



Research Article

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Received: 10 June 2023 / Accepted: 28 January 2024 / Published: 5 March 2024

Analysis of the Scientific Production on Assisted Human Reproduction (2003-2023)

Luciana Elcira Barturen Mondragón¹

María del Pilar Quezada Castro²

Guillermo Alexander Quezada Castro²

Dolores Vélez Jiménez³

María del Pilar Castro Arellano⁴

Carlos Ignacio Gallo Aguila⁵

Eliana Maritza Barturen Mondragón^{6*}

¹Universidad Científica del Sur, Antigua Panamericana Sur 19,
Villa EL Salvador 15067, Peru

²Universidad Tecnológica del Perú, Av. Petit Thouars 116,
Lima 15046, Peru

³Universidad Iberoamericana UNIBE, Av. Francia 129, Santo Domingo 10203,
Dominican Republic

⁴Universidad Alas Peruanas, Jr. Pedro Ruiz Gallo 251,
Pueblo Libre 15084, Peru

⁵Universidad César Vallejo, Av. Alfredo Mendiola 6232,
Los Olivos 15314, Peru

⁶Universidad Señor de Sipán,
Chiclayo 14000, Peru

*Corresponding Author

DOI: <https://doi.org/10.36941/ajis-2024-0038>

Abstract

The right to procreate should be provided for in every country's legislation. Infertility needs to be considered as an important public health issue. The absence of regulation could affect the essence of assisted human reproduction. In the present research, a review of the following databases was considered: Scopus, WoS, and PubMed, which were selected for their contribution and scientific rigor demonstrated over time. Twenty documents corresponding to the period 2003 to February 2023 were analyzed through a review of the literature. The results obtained were that Canada and Ireland were identified as the most cited countries. Along the same lines, the most cited journals correspond to Scopus quartile 1. Likewise, the article entitled Distributive Justice and Infertility Treatment in Canada is the most cited and was published in 2008. It was concluded that the common elements in the most studied legislation in scientific publications related to assisted human reproduction in the period 2003-2023 are access to treatment, consolidation of the right to procreate, and ethics in fertilization.

Keywords: Rights, fertility, legislation, human reproduction, public health

1. Introduction

In 2002, the World Health Organisation estimated that about 15% of couples of reproductive age are infertile and stressed that they can do anything to have a child. However, exploitation and misuse of procedures should be avoided given the high cost of infertility treatment (Montoya, Bernal & Borrero, 2002).

The right to procreate is controversial because it projects its incorporation at the constitutional level and the recognition of ethics as a guarantee of protection that justifies social policy (Robinson, 2015). The freedom of couples to procreate has been strengthened with the technological advances implemented to deal with cases related to assisted human reproduction (Valverde, 2007).

In this context, it is important to recognize the scope of the rights derived from assisted reproduction (Adam, 2007), and the protection afforded to the embryo, child, and surrogate mother (Cutas, 2008). In this regard, it is necessary to mention that the woman's consent is fundamental, since any action to the contrary could be considered a crime (Cortés, 2009).

The traditional conception of the issue is based on the couple accessing assisted reproduction techniques. It is not designed so that the individual or the fertile person is included in the procedure aimed at procreation (Germán, 2011).

This paper aims to find out the progress of legislation in assisted human reproduction, which is possible through a review of the literature.

2. Methodology

2.1 Research Methodology

The bibliometric analysis methodology was used. It is based on the implementation of bibliometrics, which uses quantitative methods to evaluate a specific area of knowledge. Content analysis was also used (Arsad, et al., 2023; Zhang, et al., 2023).

2.2 Selection of three databases

The Scopus, Web of Science (WoS), and PubMed databases were considered because they are the most representative of the topic of assisted human reproduction research (Hernández-González, et al., 2016; Stuart, & Petersen, 2022; Yeung, 2021).

2.3 Search Criteria

In Scopus, it was (TITLE-ABS-KEY ("assisted human reproduction" and legislation), in Wos, it was TOPIC ("assisted human reproduction" and legislation), and in PubMed, it was "assisted human reproduction"[Title/Abstract] AND legislation[Title/Abstract].

2.4 Questions and Aims

Table 1 records the first phase, the research questions, and the research objectives.

Table 1. Questions and aims

Research questions	Aims
Which legislation was the most studied in related scientific publications on assisted human reproduction in the period 2003-2023?	To find out which legislation was the most studied in scientific publications related to assisted human reproduction in the period 2003-2023.
What are the common elements in the most studied legislations in related scientific publications on assisted human reproduction in the period 2003-2023?	To identify which are the common elements in the most studied legislations in the scientific publications related to assisted human reproduction in the period 2003-2023.

