Heterosexual parents' decisions and experiences of disclosure to their donor-conceived children in the last ten years: a mixed methods systematic review.

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ABSTRACT

Background

Disclosure of donor conception has been advocated in several jurisdictions in recent years, especially in those that practice or mandate identity-release donation. This systematic review aims to integrate knowledge from research over the past ten years concerning heterosexual parents' decisions to disclose donor conception to their children, and their experiences of disclosure, in both jurisdictions which allow anonymous donation (non-mandated jurisdictions) and those which require donation to be identity-release (mandated jurisdictions). This may provide a context for understanding the disclosure patterns of heterosexual parents in Aotearoa New Zealand and the effects on their well-being, as the first donor-conceived children born under the provisions of the Human Assisted Reproductive Technology [HART] Act (2004) turn 18 in late 2022.

Methods

A bibliographic search of English language, peer-reviewed, and published journal articles from six computerized databases was undertaken from January 2012 to August 2022. A Preferred Reporting Items for Systematic reviews and Meta-Analyses [PRISMA] 2020 approach was used.

Results

Twenty-six reports met the inclusion criteria, representing 23 study populations and the decisions of 2,114 participants. The review shows that parental disclosure decisions and experiences may be understood via a biopsychosocial framework, and are impacted by multiple interacting intrapersonal, interpersonal, and external contextual and social factors across both mandated and non-mandated jurisdictions. There appears to be a general trend towards early disclosure with most of the parents in the studies included in this review disclosing to their donor-conceived children before the age of ten. Additionally, there appears to be a trend towards increased disclosure over time, specifically in mandated identity-release jurisdictions. The varied methodological approaches and sample sizes across the reports making it difficult to integrate the findings are discussed.

Conclusion

Intrapersonal, interpersonal, and external factors influence parents' decisions and experiences around the disclosure process. The need for further research across many aspects of the donor conception field has been demonstrated by this review, including the role of mandating identity-release, gender, culture, donor type, and professional psychological support in parental disclosure decisions and experiences.

Keywords. Gamete donation, sperm donation, oocyte/egg donation, embryo donation, parental disclosure, identity-release, anonymous donor, mixed methods, systematic review

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Attestation of Authorship

I hereby declare that this submission is my own work and that, to the best of my knowledge and belief, it contains no material previously published or written by another person (except where explicitly defined in the acknowledgements), nor material which to a substantial extent has been submitted for the award of any other degree or diploma of a university or other institution of higher learning.

Signed: Michelle Duff

Dated: 10th of November 2022

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CHAPTER 1: INTRODUCTION

1. Context, Terminology, and Statistics

Infertility is a medical condition defined in the International Statistical Classification of Diseases and Related Health Problems (11th ed.) as an inability to conceive after 12 months or longer of actively trying (World Health Organization, 2019). The European Society of Human Reproduction and Embryology [ESHRE] (n.d.) states that the latest estimates are that 1 in 6 couples worldwide experience infertility. The first baby conceived via in vitro, or outside the body, fertilization [IVF] of an oocyte/egg was born in the United Kingdom [UK] in 1978 (Steptoe & Edwards, 1978). Utilising Assisted reproduction treatment [ART] to achieve pregnancy involves several in vitro treatment stages, with each attempt to achieve pregnancy referred to as a cycle. The International Committee for Monitoring Assisted Reproductive Technology [ICMART] reports an increase of +20% in cycles on average since 2014, this figure excludes China, the highest estimated user of ART, which does not report their data to any registry (Adamson et al., 2017). Worldwide, there are an estimated ~2.6 million ART cycles resulting in ~500,000 babies born each year, with more than 10 million children born via ART using human sperm, oocytes, or embryo since 1978 (ESHRE, n.d.). The use of artificial insemination or intrauterine insemination [IUI], where sperm is placed directly inside a woman's genital tract, to successfully conceive using donated sperm, known as donor insemination [DI], was first formally reported in the United States [U.S.] in 1909 (Hard, 1909 as cited in Raperport et al., 2022). However, it was not until the 1980s, following the success of ART, that fertility treatment began being used in fertility clinics around the world using donated gametes from a third-party, who may be known to the prospective parents or anonymous.

In Europe and the UK, 25,760 deliveries following oocyte donation IVF and 6,379 deliveries following sperm donation IUI were reported for the 2018 year alone (European IVF Monitoring Consortium et al., 2022). Currently, in New Zealand, demand far outstrips supply with wait times for donor fertility treatment reported of 2.5–3 years; nonetheless, ~10% of

ARTs involve the use of donor gametes (Fertility Associates, 2022, 2022a) with 321 births registered in 2019, representing an increase of ~106% over five years and +3,000 births registered since mandatory registration began in 2005 (Department of Internal Affairs, 2021). These figures do not include DI conducted outside of clinical settings which may not be registered.

Historically, donation has been anonymous, with the donors' identifying information not recorded or being made available to parents or donor-conceived persons [DCP]. Although the trend in recent years has been towards open-identity donation, where donors' identifying information is recorded and made available to DCP either from the outset or, more commonly, identity-release donation, where donors recorded identifying information is made available to DCP at the age of majority (often 18-years), the right of DCP to access their donors' information remains a contentious issue (Indekeu et al., 2021). While anonymous donation remains possible in countries such as the U.S., Spain, the Czech Republic, Italy, Belgium, Japan and China, mandated recording, and registration of identifying donor information was first legislated in Sweden in 1985. Several other jurisdictions have followed suit including Australia (New South Wales, South Australia, Victoria, and Western Australia), Austria, Croatia, Finland, Germany, Ireland, The Netherlands, New Zealand, Norway, Portugal, Switzerland, and the UK (Indekeu et al., 2021). Note, however, that except for Victoria Australia (which has annotated birth certification indicating donor conception), parents even in identity-release jurisdictions are not obligated by law to disclose the nature of conception to DCP.

In jurisdictions where recipients can choose a donor, information on physical characteristics, education, and personality are often provided; further, in both mandated and non-mandated jurisdictions, clinics may perform 'matching' of donor and recipient or the recipient partners' phenotype, or observable characteristics, arguably making it easier for parents to not disclose (Raperport et al., 2022; Wong, 2017). Nevertheless, governing bodies in some jurisdictions, advise that parental disclosure to DCP early in life, and the DCP having access to their genetic information, is in their best interests and this is reflected in official publications, for example, guidance note 20 of the UK's Human Fertilisation and Embryology Authority's Code of Practice (2021), section 2(4)(e) of New Zealand's Human Assisted Reproductive Technology Act (2004), and as recommended by the Ethics Committee of the American Society for Reproductive Medicine (2018).

2. Critiques of Anonymous versus Identity Release Donation

Critiques of anonymous gamete donation focus on the fundamental interest of DCP in their genetic origin and health information, and the need for this information in the formation of a healthy sense of identity (Ravitsky, 2012; Cowden, 2012). Critiques of identity-release gamete donation on the other hand focus on the rights of recipients and donors to privacy and argue that there is a lack of empirical evidence showing any difference in the psychological well-being of DCP between disclosing and non-disclosing families, especially when DCP are children, although this is contested (Pennings, 2017; Ravelingien & Pennings, 2013).

While more recent research suggests a growing trend to tell (Lampic et al., 2021) this research has not been consolidated systematically to review if parents are telling and what the impacts are on their psychological well-being. Blyth et al. (2012) also point out that actual disclosure is not the same as the intention to disclose and that can be conflated in research. Furthermore, parents' decisions may change, and over time, disclosure may become more difficult (Tallandini et al., 2016). In addition, the rapid advancement and popularity of direct-to-consumer genetic testing adds a further factor to be considered in that it arguably compromises donors' anonymity and increases the risk of unintentional disclosure, ultimately taking the decision out of parents' hands in some cases (Harper et al., 2016). Another point that needs to be considered is whether disclosure in and of itself is enough—the question remains as to whether all that DCP need is knowledge of donor conception, or whether access to information about the donor is also needed.

3. The New Zealand Context

In New Zealand, the Human Assisted Reproductive Technology [HART] Act was enacted in 2004, with one of its principles being that DCP should be made aware of their genetic origins and be able to access information about those origins. A mandatory register, maintained by Births, Deaths and Marriages (2022), was established and includes the details of donors, parents, and DCP. Any person successfully conceived with the help of a donor from August 22, 2005, should be able to access their donor's information once they turn 18 (or earlier with parental consent). However, as mentioned above, disclosure of the nature of conception remains with the parents, who may decide not to disclose, and there are currently no legal means, such as through annotated birth certificates, to ensure that DCP will be made aware of the nature of their conception. Furthermore, due to the costs and long waiting times for clinical treatment, some intending parents may seek treatment via unofficial channels, such as the newly launched New Zealand-based donor linking website (www.thegiftoffamily.co.nz), which does not provide the same legislative and screening protections as clinical donations (Wynn, 2022). The paucity of donor gametes in jurisdictions such as New Zealand, and wanting the option of an anonymous donor, may also drive intending parents to seek cross-border reproductive care in jurisdictions where donor gametes are more readily available and where identity-release is not mandated (Rodino et al., 2014).

4. Literature Review

Daniel et al.'s (2009) follow-up New Zealand study suggests that parental disclosure is in part impacted by legislative change. Indekeu et al.'s (2013) systematic review of factors affecting disclosure decisions also identified that legislative factors such as anonymous versus identity-release provisions could be a factor affecting disclosure; however, only 17% of the studies in that review were conducted in open contexts where donors were known or identifiable, 23% were conducted in contexts where there was a mix of both known and unknown donors, and more than half were conducted in contexts where donors were anonymous. The impact of donor conception legislation identified in the reports included in this review and that may contribute to parental disclosure patterns and experiences will be explored in the current systematic review.

Existing research on parental disclosure patterns and experience suggests that disclosure is a dominant theme for parents regardless of legislation. Donor recipients may have a myriad of concerns about donor conception and its implications, for example, worry about the strength of the parent-child relationship and the impacts that disclosure will have on their child’s perceptions of them as parents (Wyverkens et al., 2015). Parents may also value their right to autonomy and privacy, and perceive non-disclosure as a protective factor against external threats to the family unit, such as social stigma (Indekeu et al., 2013). Other reported reasons for non-disclosure include the belief that it is not important for the child to know, parental confidence and disagreement about disclosure, fear of inequality between DC and naturally conceived siblings, and fear of the reaction to the child among the extended family (Indekeu et al., 2013).

This may lead parents to keep the donor conception a secret. For example, Hershberger’s (2004) integrative review of parents in both mandated and non-mandated contexts who had received donor oocytes, found that between 19%–43% of participants in the reports included in the review have no intention of informing their child that they are donor-conceived and a further 13%–33% are undecided. For families who cite the ethical principle of confidentiality, however, it appears from research that secrets may themselves be more harmful than disclosure (Blyth et al., 2012). For example, parents who opt to maintain secrecy were found to experience significant pressure and report regretting their decision; further, DCP may experience an awareness of genetic disconnection regardless of whether they are told (Daniels et al., 2011). In non-disclosing families, a sense of secrets being kept may negatively affect parent-child relationships and family dynamics, leading to resentment, distrust and “long-lasting distress” (Blyth et al., 2012, p. 788).

On the other hand, in families that cite the ethical principle of honesty as important to them, non-disclosure is conceived of as a potential threat to the internal emotional stability of the family unit, resulting in parents' perception of disclosure as a protective factor, and a greater likelihood to disclose (Indekeu et al., 2013). Parental beliefs in the right of DCP to know, and not wanting to have any family secrets were also reported by Bracewell-Milnes et al. (2016) to impact the disclosure decisions of both anonymous and identity-release oocyte recipient parents. In Blyth et al.'s (2010) study, disclosing parents discussed wanting to give their child autonomy and ownership of their conception information. This often led to parents losing control of the information and the child telling others outside of the immediate family; however, none of the parents reported any feelings of regret at disclosing. Furthermore, Berger and Paul (2008) found a positive association between families where parents had disclosed to their DC child together and a higher level of family functioning.

However, disclosure patterns are not as simple as a dichotomous 'yes' or 'no' and include grey areas where disclosure may be described as delayed, partial, or selective. Delayed disclosure refers to situations where parents do intend to disclose but are waiting for the 'right-time'; the child's age and not knowing the best time or way to disclose were commonly reported as reasons for delaying (Indekeu et al., 2013). Partial disclosure refers to situations where parents disclose some information, such as that they used IVF or needed medical help, but not that they used donor gametes. Of course, when parents do disclose, it does not mean that they are able to share donor information where these provisions do not exist. Selective disclosure refers to parents choosing to tell people perceived as trustworthy about the use of donor gametes, but not others, who they perceive may not keep it a secret (Blake et al., 2010; Readings et al., 2011). Indekeu et al. (2013) conclude that parental disclosure is challenging and is influenced by multiple overlapping and interwoven external, interpersonal, and intrapersonal factors.

Donor conception occupies an unusual space in that its beginnings are focused individually on the biological and/or medical reasons for infertility. As Daniels (2005) eloquently articulates, "infertility is circumvented rather than treated" (p. 265). Furthermore, the biomedical model does not consider the psychological and societal/cultural pressures and expectations, or the significant levels of distress experienced by intending parents as a result of infertility (Daniels, 2005). The impacts of infertility and donor conception do not end with the delivery of a healthy baby, the ripple effects carry forward potentially impacting DCP and their family for life. For new parents, the disclosure decision is firmly grounded in psychosocial emotional and behavioural perceptions and experiences; nevertheless, it is often the biomedical specialists who offer disclosure advice (Daniels, 2005).

Psychological factors that have been found to influence disclosure decisions include parental beliefs and values, couple/parental relationship dynamics, DCP age, family influences such as family compositions and the importance of the possible existence of half-siblings, the psychological toll of keeping the secret and/or disclosure, the access to and importance placed on the donors information and medical history, and the context of extended family and social networks (Daniels et al., 2011; Indekeu et al, 2013). Social factors include stigmatization, clinical and societal attitudes and values, access to support and guidance, laws, policies and practice guidelines, cultural and societal beliefs, and customs (Daniels, 2005; Indekeu et al., 2013; Webb & Shaw, 2022). What the biopsychosocial model shows us is that ART using donor gametes or embryo is more than a scientific and medical model for family building; donor-conceived babies grow up, becoming an adult person with the same rights as everybody else (Mulligan, 2021), against which the broader psychological and societal consequences of disclosure and non-disclosure must be weighed.

Researchers such as Tallandini et al. (2016), who believe that non-disclosure may have negative consequences, argue that parents need greater psychological support throughout the process of disclosure. They suggest that parents need guidance, information, and support around the importance of disclosure and to address any unresolved feelings about their infertility and conception struggles, which may impact both disclosure decisions and the parent-child relationship. They also recommend professionally run support groups to share their challenges and experiences with other parents of DCP. However, disclosure of donor conception is a contentious issue attracting hearty debate, for example, Pennings (2017) argues that there is no empirical evidence to suggest a difference in the psychological well-being of DCP resulting from non-disclosure. Pennings' article and the heated debate it inspired (see for example Crawshaw et al., 2017) provide further support to the need for an up-to-date review of research considering the psychosocial impacts of parental disclosure.

