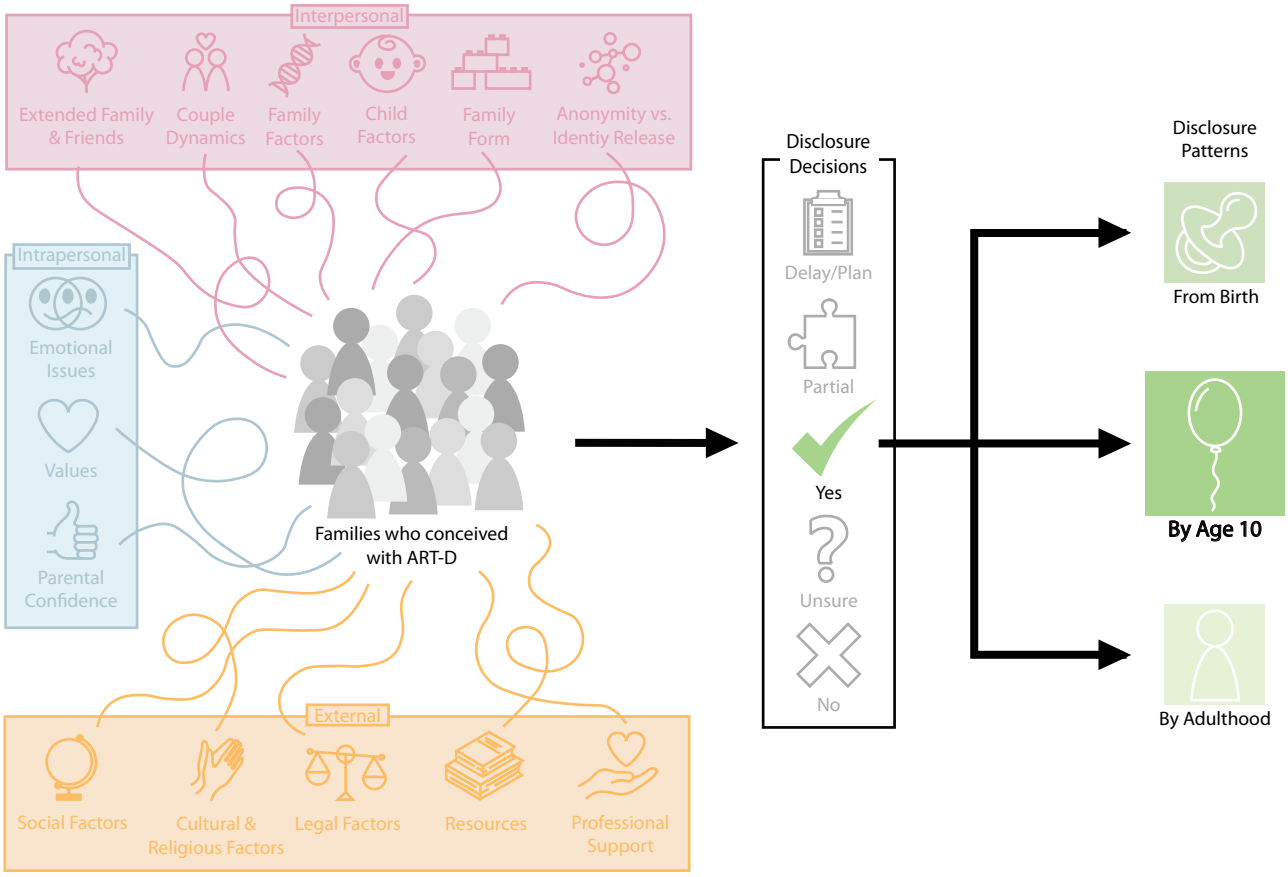
TABLE OF CONTENTS

Received: July 24, 2023. **Revised:** March 18, 2024. **Editorial decision:** April 08, 2024.

GRAPHICAL ABSTRACT



Interwoven contextual factors influence parents' disclosure decisions to their donor-conceived children, with an apparent trend towards greater and earlier disclosure noted between 2012 and 2022. ART-D, assisted reproductive technologies and donor gametes.

ABSTRACT

BACKGROUND: Disclosure of donor conception has been advocated in several jurisdictions in recent years, especially in those that practice identity-release donation. However, research on disclosure decisions has not been consolidated systematically in the last 10 years to review if parents are telling and what factors may be impacting their decisions.

OBJECTIVE AND RATIONALE: Are parents disclosing to their donor-conceived children, and what factors have influenced their disclosure decisions across different contexts and family forms in the last 10 years?

SEARCH METHODS: A bibliographic search of English-language, peer-reviewed journal articles published between 2012 and 2022 from seven databases was undertaken. References cited in included articles were manually scrutinized to identify additional references and references that cited the included articles were also manually searched. Inclusion criteria were articles focused on parents (including heterosexual, single mothers by choice, same-sex couples, and transsexual) of donor-conceived persons in both jurisdictions with or without identity-release provisions. Studies focused solely on surrogacy, donors, donor-conceived persons, or medical/fertility staff were excluded as were studies where it was not possible to extract donor-recipient parents' data separately. Both quantitative and qualitative studies were included. Preferred Reporting Items for Systematic Reviews and Meta-Analyses guidelines were followed and Joanna Briggs Institute Critical Appraisal Tools for Systematic Reviews were used to assess article quality and bias.

OUTCOMES: Thirty-seven articles met the inclusion criteria representing 34 studies and 4248 parents (including heterosexual, single, same-sex, and transsexual parents although the majority were heterosexual) from countries with anonymous donation and those with identity-release provisions or who had subsequently enacted these provisions (Australia, Belgium, Finland, France, Hong Kong, Middle East, Spain, Sweden, the UK, and the USA) A general trend towards disclosure was noted across these groups of parents with most disclosing to their donor-conceived children before the age of 10 years. Further, the majority of those who had not yet told, reported planning to disclose, although delayed decisions were also associated with lower disclosure overall. Same-sex and single parents were more likely to disclose than heterosexual parents. There was recognition of disclosure as a process involving ongoing conversations and that decisions were impacted by multiple interacting intrapersonal, interpersonal, and external contextual and social factors. Methodological limitations, such as the different population groups and contexts from which participants were drawn (including that those parents who choose not to disclose may be less likely to participate in research), are acknowledged in integrating findings.

WIDER IMPLICATIONS: This review has reinforced the need for a theoretical model to explain parents' disclosure decisions and research exploring the role of legislative provisions, culture, and donor/family type in decision-making. Greater ongoing access to psychological support around disclosure may be important to promote parent and family well-being.

Keywords: gamete donation / sperm donation / oocyte/egg donation / embryo donation / parental disclosure / identity-release / anonymous donation

Introduction

Historically, donor conception (DC) was anonymous, and it remains possible in countries such as the USA, Spain, the Czech Republic, Italy, Belgium, Japan, and China (Bauer, 2022; Ishii and de Miguel Beriain, 2022). Over the last two decades, however, more jurisdictions have elected to enact identity-release legislation recognizing the rights of donor-conceived persons (DCP) to access their genetic knowledge, and requiring the recording of donors' identifying information, with provisions for this to be made available to DCP, usually at the age of majority (often 18 years). Mandated recording and registration of identifying donor information has been enacted in countries such as Sweden (1984), Austria (1992), Victoria, Australia (1998), Switzerland (2001), the Netherlands (2004), Western Australia (2004), New Zealand (2004), Norway (2005), the UK (2005), Finland (2007), New South Wales Australia (2008), Germany (2018), Portugal (2018), Ireland (2020), and France (2022) (Boring, 2021; Indekeu *et al.*, 2021). Research on the well-being of DCP highlights the potential role of knowledge of genetic information in terms of self-identity, health, and flourishing family relationships (de Melo-Martín, 2016). However, even in jurisdictions with identity-release provisions, parents are not obligated by law to disclose the nature of conception to their DCP. While single or same-sex parents are more likely to need to explain the absence of a mother/father figure and thus the nature of their child's conception (Indekeu *et al.*, 2013), heterosexual couples are more able to conceal DC, although even in this context the increasing use of direct-to-consumer genetic testing may compromise parents' ability to do so (Harper *et al.*, 2016).

Although some research of differing family forms suggests that openness about DC is increasingly encouraged (i.e. Beeson *et al.*, 2011; Isaksson *et al.*, 2011; Bracewell-Milnes *et al.*, 2016; Cosson *et al.*, 2022), research with respect to disclosure decisions in the past decade has not been consolidated systematically. Furthermore, research may conflate parents' intention to disclose and their actual disclosure (Blyth *et al.*, 2012), failing to consider that parents' decisions may change over time (Tallandini *et al.*, 2016) thus making it difficult to assess actual disclosure rates. Research has explored a number of factors influencing parents' decisions to disclose, and in 2013 Indekeu and colleagues published a systematic review of factors related to heterosexual couples' decisions. The current systematic search and narrative review aims to build and expand on the Indekeu *et al.* (2013) review, synthesizing research on the decisions of parents from different family types and factors that contribute to their decisions.

Methods

A mixed-methods systematic search and narrative review was undertaken owing to the limited research in the area, often involving small sample numbers, a mix of quantitative and qualitative data, and stemming from cross-sectional surveys and semi-structured interviews. As appropriate for mixed-methods reviews (Page *et al.*, 2021), the search was conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses [PRISMA] 2020.

Search strategy

A bibliographic search was conducted using CINAHL Complete and MEDLINE (via EBSCOHost platform), PsycINFO (via Ovid), JSTOR, ProQuest, and Scopus, with Google Scholar used to identify any additional journal articles. The last search was conducted on 31 August 2022. References cited in articles were manually scrutinised to identify further studies, and articles that cited the included studies were also manually searched. This systematic search aims to build on previous reviews, which had a broader focus on DC with disclosure constituting just one part of the review (Hershberger, 2004; Wyverkens *et al.*, 2015; Bracewell-Milnes *et al.*, 2016; Tallandini *et al.*, 2016) and extends the review conducted by Indekeu *et al.* (2013), reviewing studies published from 2012 to 2022 with an additional focus on disclosure rates. The search terms used were: Donor OR 'assisted reproduct*' OR 'third party reproduction' AND sperm OR egg OR oocyte OR embryo OR gamete AND 'artificial insemination' OR conception OR conceived AND disclosure OR decision OR regist* OR 'open-identity' OR 'identity release' OR anonymous AND parent* OR recipient, as shown in Table 1.

Study selection

The inclusion criteria were: original empirical research (qualitative, quantitative, and mixed-methods studies) published in peer-reviewed academic journals in English; studies focused on parents from a mix of family forms (i.e. heterosexual two-parent couples, single parents by choice and female same-sex couples) and from across jurisdictions (both identity-release and anonymous contexts) and with parents having children resulting from the use of donated gametes/embryos, and their disclosure decisions/patterns. Studies including data from groups conceiving via other methods (i.e. naturally conceived, autologous IVF, surrogacy) were only included where data from these groups was presented separately from that of the donor parents; and studies published in the 10 years (2012–2022).

The exclusion criteria were: studies focused on recipient parent/DC child relationship, adjustment and/or wellbeing; studies focused on pre-conception or pre-delivery disclosure intentions; studies focused on the experiences of DCP, donors, healthcare professionals and clinicians; and studies focused solely on surrogacy families. While surrogacy may involve the use of donor gametes or embryos, since surrogacy introduces an additional third party and some research has suggested that the use of a surrogate may be more readily disclosed than the use of a donor (e.g. Jadva *et al.*, 2012; Blake *et al.*, 2016; Söderström-Anttila *et al.*, 2016), it was decided to exclude studies focused exclusively on surrogacy.

Screening and quality assessment

Articles were searched using the eligibility criteria and reviewed independently by M.D. and cross-checked by S.G. with any disagreement managed through discussion. In accordance with the Cochrane Handbook for Systematic Reviews (Li *et al.*, 2022), data for the review was collated from studies as the unit of import, rather than the articles themselves. Exceptions to collating data from articles gathered within the same umbrella study were where participant numbers differed and where secondary analysis had been conducted that provided unique data.

Table 1. Search and selection strategy for systematic review of donor recipients' disclosure decisions and patterns.

Databases searched	CINHAL Complete, MEDLINE, PsycINFO, JSTOR, ProQuest, Scopus, Google Scholar
Search keywords	Donor OR 'assisted reproduct*' OR 'third party reproduction' AND sperm OR egg OR oocyte OR embryo OR gamete AND 'artificial insemination' OR conception OR conceived AND decision OR disclosure OR regist* OR 'open-identity' OR 'identity release' OR anonymous AND parent* OR recipient
Other sources	Snowball referencing through included studies.
Inclusion criteria	(1) Original empirical research (qualitative, quantitative, and mixed-methods studies) published in peer-reviewed academic journals in English. (2) Parents from a mix of family forms (i.e. heterosexual two-parent couples, single parents by choice and female same-sex couples) who have a children resulting from the use of donated gametes (sperm, oocyte, or embryo/s), and their disclosure decisions/patterns. (3) Published in the 10 years 2012–2022
Exclusion criteria	(1) Focused on recipient/DC child relationship, adjustment, and/or well-being (2) Studies of pre-conception disclosure intention. (3) Studies of donor, donor-conceived offspring, or healthcare professionals and clinicians. (4) Focused solely on surrogacy and adoptive parent families.

DC, donor conception.

The Joanna Briggs Institute [JBI] Critical Appraisal Tools for Systematic Reviews were used to assess included articles (Table 2). All qualitative articles met at least 7 of 10 methodological quality criteria of the JBI Checklist for Qualitative Research (Lockwood *et al.*, 2015). However, most authors did not state their philosophical perspective, cultural values, theoretical beliefs, or potential influence on the research. All quantitative articles were found to be acceptable using the JBI Checklist for Analytical Cross Sectional Studies (Moola *et al.*, 2020). Mixed-methods articles were assessed and found to be acceptable using both checklists.

Data extraction

A data extraction spreadsheet was developed and included: lead author, publication year, jurisdiction, identity-release legislation (mandated, non-mandated, pre-mandate), source, study aim, research design/methods, participant demographics, type of DC, and key findings. Articles that met the eligibility criteria were carefully and repeatedly read by the first author M.D. with relevant data manually extracted and included in the spreadsheet and cross-checked. A summary is shown in Table 3. Two articles using data gathered online via the Donor Sibling Registry website and articles pertaining to two specific longitudinal studies, the Swedish Study on Gamete Donation [SSGD] and the UK Longitudinal Study of Assisted Reproduction Families [UK Longitudinal Study], are listed first, with the remaining articles listed alphabetically by first author surname for ease of searching.

Data synthesis and integration

As modelled by Indekeu *et al.* (2013), this synthesis draws on a biopsychosocial framework by exploring demographic, intrapersonal, interpersonal and external social and cultural factors that may contribute to disclosure decisions. Daniels (2005) argues that such a psychosocial approach recognizes that while DC family building has biological beginnings, the psychosocial (and legal) dimensions, for example the influence of government policy and professional and societal attitudes involved in building a family, are just as, if not more, salient. Although the factors are presented separately, the influence of each component on the other and the way they interact is recognized as having significant influence on outcomes and the daily lives of donor families (Daniels, 2005; Indekeu *et al.*, 2013).

Results

Screening and study selection

As shown in Fig. 1, database searches resulted in the identification of 768 articles. Forty-six were initially identified as relevant, but nine were excluded because they did not meet inclusion criteria. One study (reported in two articles) included a small number (4/108, i.e. 3.7%) of participants who conceived via a combination of surrogacy and donation (Stephenson *et al.*, 2012; Blyth *et al.*, 2013) and two others included 9.1% and 9.7%, respectively, of intending parents (de Melo-Martín *et al.*, 2018; Indekeu and Lampic, 2021); but as more than 90% of participants fit the inclusion criteria these studies were included. Some studies were included because they referenced disclosure decisions, or factors affecting disclosure decisions, as part of the study (e.g. Golombok *et al.*, 2013; Blake *et al.*, 2014) even if these were not the major study aims. Thus, 37 articles were initially included in this review. After reviewing the articles gathered from the same umbrella study, six were identified that use the same data as another article based on participant numbers and demographics (Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Nordqvist, 2014, 2021; Jociles *et al.*, 2017, 2021). After combining the data from these six articles into three pairs, 34 studies were identified for inclusion.