2.5 Inclusion and Exclusion Criteria

Table 2 shows the criteria linked to the inclusion and exclusion of the scientific output of the 3 selected databases.

Table 2 records the second stage and was based on the keywords "assisted human reproduction" and legislation. Three databases were considered: Scopus, WoS, and PubMed. Inclusion and exclusion criteria were established. The PRISMA methodology was taken into account.

Table 2. Selection criteria

Inclusion Criteria	Criterios de exclusión
Open access documents	Gold, Hybrid Gold, Bronze, and Green Documents
2003- February 2023	Documents not relating to the period 2003-February 2023
Document type: Article	Document type: Conference Paper, Book Chapter, Conference Review, Review, Book, Editorial, Erratum, Retracted, Letter, and Short Survey
Publication stage: Final	Publication stage: Article in Press
Source type: Journal	Source type: Conference Proceeding, Book Series, Book, and Trade Journal.
Language: English	Language: Chinese, Spanish, German, Russian, Italian, Portuguese, Turkish, Korean, French, Japanese, Croatian, Dutch, Polish, and Catalan

Documents were extracted and collected from the databases. We obtained 27 documents from Scopus, 6 from PubMed, and 6 from WoS.

Table 3 records the third phase, where the papers to be reviewed were selected according to the inclusion and exclusion criteria. Duplicate articles were identified.

Table 3. Comparison

	Inclusion criteria	Exclusion criteria	Duplicates	Documents for final review
Scopus	27	5	4	18
WoS	6	3	2	1
PubMed	6	2	3	1

Table 4 records the fourth phase and shows that the 20 articles selected for the final review fit the research questions: Q1: Which legislation was the most studied in the related scientific publications on assisted human reproduction in the period 2003-2023?

Q2: What are the common elements in the most studied legislations in the related scientific publications on assisted human reproduction in the period 2003-2023

Table 4. Evaluation

Document	Title	P1	P2
1	The Lack of Ireland's Assisted Human Reproduction (AHR) Regulation Viewed under the Lens of the Patient's Experience	✓	✓
2	The normative underpinnings of Ireland's proposed regulation of assisted human reproduction	✓	✓
3	Critical Analysis of The Changes in CFM Resolution 2294/21 And Its Impacts on Assisted Human Reproduction	✓	✓
4	Assisted human reproduction outside the French legal and medical framework: issues and challenges	✓	✓
5	Towards a Patient-Centred Regulation of Gamete Donation in Canada	✓	✓
6	Infertility: unjustified discrimination of assisted reproduction patients	✓	✓
7	The regulation of stem cell research in Ireland: From the Commission on Assisted Human	✓	✓

Document	Title	P1	P2
	Reproduction to the Assisted Human Reproduction Bill 2017		
8	Everything and Nothing: regulating embryo research in Canada	✓	✓
9	Enduring politics: the culture of obstacles in legislating for assisted reproduction technologies in Ireland	✓	✓
10	Risky Business: Surrogacy, Egg Donation, and the Politics of Exploitation	✓	✓
11	Irish public opinion on assisted human reproduction services: Contemporary assessments from a national sample	✓	✓
12	Assisted Human Reproduction in common law Canada after the Supreme Court of Canada Reference: Moving beyond regulation by colleges of physicians and surgeons	✓	✓
13	Determining the status of non-transferred embryos in Ireland: A conspectus of case law and implications for clinical IVF practice	✓	✓
14	Ethical and legal aspects in medically assisted human reproduction in Romania.	✓	✓
15	Distributive Justice and Infertility Treatment in Canada	✓	✓
16	The legal challenges in assisted human reproduction	✓	✓
17	Reproductive and therapeutic cloning, germline therapy, and purchase of gametes and embryos: Comments on Canadian legislation governing reproduction technologies	✓	✓
18	A comparison of assisted human reproduction (AHR) regulation in Ireland with other developed countries	✓	✓
19	Experiences of gestational surrogacy for gay men in Canada	✓	✓
20	Assisted human reproduction legislation: Acknowledging the voice of health care professional	✓	✓

2.6 Data Validation

In the information search stage, we considered using 3 representative databases about the research topic. Inclusion and exclusion criteria were established to avoid bias. The co-authors were in charge of reviewing the results of the scientific production contained in the 3 databases; teams of three members were formed, so that the voting would be balanced in terms of the application of the selection criteria of the scientific production. Likewise, consideration was given to including full text, open access, time limitation and to avoid grey literature, the databases most closely linked to the research topic were selected.