5. Justification for this Review

Limitations of existing research include that the research is conducted under different donation contexts, social climates, and policies, which must be considered before assertions can be made about the patterns and influence of disclosure on well-being and family life (Wyverkens et al., 2015). Furthermore, Indekeu et al. (2013) call for researchers to provide more accurate and detailed information so that comparisons between studies can be made, allowing for specific factors influencing disclosure patterns to be clearly identified. Additionally, donation practices have changed substantially over time so older studies may be less relevant. Therefore, a current and targeted systematic review is needed. Specifically, more research is needed in contexts where donor identification is available and early parental disclosure is encouraged (Bracewell-Milnes et al., 2016); as well as research to help understand sociodemographic, psychosocial, environmental, and relational influences in the donor conception field (Indekeu et al., 2021). In heteronormative family forms, DCP and others may be less likely to question conception than in families formed by surrogacy, or same-sex and single-parent families, where it may be more obvious that donor conception may have occurred, thus making the disclosure decision more likely to be a conscious choice by parents (Indekeu et al., 2013). No recent reviews have specifically focused on whether jurisdictions are mandated or non-mandated, or on the differing impacts that identity-release versus anonymous donation have on heterosexual parents' decisions and experiences of disclosure. Therefore, there is a need to consolidate and synthesise recent research concerning heterosexual parents' disclosure practices and experiences, and the factors which may influence these decisions and experiences across different contexts and jurisdictions. This mixed-methods systematic review aims to fill that gap and explore these areas in New Zealand and internationally. Given the coming of age of the first DCP born under the provisions of the HART Act (2004) in New Zealand this year, it is timely to review research in the area with the aim to contribute to best possible practice and ensure that the interests of both parents and DCP are met.

CHAPTER 2: METHODS

1. The Type of Review

Munn et al. (2018) define a systematic review as "a robust, reproducible, structured, critical synthesis of existing research" (p. 2). A holistic systematic review incorporates studies that evaluate health interventions, policies and practices, no matter what design the studies included are (Page et al., 2021). Increasingly, the synthesis of qualitative and quantitative research has been called for to aid in gathering the best possible evidence available on a given topic, increasing the usefulness of the review for decision-makers, and facilitating deeper and broader understanding (Bressan et al., 2017; Hong et al., 2017; Stern et al., 2020). Important evidence may be overlooked if only quantitative or qualitative research is exclusively considered (Pluye & Hong, 2014). Qualitative experiential systematic reviews focus on human experience relating to an intervention as part of the larger social or cultural phenomenon, process or event of interest; Munn et al. (2018) assert that quantitative effectiveness data may be included in a mixed-methods approach. Mixed-methods systematic reviews [MMSR] combine subjective perspectives and experiences with objective numerical data, allowing one data form to help explore and explain the other in a contextualised way, allowing for the validation of research findings, helping to identify discrepancies in the data and areas for future research (Stern et al., 2020). This is especially relevant in the context of this MMSR due to the limited research which often involves small sample numbers and a mix of quantitative and qualitative data, frequently stemming from cross-sectional surveys and semi-structured interviews. This review is conducted in accordance with the Preferred Reporting Items for Systematic reviews and Meta-Analyses [PRISMA] 2020, which Page et al. (2021) assert is appropriate for MMSR.

2. Inclusion Criteria

The initial assessment of article eligibility used the PICo format (Munn et al., 2018). P – Population (Participants): Heterosexual parents from two-parent families who have children conceived using gamete/embryo donation. I – Phenomena of Interest: Disclosure decisions and patterns (if, when and how), and the effect and experiences of these decisions for parents. C – Context: Any jurisdiction where donation is legal, both jurisdictions where donor information collection and registration are mandated by law, and available for release to DCP upon coming of age, and jurisdictions where donor information collecting is not mandated, and donors often remain anonymous with their anonymity, in some jurisdictions, protected by law.

a. Participants

This review focuses on heterosexual parents from two-parent couples who have used donated gametes (sperm, oocyte, or embryo/s) to conceive. Studies composed of data from a mix of family forms (i.e., heterosexual two-parent couples, single parents and/or same-sex couples) and conception methods (i.e., naturally conceived, autologous IVF, adoption, surrogacy) were only included where the heterosexual recipient parents' data was able to be extracted separately. Studies focused solely on surrogacy, same-sex and single-parent families were excluded. As discussed previously and by Indekeu et al. (2013), in these family forms, the nature of conception may tend to be more openly discussed than in heteronormative families as a result of differing family dynamics and questions asked by DCP due to the lack of photographs and stories of the mothers' pregnancy and birth, or the absence of a mother or father in the household. In contrast, in more traditional two-parent heterosexual families, the fact that conception may have occurred using donor gametes/embryos is not as obvious, and there are less likely to be questions raised regarding conception and origin from both DCP and others in the family's circle. This makes it more likely that disclosure decisions are made consciously by parents. It is important to point out, however, that further studies focusing on other family forms, which are out of the scope of this review, are needed. Studies focused on pre-conception disclosure intentions, experiences of donors, healthcare professionals and clinicians, and DCP are also excluded to allow for a more concentrated focus on heterosexual parental decisions and experiences around disclosure patterns.

b. Phenomena of Interest

Studies considered in this review specifically focus on the disclosure decisions and patterns (if, when and how) of parents from two-parent heterosexual couples who have a child/ren conceived via a donor, and the effect and experiences of these decisions on family dynamics, relationships, and the psychological well-being of parents and the nuclear (including DCP) and extended family from parents' point of view.

c. Context

This MMSR focuses on jurisdictions where donation is legal and includes both those jurisdictions where donor identity-release is required, and those where this is not required, as both contexts may influence the likelihood and experience of disclosure. Donor identity-release has been mandated by law in several jurisdictions, as is the case in the following 13 jurisdictions: New Zealand (where it was mandated under the provisions of the HART Act, 2004). Sweden (1984), Austria (1992), Switzerland (2001), The Netherlands (2002), Norway (2003), the UK (2005), Finland, (2006), specific Australian states (Western Australia (2004), New South Wales (2007), Victoria (2008), and South Australia (2021)), Croatia (2012), Ireland (2015), Germany (2017), and Portugal (2018). Due to very recent law changes in some jurisdictions, research on disclosure decisions and the implications in those contexts since the law change is yet to be done. This MMSR aims to gather the most up-to-date information to consider the impacts on disclosure decisions and experiences that may have resulted from the many recent changes to legislation and practice.

This review was able to locate relevant studies in only 4 of the 13 jurisdictions in the last ten years: Sweden, the UK, Australia, and Finland, and includes studies that focus on participants whose donor conception experience pre-dated the change in legislation mandating identity-release for donors and where donation was thus frequently anonymous. Relevant studies over the last ten years in non-mandated jurisdictions were found in eight countries: The U.S., Belgium, Spain, France, Hong Kong, and the Middle East (two non-specified countries to protect the participants' identity, counted as one jurisdiction in this study), as well as studies from Nigeria and the Czech Republic that did not meet inclusion criteria at the final assessment. Two multi-national studies involving the U.S., UK, Australia, Canada, and Europe were also found and included.

d. Types of Studies

This MMSR considers qualitative, quantitative, and mixed-methods studies. Due to resourcing and time constraints, only studies published in peer-reviewed academic journals in English are included. Quantitative studies considered include retrospective and prospective cohort studies, analytical cross-sectional studies, and comparative studies. Qualitative studies considered include designs such as grounded theory, phenomenology, and ethnography. Mixed-methods studies where the qualitative and quantitative data can clearly be extracted were also considered.

3. Search Strategy

Following consultation with Auckland University of Technology [AUT] library staff, a bibliographic search was conducted using seven online databases via the AUT Library computerised search function: CINAHL Complete and MEDLINE (via EBSCOHost platform), PsycINFO (via Ovid), JSTOR, ProQuest, and Scopus. Google Scholar was also searched to pick up any journal articles, or reports, that may have been missed or were not included in the searched databases to ensure thoroughness. The last database search was conducted on August 31, 2022. References cited in included reports were also manually scrutinised to identify any possible references to augment the search. References that cited the included reports were also manually searched. Two snowball references were found. As this systematic review aims to build on existing reviews which often have a different focus, with disclosure constituting one part (Bracewell-Milnes et al., 2018; Hershberger, 2004; Indekeu et al., 2013; Tallandini et al., 2016; Wyverkens et al., 2015), a targeted focus on disclosure and a ten-year date limit were imposed (2012-2022) on publication.

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. Quotation marks (“ “) allow for the search of phrases rather than individual words alone. Truncation (*) allows for every iteration of the root word to be found; for example, regist* can find registered, registration, and registry. The Boolean phrase AND was used to combine the different concepts within the search and OR was used to separate synonyms and similar concepts within a search field.

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) Journal published English language peer-reviewed original studies (including quantitative, qualitative, and mixed methods) 2) Focused on donor-recipient disclosure and experience 3) Study published in last 10-years (2012 – 2022)
Exclusion criteria	1) Same-sex, single-parent, or surrogate recipients, studies focused on donor, donor-conceived offspring, or medical/fertility staff.

4. Selection Process

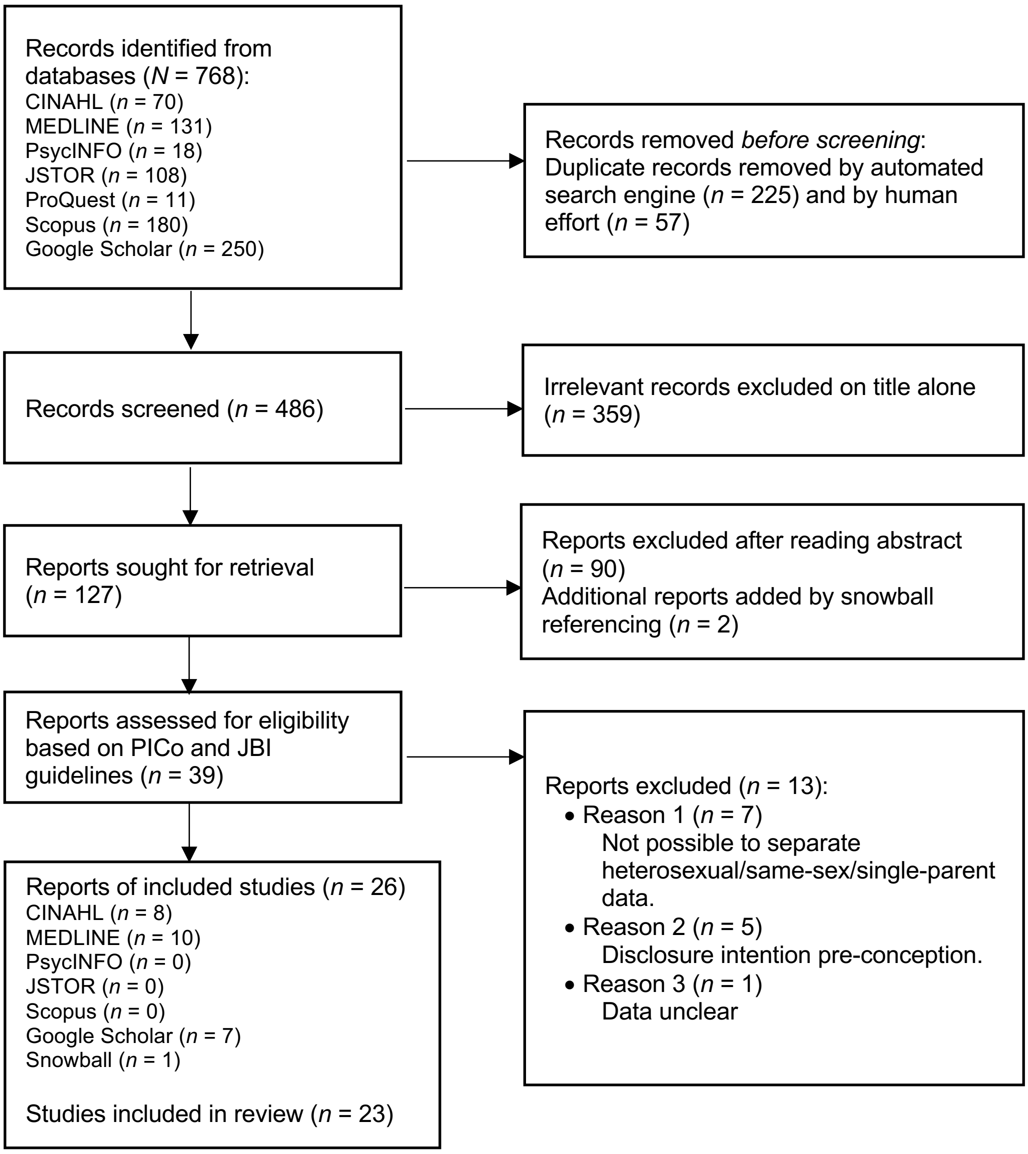
In accordance with the Cochrane Handbook for Systematic Reviews (Li et al., 2022), this review collates the data from studies as the unit of import, rather than the reports themselves. Li et al. (2022) state that multiple journal articles may report different aspects of the same study. Reports were searched using eligibility criteria and reviewed independently by M.D., the first author. Database searches of Scopus resulted in 180 reports, CINHAL Complete and MEDLINE yielded 70 and 131 respectively, PsychINFO resulted in 18 reports, with an additional 108 from JSTOR, 11 from ProQuest, and 250 from Google Scholar (from the first 25 pages of 16,000 results), resulting in 768 reports in total. The citations for these reports were downloaded into EndNote X9.3.3 (The EndNote Team, 2013). Following an initial search, 225 duplicates were removed using the EndNote automated search engine and a further 57 were removed following human effort by M.D. After reading the titles of all remaining reports, 359 were excluded as irrelevant and clearly not meeting the inclusion criteria.

Of the 127 reports that were subsequently retrieved, a further 90 were excluded after reading their abstracts – these included those that were not original studies, or not donor-recipient-focused (i.e. autologous IVF, or focused on donors or DCP). Two additional snowball references were added, resulting in 39 reports. These reports were then read in full by M.D. Thirteen further reports were eliminated that did not meet the inclusion criteria: seven as it was not possible to separate heterosexual, same-sex, and single-parent data; five that focused on disclosure intention pre-conception; and one that contained participant and disclosure data that was unclear.

Twenty-six reports remained (see Figure 1.). Exceptions to collating data from reports gathered within the same umbrella study in this review are where participant numbers differ and where secondary analysis has been conducted that provides unique data. After reviewing and collating reports where appropriate, 23 studies in total are included in this MMSR. The second author, S.G., provided consultation and cross-checking of the screening process.

