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Posted Date: 10 October 2025

doi: 10.20944/preprints202510.0797.v1

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Article

Information, Beliefs, and Gender Stereotypes: Analysis of Sociocognitive Factors Influencing Healthcare for Intersex Individuals

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Abstract

Intersex individuals still face major barriers in healthcare, largely stemming from insufficient professional training, persistent cultural stereotypes, and outdated biomedical frameworks. Despite growing ethical and legal attention to intersex rights, the sociocognitive factors influencing healthcare professionals' knowledge and attitudes remain poorly understood. **Objective:** To examine how information, beliefs about gender determinism, and adherence to gender roles influence healthcare professionals' attitudes toward intersex individuals. **Methods:** A cross-sectional survey was conducted with 210 healthcare professionals from Spain. Participants completed Intersex Knowledge Questionnaire, Bem Sex-Role Inventory, short Version and Gender Determinism Scale. **Results:** Higher levels of conceptual, procedural, legislative knowledge and prior contact with intersex individuals were consistently associated with more affirmative, non-normative attitudes toward intersex healthcare. Neither gender determinism nor adherence to traditional gender roles explained professionals' attitudes. Differences also emerged by discipline: physicians concentrated in corrective and ambivalent attitudes. Among medical specialties, surgical fields and pediatrics remained closer to interventionist traditions, while primary care and endocrinology demonstrated greater openness to non-normative perspectives. **Conclusions:** Intersex healthcare attitudes are primarily driven by deficits in training and the invisibility of intersex issues in medical education. Knowledge (conceptual, procedural, and especially legislative) acts as the most immediate modulator of professional attitudes.

Keywords: intersex healthcare; medical education; gender stereotypes; sociocognitive factors; human rights; professional attitudes

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1. Introduction

Intersex variations represent a natural expression of human bodily diversity. Their existence places intersex individuals in a position of vulnerability within social and medical systems historically designed around a dichotomous model of sex. Within this framework, the present study is part of a broader effort to examine whether healthcare professionals' beliefs, attitudes, and levels of knowledge influence the clinical practices applied to intersex individuals, and whether such practices may be shaped, beyond strictly medical criteria, by conformity to and identification with gender stereotypes and normative gender roles (Garland et al., 2022 [1]).

Medical History and the Normative Construction of Intersex Bodies

Intersexuality refers to a range of biological conditions in which an individual is born with sex characteristics that do not fit typical definitions of male or female. These differences may occur at the chromosomal, gonadal, hormonal, or morphological level. The binary sex system has proven

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insufficient to encompass this diversity, leading to processes of invisibilization, pathologization, and stigmatization of intersex bodies (Karkazis, 2008 [2]; Fausto-Sterling, 2021 [3]).

Historically, medicine has interpreted intersexuality through a corrective lens, grounded in the normalization of the body within a binary framework. Until the 1950s, intersex variations were primarily understood through a pathological perspective, and early taxonomies were deeply rooted in the establishment of morphological criteria for classifying intersex individuals (Karkazis, 2008 [2]). From the mid-twentieth century onward, the prevailing model was based on the belief that gender identity was malleable and could be shaped through medical intervention and socialization (Kessler, 1990 [4]). This view legitimized early surgical and hormonal interventions, often performed without proper informed consent from the patient or their legal guardians (Tovar, 2013 [5]), with the aim of aligning intersex bodies to a dichotomous sexual model that would facilitate social integration according to hegemonic standards.

Since then, this model has been widely criticized for failing to capture the complexity of intersex experiences and for disregarding the serious physical and psychological consequences of interventions intended to "correct" bodily variations to fit social norms. Such practices have been questioned not only for their long-term health and psychological impacts (Minto et al., 2003 [6]; Garland et al., 2022 [1]), but also for being grounded more in sociocultural constructs than in scientific evidence (Fausto-Sterling, 2021 [3]; Bonavia & Palacios Pérez, 2020 [7]).