2.7 Limitations

It is recorded as a limitation that the Scopus and WoS databases require a subscription. Authors have access by institutional agreement. This represents a limitation for researchers who do not have a username and password for these databases.

It is also recorded that the authors prefer to read scientific production in English, so it was decided to exclude information in other languages. This represents a limitation in that there is likely information relevant to the research topic that was not considered because it was published in a language other than English.

3. Results

Most studied legislation in related scientific publications on assisted human reproduction in the period 2003-2022.

- Identification of the most cited country

Table 5 lists the countries that stand out in terms of scientific production.

Table 5. Countries

Country	Total
Canada	7
Ireland	7
Australia	1
Brazil	1
Romania	1
France	1
Several countries cited in a single document	2

- Identification of journals from Canada and Ireland
Table 6 records the list of journals and their respective quartile.

Table 6. Journals

Canada		
Journal	H-index	Quartile
Journal of Obstetrics and Gynaecology Canada (ISSN 1701-2163)	73	Q2
New Genetics and Society (ISSN 1463-6778)	36	Q1
Canadian Journal of Law and Society (ISSN 0829-3201)	23	Q3
Canadian Journal of Women and the Law (ISSN 1911-0235)	14	Q3
Journal of Medical Ethics (ISSN 0306-6800)	77	Q1
Culture, Health & Sexuality (ISSN 1369-1058)	66	Q1
Irlanda		
Journal	H-index	Quartile
International Journal of Environmental Research and Public Health (ISSN 1661-7827)	138	Q1
International Journal of Law, Policy and the Family (ISSN 1360-9939)	24	Q2
Medical Law International (ISSN 0968-5332)	12	Q2
Reproductive Biomedicine and Society Online (ISSN 2405-6618)	16	Q1
Philosophy, Ethics, and Humanities in Medicine (ISSN 1747-5341)	31	Q1
European Journal of Obstetrics & Gynecology and Reproductive Biology (ISSN 0301-2115)	104	Q2
Clinical and Experimental Reproductive Medicine (ISSN 2233-8241)	27	Q3

The common denominator in the most studied legislation in related scientific publications on assisted human reproduction in the period 2003-2022.

- Identificación de los 5 artículos más citados
Table 7 records the most cited articles about the topic of assisted human reproduction.

Table 7. Most cited articles

Title	Citas
Distributive Justice and Infertility Treatment in Canada	18
Determining the status of non-transferred embryos in Ireland: A conspectus of case law and implications for clinical IVF practice	11
Risky Business: Surrogacy, Egg Donation, and the Politics of Exploitation	10
Experiences of gestational surrogacy for gay men in Canada	10
Enduring politics: the culture of obstacles in legislating for assisted reproduction technologies in Ireland	9
Reproductive and therapeutic cloning, germline therapy, and purchase of gametes and embryos: Comments on Canadian legislation governing reproduction technologies	6

- Identification of common elements in the most cited articles
- 1. On access to assisted reproductive treatment: it is not focused on single persons or homosexual couples.
- 2. The consolidation of the right to procreate.
- 3. Ethics and women's access to in vitro fertilization.

4. Discussion

Regarding which legislation was the most studied in scientific publications related to assisted human reproduction in the period 2003-2023.

From the results, it can be seen that the most studied legislation in scientific publications corresponds to Canada and Ireland. The oldest research found in this review dates from Canada in 2004 and from Ireland in 2009.

The concern in 2004 focused on the regulation of reproductive cloning, which when influenced by technology could have criminal consequences (Bernier & Grégoire, 2004). In 2009, however, research focused on recognizing the importance of the right to procreate, which could be exercised in the context of in vitro fertilization (Sills & Murphy, 2009).

Similarly, in 2007, research in the United States shaped the right to form a family. At the same time, it was established that this is made possible by the freedom to use biotechnological practices related to human reproduction (Valverde, 2007). For its part, in Romania since 2008, the concern has been the right to have children in the quantity desired by the parents, which corresponds to the cultural pattern (Ioan & Astarastoe, 2008). In this context, regulation of the right to procreate and the use of assisted reproduction is necessary. This situation cannot be left to drift without legislation because it would affect the essence of the procedure in the face of human infertility.

In 2018, Australia is focusing attention on recognizing that there is discrimination against people who wish to build a family because a criminal record check was incorporated into legislation. This issue became a prerequisite for starting assisted reproductive treatment (Tonkens, 2008).

In 2021, research was carried out in France on access to assisted reproduction for all women. On this occasion, it was recognized that in the face of the country's regulatory prohibition, it was preferred to travel abroad and thus be favored with medical procedures linked to human fertility (Rozée & De la Rochebrochard, 2021).