Figure 1

PRISMA flow diagram demonstrating the systematic search method for identification of articles for review



5. Data Extraction Process

A data extraction spreadsheet was independently developed by M.D. in Microsoft Excel version 16.63.1. The descriptive data extracted included: Lead author, publication year, jurisdiction, identity-release legislation (mandated, non-mandated, pre-mandate), source, report/study aim, research design/methods, participant demographics, type of donor conception, and key findings as recommended by the PRISMA 2020 guidelines (Page et al., 2021). Thirty-nine reports were initially identified as meeting the inclusion criteria; however, after being read in full, 13 reports were excluded. Seven reports were excluded where it was not possible to separate heterosexual, same-sex, and single recipient parents' data:

1. 'Embryo donation and receipt in Australia: views on the meanings of embryos and kinship relations' (Bartholomaeus & Riggs, 2019). Does not separate heterosexual, same-sex or single recipients' data.
2. 'Perspectives, experiences, and choices of parents of children conceived following oocyte donation' (Blyth et al., 2013). Does not separate heterosexual, same-sex, single, and surrogacy recipient' data.
3. 'Emotional and relational aspects of egg-sharing: egg-share donors' and recipients' feelings about each other, each other's treatment outcome and any resulting children' (Gürtin et al., 2012). Does not separate heterosexual, same-sex or single-parent recipients' data.
4. 'Parents' experiences telling children conceived by gamete and embryo donation about their genetic origins' (Hershberger et al., 2021a). Does not separate heterosexual, same-sex, and single recipients' data.
5. 'The interaction between donor-conceived families and their environment: parents' perceptions of societal understanding and attitudes regarding their family-building' (Indekeu & Lampic, 2021). Participant data split by sexuality and family type but not both together. The majority of Swedish participants were solo-mothers who had used anonymous donors abroad due to Swedish laws prohibiting single women accessing ART before 2016.
6. 'Disclosure patterns of embryo donation mothers compared with adoption and IVF' (MacCallum & Keeley, 2012). Sexuality and relationship status not specified or discussed.

7. ‘Donor type and parental disclosure following oocyte donation’ (Stephenson et al., 2012). Does not separate heterosexual, same-sex or single recipients’ data.

Five reports were excluded as they focused on pre-conception disclosure intention only:

1. ‘Disclosing their type of conception to offspring conceived by gamete or embryo donation in Spain’ (Baccino et al., 2014).
2. ‘Preference for anonymity in sperm donation for artificial insemination: An experience from low-resource settings in Nigeria’ (Ezugwu et al., 2018).
3. ‘Parenthood motives, well-being, and disclosure among men from couples ready to start treatment with intrauterine insemination using their own sperm or donor sperm’ (Indekeu et al., 2012).
4. ‘Sperm donor regulation and disclosure intentions: Results from a nationwide multi-centre study in France’ (Kalampalikis et al., 2018).
5. ‘The attitudes of IVF patients treated in the Czech Republic towards informing children born after gamete donation’ (Rumpikova et al., 2018).

One additional report was excluded as the participant and disclosure data was unclear:

1. ‘The meaning of the sperm donor for heterosexual couples: Confirming the position of the father’ (Wyverkens et al., 2017).

6. Study Risk of Bias Assessment

As this review uses a mixed-methods methodology, two differing Joanna Briggs Institute [JBI] Critical Appraisal Tools for Systematic Reviews were used. When considering the qualitative reports, the JBI Checklist for Qualitative Research (Lockwood et al., 2015) was used to establish the methodological quality. All reports met at least 7 of the 10 methodological quality criteria. However, most authors did not state their philosophical perspective (Q.1); additionally, a majority of the authors did not state their cultural values and theoretical beliefs (Q.6), or their potential influence on the research, and vice-versa (Q.

7). Quantitative reports were assessed using the JBI Checklist for Analytical Cross Sectional Studies (Moola et al., 2020). This checklist incorporates eight criteria: Clearly defined inclusion criteria; a detailed description of the study setting and subjects; reliable and valid measurements are used; the condition is measured using standard and objective criteria; confounding factors are identified; strategies for dealing with confounding factors are stated; the outcomes are measured in reliable and valid ways; the statistical analysis used is appropriate.

All quantitative reports were found to be acceptable with all but one meeting the criteria (Wyverkens et al., 2017). In addition, Kovacs et al. (2015) did not provide clear descriptions of the participants' characteristics. However, the same participant sample was analysed in an earlier study conducted by Kovacs et al. (2012), which focuses on family functioning as part of the Follow-Up of Children Conceived through Donor Insemination research in Victoria, Australia. The participants in that study were a sample of either married or in a 'stable de facto relationship' anonymous donor-recipient patients of Prince Henry's Institute of Medical Research between 1989-1999. The law allowing two women in a relationship to undergo IVF with donor sperm was amended in 2008. Therefore, it may be assumed that the participants were parents from heterosexual two-parent families, and on that basis, the report was included in this MMSR. Mixed-methods reports were assessed using both checklists and were found to be acceptable, meeting the quality criteria of both checklists.

7. Data Synthesis and Integration

In this MMSR, as modelled by Indekeu et al. (2013), synthesis draws on a biopsychosocial framework by exploring demographic, intrapersonal, interpersonal and external social and cultural factors that may contribute to disclosure decisions and experience. Daniels (2005) states that despite the family-building process having biological beginnings via treatment for infertility, donor conception and birth, the psychological and social dimensions, for example, the significant influence of government policy and professional and societal attitudes, involved in family-building are just, if not more, salient. A biopsychosocial framework recognises that although each component can be studied separately, each is of equal importance (Daniels, 2005). Decades of research have been generated by Engel (1977) and his proposed biopsychosocial model that has had a lasting impact on both health policy and clinical practice by focusing on a holistic view of people within an interrelated, interconnected Systems Theory approach (Frazier, 2020). Although the findings of this research will be presented separately, the influence of each component on the other and the way they interact is recognised as having a significant influence on outcomes and the daily lives of donor families (Daniels, 2005; Indekeu et al., 2013).

CHAPTER 3: RESULTS

1. Study Selection and Characteristics

Twenty-six reports were identified as fitting this MMSR's inclusion criteria. After reviewing the reports that were gathered from the same umbrella study, six reports were identified that use the same data as another study based on participant numbers and demographics (Jociles et al., 2017 and Jociles et al., 2021; Lampic et al., 2021 and Widbom et al., 2022; Nordqvist, 2014 and Nordqvist, 2021). After combining the six reports into three pairs, twenty-three studies were identified for inclusion overall. A summary of the relevant extracted data is shown in Table 2. Reports 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 studies listed alphabetically by first author surname for ease of searching.

a. Jurisdictions

Of the reports found from mandated identity-release jurisdictions in the last ten years, five are from the UK (although four are pre-mandate), six are from Sweden and one pre-mandate report each from Australia and Finland. In non-mandated jurisdictions, three reports that met the inclusion criteria are from the U.S., three from Spain, two from Belgium, one each from the Middle East, France, and Hong Kong, and two are multi-national (U.S., Canada, UK, Australia, Europe, and 'Other'). No reports with the inclusion criteria were found for New Zealand. Most of the reports from Sweden and the UK use data from longitudinal studies involving the same group of participants. Five of the reports from Sweden are based on data from the SSGD, and three of the reports from the UK utilise data from the UK Longitudinal Study.

b. Research Design and Risk of Bias

Of the 26 reports identified as fitting this MMSR's inclusion criteria; eight are quantitative, six are mixed-methods, and twelve are qualitative (see Table 2.). The eight quantitative reports use data gathered via online surveys, standardised self-report instruments and clinical observation, and are a mix of longitudinal prospective cohort (*n* = 2), cross-sectional (*n* = 4), and comparison (*n* = 2) designs. The six mixed-methods reports use online and mail-out questionnaires and surveys, standardised measures, and semi-structured interviews to gather both qualitative and quantitative data, with open-ended question responses analysed by researchers using grounded theory (*n* = 1), a categorical approach (*n* = 4), and a standardised coding scheme (*n* = 1); closed questions are analysed statistically. The twelve qualitative reports use both broad, in-depth, and semi-structured interviews either in-person or over the telephone and are analysed using grounded theory (*n* = 5), thematic analysis (*n* = 4), Interpretative Phenomenological Analysis (*n* = 2), and the constant comparison approach (*n* = 1).

This MMSR used the JBI Checklist for Analytical Cross Sectional Studies (Moola et al., 2020) and the JBI Checklist for Qualitative Research (Lockwood et al., 2015) to assess the trustworthiness and quality of the included reports. It was found that only Bokek-Cohen et al. (2022), Indekeu et al. (2014), Jociles et al. (2017), Nordqvist (2021), and Tsui and Cheng (2021) discussed the potential influence of their own theoretical beliefs and cultural values on their qualitative research. None of the mixed-methods reports included this discussion. Across the quantitative reports, seven of the eight identified possible confounding factors or strategies used to address these (Sawyer et al., 2013). In contrast, within the mixed-methods reports, only two discussed confounding factors (Isaksson et al., 2012; Freeman et al., 2016). Commonly discussed limitations across included studies included sample size, participant attrition across the longitudinal studies, and self-selection bias. A majority of the studies discussed the possibility that participants may overrepresent the true rate of disclosure due to parents who have no intention of disclosing potentially being less likely to agree to participate in studies. Only Nordqvist (2014, 2021) did not discuss any limitations. In general, all of the reports were found to be credible and trustworthy.

c. Participants

Participant numbers range between 6 and 387, with ten studies involving less than 30 participants, and seven studies including over 100 participants. Data reported by fathers are included separately in seven of the 23 studies (Gebhardt et al., 2017; Indekeu et al., 2014; Isaksson et al., 2012, 2016; Lampic et al., 2021 & Widbom et al., 2022; Nordqvist, 2014, 2021; Sälevaara et al., 2013). None of the studies focuses exclusively on fathers; however, one comparative study includes data from non-biological heterosexual fathers and non-biological lesbian mothers (Frith et al., 2012). As this MMSR only considers heterosexual parents of DCP, the non-biological heterosexual fathers' data was extracted separately for inclusion. In contrast, seven studies focused exclusively on mothers (Bokek-Cohen et al., 2022; de Melo-Martín et al., 2018; Freeman et al., 2016; Hertz & Nelson, 2016; Kovacs et al., 2015; Sawyer et al., 2013; Tsui & Cheng, 2021). The remaining eight studies report couples as units of data. Where couples are presented as a unit of data in reports, the couple is also counted as a single participant in this MMSR (Applegarth et al., 2016; Hershberger et al., 2021; Jociles et al., 2017, 2021; Kerckhof, et al., 2020; Lassalzede et al., 2017; Blake et al., 2014; Golombok et al., 2013).

Two of the six studies from mandated jurisdictions involved parents with DC children aged under 4 years, three had DC children under 8 years, and one included families of adult DCP (Widbom et al., 2021). Of the 17 studies from non-mandated and pre-mandated jurisdictions, one did not report the age of DCP at the time of the study (Frith et al., 2012). Two studies included parents with DC children under 2 years (Bokek-Cohen et al., 2022; Indekeu et al., 2014). Three studies reported DC children under 7 years (Hertz & Nelson, 2016; Jociles et al., 2017, 2021; Tsui & Cheng, 2021). The remaining eleven studies included parents who reported having DC children ranging from under 1 year to adulthood. Thus, of the 23 studies, ten were conducted where parents' DC children were aged under 8-years, eleven with DC children aged 1 year to adulthood, one with adult DCP, and one with DC children of unspecified age.

Nine studies consider both sperm donor [SD] and oocyte donor [OD] recipients and only two studies (both from Spain) also consider embryo donor [ED] recipients (Hertz & Nelson, 2016; Jociles et al., 2017, 2021). Nine studies solely consider SD recipients, while only four focus specifically on OD recipients. In one study it is not possible to specify the type of gamete donation received by two-parent heterosexual couples as the data is presented for the total sample, which includes single-parent and same-sex couples. However, the qualitative data can be separately extracted and so the study is included (Nordqvist, 2014, 2021). Seven studies in total include comparison groups of same-sex, surrogacy, natural conception and single-mother families where heterosexual two-parent couples' data can be extracted separately. In total, the disclosure decisions and experiences of 2,114 heterosexual parents of DCP from two-parent families are represented in this MMSR.

Table 2

Characteristics and aims of studies of parent's donor conception disclosure decisions and experiences

Study	Lead Author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-Release	Sample Demographics	Type of donor conception	Family Characteristics	Findings
Swedish Study on Gamete Donation (SSGD)	Gebhardt, A. J.	2017	MEDLINE	Acta Obstetricia et Gynecologica Scandinavica	To explore heterosexual parents of young DC children stress levels and if parenting stress is related to perceived agreement about disclosure to their DC children.	Quantitative study using standardized, validated self-report instruments and study-specific items sent to participants from 2007 to 2011. Analysed via multiple regression analysis. Part of the longitudinal SSGD.	Sweden	Mandated	213 parents with children aged 1–4 following OD (*n* = 103) & SD (*n* = 110).	Gamete Donation (sperm & oocyte)	Two-parent hetero-sexual 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 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 examine disclosure intentions and patterns among parents of DC children aged 1–4 years and the association between agreement on disclosure and couple relationship satisfaction.	Mixed-methods follow-up of Isaksson et al., (2011) study utilising both standardised measures & open-response questions. Data was collected via mail-out questionnaires between 2007–2011. 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) & SD recipients n = 122 (59 couples; 4 individuals), with children aged 1–4 years.	Gamete Donation (sperm & oocyte)	Two-parent hetero-sexual 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 0–2 years and 57% between 2–4 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 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	To explore how heterosexual parents of school-aged DC children reason about and experience disclosure following identity-release SD.	Qualitative semi-structured interviews conducted from February 2014 to March 2015 via telephone & face-to-face, analysed 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 children aged 7–8 years following identity-release donation	Sperm donation	Two-parent heterosexual families	All 30 parents included 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 realisation, 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 examine if the theory of planned behaviour contributes to understanding parents' disclosure intentions and if donation type, parent gender and genetic link to the DC child are associated with disclosure intentions.	Quantitative cross-sectional survey study – Data were collected with the study-specific TPB Disclosure Questionnaire and analysed with path analysis. Part of the longitudinal SSGD.	Sweden	Mandated	Sample of participants from the SSGD: 196 couples with children aged 7–8 years conceived via identity-release OD (n = 83) or SD (n = 113). Data collected 2012–2016 approx. (Participants recruited 2005–2008 & completed four postal surveys over 10 years).	Gamete Donation (sperm & oocyte)	Two-parent heterosexual 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 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.
	Widbom, A.	2022	Google Scholar	Reproductive BioMedicine Online	To examine the relationship between heterosexual-couple families psychological adjustment and disclosure following OD and SD when the DC child is 7-years old.	Quantitative cross-sectional study using data collected via standardised & validated questionnaires mailed to prospective participants & analysed using factorial ANOVA – from the fourth wave of the longitudinal SSGD.						Disclosure of the donor conception to young children does not appear to be associated with negative outcomes for parents or children. Heterosexual couples using oocyte or sperm donation should be informed that disclosure in preschool age is not detrimental to the psychological adjustment of families. Overall, mothers and fathers in OD and SD families were found to be well-adjusted, reporting within normal range levels of anxiety, depression and parental stress, and a high relationship quality. This study adds new knowledge indicating that disclosure is not related to OD couples' relationship satisfaction.