The conceptualization of intersex embodiment as a "disorder" has hindered essential legal and social progress (Lauroba, 2018 [8]), contributing to the stigmatization and invisibility of intersex individuals. The motivations behind medical interventions have been, and often continue to be, centered on normative social participation, with their perceived necessity driven more by social anxieties than by scientific evidence. In fact, such interventions can result in severe lifelong physical and psychological consequences (Garland et al., 2022 [1]). Clinical decision-making has frequently prioritized conformity to social expectations of what a "male" or "female" body should be.

Although it may seem striking, several authors have documented how traditional medical protocols included immediate diagnosis upon the presence of ambiguous genitalia, followed by gender assignment based on criteria such as penile size, the ability to urinate while standing, or vaginal penetrability (Hernández Guanche, 2009 [9]). These practices, now the subject of growing ethical and scientific criticism, were primarily focused on surgical "normalization" and reproductive or coital criteria rather than on the well-being of the patient. They reflected prevailing social norms and anxieties related to gender and sexuality, with little scientific grounding and weak clinical justification (Garland et al., 2022 [1]; Bonavia & Palacios Pérez, 2020 [7]; Haghighat et al., 2023 [10]). Consequently, medical treatments of intersexuality have historically prioritized gender conformity over the autonomy and holistic well-being of intersex individuals (Minto et al., 2003 [6]).

From the Corrective Model to Epistemological Critique: Questioning the Dominant Clinical Paradigm

Medical practice has long operated under the assumption that gender assignment, reinforced through early surgical intervention, would promote psychosocial well-being in adulthood. However, this premise lacks solid empirical support. Relevant studies (Minto et al., 2003 [6]; Garland et al., 2022 [1]) indicate that there is no conclusive evidence that early surgeries improve long-term psychological or social adjustment, nor that they ensure the development of a gender identity consistent with the initial assignment. Far from demonstrating unequivocal benefits, genital interventions can entail significant risks, such as the loss of sexual function resulting from the removal of clitoral or phallic tissue (Minto et al., 2003 [6]). Given the absence of evidence showing that such procedures yield better outcomes than allowing bodily development without surgical modification, it is reasonable to question whether their true purpose lies not in preventing future suffering, but in aligning bodies with a normative ideal.

The sex–gender binary system, rather than accommodating existing bodily diversity, has proven insufficient to capture the complexity of human experience. Instead of recognizing the natural

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doi:10.20944/preprints202510.0797.v1

spectrum of bodies, it imposes rigid categories that pathologize what does not conform to them (Fausto-Sterling, 2021 [3]). This imposition reveals a corrective rather than a therapeutic logic.

Within this context, various theoretical perspectives, such as Butler's (2007) [11] work and queer pedagogies (Sánchez Sáinz, 2019 [12]), have called for a critical reassessment of the epistemological foundations underlying medical practice. The challenge is not merely to reform clinical protocols, but to re-examine, and perhaps reconfigure, the very lens through which medicine has historically approached bodily and gender diversity.

Consequences of Pathologization: Health, Consent, and Human Rights Violations

The pathologization of sexual variations has hindered progress toward a culture of acceptance and respect for diversity. These circumstances are exacerbated when healthcare professionals operate under deterministic personal beliefs or an uncritical identification with gender stereotypes, which can lead to perceiving intersex bodies as problems to be "fixed" rather than as legitimate expressions of human diversity (Platero, 2012 [13]). This context calls into question the validity of informed consent, as families may be influenced by social pressures or receive incomplete information, limiting their ability to make fully informed and autonomous decisions.

In many cases, decisions are made before the child has the opportunity to express their own will, thereby violating fundamental principles such as progressive autonomy and the free development of personality (Camacho Gutiérrez, 2016 [14]; Tovar, 2013 [5]). Several studies indicate that families often make medical decisions without fully understanding their implications, partly because the information provided is insufficient, biased, or presented as the only possible course of action (Bonavia & Palacios Pérez, 2020 [7]; Haghighat et al., 2023 [10]). The consequences of the aforementioned protocols and practices extend beyond physical development, affecting the subjective construction of identity and the mental health of intersex individuals. Reports of body shame, difficulties in accessing adequate healthcare, and social rejection among those who have undergone "normalization" procedures point to a structural problem that transcends the strictly medical domain (Minto et al., 2003 [6]; Leivas et al., 2023 [15]). Early corrective surgeries can also result in sexual dysfunction, loss of genital sensitivity, body rejection, and psychological disorders (Minto et al., 2003 [6]).