Study characteristics

Jurisdictions

This review was able to locate relevant studies in only five mandated jurisdictions between 2012 and 2022 (Sweden, the UK, Australia, Finland, and France) and includes studies where DC experience pre-dated legislative changes mandating identity-release for donors. Of the 16 studies from currently mandated identity-release jurisdictions, six were from the UK (four pre-mandate and two mandate; three are based on data from the UK Longitudinal Study), five from Sweden (four are based on data from the longitudinal SSGD), three pre-mandate studies from France, one pre-mandate study from Australia, and one pre-mandate study from Finland. One additional comparative study considered data gathered in both mandated Sweden and non-mandated Belgium. This implies that only eight studies report on disclosure decisions made in the context of current mandated identity-disclosure. A further 17 studies in five non-mandated jurisdictions were found: four studies had multi-national participants (from the USA, Canada, UK, Australia, Europe, and 'Other'), four studies were from the USA, four from Belgium, three from Spain, one from the Middle East, and one from Hong Kong.

Table 2. Joanna Briggs Institute critical appraisal tool checklist.

Lead author	Year	1	2	3	4	5	6	7	8	9	10	Study type	Limitations
Applegarth, L.	2016	Y	Y	Y	Y	Y	Y	n/a	Y	—	—	Quantitative	Low response rate (12%), self-selection bias, lack of participant heterogeneity, confounding factors resulting from seminar participation, and the lack of a specified anxiety measurement.
Blake, L.	2014	Y	Y	Y	Y	Y	Y	Y	Y	—	—	Quantitative	More than 40% of parents chose not to participate, it is likely that those who do not take part are less inclined to disclose and this should be taken into consideration when conclusions are drawn. Unfortunately, the study did not ask about parents' feelings after they had disclosed to their child, or the child's reactions/feelings after being told.
Blyth, E.	2013	Y N	Y Y	Y Y	Y Y	N Y	N N	Y N	Y Y	— Y	— Y	Mixed methods	Relatively small number of respondents and from a potential study population of unknown size. Data were self-reported by a self-selected group of anonymous respondents. Self-selection bias.
Bokek-Cohen, Y.	2022	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Qualitative	Small homogenous sample size, the number of Sunni Muslim women who seek third-party gamete donations is not available. All these factors contribute to the study not being generalizable.
Chiland, C.	2013	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Qualitative	None discussed
de Melo-Martín, I.	2018	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Qualitative	Self-selection bias, results may not be generalizable, preferences for anonymity and discomfort with disclosure may be more prevalent than is represented within our data, the underrepresentation of minority populations.
Freeman, T.	2016	Y N	Y Y	Y Y	Y Y	Y Y	Y N	Y N	Y Y	— Y	— Y	Mixed methods	Representativeness—possible that parents who do not agree to participate in research may be more inclined towards non-disclosure. Small sample size. Findings represent parents' disclosure experiences at one time point when their children are relatively young; Mothers' disclosure decisions may change over time.
Frith, L.	2012	Y N	Y Y	Y Y	Y Y	N Y	N N	n/a N	Y Y	— Y	— Y	Mixed methods	Majority of participants were non-biological Lesbian mothers, thus views of non-biological heterosexual fathers may be adequately addressed. Self-selection, results may not be generalizable. The geographical spread—reflecting different policies and legislative frameworks. Results are from a convenience sample therefore statistical inferences cannot be drawn from the data.
Gebhardt, A. J.	2017	Y	Y	Y	Y	Y	Y	Y	Y	—	—	Quantitative	22% of parents reported incomplete agreement, reflecting imbalanced group sizes reducing the statistical power of the analysis. Selection bias may limit the external validity. Interpretation of the couples' level of agreement based on individually reported decision details would involve a high risk for bias. Self-report bias.
Gürtin, Z. B	2012	Y N	Y Y	Y Y	Y Y	Y Y	N Y	Y N	Y Y	— Y	— Y	Mixed methods	Small sample size. Self-selection bias, respondents with stronger opinions (either positive or negative) may have been more likely to respond. Methodological limitations due to online/postal surveys which limit the types of information that can elicited.
Golombok, S.	2013	Y	Y	Y	Y	Y	Y	Y	Y	—	—	Quantitative	Study inability to follow donor recipients from different origins who live in Sweden but could not read and write Swedish. Attrition a concern for the generalizability. Possible social desirability effect.
Gross, M.	2020	Y Y	Y Y	Y Y	Y Y	N Y	N Y	U N	Y Y	— Y	— Y	Mixed methods	Only states that it is not possible to compare the narratives of lesbian mothers who used MAP or a known donor with the conception stories of gay fathers who used surrogacy.
Harrigan, M	2017	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Qualitative	Not generalizable, limited participants in each family type and specific cultural contexts. Self-selection bias.
Hershberger, P.	2021a	U	Y	Y	Y	Y	N	Y	Y	Y	Y	Qualitative	Small sample size, self-selection bias, lack of diversity.
Hershberger, P.	2021b	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Qualitative	Small sample size, few fathers participated.

(continued)

Table 2. (continued)

Lead author	Year	1	2	3	4	5	6	7	8	9	10	Study type	Limitations
Hertz, R.	2016	Y Y	Y Y	Y Y	Y Y	N Y	N N	Y N	Y Y	— Y	— Y	Mixed methods	Low response rate, findings were based on women in heterosexual partnerships only, limiting the generalizability of the findings. Patients came to the clinic from within Spain and as border crossers (i.e. UK where donors cannot be anonymous). Therefore representing a number of different countries and their attitudes might be shaped by their nationality as much as by their method of conception.
Indekeu, A.	2014	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Qualitative	Small sample size and self-selection bias, results may not be generalizable. Attempts to investigate non-disclosure are hampered by the very aspect being examined, namely their unwillingness to disclose non-disclosure.
Indekeu, A.	2021	Y Y	Y Y	Y Y	Y Y	Y Y	N Y	Y N	Y Y	— Y	— Y	Mixed methods	Most respondents were genetic parents and women, meaning the present findings cannot be generalized to social parents or men. Most Swedish participants were solo mothers–Similar to same-sex donor-conceived families, solo mother families are visibly deviating from the heterosexual two-parent family. Online surveys do not provide information on representativeness of the sample.
Isaksson, S.	2016	U	Y	Y	Y	Y	N	N	Y	Y	Y	Qualitative	No information about the views of sperm recipients who chose not to participate in the main study or who were lost due to attrition. Possible that they have not captured all possible views, specifically on non-disclosure.
Isaksson, S.	2012	Y U	Y Y	U Y	Y Y	Y Y	Y N	Y N	Y Y	— Y	— Y	Mixed-methods	Results based on participants' individual perceptions—possibly some couples share the same disclosure intentions but lack communication. Risk of selection and attrition bias. Unknown numbers of Swedish couples have treatment in anonymous donor countries; no info is available for these individuals.
Jociles, M.	2021	Y	Y	Y	Y	Y	N	N	Y	Y	Y	Qualitative	None discussed
Jociles, M.	2017	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Kerckhof, M.	2020	U	Y	Y	Y	Y	N	N	Y	Y	Y	Qualitative	Findings cannot be generalized to other contexts. The results are mainly based on the experiences of couples who leaned more towards openness.
Kovacs, G.	2015	Y	U	Y	Y	Y	Y	Y	Y	—	—	Quantitative	Relatively small sample size; the categorization of children as 'told' and 'not told' does not take into account children's level of understanding; responses from parents may be biased towards presenting themselves in a positive light.
Lampic, C.	2021	Y	Y	Y	Y	Y	Y	Y	Y	—	—	Quantitative	The study included heterosexual couples in the context of the Swedish legislation on identity-release donation, which limits the generalizability to other populations. Also, attrition may have introduced selection bias.
Lassalzede, T.	2017	Y N	Y Y	Y Y	Y Y	N Y	N N	n/a N	Y N	— Y	— Y	Mixed methods	Self-selection bias. Some parents contacted did not participate or refused to participate in the survey. This population of parents might not be inclined to disclose.
MacCallum, F	2012	N	Y	Y	Y	Y	N	N	Y	Y	Y	Qualitative	Small sample size limiting the strength of the findings. Ethics and recruitment data reported in earlier article.
Nordqvist, P.	2014	N	Y	Y	Y	Y	N	N	Y	n/a	Y	Qualitative	None discussed.
Nordqvist, P.	2021	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y		
Poveda, D.	2018	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Qualitative	None discussed.
Sälevaara, M.	2013	Y N	Y Y	Y Y	Y Y	N Y	N N	n/a N	Y Y	— Y	— Y	Mixed methods	More than 40% of parents chose not to participate, it is likely that those who do not take part are less inclined to disclose and this should be taken into consideration when conclusions are drawn. Unfortunately, the study did not ask about parents' feelings after they had disclosed to their child, or the child's reactions/feelings after being told.

(continued)

Table 2. (continued)

Lead author	Year	1	2	3	4	5	6	7	8	9	10	Study type	Limitations
Sawyer, N.	2013	Y	Y	Y	Y	N	N	Y	Y	—	—	Quantitative	Self-selection bias, results may not be generalizable as a majority of respondents were members of DSR, who assist DC offspring to find their donor and any half siblings, so are more likely to have an interest in such contact. Likely that the views of recipients who used open-identity donors are underrepresented in this study.
Stephenson, J.	2012	Y Y	Y Y	Y Y	Y Y	Y Y	Y N	N N	Y Y	— Y	— Y	Mixed methods	Relied on a non-probability sample. Potential bias of respondents subscribing to the DSR's ethos of disclosure. Possible recall error. Self-selection bias. Data are self-reported by anonymous participants, accuracy could not be independently verified. Survey designed for organizational purposes by DSR rather than research. Not generalizable.
Tsui, E.	2021	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Qualitative	Small sample size, very limited demographic data available due to the confidentiality concerns of the Hospital authority, self-selection bias, results may not be generalizable.
Van Parys, H.	2016	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Qualitative	It must be taken into account that the participants were counselled 7–10 years ago and practice may now differ. Possible recall error. Social desirability effect. Risk that the communication about the DC is unnecessarily problematized. Selection bias. Not generalizable.
Widbom, A.	2021	N	Y	Y	Y	Y	N	N	Y	Y	Y	Qualitative	Potentially completing repeated SSGD surveys made parents increasingly aware of disclosure issues. Also, some participants may be categorized as 'disclosers' despite not having fully informed their child of the specifics. Small subgroup sample sizes (disclosing and non-disclosing mothers and fathers) limit the generalizability of the findings.
Wyverkens, E	2017	Y	Y	Y	Y	Y	Y	N	Y	Y	Y	Qualitative	Self-selection bias and small sample size, no generalizability claims can be made. The joint narrative might have constrained some participants from talking freely about their personal views.

DC, donor conceived/donor conception; DSR, donor sibling registry; MAP, medically assisted procreation; SSGD, Swedish Study on Gamete Donation.

Table 3. Characteristics and aims of studies of parents' donor-conception disclosure decisions.

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
Donor Sibling Registry (DSR) Study	Blyth, E.	2013	MEDLINE	*Reproductive BioMedicine Online*	To extend the current evidence base with respect to the perspectives of parents of children conceived following oocyte donation, and thereby to inform service provision for Donor Sibling Registry members	Mixed-methods anonymous online survey of multiple-choice and open-ended questions, available on the Donor Sibling Registry website between Nov 2009–Jan 2010. No discussion of qualitative analysis method.	58 (61.1%) USA 22 (23.2%) UK 8 (8.4%) Australia 5 (5.3%) Canada 2 (2.1%) Europe	Non-mandated	108 parents who conceived via DC (75 OD, 33 DD): 68 (63.0%) gestational mothers; 34 (31.5%) heterosexual couples responding jointly; 2 (1.9%) two-parent female couples; plus 4 (3.7%) via surrogacy with 143 children conceived aged 1–15 years (58.7% >5 years)	Gamete donation (sperm and oocyte)	Heterosexual two-parent families, female two-parent families, single mothers by choice.	Participants generally supported early disclosure of donor conception. Uncertainty regarding the best time for disclosure was apparent. 50% of parents who had chosen, and 54% who had been given no choice of an anonymous donor subsequently wished they had used an open-identity donor; 87% of respondents showed interest in identifying and contacting their donor and other families sharing the same donor; 19% had already made such contact.
	Stephenson, J.	2012	Scopus	*Asian Pacific Journal of Reproduction*	To explore the perspectives of parents of children conceived via oocyte donation with respect to donor anonymity and disclosure to their children.							Whether the donor is anonymous or identity-release, regardless of parents' choice of donor, has little impact on the timing of disclosure to their DC child. The median age at disclosure is ~3.5 years; UK/Australian parents seem more ready to disclose earlier (M = ~2 years) than North American parents (M = ~4.5 years), where disclosure had occurred, ~75% of children have been told by age 6. Considerable ambiguity about the optimal age of disclosure to DCP is evidenced among disclosure intending parents.
Swedish Study on Gamete Donation (SSGD)	Gebhardt, A. J.	2017	MEDLINE	*Acta Obstetricia et Gynecologica Scandinavica*	To explore parenting stress levels among heterosexual parents of young children following gamete donation and	Quantitative study using standardized, validated self-report instruments and study-specific items sent to participants from 2007 to	Sweden	Mandated	213 heterosexual parents with DCP aged 1–4 years following OD (n = 103) and SD (n = 110).	Gamete donation (sperm and oocyte)	Heterosexual two-parent families	Perceived agreement on disclosure does not appear to influence parental stress. This could be related to the young age of the children (see Isaksson *et al.*, 2012 re. disclosure intention for this

(continued)

Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
					whether parenting stress is related to perceived agreement about disclosure of DC to the children.	2011. Analyzed via multiple regression analysis. Part of the longitudinal SSGD.						sample); alternatively, the psychosocial screening process may play a preparatory role for parents in facing the additional strains specific to DC families; or it may be that the stress of disclosure decisions is being overshadowed by the practical demands of parenthood with young children. Indeed, relationship satisfaction was found to be a consistent and significant influence on parenting stress levels, indicating that parental stress is buffered by relationship satisfaction in both mothers and fathers in DC families regardless of donation type (SD or OD).
	Isaksson, S.	2012	CINAHL	*Human Reproduction*	Follow-up study to explore disclosure behaviour and intentions among parents of children aged 1–4 years following gamete donation and the association between agreement on disclosure to offspring and relationship satisfaction within the couple	Mixed-methods follow-up of Isaksson *et al.* (2011) study utilizing both standardized measures and open-response questions. Data were collected via mail-out questionnaires between 2007 and 2011. Part of the prospective longitudinal SSGD. Statistical analysis and a categorical approach to open-ended questions was used.	Sweden	Mandated	229 heterosexual parents: OD recipients n = 107 (52 couples; 3 individuals) and SD recipients n = 122 (59 couples; 4 individuals), with DCP 1–4 years.	Gamete donation (sperm and oocyte).	Heterosexual two-parent families	Most of the participants (78%) planned to disclose. The process of disclosure had already been started by 16% of participants, and 6% of participants were either undecided or planned not to disclose. Of the 35 parents who had disclosed, 43% began the process when the child was between 0 and 2 years and 57% between 2 and 4 years. 59% of women and 26% of men reported wanting information on disclosure strategies and tools, and were unsure of the appropriate time to disclose. Disclosure agreement (76% were in total agreement) within the couples was found to be related to higher relationship quality as measured