Table 2 continued

Study	Lead Author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-Release	Sample Demographics	Type of donor conception	Family Character-istics	Findings
UK Longitudinal Study of Assisted Reproduction Families	Blake, L.	2014	MEDLINE	Human Reproduction	To examine the relationship between SD and OD, parent psychological adjustment, and disclosure to their DC children.	Quantitative follow-up study using data from 5 time points. A cross-sectional factorial analysis of variance (ANOVA) design was utilized. Part of the Longitudinal UK Study.	United Kingdom	Pre-Mandate	50 SD families & 51 OD families when children were aged 1, 2, 3, 7 & 10. By age 10, the study retained 34 & 30 families representing 68 and 58% of the original sample, respectively	Gamete Donation (sperm & oocyte)	Two-parent hetero-sexual 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, mothers and fathers in both SD and OD families were found to be psychologically well-adjusted; for the vast majority of parents, levels of depression, anxiety and parenting stress were found to be within the normal range at all 5 time points.
	Freeman, T.	2016	MEDLINE	Reproductive BioMedicine Online	To obtain systematic data on parental disclosure patterns to DCP born in the UK as a result of SD after donor anonymity was removed.	Mixed-methods to gather systematic data and qualitative semi-structured interviews rated using a standardized coding scheme. Part of the Longitudinal UK Study.	United Kingdom	Mandated	A random sample of 31 heterosexual solo mothers and 47 matched heterosexual mothers with partners with a child aged 4–8 years conceived using an identifiable SD.	Sperm donation	Two-parent hetero-sexual families and solo mothers	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 1/3 of partnered mothers had disclosed to their 4–8 year old children compared to ~1/2 of solo mothers. Of partnered mothers who had not disclosed 26.7% intended not to. This suggests that identifiable donation has not had a major effect on disclosure rates so far. 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.

UK Longitudinal Study of Assisted Reproduction Families cont.	Golombok, S.	2013	MEDLINE	Journal of Child Psychology and Psychiatry and Allied Disciplines	To obtain in-depth data on parenting quality and DC children's psychological adjustment in OD, SD and surrogacy recipient families from infancy onward.	Quantitative longitudinal study measuring child psych. Adjustment via SDQ & quality of parenting, couple relationship, psych. Well-being via standardised measures at age 3. Maternal well-being with disclosure & family type as IV's was assessed via FA, MANCOVA & MLR.	United Kingdom	Pre-Mandate	30 surrogacy families, 31 OD families, 35 SD families, and 53 natural conception families selected on the basis of stratification to maximize comparability with the ART samples.	Gamete Donation (sperm & oocyte)	Two-parent hetero-sexual 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 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.
	Applegarth, L. D.	2016	CINAHL	Human Reproduction	To examine if OD recipient parents with DC children follow through with their original disclosure intentions and if not, why not?	Quantitative cross-sectional hypothesis-generating pilot study between January–March 2012. Data was gathered via a 52-item questionnaire developed by the authors. Analysis was done using descriptive statistics. Open-ended qualitative responses were categorized and analysed by theme. Clinical observations were made during seminars.	USA	Non-Mandated	72 parents (46 families with 66 children from 7 – 19 years) who delivered offspring as a result of OD between 1992 – 2003	Oocyte donation	Two-parent heterosexual 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 reason for deciding to disclose. The average age of DCP 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 openly.
	Bokek-Cohen, Y. a.	2022	Snowball	Marriage & Family Review	To explore Sunni Muslim women's experiences of the cultural and religious prohibition against donor conception to have children when impacted by infertility.	Qualitative phenomenological approach using semi-structured interviews. Themes in the narratives were analysed via the constant comparison approach.	Middle East	Non-Mandated	25 Sunni Muslim women (M = 30.3 yrs) who have conceived and given birth in the last year using donor gametes.	Oocyte & sperm donation	Two-parent hetero-sexual families	All mothers believed disclosure even to close family, could considerably hurt their husbands dignity and jeopardise 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 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 prioritised despite the costs of violating the religious ban. This finding is also relevant in ethnic minority communities of Sunni Muslim in Western countries. All women in this study expressed happiness and satisfaction regarding their decision to use donor gametes to conceive.

Table 2 continued

Study	Lead Author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-Release	Sample Demographics	Type of donor conception	Family Character -istics	Findings
	de Melo-Martín, I.	2018	MEDLINE	AJOB Empirical Bioethics	To explore experiences of anonymity among recipients and oocyte donors and to understand how 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 (DC children age range 8mnths – 15yrs; majority (82%) had children < 4yrs).	Oocyte donation	Two-parent hetero-sexual families (91% of recipients)	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 examine the perspectives of SD recipients, within heterosexual or same-sex relationships, views on a number of key issues.	Mixed-methods 147-question anonymous online survey between October 2009 and January 2010, designed by DSR 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) and non-biological lesbian mothers (n = 199) with DC children	Sperm donation	Two-parent hetero-sexual families (18.5%) & same-sex families (81.5%)	A vast majority of heterosexual fathers (78.5%) had disclosed to close family members, 19% (8) reported everybody knowing, 60.5% of fathers had disclosed to their DC child, 25% believed their child to be too young. Six fathers (13.3%) reported that they did not intend to ever disclose due to the risk that the child would not view them as their father, there was no reason to disclose, it was too emotional to discuss, or that there was no point due to lack of donor information. Although a majority (57%) of participants were happy with their choice of an anonymous donor, 38.2% of fathers wished they had used an identity-release donor in hindsight.

Hershberger, P. E.	2021	CINAHL	Human Fertility	To examine the unfolding of disclosure decisions and children's understanding of family makeup, in families included in research 12 years prior.	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	6 (of the original 7) families who had used OD to conceive, recipient mothers (n = 6, M = 52.5yrs) and biological fathers (n = 6, M = 48.5yrs), representing 12 DC children (M = 10.33 ± 1.23yrs).	Oocyte donation	Two-parent heterosexual families	Of the 6 families who agreed to participate in the follow-up study, 5 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 3 couples intending to disclose and 2 couples being undecided about disclosure during pregnancy. One family had, by agreement with the known donor, agreed not to disclose. (The 7th 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.
Hertz, R.	2016	Google Scholar	Facts, Views & Vision in ObGyn	To compare women who used OD with those who used ED and examine the meaning of the absence of a genetic tie to the DC child.	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 via SPSS 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 & embryo donation	Two-parent heterosexual 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 donor sperm recipients build, navigate, and experience meanings of 'parenthood' and 'family' and how their meanings may evolve over pregnancy, birth and toddler stage.	Longitudinal qualitative interview study conducted between July 2010 and September 2012 during pregnancy, at birth and 1.5–2 years after birth, analysed using a grounded theory approach	Belgium	Non-Mandated	19 parents (9 couples and 1 woman) who had conceived via SD	Sperm donation	Two-parent heterosexual 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. Participants who intended to not disclose (6/19) viewed their parenthood as the same as parents who conceived naturally, no transitions were observed between pregnancy and 1.5-2yrs of age; further, insecurity around physical traits that could reveal the donor conception remained. Despite the increased confidence of parents who intended to disclose, anxieties around adolescence persisted and parents expressed a desire for further on-going support.

Table 2 continued

Study	Lead Author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-Release	Sample Demographics	Type of donor conception	Family Character-istics	Findings
	Jociles, M. I.	2021	Google Scholar	Journal of Comparative Family Studies	To examine donor conception families patterns and experiences of disclosure or non-disclosure to their DC children and others.	Qualitative study conducted between 2013–2015 using ethnographic semi-structured interviews and content analysis inspired by grounded theory.	Spain	Non-Mandated	63 donor-recipient parents: Single mothers by choice (24), female homoparental couples (14), male homoparental couples (4), & heteroparental couples (21) who had disclosed to their DC child (aged 0–7 years).	Sperm, oocyte, embryo, double donation, gestational surrogacy	Two-parent hetero-sexual families, same-sex couples and single mothers	Donor recipients implement indirect strategies of disclosure (or non-disclosure) in contexts beyond the parent-child dyad. The 3 main contexts are the extended family, school, and family associations. Parents intervene in their social networks mainly by controlling the information circulating that may reach their DC child. Strategies such as restriction of information and who it is shared with, and normalisation 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, including extended family, teachers, and peers, who's members become important agents of the DC child's socialisation.
		2017	Google Scholar	Suomen Antropologi: Journal of the Finnish Anthropological Society	To explore donor-recipient parents strategies in dealing with donors in discussions with their DC children about their origin.							Disclosure strategies, that have the effect (and purpose) of de-kinning the DC child from the donors while kinning them with the social parents and their extended families, are incorporated into the stories parents create to disclose. Strategies used in the storytelling and discourse of ED, OD and SD are Personalisation based on what biometric information is available and Depersonalisation (concealing one of the donors in double donations, treating the donor as an object i.e. what was donated not who donated it, pluralisation to avoid personalising the donor, transformation into a magical and evanescent character, and individualisation where the donor may only be described as a generous person without any other characteristics).

	Kerckhof, M.	2020	Google Scholar	Culture, Health & Sexuality	To explore how donor-recipient heterosexual couples manage information about the conception of their child within their 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 DC child(ren) aged 7–10 yrs. And 5 couples who were ‘aspiring’ parents	Sperm donation	Two-parent hetero-sexual families	Couples disclosed in diverse ways characterised 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 Children Conceived through Donor Insemin-ation study	Kovacs, G. T.	2015	MEDLINE	Australian & New Zealand Journal of Obstetrics & Gynaecology	To examine data on disclosure patterns in Australia and the well-being of DC children and their families, who have disclosed, or not.	Quantitative study ‘nested’ within the Australian Institute of Family Studies Children and Family Life (CFL) study in 2003. Standardised measures of family functioning and child well-being as reported by mothers via self-report questionnaires and analysed statistically via 3 general linear models.	Australia	Pre-Mandate	Mothers from 62 families where DC children aged 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 1989–1999	Sperm donation	Two-parent hetero-sexual 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 mothers’ 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 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, categorising DC children as ‘not told’ or ‘told’ does not describe their level of understanding.
	Lassalzede, T.	2017	CINAHL	Fertility & Sterility	To examine the percentage of parents in one French centre who have disclosed to their DC children.	Mixed-methods questionnaire survey sent by mail with open and closed questions between January–February 2014 analysed using a categorical approach.	France	Non-Mandated	105 couples who had a DC child (n = 138) conceived via SD	Sperm donation	Two-parent hetero-sexual 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 2.5yrs (95% between 0-6 yrs.).

Table 2 continued

Study	Lead Author	Date	Source	Journal	Study aim	Research design and methods	Jurisdiction	Identity-Release	Sample Demographics	Type of donor conception	Family Characteristics	Findings
Relative Strangers Study	Nordqvist, P.	2014	Google Scholar	International Journal of Law, Policy and the Family	To explore disclosure decisions and family boundary issues, disclosure to the DC child, disclosure to the extended family, and moral dimensions of disclosure in the 'right way'.	Qualitative systematic interpretive analysis of original empirical interview data from the 'Relative Strangers' study from 2010 to 2013.	United Kingdom	Pre-Mandate	119 (90 women, 29 Men) participants (74 families) (SD = 54, OD = 16, ED = 3 & 1 both SD & ED). Heterosexual (*n* = 22) & lesbian (*n* = 22) parents and grandparents (*n* = 30) of DC children (*n* = 111, Median = 4yrs).	Oocyte, sperm & embryo donation,	Hetero-sexual and lesbian parents	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. The Donor Conception Network [DCN], fertility counsellors, and the 'My Story' book communicate openness, and how to 'do' in an emerging script that parents should disclose from a very young age. Many parents, take this to mean that the child should be told as the 'owner' of 'their story'. The moral obligation to disclose has been experienced by heterosexual parents, who often feel they need to 'work out' how to go about disclosure. A tension exists between openness, ideas of children's innocence, and keeping intimacy unproblematic. Storytelling about the reproductive processes remains laden with taboo and stigma.
		2021	Google Scholar	Sociology	To explore and analyse social scripts and issues around donor conception storytelling for parents, DCP, grandparents and extended families.							
	Sälevaara, M.	2013	MEDLINE	Human Reproduction	To explore disclosure intentions and experiences of parents with DCP born before 2007, when the open-identity mandate was enacted.	Mixed-methods retrospective questionnaire study using structured questions and open comments. Data was analysed using statistical methods and a categorical approach.	Finland	Pre-Mandate	139 mothers and 127 fathers with altogether 240 children born after DI or dIVF during 1992–2007.	Sperm donation	Two-parent hetero-sexual families	Only 16.5% of parents overall had disclosed to their child; 18% of all children above 3 years had received the information. Parents with older children were more unwilling to tell with less than 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 of children who had been told was between 3–14 years (M = 6.8). No difference in disclosure between DI and dIVF emerged. Less than half of the parents (42%) had been satisfied with the psychological support offered to them, 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 explore SD recipients perspectives of disclosure, contact with donor and half-siblings, regulation of SD, genetic testing, access to medical information, choice of sperm bank and donor; and reporting of births and genetic disorders.	Quantitative 147-question anonymous online survey via Survey Monkey sent to members of the Donor Sibling Registry (DSR), 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 (DC child M = 10 yrs.), single mothers (DC child M = 5 yrs.), same-sex mothers (DC child M = 6 yrs.)	Sperm donation	Two-parent hetero-sexual families (n = 387, 16.2%)	Of the 373 heterosexual couples who responded to questions about disclosure, 202 (54.2%) had already disclosed. However, heterosexual couples were found to be more likely to be unsure or have decided not to disclose (8.3%) compared to lesbian couples (0.8%) and single mothers (0.7%). Of the 68 responses given by heterosexual couples as to the main reasons for non-disclosure, 22 (32.4) reported that there was no reason to tell, a further 11 (16.2%) reported that it would hurt their spouse/partner. Additional reasons given included: 'No information about donor', 'Hurt child to know', 'Partner refuses to allow', and 'Damage partner's relationship with child'.
Tsui, E.	2021	CINAHL	Journal of Health Psychology	To explore how donor-recipient Chinese women experience loss of genetic continuity and manage donor conception information.	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 women who had successfully delivered a DC child (M = 2.8 yrs.) between 2008 and 2013.	Oocyte, sperm & embryo donation,	Two-parent hetero-sexual families	Chinese women strongly preferred non-disclosure to protect their family members, the parent–child relationship, and family stability. Non-disclosure was related to disclosure-hesitancy (indecisiveness in revealing the secret) and consequence-rumination (compulsive, forced attention on the consequence of disclosure). The underlying motives were to safeguard their child from stigma, to protect the parent-child relationship, and the family as a whole from outside pressures that may impact the stability of the family. Behavioural measures, such as only sharing some information with close friends and family, choosing donors with matching blood types, using anonymous sperm donors from overseas sperm banks, and setting clear boundaries with known oocyte donors were used to avoid accidental disclosure.
Widbom, A.	2021	CINAHL	Human Reproduction	To explore how heterosexual parents experience their adult identity-release DCP obtaining information about their sperm donor.	Qualitative individual semi-structured interviews were conducted face-to face or via telephone from October 2018 to January 2019 & analysed using reflexive thematic analysis	Sweden	Mandated	A purposive sample of 23 parents (15 families: 8 hetero couples & 7 mothers) who had disclosed the use of a SD	Sperm donation	Two-parent hetero-sexual families	Following disclosure, recipient parents expressed diverse experiences related to parenthood and the presence of the donor which is captured in two themes: 1) Parents navigation of the dichotomous meanings of nature and nurture in parenthood in relation to social approval; 2) parents positioning of 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.