In this regard, several studies have documented that intersex women who underwent clitoral surgery exhibit significantly higher rates of non-sensuality (78%) and inability to achieve orgasm (39%) compared with those who were not surgically treated (20% and 0%, respectively) (Minto et al., 2003 [6]).

Legal Progress and International Recognition of Intersex Rights

In response to this situation, several legal frameworks have been developed to prohibit medically unnecessary interventions and to safeguard the physical integrity of intersex individuals (ILGA World, 2023 [16]). The United Nations has taken steps to recognize and protect the rights of intersex people, condemning non-consensual surgical interventions and other invasive treatments performed on intersex infants and children. Malta was the first European country to ban such practices in April 2015, setting a legal precedent that was later followed by others. Iceland, for example, prohibited intersex genital mutilation on July 19, 2021. In Spain, the Law 4/2023 for the Real and Effective Equality of Trans and LGBTI People introduced a specific provision banning non-consensual genital modifications in intersex minors under the age of 12, except in cases where such interventions are medically necessary to protect the individual's health. These laws aim to protect the rights of intersex people (Lauroba, 2018 [8]) and prevent unnecessary surgical procedures lacking medical justification. However, the legal situation continues to vary significantly across countries, and in many regions, such practices remain unregulated or legally permissible. At the same time, intersex rights movements in Latin America and the Caribbean have gained increasing visibility, successfully positioning intersex issues on both international and national policy agendas. This growing advocacy has contributed to a broader recognition of the need to deconstruct traditional binary notions of "male" and "female" within legal, medical, and social frameworks.

Gaps in Medical Training

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In recent years, increasing attention has been drawn to the idea that medical decisions concerning intersex individuals may stem more from a lack of information and from social or cultural imperatives than from objective clinical needs. As a result, new clinical guidelines have been developed that explicitly prohibit non-essential surgical interventions. However, little research has explored in depth how healthcare professionals' beliefs about intersexuality, and the presence, or absence, of related content in medical education influence decision-making in everyday clinical practice. Existing literature has largely focused on the effects of medical interventions on patients and on advocating for their prohibition when not medically necessary, while paying less attention to the critical examination of the epistemological and normative frameworks that underlie these clinical decisions. In some cases, such frameworks may continue to legitimize interventions perceived as necessary, despite lacking true medical justification.

This study aims to address this gap by empirically examining those factors.

Toward a Critical Medicine: The Need to Transform the Care Model

The guiding hypothesis of this study stems from a critical premise: what is deemed clinically appropriate may be deeply influenced by personal beliefs and by a cultural framework that equates legitimacy with conformity to a binary ideal of sex and gender. In light of a model historically oriented toward morphological conformity to the binary ideal, it becomes urgent to question its underlying assumptions, as well as clinical approaches that disregard children's progressive autonomy and fail to recognize bodily diversity as a legitimate human reality (Camacho Gutiérrez, 2016 [14]; Suess & Abiétar, 2021 [17]).

This research therefore aims to provide empirical evidence to advance toward a more ethical, informed, and respectful clinical model, one that transforms professional training practices, challenges stereotypes, and acknowledges that medicine itself is embedded within normative social systems. Only through a critical revision of these structural frameworks will it be possible to ensure respect for the rights of intersex individuals and to build a truly inclusive model of healthcare.

2. Materials and Methods

2.1. Objective

The general objective of this study was to analyze how information, beliefs about gender determinism, and the degree of identification with traditional gender roles influence healthcare professionals' practices and attitudes toward intersex individuals.