In 2022, different countries recognized that individuals and couples without a diagnosis of infertility could access assisted reproduction procedures (Cabar, De Oliveira & Machado, 2022; McDermott, Ronan & Butler, 2022).

In this sense, we can see the evolution of the right to procreate, which was conceived for couples to attend treatment for human infertility. However, over time, it has become clear that equality has been incorporated into legislation, i.e. single persons and couples without infertility are now able to access the assisted reproduction procedure.

This situation needs to be analyzed in detail, it would be important to incorporate psychological requirements in the legislation. This would make it possible to ascertain the mental state of couples seeking access to the procedure on assisted human reproduction. It should be remembered that the right to procreate is a responsible act, which requires priority attention, therefore, any intention contrary to what has been described is ruled out. It should be taken into account that procreation brings with it a set of obligations towards the future child, which cannot be detached in the event of a sentimental break-up of the couple who agreed to the medical procedure related to fertility.

Regarding the identification of the common elements of the most studied legislation in the scientific publications related to assisted human reproduction in the period 2003-2022

Three common elements were identified in the scientific publications:

The first is related to access to assisted reproduction treatment.

The initial conceptualization of assisted human reproduction implied the participation of couples seeking treatment for their infertility, i.e. it emerged as an exclusive act. However, the various

legislations around the world omitted the regulation of the life of the unborn. This issue is fundamental because it makes supervision and audits of clinics dedicated to the procedure and treatment of human fertility viable. This perspective was not considered from the outset, since the focus on the issue was limited to the couple's right to procreate, while it was necessary to protect the life and dignity of the unborn (Ronan, McDermott, et al., 2022). It is important to regulate the medical procedure to understand the limits of oversight of assisted human reproduction (Guichon, Mitchell & Doig, 2013).

Culture influences the issuing of legislation on assisted human reproduction. As stated in the previous paragraph, this issue was initially exclusive to couples. However, technology has opened up a range of opportunities that are accessible to same-sex couples and single persons. Therefore, there is now no recognized basis for restricting the service of assisted reproduction in society (Allison, 2016).

The second is related to the consolidation of the right to procreate.

There is research that focuses on the understanding of the term sexual family, which implies the preservation of the concept of the traditional family. The filiation of parents and children through blood ties must be rethought and incorporated into legislation on assisted human reproduction. Thus, once the above is realized, it is possible to verify the consolidation of the right to procreate (Bracken, 2022).

It should also be noted that the absence of legislation on assisted human reproduction leads to a lack of protection and the potential exploitation of women, who may be subjected to the world of commercial surrogacy and egg donation (Cattapan, 2014). It is important to discuss the right to avoid non-responsible procreation (Sills & Murphy, 2009) and the relationship between married couples (Schaler, et al., 2023).

The right to procreate must be matched by the use of reproductive technologies. Thus, the consequence of criminal law applies to the cloning of human embryos (Bernier & Grégoire, 2004).

The third relates to ethics and women's access to in vitro fertilization.

Currently, from the perspective of the right to equality, some legislations in the world sanction the commercialization of human gametes. This situation is understandable because although the tendency to avoid social gender inequality and discrimination is indeed recognized, it is also true that it is not possible to commercialize that which is linked to the essence and dignity of the human being. To hold otherwise would represent the ethical debate for the scope of the term unborn (Henein & Ells, 2019; Staunton, 2018; Fantus, 2020).

It is also necessary to highlight the actions of health professionals about assisted human reproduction. Their action or inaction must avoid any ethical questioning, for example, in embryo experimentation. This issue should be incorporated into legislation in a uniform manner, in the sense that the creation of embryos for research purposes is allowed (Cattapan & Snow, 2017).

In Ireland, research was conducted on citizens' perceptions of fertility services offered by clinics. It was found that it is not a priority public health issue and that in the absence of regulation, it was decided to incorporate the Irish Medical Council's guide to professional conduct and ethics (Walsh, et al., 2013). The aim of distributive justice in infertility treatment is also recognized (Niskier, 2008).

5. Conclusions

The legislations of Canada and Ireland were the most studied in the scientific publications related to assisted human reproduction in the period 2003-2023.

The common elements in the most studied legislation in the scientific publications related to assisted human reproduction in the period 2003-2023 are access to treatment, consolidation of the right to procreate, and ethics in fertilization.

The legislation of the different countries must protect the life and dignity of the unborn and prioritize their will over any intention that the person and fertile couples may have.

Technology and ethics are essential in the procedure of assisted human reproduction.

It is suggested as a line of future research to analyze the issue of the right to adoption and its relationship with assisted human reproduction, to establish whether or not there is protection for children and adolescents in shelters.

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