2. Synthesis of Findings

a. Disclosure Decisions and Patterns, and Impact on Well-being

The disclosure decisions and experiences of 2,114 individuals are represented across the reports included in this MMSR. However, some of the reports draw on participants from the same large studies so this is likely to be an overrepresentation. For example, Gebhardt et al. (2017) include 213 of the 229 participants included in Isaksson et al.'s (2012) earlier study as part of the SSGD. Three studies do not report disclosure statistics, focusing on disclosure agreements within couples (Gebhardt et al., 2017), how participants manage donor information in the context of their social networks (Kerckhof et al., 2020), and disclosure decisions and methods (Nordqvist, 2014, 2021). Across the 20 studies reporting disclosure decisions, one study only states that "most" participants have begun disclosure (Isaksson et al., 2016), and two studies include only parents who have begun disclosure (Widbom et al., 2021) or only parents who will not disclose (Bokek-Cohen et al., 2022). The remaining 17 studies report that disclosure ranges between 15.8%–60.5%; participants who have not yet disclosed but intend to do so in the future range from 22.9%–78%; participants who have not disclosed range from 2%–62.5%; and participants undecided range from 3.5%–33.3%.

i. Disclosure Decisions and Patterns. Disclosure decisions are categorised and described below as Yes (are disclosing), Delay (have not disclosed but plan to), No (will not disclose), Uncertain (parents unsure if they will disclose), Partial (parents have shared some information but not specific to donor conception). Age of disclosure is also discussed and shown in a Table in Appendix 1.

- **Yes.** Seventeen of the 23 included studies report that participants have begun disclosure. Five of the six studies in mandated identity-release jurisdictions contained information about disclosure, four included parents with DC children aged under 8 years (Freeman et al., 2016; Isaksson et al., 2012; Isaksson et al., 2016; Lampic et al., 2021 & Widbom et al., 2022), and one study included parents with adult DCP (Widbom et al., 2021). Eight of the twelve studies in non-mandated jurisdictions contained information about disclosure, one did not state the age of the DC children (Frith et al., 2012), two exclusively included parents with DC children under 7 years (Hertz & Nelson, 2016; Jociles et al., 2017, 2021), in two studies the DC child/ren were aged under 12 years (Hershberger et al., 2021; Lassalzede et al., 2017), two studies included parents with DC teenagers (Applegarth et al., 2016; de Melo-Martín et al., 2018), and one study included parents with DCP aged 1–21+ (Sawyer et al., 2013). Four of the five studies in jurisdictions prior to identity-release mandate coming into effect contained information about disclosure; two included parents with DC children under 10 years (Blake et al., 2014; Golombok et al., 2013), in one study the DC children were 5–13 years (Kovacs et al., 2015) and one study included parents of DCP ranged 1–22 years (Sälevaara et al., 2013).

In the mandated jurisdiction of Sweden, Isaksson et al. (2016) only state that 'most' SD recipients with DC children aged 7–8 had disclosed and Widbom et al.'s (2021) study includes mainly SD recipients 100% of whom had already disclosed to their adult DCP. The next highest rates of disclosure reported are 60.5% of SD recipients (80% from the U.S.) in Frith et al.'s (2012) multi-national study, where most parents reported disclosing before the age of 10, and 60% of mainly OD recipients with DC children aged 0–7 years in the non-mandated jurisdiction of Spain (Jociles et al., 2017, 2021). Additionally, 59.4% of both OD and SD recipients in Lampic et al. (2021) and Widbom et al.'s (2022) study, also in Sweden, had disclosed before age 8, and 54.2% of SD recipients (85% from the U.S.) in Sawyer et al.'s (2013) multi-national study had disclosed (32.8% by 5 years). The remaining eleven studies range between

15.8%–46.8% disclosure. In mandated jurisdictions: 36.2% by 8-years in the UK (Freeman et al., 2016) and 16% by 4 years in Sweden (Isaksson et al., 2012). In non-mandated jurisdictions: 16.7% by ~5 years, 18.2%, and 43% by 15 years in the U.S. (Applegarth et al., 2016; de Melo-Martín et al., 2018; Hershberger et al., 2021), ~22% by 5 years in Spain (Hertz & Nelson, 2016), and 38% by 12 years (95% by 6 years) in France (Lassalzede et al., 2017). In jurisdictions prior to identity-release mandate coming into effect: 46.8% by 13 years in Australia (Kovacs et al., 2015), 33.8% by 7 years and 31.8% by 4 years in the UK (Blake et al., 2014; Golombok et al., 2013), and 15.8% by 14 years in Finland (Sälevaara et al., 2013). However, disclosure did not necessarily mean that parents told their DC children that their donor was identifiable. For example, Freeman et al. (2016) found that only 41.2% of disclosing mothers had told their child that their donor was identifiable despite 59.6% of mothers reporting positive feelings about having used an identifiable donor. No patterns in the parental decision to disclose were observable based on age or jurisdiction; although there appeared to be a trend across time towards greater disclosure in mandated jurisdictions based on the date of the study.

- **Delay.** Across all studies, a majority of parents who have not yet disclosed do intend to in the future. This is also the case in studies of parents who specifically chose to use anonymous donors (de Melo-Martín et al., 2018). Most parents reporting disclosure intention state that they will disclose when questions are asked by the DCP, or when they are old enough to understand (Isaksson et al., 2012; Isaksson et al, 2016; Lampic et al., 2021). However, in Hershberger et al.’s (2021) prospective study, only 14% of the 43% of parents who planned to disclose during pregnancy had done so by the 12-year follow-up. Similarly, although 46% of SD and 56% of OD recipients intended to disclose at age one, Blake et al. (2014) found that by age seven, only 29% of SD and

41% of OD mothers had actually begun disclosure. Applegarth et al. (2016) found that the average age of the children in families who report that they are still intending to disclose is eleven, despite most of them having planned to disclose earlier. However, Lassalzede et al. (2017) report that parents typically remain consistent regarding their disclosure decisions, and in their study, 92.5% of parents who have disclosed had intended to from before their donor conception.

- **No.** Thirteen studies report that some parents have made definite non-disclosure decisions. One study involves participants (*n* = 25) from two Middle Eastern countries who all intend to keep their donor conception a closely guarded secret from everyone outside of the couple unit (Bokek-Cohen et al., 2022). In one other study, out of 8 Chinese mothers, five (62.5%) report that they and their partners do not ever intend to disclose (Tsui & Cheng, 2021). Three further studies report between 30%–40% of participants do not intend to disclose. Two are from the non-mandated jurisdictions of Spain (40%, DC child 0–7 years), and Belgium (31.6%, DC child 0–2 years) (Indekeu et al., 2014; Jociles et al., 2017, 2021), and one is from Finland (30.8%, DC child 1–22 years) prior to the identity-release mandate (Sälevaara et al., 2013). Eight other studies report lower numbers of those not planning to disclose. One is from the non-mandated jurisdiction of Sweden (19%, DC child 1–12 years) (Lassalzede et al., 2017), five are from the U.S.: 16.7% of parents with DC children aged 8–11 (Hershberger et al., 2021), 14.3% of parents (DC child's age not discussed) in Frith et al.'s (2012) multinational study (80% from the U.S.), 9% of parents with DC children aged 0.8–19 (Applegarth et al., 2016; de Melo-Martín et al., 2018), and 4.8% of parents with DC children aged 1–21+ in Sawyer et al.'s (2013) multinational study (85% from the U.S.). In mandated jurisdictions: 17% of parents in the UK with DC children 4–8 years (Freeman et al., 2016) and 2% of parents in Sweden with DC children aged 0–4 (Isaksson et al., 2012).

No patterns in the parental decision not to disclose were observable based on age, date of study, or jurisdiction.

• **Uncertain.** Eight studies included participants ranging from 3.5%–33.3% who were conflicted or uncertain about disclosure. Two were in mandated jurisdictions: 12.8% of parents in the UK with DC children 4–8 years (Freeman et al., 2016) and 4% of parents in Sweden with DC children 0–4 years (Isaksson et al., 2012). Four were in the non-mandated jurisdiction of the U.S.: 33.3% of parents with DC children 8–11 years (Hershberger et al., 2021), 9% of parents with DC children 7–19 years (Applegarth et al., 2016), 4.5% of parents with DC children 0.8–15 years (de Melo-Martín et al., 2018), and 3.5% of parents with DCP aged 1–21+ in Sawyer et al.'s (2013) multinational study mostly including participants from the US (*n* = 85%). One participant of 8 with a DC child aged between 1–6 years in non-mandated Hong Kong was also undecided (Tsui & Cheng, 2021). In jurisdictions prior to identity-release mandate coming into effect only Sälevaara et al.'s (2013) Finnish study reported uncertainty in 30.5% of parents with DCP 1–22 years. In six studies, regardless of age, date of study or jurisdiction, the percentage of parents who were uncertain about disclosure was lower than the percentage of parents who had begun disclosure or planned to disclose in the future except for one study (Hershberger et al., 2021) where the percentage (*n* = 33.3%) of parents uncertain matched those who intended to tell in the future, and one study (Sälevaara et al., 2013) where the percentage of parents who were uncertain (*n* = 30.5) nearly matched those who had decided not to disclose (*n* = 30.8). In both cases, the percentage of uncertain parents was nearly double those who had begun disclosure.

• **Partial***.* Three participants in Isaksson et al.'s (2012) study in the mandated jurisdiction of Sweden who are not intending to disclose report that they plan to tell their child that "some medical assistance" had been used to conceive without mentioning the use of a donor (p. 3002). Additionally, two participants in Tsui and Cheng's (2021) study in non-mandated Hong Kong reported the intention to tell their child that they had used IVF to conceive, but not that they had used donor gametes.

- **Age/when.** Nine studies explicitly report the age of disclosure, eight report disclosing before, or with a mean age of less than, seven and most where disclosure is supported report starting disclosure from birth (Applegarth et al., 2016; Blake et al., 2014; Golombok et al., 2013; Hershberger et al., 2021; Hertz & Nelson, 2016; Isaksson et al., 2012; Lassalzede et al., 2017; Sälevaara et al., 2013). The remaining study reports that 50.8% of participants disclosed from birth with "most" disclosing by age 10 (Frith et al., 2012, p. 6). Four other studies did not state the age of disclosure but due to the reported age of the participants' children at the time of the study, it can be assumed that disclosure occurred before age 8 (Freeman et al., 2016; Isaksson et al., 2016; Prociles et al., 2017, 2021; Lampic et al., 2021 & Widbom et al., 2022). In contrast, the mother in Tsui and Cheng's (2021) study who reported being 'open' to full disclosure believed the most appropriate time is after their DC child turns eighteen. There do not appear to be any patterns between mandated and non-mandated jurisdictions regarding the age of disclosure.

- **Process**. Disclosure as a process is discussed across multiple studies (Freeman et al., 2016; Isaksson et al, 2016; Lampic et al., 2021 and Widbom et al., 2021), with mothers in Freeman et al.'s (2016) study stating that donor conception conversations occur once every 3 months minimum following the initial disclosure*.*

ii. Impact on Adjustment and Well-being

The impact on adjustment and well-being resulting from disclosure decisions was discussed across ten studies. Two studies report that most parents who have disclosed felt positive about the process and believed that they disclosed at the right time, and had no problems (Freeman et al., 2016; Frith et al., 2012). None of the parents who have disclosed in Applegarth et al.’s (2016) study experienced any regrets. A sense of relief was often experienced by parents once it became clear that their child understood and that it appeared to not be a big issue to the child at that time (Isaksson et al., 2016). Nevertheless, Isaksson et al. (2016) found that most parents discussed concerns over what the future teenage years may be like. While the idea of the donor being identifiable in the future seems abstract to parents, Isaksson et al. (2016) report that many parents worry about their children meeting the donor in the future as they may not be the ideal person, they portrayed them to be during disclosure. The potential for harm arising from a situation where a child wants to meet their donor, but the donor refuses is an example of why donor anonymity is viewed as a protective factor by some parents (de Melo-Martín et al., 2018).

In one study, psychological adjustment was found to be higher in disclosing mothers; in contrast, lower levels of psychological adjustment were found in fathers of disclosing SD families (Blake et al., 2014). Blake et al. (2014) suggest that this may be due to either increased stigma for infertile fathers, or the lack of a biological link for fathers in SD families compared to OD families where fathers are linked genetically and mothers gestationally, both parents, therefore, sharing a biological link with their DC child/ren.

In two studies, elevated levels of parental anxiety and distress associated with delayed and non-disclosure were reported (Applegarth et al., 2016; Golombok et al., 2013). Additionally, both inter-couple and interpersonal conflict and stress were expressed by parents who were uncertain about whether to disclose or not (Applegarth et al., 2016; Hershberger et al., 2021). Applegarth et al. (2016) report that parents who have delayed openly report regretting not disclosing earlier. In contrast, Kovacs et al.’s (2015) Australian study of SD parents with DC children aged 5–13 in Victoria, prior to the identity-release mandate coming into effect, found no difference in the psychological well-being of either parents or DCP related to disclosure or non-disclosure. This is mirrored by Widbom et al. (2022) who also report that there are no differences in psychological outcomes between disclosing and non-disclosing SD and OD families when the DC child is 7–8 years. Thus, it appears that there is no consensus across studies as to whether disclosure results in more positive adjustment and well-being. However, as asserted by (Widbom et al., 2022), non-disclosure must be weighed up against the challenging outcomes associated with delayed or accidental disclosure to older DCP, and the focus should be on the fact that early disclosure does not cause psychological harm.