(continued)

Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												by the Evaluating and Nurturing Relationship Issues, Communication, and Happiness (ENRICH) scale.
Swedish Study on Gamete Donation (SSGD) cont.	Isaksson, S.	2016	CINAHL	*Human Reproduction*	An exploration of how heterosexual parents with school-aged children reason about and experience information-sharing with offspring following identity-release sperm donation.	Qualitative semi-structured interviews conducted from February 2014 to March 2015 via telephone and face-to-face, analyzed via thematic content analysis. Part of the longitudinal SSGD.	Sweden	Mandated	Sample of participants from the SSGD, consisting of 30 parents (19 mothers and 11 fathers) with DCP aged 7–8 years following identity-release donation.	Sperm donation	Heterosexual two-parent families	All 30 parents intended to disclose, some had begun in infancy, while others had started recently (7–8 years). All cited disclosure as an ongoing, complex process across multiple levels. The personal beliefs of the parents and how the child responds serve as impeding or driving forces in the disclosure process. Impeding factors include: notions of maturity, fear of losing control of the information, finding it difficult to discuss, and non-interest from the child. Driving factors include: believing the child has a right to know, fear they would learn about it from someone else, not wanting family secrets, wanting the child to have a sense of always knowing, avoiding accidental realization, telling others to involve family and avoid gossip and stigma, the need to keep the story alive, and curiosity from the child.
	Lampic, C.	2021	CINAHL	Human reproduction	To explore if the theory of planned behaviour (TPB) informs an understanding of parents' intention to disclose to their DC	Quantitative cross-sectional survey study—data were collected with the study-specific TPB Disclosure Questionnaire and analyzed with path analysis. Part of the	Sweden	Mandated	Sample of participants from the SSGD: 196 couples with DCP aged 7–8 years conceived via identity-release OD (83) or SD (113). Data collected between 2012 and 2016	Gamete donation (sperm and oocyte).	Heterosexual two-parent families	Of the 196 couples, 61% of OD and 58% of SD parents had already disclosed to their child by the age of 7/8. The belief that disclosure would have positive consequences and wanting to act in accordance with societal norms were positively

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Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
					child. Also, to explore whether type of donation, parent gender and absence/presence of genetic link to the child were associated with disclosure intentions.	longitudinal SSGD.			approx. (participants recruited 2005–2008 and completed four postal surveys over 10 years).			associated with the intention to disclose in the next year among parents who had not done so yet. In contrast, perceived confidence to disclose was negatively associated with intention. Disclosure intention was not associated directly with the type of donation (SD or OD), or the existence or absence of a genetic link.
UK Longitudinal Study of Assisted Reproduction Families	Blake, L.	2014	MEDLINE	Human Reproduction	To explore the relationship between parent psychological adjustment, type of gamete donation and parents' disclosure of their use of donated gametes to their children.	Quantitative follow-up study using data from 5 time points. A cross-sectional factorial analysis of variance (ANOVA) design was utilized.	United Kingdom	Pre-Mandate	50 SD families and 51 OD families when DCP were aged 1, 2, 3, 7, and 10. By age 10, the study retained 34 and 30 families representing 68% and 58% of the original sample, respectively	Gamete donation (sperm and oocyte)	Heterosexual two-parent families	At age 1, 46% of SD (n = 23) and 56% of OD parents (n = 29) reported future disclosure intention. By age 7, 29% of mothers in SD families (n = 10) and 41% of mothers in OD families (n = 13) reported that they had started the disclosure process. Disclosure was not always associated with optimal levels of psychological adjustment, especially for fathers in SD families. However, levels of anxiety, parenting stress and depression fell in the normal range for most parents across all five timepoints. Across OD and SD recipient families, mothers and fathers were both reported as being psychologically well-adjusted.
	Golombok, S.	2013	MEDLINE	*Journal of Child Psychology and Psychiatry and Allied Disciplines*	To obtain in-depth data from infancy onward on the quality of parenting and children's psychological adjustment in families created by gamete donation	Quantitative longitudinal study (phase 3, 4, and 5) measuring child psych. Adjustment via the Strengths and Difficulties Questionnaire (SDQ) and quality of parenting, couple relationship, psych.	UK	Pre-mandate	30 surrogacy families, 35 SD families, 31 OD families, and 53 natural conception families selected on the basis of stratification to maximize comparability with the ART samples following with	Gamete donation (sperm and oocyte).	Heterosexual two-parent families	Of the 66 SD and OD mothers, 21 (31.8%) had disclosed (11 OD and 10 SD) and 45 (68.2%) had not (20 OD and 25 SD). Mothers who had not disclosed were found to have a higher level of distress, indicating that non-disclosure is associated with a more negative mental state for

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
					and surrogacy.	Well-being via standardized measures at age 3, 7, and 10. Maternal well-being with disclosure and family type as independent variables were statistically analyzed.			children aged 3–10 years.			mothers. Maternal distress when the DC child was 3-years old predicted adjustment problems at 7-years old in families that had disclosed. No differences were found in parenting quality between conception type for maternal positivity, negativity, or distress.
UK Longitudinal Study of Assisted Reproduction Families cont.	Freeman, T.	2016	MEDLINE	*Reproductive BioMedicine Online*	To obtain systematic data on parental disclosure of donor conception to children born as a result of sperm donation to heterosexual solo and heterosexual partnered mothers after the removal of donor anonymity in the UK.	Mixed methods to gather systematic data and qualitative semi-structured interviews rated using a standardized coding scheme.	United Kingdom	Mandated	A random sample of 31 heterosexual solo mothers and 47 matched heterosexual mothers with partners with DCP 4–8 years conceived via an identifiable SD.	Sperm donation	Heterosexual two-parent families, single mothers by choice.	Partnered mothers were less likely to consider disclosure as extremely important ($P < 0.05$) and more likely to feel neutral, ambivalent, or negative about having used an identifiable donor ($P < 0.05$) in comparison to solo mothers. Despite the use of identifiable donors, only around one-third of partnered mothers had disclosed to their 4- to 8-year-old children compared to ~1/2 of solo mothers, with the difference non-significant. Of partnered mothers who had not disclosed 17% intended not to, a significantly higher proportion than solo mothers. In the parents that had disclosed, early disclosure was found to lead to more positive outcomes in that children seemed to assimilate this information with a relatively neutral stance. Most children (88.2%) showed little interest in the donor as reported by partnered mothers; however, less than half (41.2%) of disclosing mothers had told their child that their donor was identifiable.

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
	Applegarth, L. D.	2016	CINAHL	*Human Reproduction*	To explore whether parents with children created through oocyte donation follow through with their original intentions regarding disclosure to their offspring, and if not, why not?	Quantitative cross-sectional hypothesis-generating pilot study between January–March 2012. Data were gathered via a 52-item questionnaire developed by the authors. Analysis was done using descriptive statistics. Open-ended qualitative responses were categorized and analyzed by theme. Clinical observations were made during seminars.	USA	Non-Mandated	72 parents (46 families with 66 children 7–19 years) who delivered a child/children as a result of OD between 1992 and 2003.	Oocyte donation	Heterosexual two-parent families	43% of participating parents disclosed as intended, 39% still have disclosure intentions, 9% are uncertain and 9% have no intention of ever disclosing. The mean age of DC child at disclosure was 5.5 years. The 'child's right to know', the 'desire to be open and honest', and the belief that 'family secrets are harmful' were the main reasons for deciding to disclose. The average age of children in the disclosure intention families was 11 years. 'Never finding the right time' and uncertainty about how and when to disclose were the reasons given for the delay which resulted in increased parental anxiety levels around disclosing to older children. Reports of anxiety regarding disclosure were lowest for families who had disclosed prior to 7. None of the disclosing families expressed regret; however, the families who had delayed disclosure expressed regret at the delay.
	Bokek-Cohen, Y. a.	2022	Snowball	*Marriage & Family Review*	To explore how Sunni Muslim women experience the religious and cultural prohibition against third-party gamete donation when navigating male or female infertility to	Qualitative phenomenological approach using semi-structured interviews. Themes in the narratives were analyzed via the constant comparison approach.	Middle East	Non-mandated	25 Sunni Muslim women (M = 30.3 years) who have conceived and given birth in the last year using donor gametes.	Oocyte and sperm donation	Heterosexual two-parent families	All 25 women believed disclosure to anyone, even close family, could considerably hurt the dignity of their husbands, and jeopardize the child's inheritance, healthy development, sense of belonging, and their relationship with their non-biological parent. Non-disclosure was deliberate and well planned. Women who underwent DC in

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
					bear children.							complete secrecy, illegally and without regulation, navigate between the contradictory doctrine of their religion and culture, and their desire for motherhood and family life. Coping methods include inventing stories of family resemblances and couples uniting to closely guard the secret for life. Protecting their marriage, and the significance of family lineage and the marital bond are deliberately prioritized despite the costs of violating the religious ban. This finding is also relevant in ethnic minority communities of Sunni Muslim in Western countries. However, all women in this study expressed happiness and satisfaction regarding their decision to use donor gametes to conceive a child.
	Chiland, C.	2013	Scopus	*Neuropsychiatrie de l'Enfance et de l'Adolescence*	To explore parenting quality and the development and quality of life of children conceived via DI to female/transmen couples as part of a trial program.	Qualitative follow-up observational longitudinal study conducted 2000 to 2012 as part of an ongoing study.	France	Pre-mandate	28 couples (female 26–40 years, $M = 34$ and transmen 30–50 years, $M = 38$) with 42 DCP following SD born 2000–2011.	Sperm donation	Transmen/female two-parent families	The majority of fathers spoke easily of DI but found it more difficult to talk about their transsexualism. One father's booklet, telling of his childhood experience, was useful for others. The children coped well with disclosure; however, parents worried about their children talking about their background to other children, school staff, and others in their vicinity, due to not knowing how they would handle what they were being told. Couple relationships are stable, the children are well cared for and have good

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												relationships with their fathers.
	de Melo-Martin, I	2018	MEDLINE	*AJOB Empirical Bioethics*	To explore experiences with anonymity among oocyte donors and recipients who participated in an anonymous donor program and to understand the ways in which anonymity functions for them.	Qualitative in-depth semi-structured interviews and demographic survey in a grounded theory study conducted between July 2011 and October 2013.	USA	Non-mandated	50 women (22 recipients and 28 oocyte donors). Of the recipients, 2 were mid-treatment and 20 had conceived using donor oocytes (DCP age range 8 m–15 years; majority (82%) had children <4 years).	Oocyte donation	Heterosexual two-parent families, single mothers by choice	Two (9.1%) recipients had disclosed, 2 (9.1%) had begun the disclosure process in an age-appropriate way to their young children, 2 (9.1%) reported no intention of disclosing, 1 (4.5%) was unsure, 15 (68.2%) intended to disclose. Recipients reported the decision to use an anonymous donor acted to relieve 'anxieties about family structures and obligations', protected their family status and challenges to maternal legitimacy by the donor and the child, and protected the DC child from potential harm. Access to identifiable information was seen by some recipients as imposing an obligation to share it with the DC child and so felt protected by the lack of information as they could legitimately say they did not know if the child asked for donor information.
	Frith, L.	2012	MEDLINE	*Reproductive Biomedicine Online*	To understand the perspectives of heterosexual and same-sex non biological parents who had used donor sperm	Mixed-methods 147-question anonymous online survey between October 2009 and January 2010, designed by the Donor Sibling Registry via Survey Monkey and presented categorically and as descriptive statistics.	USA (80%), Canada, UK, Rest of Europe, Australia, Other (non-response)	Non-Mandated	Convenience sample of non-biological heterosexual fathers (n = 45, 18.5%) and non-biological lesbian mothers (n = 199, 81.5%) with DCP	Sperm donation	Heterosexual two-parent families, Female two-parent families	Ninety percent of mothers reported everyone knew they had conceived via a donor, compared to only 19% of heterosexual fathers, 78.5% of whom had only disclosed to close family members. Slightly more fathers (60.5%) than mothers (55.7%) had disclosed to their DC child, 37.4% overall believed their child to be too young. Nine participants (4.5%), six fathers, and three mothers, reported that they did not intend to

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												ever disclose due to the risk that the child would not view them as their parent anymore, there was no reason to disclose, it was too emotional to discuss, or that there was no point due to lack of donor information. A majority of participants had used an anonymous donor (67.1%) with 57% reporting being happy with their choice. However, 38.2% of fathers and 43.5% of mothers wished they had used an identity-release donor in hindsight.
	Gross, M.	2020	Google Scholar	*International Social Science Journal*	To explore conception narratives recounted by lesbian mothers and to ask the question of whether or not the stories recounted vary according to whether the donor is known or not.	Mixed-methods study as part of the national longitudinal DEVHOM project launched in 2014 via a quantitative self-administered online questionnaire, an open section for disclosing mothers, a sub-section of qualitative face-to-face semi-directive interviews.	France	Pre-mandate	118 female couples with a child born 2011–2013 following SD via MAP (77%), known donor (18%), or via internet/sperm bank (5%).	Sperm donation	Female two-parent families	Of the 118 participants, 114 had begun disclosure. Eighty-two disclosing couples described the narratives used and 27 couples were then interviewed for deeper understanding. Stories that lesbian mothers told their children on the subject of their children coming into the world allow them to broach the subject of their conception. These stories offer the opportunity to reconcile a non-conventional model of family building with societal norms, with the aim of legitimatizing and normalizing the family structure. No couple ascribes value to deviating from societal norms. While 80% of stories mention 'a man's seed', only 20% mention the 'woman's seed'. None of the narratives obscured the donor's existence nor the necessity to use 'a

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												man's seed' in order to conceive a child.
	Gürtin, Z. B.	2012	MEDLINE	*Human Reproduction*	To report on the thoughts and feelings that egg-share donors and recipients have about each other, their knowledge, and feelings about each other's treatment outcome, feelings towards resulting children, and their attitudes regarding disclosure and future contact between donors and DCP.	Mixed-methods study via questionnaire—interactive online and traditional paper versions—a mixture of multiple-choice and open-ended items. Qualitative data were thematically analyzed, quantitative data were statistically analyzed.	United Kingdom	Mandated	86 women (48 egg-sharing donors and 38 recipients) who had treatment at the London Women's Clinic from 2007 to 2009. Of the respondents 63% (54: 31 donors and 23 recipients) had conceived children through one or more cycles of egg-sharing. OD recipients were single (43%) and partnered (57%).	Oocyte donation (egg-sharing)	Heterosexual two-parent families, female two-parent families, single mothers by choice	Recipients and donors expressed positive feelings towards each other and demonstrated open attitudes towards disclosure decisions and the potential for future contact between donor-conceived children and their donors. Of the 22 recipients who responded, only one had disclosed; of the remaining 21 recipients, 86% did intend to disclose in the future. Across all recipients, 78% had told friends, and 48–52% had told their parents. While some donors and recipients wanted to know the outcome of their donor's/recipient's treatment, others did not. Importantly, this study found no support in the data for concerns raised about the potential for psychological harm to donors, especially where their own treatment is unsuccessful.
	Harrigan, M. M.	2017	CINAHL	*Journal of Family Communication*	To understand the experiences of face loss in parents whose children were conceive via an anonymous donor.	Qualitative semi-structured interviews via telephone or online analyzed using facework theory as a guiding lens.	USA (90%) UK (5%) Canada (5%)	Non- mandated	19 parents (18 female) with 22 DCP (10 months–29 years) conceived via SD (88.2%) or DD (11.8%).	Gamete donation (sperm and egg)	Single parent families, female two-parent families	Parents have concerns for themselves and their DC children and enact preventative strategies to avoid or minimize face loss. A variety of facework strategies, namely, disclosure, avoidance, closedness, humour, deception, and strategic donor choice are used by parents', who desire social approval, autonomy, respect, and to prevent rejection. Closedness (not talking about the donor or possible siblings) is used by some