First, the study examined the relationship between the level of knowledge about intersexuality, including conceptual, procedural, and legislative dimensions, and clinical attitudes toward intersex individuals, with the aim of determining whether greater professional literacy is associated with more respectful and non-normative practices. It also explored the influence of beliefs about gender determinism and adherence to traditional masculine and feminine roles on healthcare professionals' attitudes, assessing whether such beliefs predict greater support for corrective medical practices and a lower consideration of patient autonomy.

The study further addressed the role of prior contact with intersex individuals as a potential sociocognitive moderator, analyzing whether direct experience promotes greater knowledge, a less rigid view of gender, and more affirmative attitudes.

Finally, it examined the potential influence of professional group and medical specialty on levels of knowledge and clinical attitudes, with the aim of identifying disciplinary differences in approaches to intersex healthcare.

Based on these objectives, the following hypotheses were formulated:

H1. Greater knowledge about intersexuality will be associated with more respectful and non-normative clinical practices toward intersex individuals.

H2. Higher levels of gender determinism will be associated with more normative and interventionist practices.

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H3. Stronger adherence to traditional gender roles (normative masculinity or femininity) will be associated with greater support for corrective medical practices.

H4. Adherence to traditional gender roles (normative masculinity or femininity) will be associated with a greater tendency to consider informed consent in minors unnecessary, thereby legitimizing early surgical interventions without the direct participation of the child.

H5. Previous contact with intersex individuals will be associated with higher levels of knowledge and more respectful attitudes.

H6. Differences in levels of knowledge and attitudes toward intersex individuals are expected according to healthcare professionals' group and medical specialty.

2.2. Participants

The initial sample consisted of 247 participants. After a data quality review, cases with response times shorter than five minutes and those not meeting the inclusion criteria were excluded. The final sample comprised 210 professionals from the healthcare and social care sectors. The majority identified as women (77.1%), with a mean age of 39.91 years (*SD* = 13.36). Almost half of the participants were physicians from various specialties (49.5%). More than 40% reported having over fifteen years of professional experience, reflecting a highly experienced sample. Regarding sexual orientation, most participants identified as heterosexual (70.5%). In terms of marital status, 69.1% reported being in a relationship or married. Sociodemographic and professional characteristics are presented in **Table 1**.

Table 1. Sociodemographic and Professional Characteristics of the Sample (N = 210).

Variable	Categories	n	%
Sex	Woman	162	77.1
	Man	44	21.0
	Prefer not to answer	4	1.9
Profession	Health/social sciences student	19	9.0
	Nurse	39	18.6
	Psychologist	37	17.6
	Social worker	7	3.3
	Physiotherapist	4	1.9
	Physician (various specialties)	104	49.5
Professional experience	< 2 years	13	6.2
	2–5 years	23	11.0
	5–10 years	33	15.7
	10–15 years	24	11.4
	> 15 years	86	41.0
	Student	23	11.0
	None of the above	7	3.3
Sexual orientation	Heterosexual	148	70.5
	Homosexual	24	11.4
	Bisexual	31	14.8
	Other	2	1.0
	Prefer not to answer	5	2.4
Marital status	Single	45	21.4

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	Partnered	59	28.1
	Married/civil union	86	41.0
	Separated/divorced	17	8.1
	Widowed	1	0.5
	Prefer not to answer	2	1.0

Regarding familiarity with intersexuality, 23.3% of participants reported having had prior contact with an intersex person, and a large majority (80.5%) considered intersex individuals to be a vulnerable group. Attitudes toward medical practices revealed a marked division: 30.5% disagreed with performing corrective surgeries on newborns, while 29% considered them justifiable. With respect to informed consent, 56.9% indicated that they were unaware of whether ethical standards are upheld in the care of intersex individuals. Levels of theoretical and procedural knowledge were generally low to moderate, particularly in the legislative domain, where 71.3% scored in the low range. Notably, 89% of participants emphasized the need for specific professional training on intersexuality. These results are presented in **Table 2**.

Table 2. Attitudes, Knowledge, and Perceptions Regarding Intersex Care (N = 210).

