

identified in the academic literature were coded using thematic qualitative analysis by two independent researchers. Themes were developed discursively. Results: There were 381 publications of which 44 full text articles were screened. The 34 included papers detailed abuses from 4 decades and 5 continents. There were no quantitative papers measuring prevalence. The resulting coding framework was presented as a typology of abuse in assisted reproductive technology with three first order themes: exploitation of class-based vulnerabilities, ex8a0T0-.5669453.7228936900-.566921f386.0787Tm)Tn0.018.2833876.4976Tm(class-based)Tj/6.9T- 376.497

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Contribution to authorship	00
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were merged and nested through a discursive process until both authors agreed upon the final matrix of abuses. No quality assessment or risk of bias determination was made anticipating the wide variety of different designs.

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General overview

The literature search identified 381 publications of which 44 full text articles were obtained and 34 included (28 journal articles, 1 newspaper article, 2 magazine articles, 1 official report, 1 organisation bulletin, and 1 court case) ([Table 1](#)). The earliest publication was from 1987, with 8 from the 1990s, 12 from the 2000s, and 12 from the 2010s. There was some global representation as evidence came from 5 continents, though research was overwhelmingly

Included papers: [Table 1](#) outlines the methodology, content, and provenance of all papers included in the review.

First Author(s), Country, Year	Title (reference number)	Methodology	Funding
British Columbia Centre of Excellence for Women's Health, Canada, 2002	From floods to infertility: new research from the centres of excellence for women' health [22]	Autoethnography of a queer woman doing research on queer women	Funded (i)
Beeson D, USA / Canada, 2006	Egg harvesting for stem cell research: medical risks and ethical problems [21]	Review	No funding
Benagiano G, Italy, 2003	Public health policy and infertility [27]	Ethical argument	Not declared
Blackwell RE, USA, 1987	Are we exploiting the infertile couple? [39]	Reflection of practitioners	No funding
Blythe E, UK, 2008	Inequalities in reproductive health: what is the challenge for social work and how can it respond? [32]	Review	Not declared
Bourg C, Belgium, 2015	Ethical dilemmas in medically assisted procreation: a psychological perspective [45]	Reports of clinical experience	Not declared
Campagne DM, Spain, 2013	Can male infertility be improved prior to assisted reproduction through the control of uncommonly considered factors? [15]	Systematic review	Not declared
Catron J, USA, 2014	Ethics on the ground: egg donor agency behaviour in an unregulated legal environment and the growth of ethical norms in a new field. [23]	Semi-structured interviews with egg donor agency workers	Not declared
Chandra HS, India, 1997	The new genetics and ethics: sixth Shri BV Narayana Reddy memorial lecture [19]	Ethical argument	Not declared
Charles S, USA, 2002	Mothers in the media blamed and celebrated - an examination of drug abuse and multiple births [28]	Lexis Nexis searches	Not declared
Cooper S, UK, 1997	Ethical issues associated with the new		

Avoidable harm to offspring. Clinic workers identified abuse in unnecessarily exposing offspring

The other reason for unnecessary procedures was research marred by conflicts of interest, [21] including extreme cases such as Hwang's coercively obtained materials and falsified results [21] and cases where women received mixed messaging about the likelihood of a clinically applicable results and allowing them to participate in research under the illusion that new treatments were imminent [18,20,21].

Abuses leading to ineffective procedures. This connected category was characterised by dishonesty about the potential of poor quality treatment, summed up as "in reproductive medicine, false hopes are the great untallied commodity" [18]. Underlying this phenomenon is the often low quality, retrospective [21], ill-defined [20], research. However poorly supported, interventions may continue due to inaccurate use of language in their description [17,21,46] and instances of raising false hopes and overpromising [21,23]. One clinic worker described delayed introduction of add-ons (unproven adjuncts to treatment intended to increase likelihood of a successful treatment) only as abusive in the context of multiple failed rounds of IVF without add-ons [23].

Failure of aftercare

This describes abuse manifested after successful or unsuccessful ART. Many related to conflict within the family and inept data management by clinics. However the unnecessary adversity facing children created through ART was another important dimension.

themes; abuse of offspring exposed to health risks vs. experience of mothers pressured into prioritising health over important social factors. Similarly, clinics intervening too early vs. delay - both being criticized. Despite excluding papers focussed predominantly upon intimate partner violence our typology includes abuse within the family, perhaps suggesting that coercion into ART within the extended family cannot easily be delineated from other forms of reproductive coercion [49]. In emerging fields, conflicts are no reason for resignation, but the difficulty of navigating different parties' competing claims verifies the World Medical Association's warning: "Assisted reproductive technology always involves handling and manipulation of human gametes and embryos. Different individuals regard this with different levels of concern but there is general agreement that these special concerns should be met by specific safeguards to protect from abuse." [50]. Abuse is always a risk – so closer attention must be paid to identifying and remediating ongoing abuse.

Strengths and Limitations

This first systematic review of abuses in ART, draws on methodology from obstetrics [6], sexual and reproductive health [9], and other systematic reviews of qualitative data. [7,8] The deliberately wide inclusion criteria ensured mapping of all ART-based abuses documented so far in academic literature. Results were included irrespective of date, country of origin, methodology, or language. The variety of countries and methodologies allowed for many perspectives upon related phenomena. However, the small number of articles, scant primary research, and absence of prevalence studies affect reliability. Limitations include a parsimonious search strategy that required authors to describe phenomena as abusive, violent or exploitative thus potentially skewing the literature and meaning that some broadly connected papers were not found by our initial search. [51,52] Findings might represent the severer end of the abuse spectrum, missing human rights concepts, and minimising the extent compared to use of the overarching term "mistreatment" [6]. Despite excluding papers solely addressing intimate partner violence or surrogacy, these two issues still featured strongly in the literature. Time constraints prevented searching all embedded references in papers so findings may be under-representative. For example, one recent study [53] examining exaggerated health claims of non-evidenced based 'add-ons' was not identified. Few papers were excluded at the full-text stage, probably because

NH and SB contributed equally to conception, planning, and execution of the systematic review. Both authors reviewed papers, were involved in analysis, writing up (first draft by NH) and approved the final version.

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