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												parents as protection against the threat their child may be rejected.
	Hershberger, P.E.	2021a	CINAHL	*Human Fertility*	To examine disclosure decisions in eight OD recipient families who participated in prior research 12 years ago and explore their children's understanding of family structure at middle childhood.	Qualitative, prospective, follow-up longitudinal study via a short demographic questionnaire and mix of broad open and semi-structured interview questions conducted between May and July 2016 (following up from the original study in 2004).	USA	Non-mandated	Six (of the original seven) families who had used OD to conceive, recipient mothers (n = 6, M = 52.5 years) and biological fathers (n = 6, M = 48.5 years), representing 12 DCP (M = 10.33 ± 1.23 years).	Oocyte donation	Heterosexual two-parent families	Of the six families who agreed to participate in the follow-up study, five had used an anonymous donor, and one had used a known donor. Only one family in the initial cohort had disclosed by the 12-year follow-up, despite three couples intending to disclose and two couples being undecided about disclosure during pregnancy. One family had, by agreement with the known donor, agreed not to disclose. (The seventh couple declined participation in the follow-up study due to the decision not to disclose). Four parental disclosure patterns emerged at 12 years: (i) wanting to disclose; (ii) conflicted about disclosure; (iii) not planning to disclose; and (iv) having disclosed.
	Hershberger, P. E.	2021b	Scopus	*Fertility and Sterility*	To understand the what, who, when, and where of parents' disclosure to their donor-conceived offspring in the USA.	Qualitative descriptive study via individual semi-structured or dyadic parent interviews, conducted online or by telephone between Feb–Apr 2020, and directed content analysis.	USA	Non-mandated	Purposive sample of 14 families (16 parents) that had disclosed their use of gamete or embryo donation, representing 24 DCP (4 months–16 years).	Oocyte, sperm, and embryo donation	Heterosexual two-parent families, female two-parent families, single mothers by choice	Parents incorporated multiple strategies, including children's books, in aiding disclosure. Developmentally and medically appropriate language was used in the recounting of personal stories. The oldest donor-conceived children in each family were first informed of their genetic origins at birth (71.4%) or at 6 months (7.1%) or from 3.5 to 12 years (21.4%). Disclosure conversations occurred during routine family activities where parents and children are naturally in close

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												proximity, usually in the home.
	Hertz, R.	2016	Google Scholar	*Facts, Views and Vision in ObGyn*	A comparison of OD and ED recipient women in heterosexual couples exploring the meaning of the absence of a genetic link to a child via either 'genetic symmetry' where neither mother or father has a genetic tie or 'genetic asymmetry' where only the mother is not genetically linked.	Mixed-methods online survey collected in 2015, consisting of a majority of closed questions/answers with one open-ended question at the end. Statistical analysis was conducted and qualitative data was coded using a grounded theory approach.	Spain (≈50% OD and 25% ED cross border from the UK)	Non-mandated	203 women in who conceived via OD (145 or 71%) or ED (58 or 29%) in the last 5 years.	Oocyte and embryo donation	Heterosexual two-parent families	Women who conceived via OD are more likely to disclose than women who conceived via ED (OD = 26%, ED = 10%), with OD recipients feeling more confident due to the genetic link with one parent. Additionally, OD recipients are more likely to strongly believe that their DC child has a right to their genetic information (OD = 46%, ED = 8%). Both groups were equally likely to plan to disclose when the children were older. (OD =53%, ED = 52%). However, nearly half of the ED recipients expressed never discussing the conceptions with their partner, indicating that disclosure of ED conception is a much more complex issue for families that warrants further research.
	Indekeu, A.	2014	MEDLINE	*Biomedicine Online*	To explore how sperm donor recipient parents construct, negotiate and experience meanings of 'family' and 'parenthood', and how their meanings may or may not evolve over the pregnancy, birth and toddler stages in the family life cycle.	Longitudinal qualitative interview study conducted between July 2010 and September 2012 during pregnancy, at birth and 1.5–2 years after birth, analyzed using a grounded theory approach.	Belgium	Non-mandated	19 parents (9 couples and 1 woman) who had conceived via SD.	Sperm donation	Heterosexual two-parent families	In participants intending to disclose (13/19) a transition from anxiety during pregnancy to experiencing increased confidence in their parenthood during the toddler stage was exhibited. As emerging social ties became more significant, anxieties around the lack of genetic ties decreased and their confidence in their position as parents was enhanced empowering recipients and reinforcing their disclosure intentions. 6/19 parents did not intend to disclose, viewing their parenthood as

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												the same as parents who conceived naturally. In these parents, there were no observed transitions between pregnancy and 1.5–2 years, and insecurity remained around physical traits that may reveal DC. Despite the increased confidence of parents who intended to disclose, anxieties around adolescence persisted and parents expressed a desire for further ongoing support.
	Indekeu, A.	2021	CINAHL	*Human Fertility*	To explore the societal differences and experiences of donor recipient parents in two different countries; specifically, the intersection and interaction between parents and society. and the presence and influence of values and cultural beliefs around family.	Mixed-methods study via a study specific online questionnaire, available online Jan–May 2017, using a 5-point scale and open questions. Descriptive and comparative statistical analyses with thematic analysis for open questions.	Belgium and Sweden	Mandated and non-mandated	Belgian (n = 89) and Swedish (n = 56) donor-conceiving parents from one (75%) or two-parent households with DCP 0–31 (*Mdn* = 3.5years).	Sperm, oocyte, embryo, double donation	Heterosexual two-parent families, female two-parent families, single mothers by choice.	Most participants had already begun disclosure, in Sweden, 76.8% with 23.2% intending disclosure and in Belgium, 49.4% with 46.1% intending disclosure. Donor recipients faced challenges arising from societal and cultural norms and values, as well as responses from friends, teachers, and healthcare professionals. Parents of DC children coped with a lack of awareness and understanding, conflicting views about the importance of genetics. Recipient parents experienced the demands of having to navigate misconceptions, as well as explaining and defending their situation.
	Jociles, M. I.	2021	Google Scholar	*Journal of Comparative Family Studies*	To explore the attitudes, experiences and strategies of donor recipient parents around their disclosure (or non-disclosure) of	Qualitative study conducted from 2013 to 2015 using ethnographic semi-structured interviews and content analysis inspired by grounded theory.	Spain	Non-mandated	71 donor recipient parents: single mothers by choice (24), female homoparental couples (14), male homoparental couples (4), and heteroparental couples (29) who	Sperm, oocyte, embryo, double donation, gestational surrogacy	Heterosexual two-parent families, female two-parent families, single mothers by choice	88.7% of parents had disclosed by the age of 7 years. Donor recipients implement indirect strategies of disclosure (or non-disclosure) in contexts beyond the immediate family. The three main contexts are the extended family, school,

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
					donor-conception to their DC children and others.				had disclosed to their DCP (0–7 years).			and family associations. Parents intervene in their social networks mainly by controlling the information circulating that may reach their DCP. Strategies such as restriction of information and who it is shared with, and normalization of the child's conception, are used to establish an environment in which the child can create their own identity and develop agency. Disclosure is not a dyadic parent–child issue, but involves the social network of the family, who's members become instrumental in the DC child's socialization.
		2017	Google Scholar	*Suomen Antropologi: Journal of the Finnish Anthropological Society*	To explore what strategies donor recipient parents use in conversations with their DC children about their origins.							Disclosure strategies, that are designed to have the effect of dekinning DCP from donors while kinning them with their parents and extended family, are incorporated into the stories parents create to disclose. Strategies used in the storytelling and discourse of ED, OD, and SD are personalization based on what biometric information is available and depersonalization (concealing one of the donors in DD, treating the donor as an object, i.e. *what* was donated not *who* donated it, pluralization to avoid personalizing the donor, the donor as a magical and fleeting character, and individualization where the donor may only be described as a generous person

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												without any other characteristics).
	Kerckhof, M.	2020	Google Scholar	*Culture, Health and Sexuality*	To explore how heterosexual couples who use donor-conception manage information about the donation within their extended family and social network.	Qualitative cross-sectional study via semi-structured interviews given to couples jointly and using step-by-step inductive thematic analysis.	Belgium	Non-mandated	15 couples: 10 couples who had DCP aged 7–10 years and 5 couples who were 'aspiring' parents.	Sperm donation	Heterosexual two-parent families	Couples disclosed in diverse ways characterized by selectivity (i.e. only sharing select information with select people), and carefulness (i.e. only disclosing information to people considered trustworthy). The idea of parents consciously trying to avoid accidental or unwanted disclosure to the DC child is supported by the selectivity and carefulness used in disclosure to others. Selectivity was used to manage the impact of disclosure to participant's parents. The desire to be seen as a 'normal' family and the fear of rejection by extended family members were reasons given for not disclosing.
Part of the Follow-Up of Children Conceived through Donor Insemination study	Kovacs, G. T.	2015	MEDLINE	*Australian and New Zealand Journal of Obstetrics and Gynaecology*	To contribute data on donor-conception disclosure in Australia and build on what is known about DC children and their family's well-being according to if the DC child has been 'told' or 'not told'.	Quantitative study 'nested' within the Australian Institute of Family Studies Children and Family Life (CFL) study in 2003. Standardized measures of family functioning and child well-being as reported by mothers via self-report questionnaires and analyzed statistically via 3 general linear models.	Australia	Pre-mandate	Mothers from 62 families where DCP 5–13 years had been 'told' (n = 29) and 'not told' (n = 33); drawn from the 114 successful patients of the Reproductive Medicine Clinic (RMC) of Prince Henry's Institute of Medical Research (PHIMR) between 1989 and 1999.	Sperm donation	Heterosexual two-parent families	Of the 62 families, 29 (46.8%) had disclosed to their DC child. Between non-disclosing and disclosing families, there were not any meaningful differences in the rating of mother's psychological distress, family functioning and parenting alliance. A slight but negligible difference in the rating on Relationship satisfaction was observed (4.49 disclosing and 4.01 for non-disclosing). Although there is no evidence that the well-being of parents or DC children are compromised by non-disclosure, other important values act as motivation for

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												disclosure, such as, the culture of openness in contemporary Australian families, the belief that children have the fundamental right to know, and the desire to prevent discovery by accident and avoid the burden of keeping the secret. However, categorizing DC children as 'not told' or 'told' does not describe their level of understanding requiring further research.
	Lassalzede, T.	2017	CINAHL	*Fertility and Sterility*	To determine the percentage of SD recipient parents in one French centre for the study and preservation of eggs and sperm who had disclosed to their DC children and if this was in line with their preconception intention.	Mixed-methods questionnaire survey sent by mail with open and closed questions between January and February 2014 analyzed using a categorical approach.	France	Pre-mandate	105 heterosexual couples who had a DCP (n = 138) conceived via SD.	Sperm donation	Heterosexual two-parent families	Most parents in this study had already disclosed or intended to disclose in line with their intentions prior to donor-conception. Of the 105 couples, 40 (38%) had already disclosed. Of the 40 couples who had, 37 (93%) had intended to do so prior to conceiving. Among the 65 non-disclosing couples, 42 (65%) had plans to disclose soon and 20 (31%) had no intention of disclosing. Of the 20 couples who did not plan to disclose, nine couples had disclosed to others but had no plans to disclose to their child in the future. The mean age of the child at disclosure was 2.5 years (95% between 0 and 6 years).
	MacCallum, F.	2012	MEDLINE	*Reproductive BioMedicine Online*	To examine embryo donation mothers' current disclosure patterns in comparison to adoptive and IVF mothers and explore the influence of	Qualitative follow-up comparative study of embryo donation recipients, adoptive mothers and genetically related IVF mothers. Interviews were transcribed and analyzed to extract data.	United Kingdom	Pre-mandate	17 heterosexual mothers from two-parent families with DCP (5–9 years) conceived via anonymous ED; 24 mothers with an adopted child; 28 mothers with a genetically related IVF child.	Embryo donation	Heterosexual two-parent families	ED recipient mothers were much less likely to disclose to their DC child; 18% of ED recipients had begun disclosure, 24% intended to disclose, and 12% were uncertain, but, most (47%) did not intend to disclose. In comparison, all adoptive mothers and nearly 90% of

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Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
					the method of family building in disclosure.	Analysis method not discussed.						IVF mothers intended disclosure. However, both ED and IVF mothers who had disclosed had often only given partial explanations of the child's conception.
Relative Strangers Study	Nordqvist, P.	2014	Google Scholar	*International Journal of Law, Policy and the Family*	To explore disclosure decisions and family boundary issues; information sharing with the DC child; information sharing with extended family; and the moral dimensions of disclosure.	Qualitative systematic interpretive analysis of original empirical interview data from the 'Relative Strangers' study from 2010 to 2013.	United Kingdom	Pre-mandate	119 (90 families, 29 ml) predominantly white middle-class participants—74 families (SD = 54, OD = 16, ED = 3 and 1 both SD and ED). Heterosexual (n = 22) and same-sex female (n = 22) parents (34 couples and 11 individuals) and grandparents (n = 30) of DCP (n = 111, ~1-15 years, *Mdn* = 4years).	Oocyte, sperm and embryo donation	Heterosexual two-parent families, female two-parent families	Disclosure decisions are shaped by everyday family experiences and a more nuanced understanding is needed. The importance and complexities of relationships within families, which are all interconnected, are crucial to be mindful of in understanding parents' decision-making around disclosure, and its difficulties. Debates on openness need to include an appreciation of the vitality of relationships and should be balanced against other factors which have a great influence on the personal lives of parents and their children, such as sexuality.
		2021	Google Scholar	*Sociology*	To explore (the absence of) social scripts from a relational perspective and the emerging issues in the socio-cultural context of donor conception, and the recent shift from secrecy to openness, and how that influences different relationships and storytellers in the family structure.							The emerging script that parents should disclose from a very young age is taken by many parents to mean that the DC child should be told as the 'owner' of 'their story'. Heterosexual parents have experienced a moral obligation to disclose but often feel how to disclose needs to be they need to 'worked out'. A tension exists between openness, ideas of childhood innocence, and keeping intimacy complicated, especially where disclosure of donor conception also means disclosure of sexuality. While

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Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												openness is salient for many parents, it appears to be less so for grandparents and extended family.
	Poveda, D.	2018	Google Scholar	*Human Organization*	To examine how donor recipient parents and their donor-conceived children in Spain confront and experience donor-conception disclosure.	Qualitative multi-sited ethnographic study with data collected 2013–2015 via semi-structured interviews and observations. Analysis was done using an inductive grounded theory approach.	Spain	Non-Mandated	18 families that have already disclosed: single mothers by choice (n = 12); two-parent female families (n = 5); heterosexual couple family (n = 1); with 24 DCP (5–16 years).	Gamete donation (sperm and egg)	Heterosexual two-parent families, female two-parent families, single mothers by choice	Three strategies are used by parents (94% mothers) in addressing the challenges of disclosure. First narratives, either using available resources or personally created stories. Some mothers use narratives as a way to practice disclosure when the child is still very young. How the donor fits in these narratives can be shaped by conversations with other mothers. Secondly, family organizations play an important role in helping parents develop strategies, as well as socialization and normalization. Third, teachable moments are used by mothers to model to their DC child how to talk about their origins to others.
	Sälevaara, M.	2013	MEDLINE	*Human Reproduction*	To explore the disclosure intentions and experiences of sperm donor recipient parents with donor-conceived children born before 2007, when the open-identity law was enacted.	Mixed-methods retrospective questionnaire study using structured questions and open comments. Data were analyzed using statistical methods and a categorical approach.	Finland	Pre-mandate	139 mothers and 127 fathers with altogether 240 DCP born after DI or sperm dIVF during 1992–2007.	Sperm donation	Heterosexual two-parent families	Only 16.5% of parents overall had disclosed to their child; 18% of all DC children over 3 years had been told. Parents with older children were more unwilling to disclose with <30% having told or intending to tell their children aged 16–22 years compared to nearly 70% of parents with children aged 4–6 years. The age of disclosure was between 3 and 14 years (M = 6.8). No difference in disclosure between DI and dIVF was found. Less than half (42%) of parents had been satisfied with the