3. Factors Related to Disclosure Decisions, Patterns/Experiences and Well-being

a. Demographics

i. Parents' age. Four studies do not address the recipients' age (Isaksson et al., 2016; Jociles et al., 2017, 2021; Kerckhof et al., 2020; Lassalzede et al., 2017), the remaining nineteen do. Blake et al. (2014) and Golombok et al. (2013) both report that OD recipient mothers were found to be significantly older than SD recipient mothers; however, no significant relationships were found between the mothers' age, disclosure, and distress at each time point of the studies. Similarly, Applegarth et al. (2016) report that no significant association was found between parents' age and their disclosure decision. However, across the nine studies that report participants' mean age (*M* = 40.5 years) (Bokek-Cohen et al., 2022; Freeman et al., 2016; Gebhardt et al., 2017; Hertz & Nelson, 2016; Indekeu et al., 2014; Isaksson et al., 2012; Lampic et al., 2021 & Widbom et al., 2022; Sälevaara et al., 2013; Tsui & Cheng, 2021), none discuss if there was any association between parental age and disclosure. Therefore, the link between recipient age and disclosure and experience/well-being remains unclear.

ii. Infertility diagnosis. Only two studies explore the role of infertility diagnosis. Bokek-Cohen et al. (2022) report that of the 25 Sunni Muslim women who had used donor gametes, male infertility was reported in 16 cases, female infertility in 6 cases, and in 3 cases it was unexplained. Tsui and Cheng (2021) report 62.5% female-factor and 37.5% male-factor infertility in their study of eight Chinese women. One participant in that study reported that her infertility was well known due to surgery she underwent when she was younger, this was the impetus for her plan to disclose the use of a donor to her DC child, but not until they are 18 years old (Tsui & Cheng, 2021). However, across both studies, the choice not to disclose was related to other variables, such as religious beliefs, social stigma, and cultural factors rather than the stated infertility diagnosis.

iii. Education. Nine studies report that the majority of participants are highly educated but do not report any association between education and disclosure or experience/well-being (Bokek-Cohen et al., 2022; de Melo-Martín et al., 2018; Freeman et al., 2016; Gebhardt et al., 2017; Hershberger et al., 2021; Isaksson et al., 2016; Kovacs et al., 2015; Lampic et al., 2021 & Widbom et al., 2022; Nordqvist, 2014, 2021).

b. Intrapersonal Factors

i. Values. Eleven studies report on the influence of parents' values on both for and against disclosure decisions. Three studies report that non-disclosing parents believe that it is not necessary to tell stating that there is no point as they do not have the donor's information and expressing the desire to be a "normal" family (Applegarth et al., 2016; Frith et al., 2012; Isaksson et al., 2012). Other reasons given for non-disclosure are parents' worries about the emotional impact on their child, the child wanting to find their donor, the child not feeling like part of the family, the child being resentful, social stigma, it being too painful, and not being certain about how to disclose (Applegarth et al., 2016; Frith et al., 2012; Hertz & Nelson, 2016; Lassalzede et al., 2017; Sawyer et al., 2013).

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' belief that their child has a right to know about their conception is reported as the main driver for disclosure in multiple studies (Applegarth et al., 2016; Isaksson et al., 2016; Lampic et al., 2021 & Widbom et al., 2022). Parents report feeling a moral obligation to disclose in a way that protects the self-identity of DCP (Nordqvist, 2021).

ii. Parental confidence. Six studies report on the role of parental confidence in disclosing. A lack of confidence, in the form of uncertainty over the best way and time to disclose, the 'right time' never being found, finding the information difficult to share, and fear of how their child will react and the impact on the parent/child relationship were reported in a number of studies (Applegarth et al., 2016; Hershberger et al., 2021, Isaksson et al., 2016; Lassalzede et al., 2017; Widbom et al., 2022). In contrast, Lampic et al. (2021) and Widbom et al. (2022) report that parents who had not yet disclosed to their 7–8-year-old DC child were less likely to intend to disclose in the year ahead if they experienced a greater level of confidence in their ability to discuss the topic. Furthermore, couples' high-quality relationships and positive psychological adjustment were found regardless of disclosure decisions, suggesting that the similarity between couples who have, and couples who have not, disclosed may be due to a deliberate decision to delay disclosure until the child is older rather than a decision not to disclose at all (Lampic et al., 2021 & Widbom et al., 2022).

iii. Emotional issues. Five studies report on parents' emotional issues and the impact on disclosure. Tsui and Cheng (2021) report that, at the time of their study in non-mandated Hong Kong, one mother stated that the disclosure decision was too difficult to even consider.

Conflicting emotions of gratitude for the gift of a child and unresolved grief connected to infertility were experienced 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., 2021). Some parents manage this by practising disclosure when the child is too young to understand their parents' sorrow, as a way to protect the child and prepare themselves for when the child is older (Isaksson et al., 2016). Nordqvist (2021) reports that words such as 'hurt', 'casualty', and 'rejection' evidence the deeply felt emotional impact experienced by non-genetic parents, who sometimes feel that there is a risk of future rejection by their DC child, due to the lack of a genetic link.

c. Interpersonal Factors

i. Couple dynamics/agreement. Couple agreement on the disclosure decision was reported by most participants across five studies (Gebhardt et al., 2017; Isaksson et al., 2012; Bokek-Cohen et al., 2022; Frith et al., 2012; Hershberger et al., 2021). Incomplete couple agreement about disclosure was reported in four studies (Gebhardt et al., 2017; Isaksson et al., 2012; Hershberger et al., 2021; Sälevaara et al., 2013). Hershberger et al.'s (2021) study found that three of the four undecided OD recipient couples experienced conflict over disclosure. Gebhardt et al. (2017) report that 22% of parents were not in complete agreement regarding whether, and what, to disclose. Similarly, Isaksson et al. (2012) report that approximately a third of couples (SD 35% and OD 28%) experienced disagreement over disclosure which was shown to lower satisfaction and negatively impact relationship quality in several areas. Applegarth et al. (2016) believe that the conflict is emotionally or psychologically based, rather than being based on religion or culture.

Most of the reports in this MMSR did not, however, address whether partners jointly or individually assumed responsibility for disclosure. The two exceptions are Frith et al. (2012) and Lassalzede et al. (2017) where most SD recipient couples (~81%) reported disclosing to their child together, followed by the mother being responsible for disclosure (20%) (Lassalzede et al., 2017). Additionally, Isaksson et al. (2012) report that 50% of women compared to 25% of men desired further information regarding how to disclose, suggesting that women feel a heavier burden of responsibility around disclosure. Nevertheless, an equal number of mothers and fathers reported having begun disclosure in their study, potentially reflecting the relative gender equality in Swedish society (Isaksson et al., 2012).

Couple conflict and disagreement may contribute to uncertainty and disclosure delay (Applegarth et al., 2016; Sälevaara et al., 2013). On the other hand, Gebhardt et al. (2017) report that the agreement between SD and OD parents regarding the decision to disclose was not found to predict increased parenting stress. However, higher levels of relationship satisfaction were consistently found to be associated with lower levels of parenting stress, suggesting a buffering effect (Gebhardt et al., 2017). Gebhardt et al. (2017) suggest that due to the young age of the DC children (1–4 years) in their study, parental agreement on disclosure in the context of mandated identity-release jurisdictions may not become salient until the children get older and the parents need to decide.

ii. Family factors.

- ***Anonymity versus identity-release.*** Ten studies explicitly reported that a majority of participants had used an anonymous donor. Seven of these studies in non-mandated jurisdictions reported a higher percentage of parents either had begun disclosure or intended to do so in the future compared to those who intended to never disclose (de Melo-Martín et al., 2018; Frith et al., 2012; Hertz & Nelson, 2016; Indekeu et al., 2014; Jociles et al., 2017, 2021; Lassalzede et al., 2017; Sawyer et al., 2013). In Frith et al.'s 2012 study, most of the parents who had used an anonymous donor reported feeling happy with their choice (Frith et al., 2012). de Melo-Martín et al. (2018) report that many participants considered using an anonymous donor to ameliorate their anxiety about their family being different from the idealised biogenetic family unit. Some mothers report that using an anonymous donor safeguards their maternal legitimacy, removing their perceived obligation to share donor information with their child during disclosure because it was unknown (de Melo-Martín et al., 2018).

On the other hand, in some of the studies where anonymous donors were used, donation was offered anonymously only. For example, Sawyer et al. (2013) multinational study (85% U.S.) in non-mandated jurisdictions found that 33.9% of participants were not given the choice to use identity-release donors, and yet most of the mothers using an anonymous SD expressed that they wished they had been able to choose an identifiable donor. In Frith et al.'s (2012) study, 84% of non-biological fathers reported using an anonymous donor; however, nearly 50% also reported that non-anonymous donation was not offered by their sperm bank. Interestingly, 38.2% of non-biological fathers in that study state that they now wish they had used a non-anonymous donor (Frith et al., 2012). Isaksson et al. (2016) suggest that parents of DCP conceived via anonymous donation, may attach different meanings to disclosure decisions compared with parents of DCP conceived via identity-release donation; parents' reasons for disclosing to identity-release DCP were found to be more aligned with information sharing rather than information giving.

- ***Type of donation.*** Donation type was found not to significantly impact disclosure decisions (Gebhardt et al., 2017; Isaksson et al., 2012; Lampic et al., 2021 & Widbom et al., 2022; Sälevaara et al., 2013). However, in the case of SD, mothers' disclosure decisions may be influenced by the desire to protect the role of the child's father (Widbom et al., 2021), sometimes becoming the impetus for not disclosing (Freeman et al., 2016). 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).

Indecision about disclosure was also found to be more likely in ED than in OD mothers in one study (Hertz & Nelson, 2016). In Hertz & Nelson's 2016 study, 26% of OD compared to 10% of ED parents had disclosed by age five. Non-disclosure due to disclosure being too painful was given as a reason by 14% of ED recipient mothers compared to only 5% of OD recipient mothers (Hertz & Nelson, 2016). In comparison to OD mothers, ED mothers may be more private, with Hertz and Nelson (2016) finding that 47% of mothers report not even discussing the ED with their husband's following conception.

With reference to the impact of donation type on well-being, both SD and OD parents were found to be psychologically well adjusted with high-quality relationships and experiences of parental stress, anxiety, and depression within the normal range (Blake et al., 2014; Widbom et al., 2022). Widbom et al. (2022) found that this was the case regardless of disclosure decisions. Blake et al. (2014), however, note that higher psychological well-being was found in disclosing OD recipients than in disclosing SD recipients, suggesting the fathers' genetic link may be a key factor, although no clear explanations are offered for the observed patterns. Golombok et al. (2013) report no difference between SD and OD recipient mothers' levels of positivity, negativity, or distress; however, increased stress levels were shown by mothers for both SD and OD and who have not disclosed.

• ***Genetic link.*** The role of genetics in disclosure and well-being was discussed in multiple studies. Genetics was considered less important than how a child is raised by 80% of OD and 78% of ED recipients using anonymous donors (Hertz & Nelson, 2016), 53% of identity-release SD recipient mothers (Freeman et al., 2016), and 46.1% of non-genetic fathers whose DC child was conceived via anonymous SD (Frith et al., 2012). No statistical difference was found between OD and ED recipients' reports that donors could provide important genetic information, or that parents of DCP should not have secrets about the conception; nevertheless, a much higher percentage of OD recipients (46%) compared to ED recipients (17%) reported the belief that DCP have the right to knowledge of their genetic origins (Hertz & Nelson, 2016).

Donor-recipient mothers in both anonymous and identity-release jurisdictions report highly valuing the genetic link their husbands and children share; further, recipient mothers feel that carrying and delivering their DC baby strengthens their feeling of motherhood despite their own lack of a genetic link (Hertz & Nelson, 2016; Widbom et al., 2021). In contrast, non-genetic fathers reported feeling that their fatherhood is challenged by their infertility (Frith et al., 2012; Widbom et al., 2021). Some Finnish parents reported that their DC children did not need to know about their genetic father as they already had a father; the same study reported that few parents thought positively of the change in legislation mandating identity-release (Sälevaara, et al., 2013). Working to ensure their position as a parent via the conscious decision to be as involved and hands-on as possible from the very start was a strategy used by some non-genetic fathers to foster a strong bond with their DC children (Widbom et al., 2021).

- ***Narratives.*** Six studies discussed how parents devised their own disclosure narratives. Disclosure was linked to how parents developed their narratives; practising with others was used by parents to work out how they could tell the story and what words they should use (Hershberger et al., 2021; Isaksson et al., 2016; Jociles et al., 2017, 2021; Nordqvist et al., 2014, 2021). Isaksson et al. (2016) report different levels in the disclosure process, beginning with “the story of how babies are made” (p. 127), followed by the parents needing help, help being received from a donor, and the final level involving telling the DC child that they will be able to access their donor’s information when they are older. In the early stages of disclosure, while the child is still young, narratives focus on parents getting help from a kind man or woman (Hershberger et al., 2021; Isaksson et al., 2012). Mothers’ desire to protect the role of the father is also found in narratives during the process of disclosure which focus on ‘daddy’ not having any sperm and needing to borrow some (Freeman et al., 2016).

• ***Navigating the role of the donor.*** How to manage the role of the donor was explored in four studies. For SD parents who disclose, for example, Isaksson et al. (2016) found that children sometimes reflect on the role of their non-genetic father, asking questions about the sperm donor during disclosure. Jociles et al. (2017) found that parents can experience discomfort arising from their DC child’s questions about their non-genetic parent’s role, their own place in the family, or details about the donor. This is reflected in both strategies to personalise the donor and a variety of depersonalisation strategies used in the process of disclosure which aim to strengthen kinship within social families and de-kin DCP from the donor (Jociles et al., 2017).

‘Personalisation’ allows DCP to visualize the donor as a distinct individual with characteristics that they may have inherited (Jociles et al., 2017). This can be taken a step further by families openly acknowledging the donor, with some mothers positioning the donor as part of the extended family (Widbom et al., 2021). In contrast, ‘Depersonalisation’ strategies include concealing one of the donors, as in the case of ED or parents who have received a donation of both sperm and oocyte, where only disclosing the use of either a donated oocyte or donated sperm is a strategy used to ‘unlink’ the child from the donors and to ensure a kinship link with one of the non-genetic parents is not undermined (Jociles et al., 2017). Other depersonalisation strategies include: referring to what was donated rather than who donated it, in this regard treating the donor as an object; discussing the donor as 'they', 'men', in the plural, thus avoiding personalisation; or for the donor to be given the magical qualities of a fairy who grants the mother her wish and then disappears; finally, individualisation of the donor, whereby the donor is discussed without being given any characteristics other than generosity or wanting to help, and sometimes only as the provider of the gamete without any other attributes (Jociles et al., 2017).

For some parents, feelings of ambivalence and uncertainty are experienced as they struggle to conceive how the identity-release donor fits within the context of their family (Widbom et al., 2021). In identity-release jurisdictions, as DCP reach the age that they can access their donors' information, some non-genetic fathers may feel their position is threatened. More than half of the non-genetic fathers in Frith et al.'s (2012) study reported not wanting to meet the donor; further, several non-genetic fathers report withdrawing from discussions about the donor, keeping them at a distance, while simultaneously being supportive of the DCP information seeking (Widbom et al., 2021). Conversely, the lack of donor information was reported as a reason for delaying disclosure in jurisdictions where identity-release is, or was, not mandated (Applegarth et al., 2016; Sälevaara, et al., 2013).

- ***Family composition.*** Blake et al. (2014) report a statistical difference in family composition with OD recipient families being more likely to have one child. However, 10 of the 12 studies including OD recipients did not report family demographics. Only one mostly anonymous OD recipient study reported a majority of families with 2 or more children; in that study disclosure, or the intention to disclose, is reported by 50% of parents (Hershberger et al., 2021). On the other hand, five studies report that 50% or more of included SD recipient families have two or more DC children with disclosure, or the intention to disclose, between 25%–70.2% (Freeman et al., 2016; Kerckhof et al., 2020; Kovacs et al., 2015; Tsui & Cheng, 2021; Widbom et al., 2021). Disclosing parents in one identity-release study discussed that it had been important for them to have more than one DC child; reporting experiencing a level of reassurance that their DC children have each other with whom to share their 'story', experiences, and feelings (Isaksson et al., 2016). However, this too is found to act as an impediment to disclosure when the DC children are of different ages due to parental uncertainty around how to disclose to children of differing ages and maturity within the same family (Hershberger et al., 2021).

iii. Child factors.