Variable	Categories	n	%
Contact with intersex individuals	Yes	49	23.3
	No	161	76.7
Perception of vulnerability	Considered vulnerable	169	80.5
Corrective surgeries in newborns	Disagree	64	30.5
	Agree	26	12.4
	Sometimes justified	61	29.0
	Do not know	58	27.6
Informed consent compliance	Yes	10	4.8
	No	74	35.4
	Sometimes	6	2.9
	Do not know	120	56.9
Knowledge: Concepts	Low	124	58.9
	Medium	44	21.1
	High	42	20.0
Knowledge: Procedures	Low	76	36.1
	Medium	63	29.8
	High	71	34.1
Knowledge: Legislation	Low	150	71.3
	Medium	40	19.1
	High	19	9.1
Need for training	Yes	187	89.0
	No	23	11.0

2.3. Instruments

Three instruments were used to assess participants' beliefs, gender role identification, and knowledge regarding intersexuality:

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Bem Sex-Role Inventory, Short Version (BSRI) (Bem, 2011 [18]). This instrument assesses the degree to which individuals identify with characteristics traditionally associated with masculinity and femininity. It consists of 20 items: 10 reflecting stereotypically masculine traits and 10 reflecting stereotypically feminine traits. Previous studies have reported adequate internal consistency ($\alpha > .70$). In the present sample, Cronbach's alpha was $\alpha = .74$ for the masculinity scale and $\alpha = .76$ for the femininity scale.

Escala de Determinismo de Género (GDS) (Tinsley et al., 2015 [19]). Measures the extent to which individuals believe that gender is a fixed and biologically determined category. The scale has demonstrated good internal consistency, with a reliability coefficient of $\alpha = .84$. In the present study, internal consistency was $\alpha = .82$.

The Intersex Knowledge Questionnaire. Developed ad hoc by Bonavia and Palacios (2020) to assess healthcare professionals' knowledge and awareness regarding intersexuality. The instrument covers basic conceptual understanding, socio-health procedures and clinical practices, and relevant legal and jurisprudential frameworks. It also includes items exploring professionals' attitudes toward current medical approaches.

2.4. Procedure

Data collection was carried out through an online questionnaire hosted on the Microsoft Forms platform, provided by the Complutense University of Madrid. The questionnaire was initially distributed using a snowball sampling technique, through direct contact with healthcare professionals and university faculty members known to the research team. These initial contacts were invited to complete the survey and share it with colleagues within their professional networks (representing less than 10% of the total sample). Following a preliminary analysis, a stratified sampling strategy was applied, and additional questionnaires were disseminated during several professional conferences held in Madrid throughout 2025, as well as in hospitals and primary healthcare centers, encompassing a wide range of medical and health-related specialties. The purpose and objectives of the study were clearly explained to all participants. Anonymity and data confidentiality were ensured in accordance with the *Spanish Organic Law 3/2018 on the Protection of Personal Data and the Guarantee of Digital Rights*. Informed consent was obtained prior to participation, and a contact email address was provided for participants requiring additional information or clarification about the study.

The study was conducted in accordance with the principles of the *Declaration of Helsinki* and was approved by the Ethics Committee of the *Complutense University of Madrid* (protocol code CE_20250508_02_SOC).

2.5. Data Analysis

To ensure the adequacy of the data for inferential analyses, the reliability of the instruments was assessed using **Cronbach's alpha coefficient**, and sample normality was examined.

Subsequently, new variables were constructed to facilitate the analyses:

1. **Knowledge.** Operationalized through: *Basic Concepts* (participants' understanding of definitions and the diversity of intersex conditions). *Socio-Health Procedures* (knowledge about medical practices and institutional recommendations). *Legislation* (familiarity with national and international regulations concerning the protection of intersex people's rights).
2. **Attitudes.** Operationalized through items evaluating healthcare professionals' positions toward *surgical interventions (*degree of agreement with performing corrective surgeries during childhood) and *informed consent* (importance attributed to involving the intersex person in medical decision-making, even at early ages). This variable functions as an index differentiating between **normative positions**, focused on adapting the body to binary gender expectations, and **non-normative positions.**