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Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												psychological support offered, with parents of older children most dissatisfied. The parents had very few concerns about their anonymous donor. This can be interpreted as confidence in the clinic and the donor screening process. All parents felt that the child was their very own.
	Sawyer, N.	2013	MEDLINE	*Reproductive Biomedicine Online*	To understand the perspectives of respondents who had used donor spermatozoa regarding choice of sperm bank and donor; reporting of births and genetic disorders; disclosure; contact with donor and half-siblings; regulation of sperm donor activity and genetic testing; and access to medical information.	Quantitative 147-question anonymous online survey via Survey Monkey sent to members of the Donor Sibling Registry, presented as descriptive statistics.	USA (85%), Canada (6.7%), UK (4.3%), Australia (2.2%), other (1.8%).	Non-mandated	Convenience sample of 1700 genetic mothers of children conceived via SD split into three cohorts: heterosexual couples (DCP M = 10 years), single mothers (DCP M = 5 years), same-sex mothers (DCP M = 6 years).	Sperm donation	Heterosexual two-parent families, female two-parent families, single mothers by choice	Most participants (73%) reported using anonymous donors and 55% had already disclosed. However, heterosexual couples were more likely to be unsure or decide never to disclose (8.3%) compared to same-sex (0.8%) and single mothers (0.7%). Across all family forms ~5% had no intention of disclosing. Differences include pre-insemination counselling, awareness of choice of bank and type of donor; and views on DCP rights to know their genetic origins. Similarities include the wish by those who had used an anonymous donor that they had used an identity-release donor (61.2%) instead.
	Tsui, E.	2021	CINAHL	*Journal of Health Psychology*	To explore how donor recipient Chinese mothers experience the loss of genetic continuity and manage information related to their donor-conception.	Qualitative study, involving participants recruited over 12 months from August 2013 to 2014, using semi-structured interviews to gather data and Interpretative Phenomenological Analysis.	Hong Kong	Non-mandated	8 heterosexual women who had successfully delivered DCP (M = 2.8 years) between 2008 and 2013 via SD, OD or ED.	Oocyte, sperm and embryo donation	Heterosexual two-parent families	Non-disclosure was strongly preferred by Chinese donor recipient mothers. The underlying motives were to safeguard their child from stigma, to protect the parent-child relationship, and the family as a whole from external pressures that may impact family stability. Behavioural measures included only partial

(continued)

Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												information sharing with close friends and family, choosing donors with matching blood types to avoid accidental disclosure, using anonymous donors from overseas sperm banks, and setting clear boundaries with known oocyte donors.
	Van Parys, H.	2016	CINAHL	*Family Process*	To explore how lesbian parents talk about their donor conception with their school-age DC children.	Qualitative study via in-depth semi-structured interviews, conducted Oct–Dec 2012, and Interpretative Phenomenological Analyses.	Belgium	Non-mandated	Ten lesbian couples (20 participants) who gave birth to DCP between 2002 and 2005 via anonymous SD (aged 7–10 years).	Sperm donation	Female two-parent families	In these families, the donor and donor-conception were not discussed regularly. The donor was kept at a distance by restricting how they were discussed. The function of this was to focus on creating connections in family life rather than focussing on an unknown donor. Communication about DC took many forms when it did occur and was a complex interplay of extrafamilial influences, the child's agency and perceived needs, the parent's preferences and emotions, societal discourse, etc. Often, the strategy parents chose was motivated by the wish to act in the child's best interest and to maintain good relations within the family.
	Widbom, A.	2021	CINAHL	*Human Reproduction*	To explore how heterosexual donor sperm recipient parents experience identity-release donation when their adult DC children obtain information about their donor.	Qualitative individual semi-structured interviews were conducted face-to face or via telephone from October 2018 to January 2019 and analyzed using reflexive thematic analysis.	Sweden	Mandated	A purposive sample of 23 parents (15 families: 8 hetero couples and 7 mothers) who had disclosed the use of a SD.	Sperm donation	Heterosexual two-parent families	Following disclosure, recipient parents expressed diverse experiences related to parenthood and the presence of the donor which is captured in two themes: parents navigation of the dichotomous meanings of nature and nurture in parenthood in relation to social approval; parents positioning of

(continued)

Table 3. (continued)

Study	Lead author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-release	Sample demographics	Type of donor	Family characteristics	Findings
												the donor as either a person, a part of the family, or holding him distant. However, some parents had ambivalent feelings and struggled to position the donor. Lack of a genetic connection challenged the father's parental role and was reflected in how parents positioned the donor.
	Wyverkens, E	2017	Google Scholar	*Family Process*	To deepen understanding of parents' meaning making in relation to their child's anonymous sperm donor and how donor involvement is dealt with.	Qualitative in-depth semi-structured couple interviews and thematic analysis using a social constructionist approach.	Belgium	Non-mandated	Nine heterosexual couples with at least one DCP (2–9 years) via SD.	Sperm donation	Heterosexual two-parent families	Most parents chose not to disclose to their DC child. However, no differences could be identified between non-disclosing and disclosing parents. In both cases, once the family was formed, the donor faded into the background. Meanings around the donor were constructed that served the functioning of the family unit and downplayed the donor, which (consciously or unconsciously) may function.

DC, donor conceived/donor conception; DCP, donor-conceived person; DD, double sperm and oocyte donor; DI, donor insemination; dIVF, donor IVF; DSR, Donor Sibling Registry; ED, embryo donor; MAP, medically assisted procreation; OD, oocyte/egg donor; SD, sperm donor; SSGD, Swedish Study on Gamete Donation.

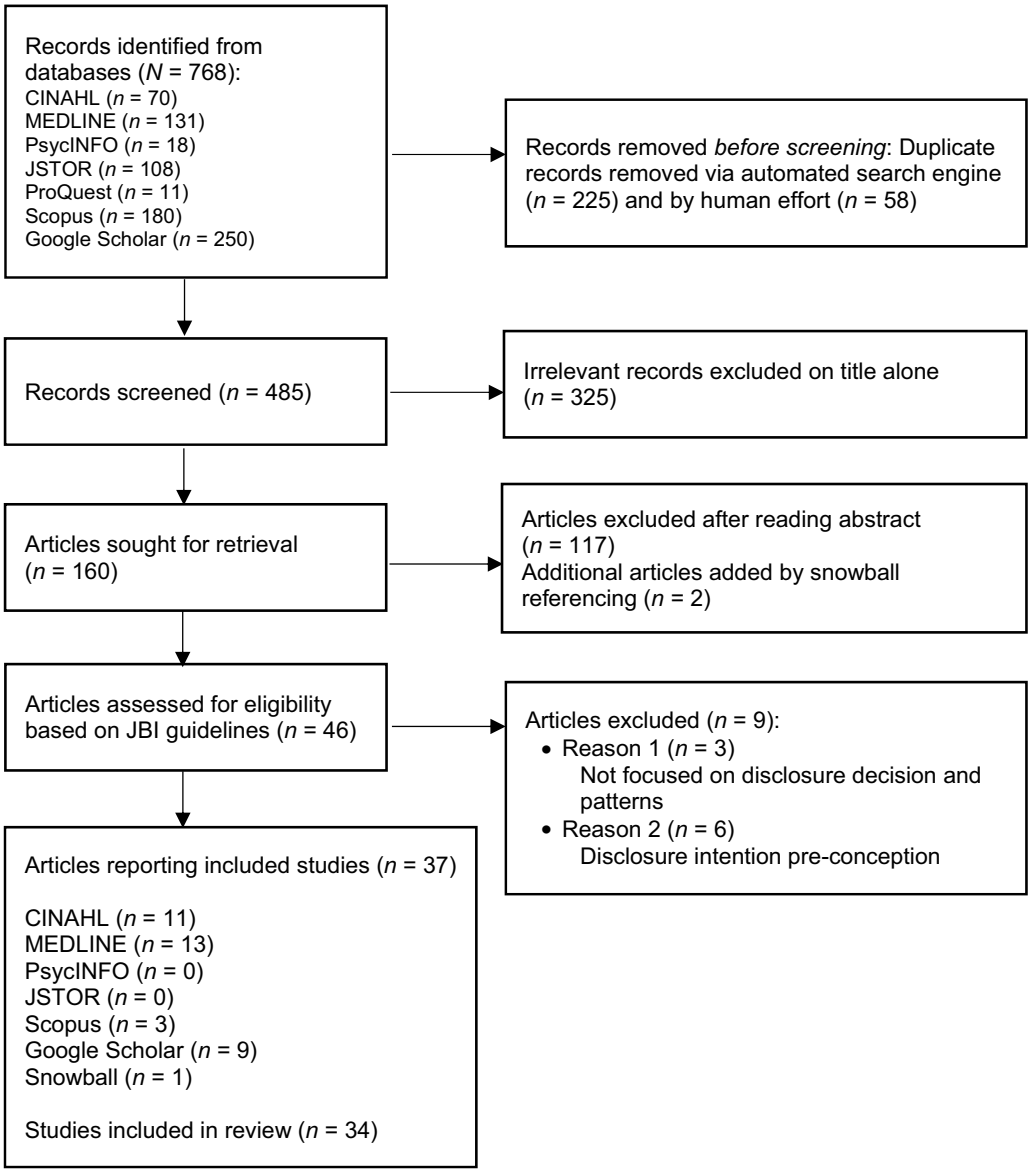

Figure 1. PRISMA flow diagram demonstrating the systematic search method for identification of articles on parents' disclosure to their donor-conceived children for review. PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analyses; JBI, Joanna Briggs Institute.

Research design

Seven studies are quantitative, 10 are mixed-methods, and 17 are qualitative (Table 3). Quantitative studies gathered data via online surveys, standardized self-report instruments and clinical observation, and use longitudinal prospective cohort and cross-sectional designs. Mixed-methods studies gathered data via online and mail-out questionnaires and surveys, standardized measures, and semi-structured interviews, collecting both qualitative and quantitative data. Qualitative studies gathered data via observational studies and broad, in-depth, and semi-structured interviews.

Participants

The disclosure decisions of 4248 parents are represented in this narrative review. However, as some articles draw on the same or a subset of participants (e.g. Isaksson *et al.*, 2012; Golombok *et al.*, 2013; Blake *et al.*, 2014; Gebhardt *et al.*, 2017), this is an overrepresentation. For example, Blake *et al.* (2014) and Golombok *et al.* (2013) use data gathered as part of the UK Longitudinal Study of Assisted Reproduction Families, which likely represent a crossover of participants (N = 64 and 66 respectively). Also, Gebhardt *et al.* (2017) include 213 of the 229 participants included in Isaksson *et al.*'s (2011) earlier study as part of the SSGD. Participant numbers range between 6 couples (Hershberger *et al.*, 2021a) and 1700 individuals (Sawyer *et al.*, 2013) with 16/34 studies involving 30 or less participants, and 11/34 including over 100 participants. While none focus exclusively on fathers, 12/34 include separate data for fathers and one study compares data from non-biological heterosexual fathers and non-biological same-sex mothers (Frith *et al.*, 2012). In contrast, 14/34 studies are more than 90% or exclusively focused on mothers and 9/34 report couples as units of data. In four studies DCP are under 5 years of age, in 13 DCP are under 10 years, in nine DCP are under 18 years, five include DCP from birth/childhood to adulthood (18 years+), one has only adult DCP, and two have DCP of unspecified age.

Nine studies consider both sperm and oocyte recipients, three consider embryo recipients, and three consider double sperm and oocyte recipients. Ten studies solely consider sperm recipients, four focus specifically on oocyte recipients, one reports

solely on embryo recipients, and one reports both oocyte and embryo recipients. Nineteen studies consider only heterosexual recipient families, 12 consider mixed family forms (heterosexual and same-sex two-parent families, single parent by choice), two only consider female two-parent families, and one considers transmen/female two-parent families. Nineteen studies explicitly report that most participants had used an anonymous donor either by choice or because it was the only option available. Refer to Table 4 for further details.

Synthesis of findings

Disclosure decisions

Disclosure decisions are reported in 31/34 studies and implied in the remaining three studies, which focus on disclosure agreement within couples (Gebhardt *et al.*, 2017), how participants manage disclosure in the context of their social networks (Kerckhof *et al.*, 2020) and disclosure methods (Nordqvist, 2014, 2021). A total of 28/31 studies specifically exploring disclosure report that participants have at least 'begun disclosure'. In all studies, regardless of DCP age, date of study or jurisdiction, the percentage of parents who had begun disclosure or planned to disclose in the future was higher than the percentage of parents who were uncertain about disclosure, except for two studies of heterosexual recipient parents: the Hershberger *et al.* (2021a) study where 33.3% of mostly anonymous oocyte/egg donation [OD] recipients were uncertain (note the small sample size), and the Sälevaara *et al.* (2013) study of 16 anonymous sperm donation [SD] recipients where 30.5% of parents who were uncertain nearly matched the 30.8% who had decided not to disclose. Overall, 13 studies report 1.8 (Sawyer *et al.*, 2013)–33.3% (Hershberger *et al.*, 2021a) of participants as being conflicted or uncertain about disclosure. In eight studies, the percentage of parents who had disclosed versus those who had not was higher, with this trend more prominent over time. Further, all but five studies (MacCallum and Keeley, 2012; Sälevaara *et al.*, 2013; Jociles *et al.*, 2017, 2021; Tsui and Cheng, 2021; Bokek-Cohen *et al.*, 2022) that report disclosure statistics found that most parents who have not yet disclosed intend to in the future. This is also the case in studies of parents who used anonymous donors in non-mandated jurisdictions (Indekeu *et al.*, 2014; Hertz and Nelson, 2016; de Melo-Martín *et al.*, 2018). However, it is also possible that parental intentions may not translate into practice (Applegarth *et al.*, 2016; Hershberger *et al.*, 2021a).

Five studies report partial disclosure. Two, in that the DCP (5–9 years) did not fully understand the process; however, all participants were planning to fully disclose as the child got older (MacCallum and Keeley, 2012; Van Parys *et al.*, 2016); two discuss a small number of parents planning to tell DCP that medical assistance, such as IVF, had been used to conceive without disclosing the use of a donor (Isaksson *et al.*, 2012; Tsui and Cheng, 2021), and in one study (Jociles *et al.*, 2017, 2021), one embryo donation [ED] recipient heterosexual couple had disclosed the use of OD but not SD out of respect for the father's wishes that his son did not know he was not the genetic father, and two double sperm and oocyte donation [DD] recipient single mothers by choice disclosed the use of SD but not OD.

Disclosure as a process is acknowledged across multiple studies (Frith *et al.*, 2012; MacCallum and Keeley, 2012; Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Nordqvist, 2014, 2021, Van Parys *et al.*, 2016; Freeman *et al.*, 2016; Isaksson *et al*, 2016; Jociles *et al.*, 2017, 2021; Lampic *et al.*, 2021; Hershberger *et al.*, 2021b), with mothers in Freeman *et al.*'s (2016) study, for example, stating that DC conversations occur once every 3 months minimum following the initial disclosure, 72.7% of parents in Stephenson *et al.*'s (2012) study reporting that they shared information with their children in stages over time, and a majority of both non-biological same-sex mothers and heterosexual fathers (72.5%) in Frith *et al.*'s (2012) multinational study (80% from the USA) reporting disclosing more information over time.