• ***Age and maturity.*** A commonly reported reason for delaying disclosure is parents' perception that the child is too young to be able to understand donor conception (Frith et al., 2012; Isaksson et al., 2016; Lassalzede et al., 2017; Widbom et al., 2022). However, parents who delay the decision may also experience increased parental anxiety, with a sense that they have left disclosure too late and have concerns about disclosure and how it will be received by older children, teenagers, and young adults – which then again may be reported as a reason for further delay (Applegarth et al., 2016; Sälevaara et al., 2013). 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 DC children aged 4–6 years. However, this may also be reflective of changing attitudes towards disclosure in Finland that may have helped pave the way for the law requiring donors to register their details to be enacted in 2007.

• ***Resemblance.*** The resemblance or lack thereof between DCP and parents may be related to disclosure and experience. For example, Hershberger et al. (2021) report that OD parents may find that people commenting on their child's resemblance to them acts as an impediment to their disclosure. Physical resemblance between DCP and their non-genetic parent may be experienced as an asset, attracting social approval from those outside the family, and concealing the absence of a genetic link.

Where there is a lack of resemblance this may be experienced as a liability due to the increased risk of questions and fear of a potential sense of disconnection (Indekeu et al., 2014; Widbom et al., 2021). Widbom et al. (2021) report that lack of resemblance can be a ‘visible marker’ to be navigated even up to 30 years after donor conception. However, Indekeu et al. (2014) suggest that over time (i.e., by the time the child reaches the age of 2), the impact of resemblance talk may diminish as parents begin organically to emphasise their social ties over genetics and thus experience an easing of insecurities and anxiety. In Bokek-Cohen’s (2021) study, a potential lack of resemblance was reported by all mothers as a non-problem, that would be dealt with by using stories of resemblance to relatives in previous generations, or other explanations.

- ***Role of the child.*** Several studies refer to the role the child plays in initiating and continuing disclosure. For example, Hershberger et al. (2021) and Isaksson et al., (2016) report that the prompt for disclosure in some families is the DC child asking questions about pregnancy, where babies come from, and their birth. Although parents often view themselves as the manager of the disclosure process, children are reported to have a role via their reactions (Isaksson et al., 2016; Nordqvist, 2014). For example, in studies reporting parents’ perceptions of their child’s reaction to disclosure (Freeman et al., 2016; Isaksson et al., 2016; Lassalzede et al., 2017; Nordqvist, 2014) 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. (2016) study, leading parents to bring it up at every opportunity (p. 128).

iv. Link between parents and donors. In four studies, parents report an ongoing relationship or link with the donor which can act as either an aid or a barrier to disclosure. Sawyer et al. (2013) report that some disclosing parents actively search for their child's donor and 11% of SD recipients had met or regard as family their DC child's half-siblings. One family, in an effort to circumnavigate the long wait times in the UK, specifically chose to accept a friend's offer to provide them with an oocyte based on everyone knowing across both extended families and everyone being accepting (Nordqvist, 2014). However, in other families where the OD is known, the boundaries of the child's family must be carefully negotiated, which can be difficult if there are differences in the needs and wants of the recipient family, the donor, and broader relational networks involved (Nordqvist, 2014). Tsui and Cheng's (2021) study for example reports the importance of having clear and firm boundaries in place to protect the child and their families from unintentional disclosure and the unknown impacts on family relationships. Hershberger et al. (2021) report that despite one mother having a contractual agreement with a known OD never to disclose, and a commitment to the plan, she experienced tension about the decision.

v. Extended family/friends. Disclosure to others was reported by participants in twelve studies (Applegarth et al., 2016; Frith et al., 2012; Hertz & Nelson, 2016; Isaksson et al., 2012; Isaksson et al., 2016; Jociles et al., 2021; Kerckhof et al., 2020; Lampic et al., 2021; Lassalzede et al., 2017; Nordqvist, 2014; Sälevaara et al., 2013; Tsui & Cheng, 2021), with six studies explicitly reporting that more than 80% of participants had disclosed to others, including parents who do not intend to ever disclose to their DC child (Applegarth et al., 2016; Frith et al., 2012; Hertz & Nelson, 2016; Isaksson et al., 2012; Kerckhof et al., 2020;

Lassalzede et al., 2017). This means that there could be inadvertent disclosure to DCP by others. Some parents report regrets about disclosing to some people due to fear of losing control of the information and the DCP finding out about their donor conception from someone other than themselves (Isaksson et al., 2012; Isaksson et al., 2016; Tsui & Cheng, 2021). Sälevaara et al. (2013) report finding that in general, parents are more likely ($p < .005$) to disclose to others about their donor conception if they have disclosed or intend to disclose to their child.

Although many parents report positive feelings about disclosure to their child/ren, many also report disclosure to the wider family as a process fraught with vulnerability and anxieties around how they may react (Nordqvist, 2014). Involving extended family can often be seen as a way to ensure that DCP also hear their donor conception story from others (Isaksson et al., 2016), and to foster a supportive and cooperative environment for both DCP and parents (Jociles et al., 2021). However, the sensitive nature of infertility was observed by Isaksson et al. (2016) via some parents' fear of how non-family members may respond to the child if they talk about being donor-conceived; some going so far as to dissuade the child from telling anyone. The process of disclosure or non-disclosure in the context of extended family social networks involves two main indirect strategies. 'Restriction of information' whereby parents carefully select how much to disclose and to whom, and 'normalisation' (Jociles et al., 2021; Kerckhof et al., 2020). The objective of normalisation is to ensure congruency between the parents and the extended family over what, and how the donor conception, is discussed with the child (Jociles et al., 2021). The conscious aim of careful selectivity is to reduce the likelihood of unwanted disclosure and avoid rejection of the DCP by relatives that are very traditional or conservative (Jociles et al., 2021; Kerckhof et al., 2020; Tsui & Cheng, 2021).

For many parents, donor conception does not happen in isolation. Relationships within families are complex and interconnected, and often the process of struggling to conceive a child touches the lives of more than just the parents and the child to be, however, the social and economic consequences of disclosure within family networks can be significant and impact crucial relationships (Nordqvist, 2014). This can be seen in two studies that report exceptions to the common pattern of disclosing to others. Bokek-Cohen et al.'s (2021) study of Sunni Muslim women who undergo donor conception with their husbands in total secrecy, never disclosing to anyone outside their couple unit. Similarly in Tsui and Cheng's (2021) study, complete secrecy was maintained by 5 of 8 participants. Protection against possible negative reactions from traditional or conservative family members, family stability, protecting their marital relationship, and the high potential for negative economic (i.e. loss of support and/or inheritance for DCP) and wider social impacts (shame, stigma, non-acceptance within the wider family) of disclosure were stated to be major concerns and reasons for secrecy among participants in both studies (Tsui & Cheng, 2021; Bokek-Cohen et al., 2021).

d. External Context and Social

i. Socio-cultural-legal factors.

- ***Social.*** Parental concern over what others think can have both a positive and negative influence on disclosure decisions and experiences depending on the parents' attitudes towards acting in accordance with perceived social norms (Lampic et al., 2021). Several studies (Indekeu et al., 2014; Isaksson et al., 2012; Isaksson et al., 2016; Lampic et al., 2021; Nordqvist, 2014) report on the role of social factors and stigma in fostering or hindering disclosure. Isaksson et al. (2012) report that 89% of participants reported experiencing support and empathy from others in reaction to their use of a donor to conceive. Parents who view their social network and society as having positive attitudes to disclosure are more likely to have disclosure intentions for the year ahead (Lampic et al., 2021). The absence of negative reactions to disclosure by others also helps parents to feel acceptance and normalisation (Indekeu et al., 2014). Furthermore, some parents believe if they are open about their child's donor conception, gossip and stigma may be avoided by normalising the situation (Isaksson et al., 2016). Often this means navigating situations resulting from very young children with an unusual amount of knowledge about the conception process in social settings which inadvertently acts to expose parents' donor use (Nordqvist, 2014). The school environment is also a context which provides multiple challenges for parents of DC children where classroom discussions and activities can also become the inception of disclosure for families who did not disclose early (Jociles et al., 2021).

Fathers in SD recipient couples reported experiencing more societal pressure regarding disclosure than fathers from OD recipient couples; Lampic et al. (2021) tentatively suggest the increased pressure experienced by fathers in SD couples may reflect that fathers in OD couples are less inclined to reveal their partners' infertility, regardless of others' opinions. Mothers, however, showed no difference in their disclosure patterns in relation to subjective norms (Lampic et al., 2021). Interestingly, Lampic et al. (2021) report that once parents begin the process of disclosure, subjective norms no longer appear to have an influence; instead, parents focus on disclosure achieving desired consequences.

• ***Culture and religion.*** The impacts of culture and religion on disclosure decisions were explored in three studies that used anonymous donors in non-mandated jurisdictions. Delays in disclosure due to social issues and stigma were discussed briefly in the context of the Catholic faith in one study by parents of school-aged DC children whose own church protested the opening of an IVF centre locally (Hershberger et al., 2021). Non-disclosure for religious and cultural reasons was discussed in two studies (Bokek-

Cohen et al., 2021; Tsui & Cheng, 2021). Bokek-Cohen et al. (2022) report that disclosure to anyone would have serious consequences for Sunni Muslim women who have acted against the Islamic law forbidding donor conception of any kind, considering it akin to adultery. Reasons for non-disclosure in this context were: Protection of privacy and avoidance of authorities' sanctions, protecting the culturally important image of masculinity and virility of the father, protection of the child's psychological well-being and healthy development, maintaining the symmetry of parenthood, and safeguarding the inheritance rights of male DCP (Bokek-Cohen et al., 2022).

A pattern of information concealment was also found in Tsui and Cheng's (2021) study of Chinese women who had DC children, a majority of whom did not intend to disclose to protect family stability, the child, the parent-child relationship, and extended family members. The conservative attitudes of older generations and the traditional Chinese value placed on genetic connection were found to underly decisions of non-disclosure (Tsui & Cheng, 2021). Efforts to ensure privacy and avoid accidental disclosure include some parents insisting on a donor with a matching blood type, choosing anonymous sperm donors from international sperm banks, and setting clear boundaries where known oocyte donors are used (Tsui & Cheng, 2021).

• ***Legal.*** There do not appear to be any patterns between mandated and non-mandated jurisdictions and the age of disclosure. Sälevaara et al. (2013) study of parents who had conceived before Finland mandated identity-release in 2006, reports that among donor recipients, 40.5% of fathers and 45.5% of mothers feel that mandating donor identity-release will not impact parental disclosure decisions; furthermore, a quarter of recipients believe it will result in fewer parents disclosing. However, the reasons for this are not explored and interestingly, the study found that parents of older DCP were less likely to disclose than those with younger children (Sälevaara et al., 2013). This potentially does reflect a change in attitude resulting from the mandate, as also found in Sweden where growing openness towards disclosure has been reported over time (Isaksson et al., 2012; Lampic et al., 2021 & Widbom et al., 2022). Based on the dates of the studies, there appears to be a trend across time towards greater disclosure in mandated jurisdictions.

- **Professional support.** Across all studies, many participants report feelings of unpreparedness, isolation and anxiety around the disclosure decision and process. The desire for more information and ongoing professional support and advice around disclosure decisions and strategies was found to be more common for mothers in two studies, irrespective of donation type and jurisdiction (Indekeu et al., 2014; Isaksson et al., 2012). However, Sawyer et al. (2013) report that only 23.9% of mothers, who had mostly (81.7%) used an anonymous SD, received pre-treatment counselling arranged by the clinic; 4.9% report the thought never occurring to them. Mothers report being less satisfied with pre-treatment psychological support than fathers, some reporting that they were not offered any support and one mother reported feeling abandoned (Sälevaara et al., 2013). Just over half of the fathers (57.5%) in Frith et al.'s (2012) multinational study in non-mandated jurisdictions (80% U.S.) report having professional counselling before, mostly anonymous, sperm donation; 81% report being told by the counsellor to disclose to the child while they were young; however, 39% of fathers report consequently being told by the clinic never to disclose.

A difference in support seeking was found by Applegarth et al. (2016) who 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, and none of the non-disclosing families. 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.** Participants in five studies discussed seeking out and using a variety of resources to help in the disclosure process. During the decision-making process, advice, and guidance on how to disclose were sought from extended family, books, and via searching the internet (Isaksson et al., 2016). Most parents reported using a visual aid, such as a book, in the disclosure process, or bringing it up in conversation, predominantly initiated by the parents (Freeman et al., 2016; Lassalzede et al., 2017; Nordqvist, 2014, 2021). Parents report wanting to hear from other parents about their disclosure experiences, access to resources such as storybooks and movies, and networking opportunities for DCP (Isaksson et al., 2012)

CHAPTER 4: DISCUSSION

1. Overview

This MMSR has identified that, particularly in mandated jurisdictions, there appears to be a trend towards greater disclosure over time. However, whether disclosure improves well-being and positive adjustment for parents and their families remains contentious, with studies in both Australia and Sweden finding no difference in psychological well-being relating to disclosure (Kovacs et al., 2015; Widbom et al., 2022). Nevertheless, emotions such as relief and gratitude were reported by parents who had disclosed (Isaksson et al., 2016) with a majority in two studies reporting feeling positive about both the process and the timing (Freeman et al., 2016; Frith et al., 2012). In addition, similarly to Blyth et al.'s (2010) earlier research, none of the disclosing parents in Applegarth et al.'s (2016) study experienced any regrets. Furthermore, most parents across the included studies that have not yet disclosed, report intending to in the future, and this is regardless of jurisdiction or the use of identity-release or anonymous donors. Widbom et al. (2022) and Lampic et al., (2021) suggest that rather than parents' positive psychological adjustment and high-quality relationships being irrespective of disclosure decisions, potentially this may be indicative of non-disclosing parents' future disclosure intentions.

However, in this review, as also discussed by Blyth et al. (2012), intention was not always reported to result in actual disclosure (Applegarth et al., 2016; Blake et al., 2014; Hershberger et al., 2021) with parents struggling to disclose to older DCP. Parental anxiety, distress and regret may be experienced due to delayed disclosure with parents worrying about how their older DC child may respond (Applegarth et al., 2016; Sälevaara et al., 2013). However, even in parents who had disclosed early, concerns about what the future teenage years may be like were reported (Isaksson et al., 2016). Non-disclosure was also found to be inconsistently related to parental well-being, with some studies reporting an influence (Applegarth et al., 2016; Golombok et al., 2013; Hershberger et al., 2021) and some reporting no difference (Kovacs et al., 2015; Widbom et al., 2022). It appears that the key message here, as also highlighted by Widbom et al. (2022), is that early disclosure does not appear to cause psychological harm and must be considered against the possible negative outcomes associated with delayed or accidental disclosure when DCP are older (for example Frith et al., 2018; Ilioi et al., 2017).