Seventeen studies report that some parents have made definite non-disclosure decisions. One study involves participants (n = 25) from Middle Eastern countries who all intend to keep their DC a closely guarded secret from everyone outside of the couple unit (Bokek-Cohen *et al.*, 2022). In another study of eight Chinese mothers, five (62.5%) report that they and their partners do not ever intend to disclose (Tsui and Cheng, 2021). Wyverkens *et al.* (2017) state only that the 'majority' of the nine anonymous SD recipient heterosexual couples participating in their study in non-mandated Belgium have chosen not to disclose. MacCallum and Keeley (2012) report that 47% (compared to 42% who have begun, or plan, to disclose) of 17 ED recipient mothers from heterosexual two-parent families in pre-mandated UK have no intention of disclosing to their DCP aged 5–9 years. Two further studies report ~30% of participants do not intend to disclose: one from non-mandated Belgium (31.6%, DCP 0–2 years) (Indekeu *et al.*, 2014), and one from a larger study in Finland (30.8%, DCP 1–22 years) prior to the identity-release mandate (Sälevaara *et al.*, 2013). The remaining studies report lower rates of planned non-disclosure, ranging from 2% of parents with DCP aged 1–4 years in Sweden (Isaksson *et al.*, 2012) to 19% of parents with DCP aged 1–12 years in pre-mandated France (Lassalzede *et al.*, 2017). There appears to be a trend across time towards less non-disclosure based on the dates of the studies.

Many of the studies were based on small sample sizes, limiting the ability to draw conclusions. Studies were also based in jurisdictions with different legal frameworks and drew on participants with different donor types (egg, sperm, embryo donation), family type (single, same-sex or heterosexual parents) and age of children or did not report separate data for different groups when these were included. We discuss the possible influence of these variables on disclosure decisions below.

Factors related to disclosure decisions

Demographics

Parents' age

The Indekeu *et al.* (2013) review included studies which suggested that younger parents could be more likely to disclose, although other studies did not observe this effect. In this review, of the 11 studies which reported participants' mean age none discuss if there was any association between parental age and disclosure. While reference is made to age, for example SD recipient single mothers by choice being older than heterosexual partnered mothers (Freeman *et al.*, 2016), and in two studies there is some speculation about the role of age (Applegarth *et al.*, 2016; Indekeu and Lampic, 2021), no association was reported between parental age and disclosure. A link between older age and likelihood of using an anonymous donor and deciding not to disclose was found in only one study, that of Sawyer *et al.* (2013). The researchers suggest that this is likely to be influenced by socio-political norms at the time of conception where donor anonymity was usual, and secrecy was advised. Therefore, any link between recipient age and disclosure remains unclear.

Family form

The Indekeu *et al.* (2013) review was limited to research on heterosexual couples, arguing that single mothers and lesbian

Table 4. Patterns of disclosure and non-disclosure by jurisdiction from 2012 to 2022.

	First author	Study year	Jurisdiction	Donor type	Family form	DCP age at study	% no.	% un-sure	% delay	% yes	Age (years) disclosed
Pre-mandate	MacCallum	2012	UK	ED	HTP	5–9	47	12	24	18	0–5 (*M* = 2.2)
	Sälevaara	2013	Finland	SD	HTP	1–22	30.8	30.5	22.9	15.8	3–14 (*M* = 6.8)
	Golombok	2013	UK	SD/OD	HTP	3–10				31.8	<4
	Chiland	2013	France	SD	TFP	<1–12	0	0	0	100	<12
	Blake	2014	UK	SD/OD	HTP	<10				33.8	<7
	Kovacs	2015	Australia	SD	HTP	5–13				46.8	<13
	Lassalzede	2017	France	SD	HTP	1–12	19		40	38	0–6 (95%) (*M* = 2.5)
	Gross	2020	France	SD	FTP	<9				96.6	<9
	Nordqvist	2014, 2021	UK	SD/OD/ED	HTP, FTP	~1–15 (*Mdn* = 4)					
Mandated	Isaksson	2012	Sweden	SD/OD	HTP	1–4	2	4	78	16	0–4
	Gürtin	2012	UK	OD	HTP, SMC, FTP	<3	4.6	9	81.8	4.6	<3
	Freeman	2016	UK	SD	HTP, SMC	4–8	10.2	9	37.1	43.6	<8
	Isaksson	2016	Sweden	SD	HTP	7–8				Most	<8
	Gebhardt	2017	Sweden	SD/OD	HTP						
	Indekeu*	2021	Sweden	SD/OD/DD	HTP, SMC, FTP	0–31 (*Mdn* = 3.5)	0	0	23.2	76.8	
	Widbom	2021	Sweden	SD (most)	HTP	Adult	0	0	0	100	
	Lampic	2021	Sweden	SD/OD	HTP	7–8				59.4	<8
	Frith	2012	Multi	SD	HTP, FTP		4.5		37.3	56.6	0< (51%) most <10
Non-mandated	Blyth & Stephenson	2012, 2013	Multi	OD/DD	HTP, SMC, FTP	1–15	3.2	4.3	41.4	51.1	*M* = 3.5
	Sawyer	2013	Multi	SD	HTP, SMC, FTP	0–21+	5	1.8	38.2	55	
	Indekeu	2014	Belgium	SD	HTP	0–2	31.6	0	68.4	0	
	Applegarth	2016	U.S.A	OD	HTP	7–19	9	9	39	43	1–15 (*M* = 5.5)
	Hertz	2016	Spain	OD/ED	HTP	<7			~67	~22	<5
	Van Parys	2016	Belgium	SD	FTP	7–10	0	0	0	100	<10
	Wyverkens	2017	Belgium	SD	HTP	2–9	Majority	11		Unclear	<9
	Harrigan	2017	Multi	SD/DD	SPF, FTP	<1–29 (*M* = 10.6)	0	0	0	100	
	de Melo-Martín	2018	USA	OD	HTP, SMC	0.8–15 (82% <4)	9.1	4.5	68.2	18.2	<15
	Poveda	2018	Spain	SD/OD	SMC, FTP, HTP	5–16	0	0	0	100	<16
	Kerckhof	2020	Belgium	SD	HTP	7–10					
	Jociles	2017, 2021	Spain	SD/OD/ED/DD	HTP, SMC, FTP	0–7	11.3	0	0	88.7	<7
	Indekeu*	2021	Belgium	SD/OD/ED/DD	HTP, SMC, FTP	0–23 (*Mdn* = 3.5)		4.5	46.1	49.4	
	Hershberger	2021a	USA	OD	HTP	8–11	16.7	33.3	33.3	16.7	~5
	Hershberger	2021b	USA	SD/OD/ED/DD	HTP, SMC, FTP	0.4–16	0	0	0	100	71.4% from birth
	Tsui	2021	Hong Kong	SD/OD	HTP	1–6	62.5	12.5	25	0	
	Bokek-Cohen	2022	Middle East	SD/OD	HTP	<2	100	0	0	0	

Empty cells denote data were not reported.
DCP, donor-conceived person; DD, double sperm and oocyte donor; ED, embryo donor; FTP, female two-parent; HTP, heterosexual two-parent; OD, oocyte/egg donor; SD, sperm donor; SMC, single mother by choice; SPF, single-parent family; TFP, transmen/female parents.
* One comparative study, conducted in both mandated Sweden and non-mandated Belgian, with data separated for clarity.

couples need to explain and are more likely to face their children's questions about the absence of a male parent. In this review, five studies compare disclosure statistics between heteronormative two-parent families and other family forms. Frith *et al.* (2012) reported little difference in disclosure rates at the time of their study for non-biological heterosexual partnered fathers (60.5%) versus non-biological same-sex partnered mothers (55.7%) although the majority of mothers reported that everyone knew they had used a donor. Further, the mothers reported more interest in donor-linking: wanting to meet the donor and any siblings of their child, suggesting their intent to disclose. Freeman *et al.* (2016) report a non-significant difference by family type in disclosure status with more single mothers disclosing (54.8%) than partnered heterosexual mothers (36.2%), as well as a significant difference in the intention to tell, with only 3.2% of single mothers feeling uncertain or planning not to disclose compared to 29.8% of partnered mothers. Disclosure for single mother by choice families was linked to the absence of a father in the home, whereas non-disclosure for partnered mothers was linked to the presence of a father (Freeman *et al.*, 2016). Similarly, the Jociles *et al.* (2017, 2021) study found that, of the recipient parents who intended non-disclosure (11.3%), all were heterosexual two-parent families, and the remaining 88.7% of parents (female two-parent and single mother by choice) all reported that they had disclosed.

In Indekeu and Lampic's (2021) comparative study, where recipient parents in Sweden were mostly heterosexual single mothers by choice, 76.8% had disclosed and a further 23.2% intended to. In contrast, recipient parents (57.3% heterosexual, 42.7% non-heterosexual) in Belgium were mostly from two-parent families with 49.4% reporting having disclosed and a further 46.1% reporting intending to. It is unclear whether the differences in actual disclosure was linked to legislative differences (Sweden has identity-release legislation and Belgium does not) or family type, further complicated by the fact that data was reported by sexuality and family type but not both together. In both countries, parents also indicated intention to disclose if they had not already done so.

Gross and Richardot (2020) and Nordqvist (2021) discuss the role of heterosexual assumption in family forms, suggesting that donor disclosure in non-heterosexual families is also simultaneously a disclosure of sexuality, both to others and the DCP. In Gross and Richardot's (2020) study, 96.6% of female two-parent recipients had disclosed by 9 years. Similarly, in Sawyer *et al.*'s (2013) multinational study of 1700 heterosexual, same-sex and single mothers, disclosure appeared more likely in same-sex female families. In the case of transmen/female two-parent families, DC disclosure to DCP was found to be easier for fathers than discussing their transsexualism (Chiland *et al.*, 2013). Regardless, all families in Chiland *et al.*'s (2013) study had disclosed. Thus, it appears that heterosexual families may be less likely to disclose than other family forms.

Other parental demographics

A number of studies collected data with respect to education and infertility diagnosis but as in the. Indekeu *et al.* (2013) review, no consistent associations with disclosure were reported.

Intrapersonal factors

As in Indekeu *et al.* (2013), intrapersonal factors are those which occur within the individual and which may influence the disclosure decision.

Values

Thirteen studies report on the influence of parents' values in relation to their support for disclosure. Similar to what was reported by Indekeu *et al.* (2013), the main driver for non-disclosure in the studies in this review was parents' belief that it is not necessary to tell, that there is no point as they do not have the donors' information, and/or expressing the desire to be a 'normal' family (Frith *et al.*, 2012; Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Applegarth *et al.*, 2016; Wyverkens *et al.*, 2017). Other commonly reported reasons given for non-disclosure related to parents making decisions they felt would be in the best interests of their child, e.g. worries about the emotional impact on their child and the social stigma they might face; or related more to parents' self-interest, e.g. that the child will no longer view them as their parent, concerns about the child wanting to find their donor, the child being resentful, social stigma for them as parents, it being too painful, being told not to disclose by others, and uncertainty about how to disclose (Frith *et al.*, 2012; Sawyer *et al.*, 2013; Applegarth *et al.*, 2016; Freeman *et al.*, 2016; Hertz and Nelson, 2016; Isaksson *et al.*, 2016; Lassalzede *et al.*, 2017; de Melo-Martín *et al.*, 2018).

Parents' belief that their child has a right to know about their conception is reported as the main driver for disclosure or intended disclosure in multiple studies (Gürtin *et al.*, 2012; Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Applegarth *et al.*, 2016; Isaksson *et al.*, 2016; Lampic *et al.*, 2021). Disclosing parents' decisions were also made in consideration of what they perceived to be in the best interests of their donor-conceived children. Across all studies, and similar to Indekeu *et al.*'s (2103) findings, other commonly reported reasons for deciding to disclose are the desire to be open and honest, not wanting the burden of family secrets, fear that the child may find out accidentally or from someone else and wanting the child to feel that they had always known. Parents also report feeling a moral obligation to disclose in a way that protects the DCP's self-identity (Nordqvist, 2014, 2021).

Parental confidence

Twelve studies report on the role of parental confidence in disclosing and, as in the Indekeu *et al.* (2013) review, confidence was generally associated with disclosure. In Spain, parents involved in community and support groups were reported to feel proactive and empowered in their disclosure (Poveda *et al.*, 2018). However, a lack of confidence about disclosure, including uncertainty around the language to use, the best way and time to disclose, and finding the information difficult to share was reported in a number of studies (Chiland *et al.*, 2013; Applegarth *et al.*, 2016; Isaksson *et al.*, 2016; Van Parys *et al.*, 2016; Lassalzede *et al.*, 2017; Wyverkens *et al.*, 2017; Widbom *et al.*, 2021; Hershberger *et al.*, 2021a,b). Additionally, the complexity of having to explain sexuality in same-sex and transmen/female families added another layer to navigate in disclosure, causing confusion and conflicted feelings about disclosure for some participants (Chiland *et al.*, 2013; Nordqvist, 2021). Interestingly, in one study, parents who had not yet disclosed to their 7–8-year-old DCP were found to be *less* likely to intend to disclose in the year ahead if they had a greater level of confidence in their ability to discuss the topic (Lampic *et al.*, 2021). The authors suggest, however, that this may be the result of a deliberate decision to delay disclosure until the child is older (and potentially better able to comprehend and control the information about being donor conceived) rather than a decision not to disclose at all (Lampic *et al.*, 2021).

Emotional factors

Related to parental confidence, nine studies report on the impact of parents' emotional issues on disclosure. Unresolved grief or shame made disclosure too difficult for some participants in two

studies (Frith *et al.*, 2012; Tsui and Cheng, 2021). In the Hershberger *et al.* (2021a) study, unresolved infertility grief seemed to increase OD mothers' fears that children's reactions to knowing about the DC would bring further emotional pain. Heterosexual women using SD also reported concern about the possible emotional impact of disclosure on their partners in the Wyverkens *et al.* (2017) study. However, both OD and SD recipient heterosexual mothers from two-parent families who had not disclosed were found to have increased distress levels compared to mothers who had disclosed (Golombok *et al.*, 2013). Conflicting emotions of gratitude for the gift of a child and unresolved grief connected to infertility were reported by parents at the start of the disclosure process (Isaksson *et al.*, 2016), and in some cases were reported as the reason for delaying disclosure (Applegarth *et al.*, 2016; Hershberger *et al.*, 2021a). However, positive emotions of pride, gratitude and awe were also experienced by OD recipient parents, with disclosure regarded as an affirmation of the positive experience of building a family rather than as a form of apology or damage control (Blyth *et al.*, 2013).

Interpersonal factors

Couple dynamics

Although agreement on the disclosure decision was reported by the majority of partnered parents in some studies (Frith *et al.*, 2012; Isaksson *et al.*, 2012; Chiland *et al.*, 2013; Gebhardt *et al.*, 2017; Hershberger *et al.*, 2021a,b; Bokek-Cohen *et al.*, 2022), a change in agreement from non-disclosure towards disclosure could also occur by consensus over time (Hershberger *et al.*, 2021b). As suggested by Gebhardt *et al.* (2017), parental agreement on disclosure in the context of mandated identity-release jurisdictions may not become salient until children get older, and the parents need to decide. Nevertheless, disagreement over disclosure could contribute to uncertainty about disclosure and disclosure delay (Sälevaara *et al.*, 2013; Applegarth *et al.*, 2016; Hershberger *et al.*, 2021a,b), as was also reported in the Indekeu *et al.* (2013) review.

Access to donor information

Three studies reporting on anonymous donor use where parents did not have access to identifying information about the donor included only parents who had disclosed (Chiland *et al.*, 2013; Van Parys *et al.*, 2016; Hershberger *et al*, 2021b), one does not give disclosure statistics (Kerckhof *et al.*, 2020) and one reports an even split between OD heterosexual couples who have or plan to disclose and those intending non-disclosure or who are uncertain (Hershberger *et al.*, 2021a). However 10 studies (all in non-mandated and pre-mandate jurisdictions) report a higher percentage of parents (from a mix of family forms) either had begun disclosure or intended to, compared to those who intend not to disclose, regardless of identifiable donation not being required by their jurisdiction (Frith *et al.*, 2012; Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Sawyer *et al.*, 2013; Indekeu *et al.*, 2014; Hertz and Nelson, 2016; Jociles *et al.*, 2017, 2021; Lassalzede *et al.*, 2017; de Melo-Martín *et al.*, 2018; Gross and Richardot, 2020; Indekeu and Lampic, 2021). Furthermore, in Sawyer *et al.*'s (2013) multinational study of mostly anonymous SD recipient parents, 55% had disclosed and 38.2% were intending to, 24% had found or were actively searching for their child's donor, and ~52% reported they potentially would in the future, demonstrating the willingness to be open in spite of anonymity and lack of access to donor identifying information.

Only five studies report that a majority of recipients (100% heterosexual) using anonymous donors do not intend to disclose or are uncertain (MacCallum and Keeley, 2012; Sälevaara *et al.*, 2013; Wyverkens *et al.*, 2017; Tsui and Cheng, 2021; Bokek-Cohen *et al.*, 2022). Interestingly, anonymous donation, where parents did not have access to identifying information, was regarded as an advantage in disclosure by some parents, in that it provided the ability for DCP to use their imagination about their donors, avoiding any potential disappointment or rejection, which may hypothetically result from reality (Harrigan *et al.*, 2017; Wyverkens *et al.*, 2017). On the other hand, for parents who did not disclose, anonymity was seen as protective, allowing them to forget the SD donor (whom they know nothing about) and get on with their lives without disclosing (Wyverkens *et al.*, 2017). The lack of donor information in anonymous donation was also reported as a reason for non-disclosure or delaying disclosure (Sälevaara, *et al.*, 2013; Applegarth *et al.*, 2016).

However, even when donors' identifying information is available, parents who disclose DC may not necessarily tell their child that this is the case, for example in Freeman *et al.*'s (2016) study in the UK only 41.2% of SD partnered recipient mothers who had disclosed had informed their children that their donors' identifying information was available, despite 59.6% reporting positive feelings about having used an identifiable donor. This suggests a complicated link between access to donor information and disclosure. Even where known donors are used, the ongoing relationship or link with the donor can act as either an aid to disclosure (Sawyer *et al.*, 2013; Nordqvist, 2014) or a barrier, with participants reporting having firm boundaries, agreements, and even contracts in place with the donor to protect *against* disclosure (Tsui and Cheng, 2021; Hershberger *et al.*, 2021a). As discussed by Gross and Richardot (2020) and Harrigan *et al.* (2017), choosing between a known or anonymous donor may be based on whether the recipient parents want a third party involved in their child's life and the importance placed on the DCP having access to their donors' information later, rather than disclosure intention. As also found by Indekeu *et al.* (2013), the link between disclosure/non-disclosure and the use of identity-release versus anonymous donors remains unclear.

Family factors

Type of donation

Donation type was found not to significantly impact disclosure decisions in three studies (Isaksson *et al.*, 2012; Sälevaara *et al.*, 2013; Lampic *et al.*, 2021). However, Blake *et al.* (2014) report that 26.5% of SD compared to 43.3% of OD recipient heterosexual mothers from two-parent families in the UK had disclosed by age 10 years, suggesting possible lower rates of disclosure for SD. As also found in Indekeu *et al.*'s (2013) review, it is suggested that as OD recipient parents both have a biological link (mothers via gestation and fathers via genetics) to the DCP, disclosure may not be as much of a challenge in these families (Blake *et al.*, 2014). The concern that the SD-conceived child may not consider their father to be their real father is discussed by both parents, but mothers particularly (Widbom *et al.*, 2021). In the case of SD, heterosexual parents' disclosure decisions may be influenced by the desire to protect the role of the father (Wyverkens *et al.*, 2017; Widbom *et al.*, 2021), sometimes becoming the impetus for not disclosing (Sawyer *et al.*, 2013; Freeman *et al.*, 2016) or only partially disclosing in the case of anonymous ED (Jociles *et al.*, 2017, 2021).

However, similar to Indekeu *et al* (2013), indecision and non-disclosure were found to be more likely in ED in two studies, where both parents share no genetic link to the child. MacCallum and Keeley (2012) report that a majority (47%) of ED recipient mothers do not intend to disclose. In Hertz and Nelson's (2016) study, only 10% of ED parents (in contrast with 26% of OD) had

disclosed by age 5 years, with ED mothers reporting that disclosure was too painful and that they did not even discuss the ED with their husbands following the decision to proceed with ED and conception of their child.

Family composition

Seventeen studies report on family composition, including the number of children, but most do not draw a link between number of children and disclosure. However, Isaksson *et al.*'s (2016) study of 'mostly' disclosing heterosexual SD recipient parents comments on the effect of the number of children, reporting that those with more than one DCP felt reassured about disclosure owing to the support the children can offer each other. In Indekeu and Lampic's (2021) study, where 45.8% of parents in Belgium and 33.3% of parents in Sweden had more than one DCP, with most conceived using the same donor (81.8% Belgium, 72.2% Sweden), most parents reported disclosing or intending to do so, suggesting that parents might more readily disclose where DCP had the same donors. On the other hand, having DCP of different ages has also been found to be an impediment to disclosure, as was the case in Hershberger *et al.*'s (2021a) study of heterosexual OD recipients, where this was linked to parental uncertainty around how to disclose to children of differing ages. As was the case in Indekeu *et al.*'s (2013) review, the link between the number of donor-conceived children and disclosure within different family forms thus remains unclear.

Child/DCP factors

Age and maturity

Thirteen studies report the age of children at disclosure, with 11 reporting disclosing before, or with a mean age of <7 years, and most, where disclosure is supported, report starting disclosure from birth using a 'seed planting' strategy (Isaksson *et al.*, 2012; Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Golombok *et al.*, 2013; Blake *et al.*, 2014; Applegarth *et al.*, 2016; Hertz and Nelson, 2016; Lassalzede *et al.*, 2017; MacCallum and Keeley, 2012; Sälevaara *et al.*, 2013; Hershberger *et al.*, 2021a,b). Most parents reporting disclosure intention state that they will disclose when questions are asked by the DCP, or at the 'right time' when they are old or mature enough to understand (Isaksson *et al.*, 2012; Isaksson *et al*, 2016; Lampic *et al.*, 2021) although there was also uncertainty about the best time as which to start the disclosure process (Isaksson *et al.*, 2012). As found by Indekeu *et al.* (2013), a commonly reported reason for delaying disclosure is parents' perception that the child is 'too young' to be able to understand DC, or family boundaries around the sharing of information (Frith *et al.*, 2012; MacCallum and Keeley, 2012; Stephenson *et al.*, 2012; Blyth *et al.*, 2013; Isaksson *et al.*, 2016; Van Parys *et al.*, 2016; Lassalzede *et al.*, 2017; Lampic *et al.*, 2021). Interestingly though, 80% of the parents in the Stephenson *et al.* (2012) study who had disclosed also have DCP aged <5 years. The researchers speculate that parents who find disclosure difficult or who do not intend to disclose may use the explanation that they are 'too young' to rationalize their delay.

Delayed decisions are, however, potentially problematic as parents who delay the decision may report having left disclosure 'too late', with their concerns about how older children, teenagers, and young adults will receive disclosure given as reasons for further delay (Sälevaara *et al.*, 2013; Applegarth *et al.*, 2016). The Sälevaara *et al.* (2013) study in Finland found that only 30% of parents with DCP aged 16–22 years had disclosed or were intending to, compared to 70% of parents with DCP aged 4–6 years. However, the authors suggest that this may also be reflective of changing attitudes towards disclosure in Finland, possibly related to the 2007 legal changes requiring donors to register their details. Nonetheless other studies too reflect that disclosure delay might result in further delay or non-disclosure. In Hershberger *et al.*'s (2021a) follow-up study, for example, only 14% of the 43% of OD recipient parents who planned to disclose in the original study during pregnancy had done so by the 12-year follow-up. Similarly, Blake *et al.* (2014) found that although 46% of SD and 56% of OD recipients intended to disclose when asked when their child was 1 year old, only 29% of SD and 41% of OD mothers had actually begun disclosure by age 7 years. Additionally, Applegarth *et al.* (2016) found that the average age of the children in families who report that they are still intending to disclose is 11 years, despite most parents having planned to disclose earlier.

Resemblance

The resemblance or lack thereof between DCP and parents may be related to disclosure, as was also reported in the Indekeu *et al.* (2013) review. For example, Hershberger *et al.* (2021a) report that OD parents may find that when the child outwardly looks like their parents this acts as an impediment to their disclosure. On the other hand, a lack of resemblance may be difficult for parents to manage (Harrigan *et al.*, 2017) leading to the increased risk of questions, and possibly greater disclosure (Indekeu *et al.*, 2014; Widbom *et al.*, 2021).

Role of child

Several studies refer to the role the child plays in initiating and continuing disclosure. For example, Hershberger *et al.* (2021a), Hershberger *et al.*, (2021b), Isaksson *et al.*, (2016), and Van Parys *et al.* (2016) report that the prompt for disclosure in families may be the DCP asking questions about pregnancy, where babies come from and their birth. Freeman *et al.* (2016) report that DCP in single mother by choice families are more likely to raise the subject than DCP in two-parent families, suggesting greater openness in communication related to disclosure. Van Parys *et al.* (2016) similarly found that all same-sex female couples in their study report the DCP as driving disclosure, with discussions occurring as a result of the child's questions.

Children are also reported to have a role in the disclosure process via their reactions (Isaksson *et al.*, 2016; Nordqvist, 2014, 2021). For example, in studies reporting parents' perceptions of their child's reaction to disclosure (Nordqvist, 2014, 2021; Freeman *et al.*, 2016; Isaksson *et al.*, 2016; Lassalzede *et al.*, 2017) most report that either their child showed neutral or mixed feelings, or that the child showed little interest in the donor. A neutral reaction or curiosity is reported to foster further discussion and enables parents to better gauge how their child feels and what they understand—in contrast, non-interest may act to stall disclosure (Isaksson *et al.*, 2016). The need to 'keep the story alive' was experienced by parents in Isaksson *et al.*'s (2016) study, leading parents to bring it up at every opportunity.

Extended family/friends

Eight studies explicitly reported that more than 80% of participants had disclosed to others, including parents who do not intend to ever disclose to the DCP (Frith *et al.*, 2012; Gürtin *et al.*, 2012; Isaksson *et al.*, 2012; Applegarth *et al.*, 2016; Hertz and Nelson, 2016; Lassalzede *et al.*, 2017; Kerckhof *et al.*, 2020; Indekeu and Lampic, 2021). This means that there could be inadvertent disclosure to the DCP by others, although Sälevaara *et al.* (2013) report finding that, in general, parents are more likely ($P < 0.005$) to disclose to others about their DC if they have disclosed or intend to disclose to their child. Disclosure to family

and friends can help normalise the DC, avoid gossip (Isaksson *et al.*, 2016) and be used to express gratitude, family pride, surety in their decision, break taboos, and to build awareness and sensitivity to protect the DCP (Indekeu and Lampic, 2021). Disclosure can also be used to ensure family support and consistency in the disclosure process and, for some same-sex families, as a method for 'coming out' to their extended family (Jociles *et al.*, 2017, 2021). Nevertheless, some parents also report confusion related to disclosing to others and how best to respect the moral rights of the DCP to have agency or control of their own information, especially while the DCP are too young to make informed choices (Nordqvist, 2014, 2021).

As also found by Indekeu *et al.* (2013), while some parents report receiving support from extended family/friends to negotiate their own emotional issues about DC, which may also help them to disclose to their DCP, others report needing to adapt their disclosure of DC in reaction to the upset caused by disclosure of fertility problems to their family, for example their parents, thus delaying their disclosure of DC, or only partially disclosing DC to others and to their children (Kerckhof *et al.*, 2020). For some parents, the social and economic consequences of disclosure within family networks can be significant and negatively affect crucial relationships; where support is not expected or forthcoming, restrictive or selective disclosure and avoidance can result (Nordqvist, 2014; Harrigan *et al.*, 2017; Jociles *et al.*, 2017, 2021).

External context and social influences

Socio-cultural-legal factors

Socio-cultural

As also found by Indekeu *et al.* (2013), parental concern about social and cultural norms can have both a positive and negative influence on disclosure. For example, Wyverkens *et al.* (2017) found that heterosexual couples in non-mandated Belgium are significantly influenced by social norms that prioritize the traditional nuclear structure of families based on genetic links, and thus in this context non-disclosure may be viewed as protective against stigma and social disapproval. Similarly, a pattern of information concealment was found in Tsui and Cheng's (2021) study of donor–recipient Chinese women where the conservative attitudes of older generations and the traditional Chinese value placed on genetic connection were found to underly decisions of non-disclosure and held to protect against stigma, negative effects on the parent–child relationship and family instability. Stephenson *et al.* (2012) suggest that greater cultural and legislative support for disclosure in the UK versus the USA accounts for the fact that they found that UK/Australian parents seemed more ready to disclose at earlier ages than North American parents regardless of whether the donor is identifiable or anonymous.

However, Macmillan (2024) suggests that there has been a shift over time with a more recent liberalization of attitudes towards new and alternative family forms, and as a result, that the social context for disclosure may have become more supportive across contexts. For example, in Hertz and Nelson's (2016) study, even though 48% of OD recipients and 24% of ED recipients from the UK accessed anonymous donors in Spain, most parents planned to disclose. Similarly, in Indekeu and Lampic's (2021) study, 40.7% of recipient parents in mandated Sweden (mostly single mothers by choice who had gone overseas for treatment) and 87.5% of recipients in non-mandated Belgian (mostly two-parent families) used anonymous donors; however, both groups of parents (100% of participants in Sweden and 95.5% in Belgium) report disclosing or disclosure intention regardless of where they lived, which may be reflective of increasing societal openness. While in both countries parents reported a lack of knowledge about DC and policies among friends, health-care professionals and teachers, outright disapproval was rare. On the other hand, parents reported 'being confronted with more subtle remarks revealing "a culture of genes"' and these were experienced as inhibiting disclosure, especially in the case of Belgium (Indekeu and Lampic, 2021).

Disclosure *intentions* may likewise be shaped by social and cultural factors. Lampic *et al.* (2021), for example, report that parents who view their social network and society as supportive are also more likely to have disclosure intentions for the year ahead. Interestingly, in their study heterosexual fathers in SD recipient couples were more likely to intend disclosure in compliance with societal pressure than fathers from OD recipient couples. Lampic *et al.* (2021) suggest that this possibly reflects that fathers in OD couples are less inclined to reveal their partners' infertility, regardless of others' opinions. Mothers, in this study, however, showed no difference in their disclosure patterns in relation to subjective norms, and once parents began disclosure, subjective norms no longer appeared to have an influence; instead, parents focused on disclosure achieving the desired consequences (Lampic *et al.*, 2021). The school environment is a context which provides multiple challenges around disclosure, with parents reporting that classroom discussions and activities can motivate disclosure to DCP, and that as parents they may disclose to teachers to ensure support for the DCP and understanding of their family context (Harrigan *et al.*, 2017; Jociles *et al.*, 2017, 2021; Indekeu and Lampic, 2021).