The finding of this MMSR that disclosure happens as a process also aligns with Readings et al.'s (2011) earlier findings that there are multiple variations in parental disclosure patterns; for example, parents might disclose the use of IVF but not the use of donor gametes, or they may disclose the use of donor gametes, but not share information about the donor even where it is available. Earlier research also reports that, in some families, donor conception had only been discussed once or twice, consequently DCP may have limited understanding (Blake et al., 2010). This is emphasised in more recent studies which argue that describing DCP as 'not told' or 'told' is too simplistic and does not account for the depth of understanding (Kovacs et al., 2015). Applegarth et al. (2016) assert that parental 'telling' and DCP 'knowing' are key differentiation that must be considered in the disclosure debate. Families who are open about donor conception from the beginning do not experience having to 'tell' and provide the opportunity for DCP to feel it is part of their story, and that they have always known, and this appears to be positive in terms of DCP, parental, and family well-being (Applegarth et al., 2016).

Disclosure decisions were found to fall into five categories: Yes (are disclosing), Delay (have not disclosed but plan to), No (will not disclose), Uncertain (parents unsure if they will disclose), Partial (parents have shared some information but not specific to donor conception). The findings of this MMSR, similarly to Indekeu et al.'s (2013) systematic review, suggest that multiple, interacting interpersonal, intrapersonal, and external factors come into play influencing the likelihood of parental disclosure to DCP, and how donor conception is experienced by the parents and families. Intrapersonal factors that influence disclosure include values, parental confidence, and emotional issues. Interpersonal factors include couple dynamics and agreement, family factors, child factors, the link between parents and donors, and extended family and friends. External factors include socio-cultural-legal factors, professional support, and access to resources.

2. What is Known

a. Intrapersonal Factors

In terms of *Intrapersonal Factors*, parents' values, the desire to be open and honest, and the belief that DCP have the right to know of their genetic origins influence a willingness to disclose (Applegarth et al., 2016; Isaksson et al., 2016; Lampic et al., 2021 & Widbom et al., 2022). On the other hand, wanting to be a 'normal' family and concerns about stigma and the emotional impact on DCP, influence non-disclosure decisions (Applegarth et al., 2016; Frith et al., 2012; Hertz & Nelson, 2016; Lassalzede et al., 2017; Sawyer et al., 2013). In both cases, it is apparent that parents' decisions are often guided by their belief of what is in the best interests of their children. Parental confidence is a further key factor which appears to affect not just disclosure decisions, with a lack of confidence acting as an impediment to disclosure, but also the disclosure experience. Confidence as a key factor was also found by Daniels (2005) in both the decision to use donor conception to build a family and also in parents' ability to talk to DCP and their extended support networks going forward. In this MMSR, parents who lack confidence report that they experience difficulty sharing the information, fear of their DC child's reaction and uncertainty over the best time and method for disclosure (Applegarth et al., 2016; Hershberger et al., 2021; Isaksson et al., 2016; Lassalzede et al., 2017; Widbom et al., 2022). Raperport et al. (2022) assert that counsellors can help to normalise experiences of donor conception and suggest services and resources which can provide support to families around disclosure.

Ongoing psychological and family support beyond the donor decision and conception stages would allow parents to feel confident, fully supported and empowered with knowledge on which to base their disclosure decisions and disclosure narratives.

b. Interpersonal Factors

In terms of *Interpersonal Factors*, high-quality relationship satisfaction may have a buffering effect which protects against parenting stress in relation to disclosure decisions and experience (Gebhardt et al., 2017). One reason proposed by Gebhardt et al. (2017) to explain this is that parents may be better prepared for the additional strains of parenthood to DCP as a result of the psychosocial screening process, which includes disclosure discussions, before undergoing donor conception. If this is the case, this becomes further evidence of the importance of psychological support. Conflict and incomplete agreement within couples regarding disclosure acted as an impediment becoming a reason for both delay and non-disclosure (Applegarth et al., 2016; Sälevaara et al., 2013). In Applegarth et al.'s (2016) study only 3 of the 26 families who had delayed, were uncertain, or who intended non-disclosure had sought psychological support. Sälevaara et al. (2013) also question the link between disclosure decisions and dissatisfaction expressed by parents regarding psychological support.

In terms of other family factors, the type of donation was not found to significantly impact disclosure decisions; however, whether family composition impacts parental disclosure decisions is inconclusive. Hershberger et al. (2021) report that having children of differing ages and maturity within the same family acts as an impediment to disclosure, whereas Isaksson et al. (2016) report that parents experienced reassurance around their decision to disclose in families where DC siblings have each other for emotional and experiential support. This is also an area requiring further research.

Child factors were also found to be strongly influential in that the curiosity and positive or neutral reactions of DCP acted to advance disclosure (Freeman et al., 2016; Isaksson et al., 2016; Lassalzede et al., 2017; Nordqvist, 2014). In line with Mac Dougall et al.'s (2007) earlier findings, most parents in the included studies of this review had disclosed before the age of 10 years using a 'seed-planting' strategy; other parents used a 'right-time' strategy with the DC child being considered 'too young' a common reason for not disclosing earlier. Parents using this strategy often stated their intention to disclose when questions are asked by the DCP, or when they are old enough to understand (Isaksson et al., 2012; Isaksson et al, 2016; Lampic et al., 2021). On the other hand, parents of older children often reported experiencing more difficulty in deciding to disclose, leading to delay (Applegarth et al., 2016; Sälevaara et al., 2013). This implies that if disclosure is delayed, it may become less likely that it occurs and more likely that it negatively impacts both DCP and parents' experiences. Commonly reported child factors relating to non-disclosure included the parents' belief that there was no point in disclosing due to the lack of donor information to give and fear of how extended family would react and treat the DCP; resemblance between parents and DCP was also found to impede disclosure.

c. External Context and Social Factors

In terms of *External Context and Social Factors*, legislative factors may have some influence in that there seemed to be a greater trend to tell in those jurisdictions with identity-release provisions, although the strength of this association is difficult to ascertain. Sälevaara et al.'s (2013) study found that parents of older DCP were less likely to disclose than those with younger children. This potentially reflects a change in attitude resulting from the mandate as also found in Sweden where growing openness towards disclosure has been reported over time (Isaksson et al., 2012; Lampic et al., 2021 & Widbom et al., 2022, Sälevaara et al., 2013). Nevertheless, as also highlighted by Indekeu et al. (2013), how parental disclosure decisions are impacted by mandating identity-release remains unclear and inconclusive requiring ongoing longitudinal research. However, while it appears that mandating identity-release does seem to be increasing disclosure over time, mandates alone are not enough. Ongoing access to psychological support and resources gives strength to the intention behind the mandates and may improve both disclosure and well-being among DC families.

Cultural factors can play a significant role in disclosure decisions as evidenced by the studies of Chinese and Muslim donor-recipient mothers (Bokek-Cohen et al., 2021; Tsui & Cheng, 2021) included in this review. A biopsychosocial approach to donor conception in Western contexts may help in better supporting couples from minority communities who may need to use a donor to conceive. The cultural and social implications of disclosure for these families need to be recognised, carefully considered, and understood in contexts where identity-release is mandated. There is important research that needs to be done in this area.

In considering social factors, what was clearly highlighted by many participants across the included studies was the need for more information, resources, and access to ongoing professional support and advice around disclosure decisions and strategies for parents, who often felt isolated and unprepared. Researchers and practitioners are developing resources to aid parents in disclosure, such as the series of ‘Our Story’ books published by the Donor Conception Network [DCN] in the UK (Harper et al., 2022). Another is a newly developed digital decision aid prototype, the Tool to Empower Parental Telling and Talking [TELL Tool] which parents reported as helpful in the alpha test (Hershberger et al., 2022), however further research is needed to refine the tool and establish validity and reliability. Nevertheless, while useful, resources are only a part of what is needed to support parents through disclosure. Why access to resources and support is important to address is illustrated via the biopsychosocial family-building model to show how factors interact in the context of donor conception and disclosure as proposed by Daniels (2005) and Indekeu et al. (2013). The model calls for social and genetic families to be valued equally by appropriate culturally relevant laws and policies which empower and support professionals in the field and help to foster societal acceptance and more positive attitudes towards different family forms, for example, through the availability of resources which normalise donor conception. Daniels (2005) argues that well-supported parents will be confident and able to build secure families that are well-functioning and healthy.

3. Recommendations for Future Research

The rapid advancement of technology and legislative changes in this field means that there are now multiple possible pathways to creating a family that were not even conceivable only a couple of generations ago (Golombok, 2015). However, societal attitudes may be changing more slowly with ethical and philosophical debates still occurring even as the technology forges ahead. By considering indirect disclosure and non-disclosure strategies, Jociles et al. (2021) offer a different perspective on how donor-recipient families' experiences are shaped by broader social contexts beyond the parent-child triad, such as in school environments and within the extended family. Strategies such as normalisation are reported to support DCP to develop a sense of agency and to flourish (Jociles et al., 2021). Further research is needed in this area.

There is also a lack of research among indigenous and minority ethnic communities that urgently needs to be addressed. Studies such as Bokek-Cohen et al (2022) and Tsui and Cheng (2021) highlight a difference in attitudes that needs to be explored in minority ethnic communities in Western countries where it may be assumed that donor-recipient parents are a homogenous group. As Blake et al. (2014) articulate, they are not, and should not be treated as such. A positive example of this can be seen in the context of New Zealand where the HART Act (2004) was influenced by Māori cultural values concerning the fundamental importance of whakapapa [genealogy] (Webb & Shaw, 2022). The right of DCP to know their whakapapa is actively protected by The Ethics Committee on Assisted Reproductive Technology [ECART] as can be seen in the ruling that a mother receiving an ED from a Māori couple had to explore and acknowledge what it means to raise a Māori child through counselling, despite already having an agreement that the child's whakapapa would be openly shared (Eriksen, 2021). However, barriers to ART to begin with are still commonly experienced by Māori and also Pacific people in

New Zealand, as recently reported by Shaw and Fehoko (2022). Very little research exists in this space, and even less around disclosure patterns.

Further exploration of disclosure decisions and patterns among donor oocyte and donor embryo recipients is also needed with limited recent research found in this area. The findings reported in this MMSR that ED recipients are less likely to disclose (Hertz & Nelson, 2016) are in direct contrast to Goedeke and Daniels (2018) study in New Zealand, where embryo donors can choose and meet the recipients of their donated embryo, and disclosure, information sharing, and contact are reported. The striking differences in parental well-being, experience, and disclosure patterns in these two studies make this an area in need of further study.

Additionally, the link between parents' age, disclosure and well-being across all donation types and jurisdictions remains unclear. Further research is also needed that is focused on fathers of DCP, the assumption that fathers and mothers experience and perceive donor conception in the same way appears fundamentally flawed (Blake et al., 2014). Finally, a systematic review is needed to synthesize what is known about the impact of professional counselling and psychological support on parental disclosure decisions to identify if there is an optimal approach from which a framework could be developed.

4. Limitations

Due to their usefulness and practicality, MMSRs are gaining traction among healthcare professionals; although guidance regarding the methodology of synthesising quantitative and qualitative research data is limited and, to a great extent, still theoretical (Hong et al., 2017). The studies included in this MMSR consist of varying methodologies, sample sizes (most of which were quite small), and methods acting to impede the 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 studies 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 their donor conception a secret may be less inclined to agree to take part in donor conception research. Therefore, there is a large population of donor recipients for which there is no available data. It is also possible that there are relevant references that were not identified in the search strategies employed. Additionally, important findings relating to different contexts and cultures have been missed in this MMSR due to the exclusion of studies in other languages (Lockwood et al., 2020). Finally, due to the recent law changes mandating donor information collection and identity-release in many jurisdictions, limited research in these contexts is available.

5. Conclusion

In summary, this mixed methods systematic review aimed to build on existing systematic reviews to provide an overview of heterosexual parents' decisions and experiences of disclosure to their donor-conceived children in the last ten years, and whether any differences could be noted across identity-release or anonymous jurisdictions. Similar to Indekeu et al. (2013), this review found that disclosure versus secrecy is not black and white. 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 and experiences. No apparent pattern was found for non-disclosure in this MMSR; however, in mandated jurisdictions there does appear to be a trend towards greater disclosure over time. This further highlights the need for a theoretical model to explain parents' disclosure decisions and experiences. As reported in Tallandini et al.'s (2016) earlier systematic review, this review also finds that greater ongoing access to psychological support is both needed and desired by parents of donor-conceived persons around disclosure and that this may be important to promote parent and family well-being.

There is also a need for further research in the rapidly expanding field of donor conception to explore longer-term outcomes.

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Appendix 1

Parental disclosure of donor gamete and embryo conception to their donor-conceived children in pre-mandated, mandated, and non-mandated identity-release jurisdictions in the last 10 years

	First Author	Study Year	Donor Type	% Non-Disclosing	Uncertain	Plan to Disclose	% Disclosing	DCP Age at Disclosure
Pre-Mandate	Sälevaara	2013	SD	30.8	30.5	22.9	15.8	3–14 (*M* = 6.8)
	Golombok	2013	SD/OD	-	-	-	31.8	< 4
	Blake	2014	SD/OD	-	-	-	33.8	< 7
	Kovacs	2015	SD	-	-	-	46.8	-
	Nordqvist	2014, 2021	-	-	-	-	-	-
Mandated	Isaksson	2012	SD/OD	2	4	78	16	0–4
	Freeman	2016	SD	17	12.8	34	36.2	< 8
	Isaksson	2016	SD	-	-	-	*"most"*	< 8
	Gebhardt	2017	SD/OD	-	-	-	-	-
	Widbom	2021	SD (most)	0	0	0	100	-
	Lampic & Widbom	2021, 2022	SD/OD	-	-	-	59.4	< 8
Non-Mandated	Frith	2012	SD	14.3	-	-	60.5	0 < (51%), "most" < 10
	Sawyer	2013	SD	4.8	5.6	-	54.2	-
	Indekeu	2014	SD	31.6	0	68.4	0	-
	Applegarth	2016	OD	9	9	39	43	1–15 (M = 5.5)
	Hertz	2016	OD/ED	-	-	~66.9	~21.7	< 5
	Lassalzede	2017	SD	19	-	40	38	0-6 (95%, M = 2.5)
	de Melo-Martin	2018	OD	9.1	4.5	68.2	18.2	-
	Kerckhof	2020	SD	-	-	-	-	-
	Jociles	2017, 2021	OD (most)	40	0	0	60	< 7
	Hershberger	2021	OD	16.7	33.3	33.3	16.7	~ 5
	Tsui	2021	SD/OD	62.5	12.5	25	0	-
	Bokek-Cohen	2022	SD/OD	100	0	0	0	-

Note. Sperm donor [SD], Oocyte/egg donor [OD], Embryo donor [ED], Donor-conceived persons [DCP], Age in years, Mean [*M*]