Joining DC associations may be helpful in feeling supported in making disclosure decisions and in normalizing and reinforcing disclosure, especially in single mother by choice and same-sex female families (Jociles *et al.*, 2017, 2021; Poveda *et al.*, 2018). For single mothers by choice, disclosure of donor use may be a way to ensure their public image is protected against assumptions that their pregnancy was unintentional and the result of 'irresponsible sexual behaviour' (Harrigan *et al.*, 2017). Indekeu *et al.*'s (2013) review similarly pointed to the value of peer support but reported that parents may have difficulty finding other parents in similar situations, but with the increase in single mother by choice and same-sex families this may now be less of an issue (Jociles *et al.*, 2017, 2021).

Religion

Delays in disclosure owing to stigma were discussed in the context of Catholic faith by parents of school-aged DCP whose own church protested the opening of an IVF centre locally (Hershberger *et al.*, 2021a). Non-disclosure for religious as well as cultural reasons were also discussed in Bokek-Cohen *et al.*'s (2022) study of Sunni Muslim women who report that disclosure to anyone would have grave consequences given the Islamic law forbidding DC of any kind, considering it akin to adultery. Protecting their marital relationship and the parent–child relationship, and the high potential for negative economic (i.e. loss of support and/or inheritance for the child) and wider social impacts (shame, stigma) resulting from disclosure were stated to be major concerns and reasons for secrecy (Bokek-Cohen *et al.*, 2022).

Legal

Legislation around the use of identifiable donors has been introduced in many jurisdictions in an attempt to facilitate DCP access to genetic information. However, the impact of this on parents' disclosure decisions remains unclear. MacCallum and Keeley's (2012) follow-up study reports that parents who had conceived via ED in the UK prior to the mandate coming into

force, held true to their original intentions to disclose (18%) or not disclose (47%) regardless of the subsequent changes in the law. Similarly, Sälevaara *et al.*'s (2013) study of parents who had conceived before Finland mandated identity-release in 2006 report that, among donor recipients, 40.5% of fathers and 45.5% of mothers felt that mandating donor identity-release would not impact their parental disclosure decisions; furthermore, one-quarter of recipients believed it would result in fewer parents disclosing. However, the reasons for this were not explored and, interestingly, the study found that parents of younger DCP were more likely to disclose than those with older children (Sälevaara *et al.*, 2013). This may reflect a change in attitudes towards openness over time, as has also been found in Sweden, which implemented identity-release legislation as early as 1984 and where growing openness towards disclosure has been reported in studies over time, although care needs to be taken to consider the age of the DCP in the studies (Isaksson *et al.*, 2012; Lampic *et al.*, 2021). This is also observable in some studies from the UK (Golombok *et al.*, 2013; Freeman *et al.*, 2016) and France (Lassalzede *et al.*, 2017).

While Indekeu and Lampic's (2021) comparative study reported that 76.8% of parents in mandated Sweden had disclosed compared to 49.4% of parents in non-mandated Belgium, in both countries all parents expressed an intent to disclose, and the disclosure rates in Sweden may have been influenced by the fact that most parents were single mothers by choice.

Professional support

Many of the participants across the studies in this review report feelings of being unprepared, isolation and anxiety around the disclosure decision and process, and express a desire for support (e.g. Isaksson *et al.*, 2012; Indekeu *et al.*, 2014). However, support and advice were not always provided (e.g. Sawyer *et al.*, 2013). In Frith *et al.*'s (2012) multi-national study, 57.5% of fathers compared to 39.4% of mothers report having professional counselling before mostly anonymous SD. Of those, 81% of fathers and 60.8% of mothers report being told by the counsellor to disclose to the child while they were young, however 39% of fathers and 35.7% of mothers report being told by the clinic never to disclose.

Parents may also not seek support, but it is unclear as to whether this is because it is not offered, a lack of awareness of its availability or use, or a lack of desire for counselling. Applegarth *et al.* (2016) report that half of the OD families who had disclosed had sought professional mental-health support, in comparison to only 3 of 19 couples who were uncertain or still intended to disclose. None of the non-disclosing families had sought support. Professional support and advice, however, has been linked to disclosure, with Blyth *et al.* (2013) and Stephenson *et al.*'s (2012) multi-national study reporting that of over 70% of parents given advice to disclose, 51.1% had already done so, most by age 7 years. Sälevaara *et al.* (2013) report that, in Finland, increased attitudes of openness to disclosure coincided with the inclusion of pre-treatment counselling by experienced counsellors.

Resources

Access to resources was discussed by participants in nine studies in relation to the disclosure process. Most parents report using visual aids in the disclosure process and seeking advice and guidance around how to disclose from books or the internet (Nordqvist, 2014, 2021; Freeman *et al.*, 2016; Isaksson *et al.*, 2016; Lassalzede *et al.*, 2017; Poveda *et al.*, 2018; Hershberger *et al.*, 2021b). Others created their own resources (e.g. Chiland *et al.*, 2013) or found their own unique ways to aid their DCP's understanding (Van Parys *et al.*, 2016). Parents report wanting to hear from other parents about their disclosure process and having access to resources, such as storybooks and movies, and networking opportunities for the DCP (Isaksson *et al.*, 2012). This may be linked to disclosure or increased comfort with the disclosure process.

Discussion

This review, as for Indekeu *et al.*'s (2013) review of factors influencing *heterosexual* parents' decisions to disclose, suggests that multiple, interacting demographic, interpersonal, intrapersonal, and external factors come into play influencing the likelihood of parental disclosure to DCP *across* family types. Many of the findings in Indekeu *et al.*'s review of studies from 1980 to 2012 are replicated in this review of studies covering 2012–2022. Indekeu *et al.* (2013) suggested an explanatory model originating from Steuber and Solomon (2011), which examines how individuals conceal and reveal secrets. Indekeu *et al.* (2013) highlight the three main factors of the model as: assessed risk/stigmatization (for oneself, the relationship, and others), confrontation efficacy (confidence in discussing the topic), and closeness in relationships (feelings of trust that promote disclosure). They suggest that their review highlights the central role of particularly the first two factors and suggest that other factors in their review either enhance or diminish these particular aspects of the disclosure decision.

In our review, we similarly found that the social risks associated with disclosure, such as stigma, influence decision-making. However, Macmillan (2024) suggest that there has been a change in socio-cultural norms with greater acceptance of new family forms and different ways to have a child. As a result, the social context for disclosure may have become more supportive and, indeed, our review suggests that the majority of parents are disclosing, with a trend towards early and greater disclosure over time. Furthermore, most parents across the included studies that had not yet disclosed reported intending to in the future, and this was the case regardless of jurisdiction, family form, or the use of identity-release or anonymous donors, suggesting an overall move to increased openness.

Same-sex female two-parent families and single mothers by choice were more likely to be disclosing or intending to than heterosexual two-parent families across a number of studies in this review (Freeman *et al.*, 2016; Jociles *et al.*, 2017, 2021). These groups of parents may be more likely to disclose given the need to explain the absence of a male parent, however the increase in same-sex parent and single-parent families has also required the disruption and renegotiation of heteronormative conceptions of family, as they make transparent the need for third party assistance. While this may be challenging for parents, it may also serve to normalize DC in society and disrupt expectations around the conflation of social and biogenetic parenthood. An emphasis on social and affective parenthood could serve to relegate the donor to the role of genetic material provider, which may be perceived by parents as protective of their role as the child's parents, but may also devalue the child's right to know of their genetic origins. At the same time, however, Grace and Daniels (2007) point to an increasing discourse of the significance of genetic inheritance, partly for medical reasons and, also as de Lacey *et al.* (2015) point to, a 'welfare of the child' discourse (in some jurisdictions reinforced through legislation and policy), which highlights the role of access to genealogy as central to DCP identity and adjustment. Furthermore, the increased use and availability of direct-to-consumer DNA testing may not only

encourage parental disclosure to avoid unplanned discovery but also make visible genetic connections (Darroch and Smith, 2021; Gilman *et al.*, 2024), potentially underscoring their importance and shaping ethical and biomedical discourses. Parents thus negotiate parenthood in a context in which separating out the various aspects of reproduction and parenting have become more common, and yet in which genetic information is valued. This may be reflected in parents' choices around disclosure, with most parents in this review either having disclosed or reporting intending to disclose, but it is also possible that parents may report an intention to disclose owing to perceived social desirability rather than actual intent, and that intention may not always result in actual disclosure. The valuing of genetic bonds may also be reflected in parents' choices around donors and interest in meeting the donor and siblings.

To what extent legislative provisions introduced in several jurisdictions around identity-release impact parental disclosure remains unclear and inconclusive. This review drew on research mostly from the same countries as in the Indekeu *et al.* (2013) review, and there has been little research in jurisdictions which have more recently enacted identity-release legislation, making it difficult to reflect on the intersection between law change, and social and cultural attitudes. Even in those jurisdictions with identity-release provisions, parents may also still elect not to disclose as there may be no legal requirement to do so. Furthermore, it is interesting to reflect that the American Society for Reproductive Medicine guidelines, which apply in jurisdictions in which most states adhere to anonymity, had already recommended disclosure from 2004.

In terms of the second factor of confrontation efficacy, this review similarly suggests that parental confidence is an important factor, with a lack of confidence, which may also be associated with shame or unresolved emotions, generally acting as an impediment to disclosure. Crawshaw and Daniels (2019) have highlighted how parental confidence in using DC can be expected to translate into parental openness with their children, which may help overcome possible stigma and shame associated with family-building that differs from the norm. Best *et al.* (2023) also point to the need for openness to be reflected in ongoing conversations to ensure that DC is normalized. Although most of the studies in this review focus on disclosure by certain points in time, several emphasize that disclosure should be regarded as a process, recognizing that there is a key difference between parental 'telling' and the DCP's 'knowing' (Blyth *et al.*, 2013; Applegarth *et al.*, 2016).

Raperport *et al.* (2022) assert that counsellors can help to normalize experiences of DC and suggest services and resources that can provide support to parents/families around disclosure. Petok (2015) emphasizes the need for improving support, particularly for men who are less likely to access counselling and make use of support groups but who may also experience negative emotional consequences associated with infertility, such as shame and stigma. Ongoing psychological and family support beyond the conception and disclosure decision stages may enable parents to feel confident, supported and empowered with knowledge on which to base disclosure narratives.

In terms of the third factor of the model, closeness in relationships, conflict and incomplete agreement within couples about whether or not to tell their child about their conception may be an impediment to disclosure. Extended family/friends were further found to be key in this review in supporting parents to disclose and normalizing DC for the DCP, with possible negative relational consequences of disclosure to others resulting in distress and selective disclosure or non-disclosure to DCP. Additionally, the importance of the school environment as a barrier or a motivating and supporting factor for parents reflects a greater awareness of how social context may influence disclosure or non-disclosure.

Many participants across the included studies highlighted the need for access to ongoing support and advice around disclosure decisions and strategies for parents, who often felt isolated and unprepared. Access to professional support and support groups, as well as resources such as the series of 'Our Story' books published by the Donor Conception Network [DCN] in the UK (Harper *et al.*, 2022), and the newly developed digital decision aid prototype, the Tool to Empower Parental Telling and Talking [TELL Tool] (Hershberger *et al.*, 2022), may be useful also because they communicate wider social and cultural attitudes around the valuing of both social and genetic families. Daniels (2005) argues that, in turn, well supported parents will be confident in their use of DC and their disclosure, and able to build secure families that are well-functioning and healthy.

Limitations

The studies included in this review draw on varying sample sizes and methods, acting to impede comparison and integration of the findings. A further limitation is that this review included reports that referred to the same study population, and while several reports were combined to mitigate this, an overrepresentation may still exist. Additionally, nearly all the included studies report self-selection bias as a limitation of their research, in that parents who have no intention of ever disclosing and who want to keep DC a secret may be less inclined to agree to taking part in research. Therefore, there is a large population of donor recipients for which there is no available data. There may also have been an element of social desirability in parents' responses, in that they may, for example, have reported intent to disclose in the face of presumed support for disclosure. Furthermore, where comparative disclosure rates are given for different groups, the statistical significance of these differences is not always mentioned. Neither is there always reflection on whether disclosure involved disclosure of the DC, or also of access to donor identifying information where this was available. Further, where factors which may be associated with disclosure are reported in studies, it is often not possible to infer causation. Additionally, important findings relating to different contexts and cultures may have been missed in this review owing to the exclusion of studies in languages other than English (Lockwood *et al.*, 2020) or may not have been identified in the search strategies employed. Finally, owing to the recent law changes mandating donor information collection and identity-release in many jurisdictions, limited research in these contexts is available.

Recommendations for future research

Further research is needed in a number of areas to assess their impact on disclosure decisions. Firstly, while recognizing the complex interplay between legislative frameworks and sociocultural factors, more research is needed across jurisdictions to assess any possible association between disclosure rates in legislative contexts which enforce identity-release provisions versus those which do not, especially given the recency of legislative change in many countries (e.g. Portugal, 2018; Germany, 2018; Ireland, 2022; France, 2022). Related to this, there is a need for research exploring disclosure across cultural contexts, including in minority ethnic communities in Western countries, where it may be assumed that donor recipient parents are a homogenous group. How donor recipient families' disclosure patterns are

shaped by broader social contexts beyond the parent–child triad or dyad, such as in school environments and within the extended family, is also important as is research exploring the impact of direct-to-consumer DNA testing, which has become far more accessible and affordable for many and may lead to unplanned discovery of DC where parents have not disclosed.

Further exploration of disclosure decisions and patterns among recipients using different types of donors, for example OD and ED, is also needed with limited recent research in this area in comparison with research on SD recipients. The findings reported in this review, for example that ED recipients are less likely to disclose (Hertz and Nelson, 2016), are in direct contrast to Goedeke and Daniels (2018) study in New Zealand, where ED donors can choose and meet the recipients of their donated embryo, and disclosure, information sharing, and contact are reported. Additionally, research is needed that is focused on fathers of DCP (Blake *et al.*, 2014) and which compares disclosure patterns within families who have DCP conceived using the same donor with families who have used different donors.

Research efforts to date, while highlighting that disclosure is a process, have tended to be cross-sectional. Longitudinal research, which explores how DCP come to know about and understand DC over time, and the role of ongoing conversations in this process would be worthwhile. Finally, further research needs to explore both *what* information and support parents need to facilitate their 'telling' and disclosure as an ongoing process, and in what *form*, e.g. through access to targeted psychoeducation, workshops, contact with other parents and families built through various forms of DC (as suggested by Crawshaw and Daniels, 2019), access to resources and counselling support (Indekeu and Lampic, 2021), as well as advice around the implications of legislative frameworks and direct-to-consumer DNA testing. Such efforts may help identify if there is an optimal approach from which a framework could be developed.

Conclusion

This systematic search and narrative review aimed to build on existing reviews to provide an overview of parents' decisions of disclosure to their donor-conceived children across family types in the last 10 years, and to identify what factors may affect these decisions, particularly given the increase in identity-release provisions across jurisdictions. Similar to Indekeu *et al.* (2013), this review found that disclosure is multifaceted; the contexts and dynamics of donor-conceived families must be considered; intricately interwoven intrapersonal, interpersonal, and external contextual and social factors interact and overlap in influencing parents' disclosure decisions. Regardless of family form or donor type, however, there appears to be a trend towards greater disclosure over time, and parents who are choosing to disclose are doing so from an early age. As reported by Tallandini *et al.* (2016), this review similarly suggests that greater ongoing access to psychological support is both needed and desired by parents of DCP around disclosure. There is also a need for further research in the rapidly expanding field of DC to explore longer term outcomes.

Data availability

All data are incorporated into the article. The data underlying this article are available in the article and in the source references listed at the end of the article.

Authors' roles

M.A.D. performed the data extraction, critical appraisal, data analysis and interpretation, and writing the report; S.G. assisted in critical appraisal, data interpretation, and in the writing process. Both authors approved the final version for submission.

Funding

No funding was received.

Conflict of interest

There are no competing interests to disclose.

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Human Reproduction Update, 2024, 30, 488–527
https://doi.org/10.1093/humupd/dmae010
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