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3. **Gender Normativity.** Constructed from the masculinity and femininity scores obtained in the *Bem Sex-Role Inventory* (BSRI, Short Version). To establish differential levels in each dimension, the mean and standard deviation were used as cutoff criteria. For masculinity, the mean was 33.76 ($SD = 5.35$); therefore, scores above 39.11 were classified as *high*, those below 28.41 as *low*, and those between these values as *medium*. For femininity, the mean was 40.41 (SD = 5.33); scores above 45.74 were classified as *high*, those below 35.08 as *low*, and those in between as *medium*.

Based on this initial categorization, Participants with balanced or low gendered traits were classified as *low normativity*, those clearly aligned with traditional masculine or feminine traits as *high normativity*, and those showing partial inclination toward one role as *moderate normativity*.

Preliminary analyses were conducted to describe the sample distribution. **Frequencies and percentages** were calculated for categorical variables. For quantitative variables, **measures of central tendency and dispersion** were computed.

Data were analyzed using descriptive and inferential statistics. Chi-square tests were employed to examine associations between knowledge levels (conceptual, procedural, and legislative) and attitudinal orientations toward intersex care (H1). A one-way ANOVA and independent-samples t-tests were conducted to explore the relationship between gender determinism and normative or interventionist attitudes, as well as support for corrective medical practices (H2). Further chi-square tests assessed whether adherence to traditional gender roles was associated with greater support for corrective interventions or reduced consideration of informed consent in minors (H3–H4). Independent-samples t-tests evaluated whether prior contact with intersex individuals was related to higher knowledge, more affirmative attitudes, and lower gender determinism (H5). Finally, chi-square analyses were used to determine whether levels of knowledge and attitudes differed across professional groups (H6).

3. Results

3.1. Relationship between the Level of Knowledge about Intersexuality and Attitudes toward Intersex Individuals

Significant differences were found in clinical attitudes according to the level of **conceptual knowledge**, $\chi^2(12, N = 208) = 61.25$, $p < .001$, with a medium effect size (Cramér's V = 0.31). Corrective attitudes were observed more frequently among participants with low (46.7%) or no knowledge (26.7%), and were much less common among those with adequate (3.3%) or excellent (10.0%) knowledge. Similarly, indifferent or uninformed attitudes predominated among participants with no (52.2%) or low (39.1%) knowledge, while they were almost absent in higher knowledge groups.

Ambivalent attitudes were more common among those with low (40.8%) or medium (29.6%) knowledge but decreased among participants with adequate (15.5%) and excellent (5.6%) levels. In contrast, affirmative or non-normative attitudes increased as knowledge improved, being most frequent among participants with adequate (23.0%) and excellent (13.1%) knowledge, compared with those reporting no (8.2%) or low (29.5%) knowledge.

The linear trend test was also significant, $\chi^2(1) = 26.30$, $p < .001$, indicating that higher levels of knowledge were systematically associated with a greater likelihood of adopting affirmative and non-normative attitudes. Overall, as knowledge increased, attitudes shifted toward more respectful and inclusive positions (see **Table 3**).

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Table 3. Distribution of Attitudes toward Intersex Care by Levels of Knowledge of concepts.

			Attitudes				
			Corrective	Indifferent/ uninformed	Ambivalent	Affirmative	Total
Conceptual Knowledge	None	N	8	24	6	5	43
		%	26,7%	52,2%	8,5%	8,2%	20,7%
	Low	N	14	18	29	18	79
		%	46,7%	39,1%	40,8%	29,5%	38,0%
	Medium	N	4	3	21	16	44
		%	13,3%	6,5%	29,6%	26,2%	21,2%
	Adequate	N	1	0	11	14	26
		%	3,3%	0,0%	15,5%	23,0%	12,5%
	Excellent	N	3	1	4	8	16
		%	10,0%	2,2%	5,6%	13,1%	7,7%
Total		N	30	46	71	61	208
		%	100%	100%	100%	100%	100%

Significant differences were found in attitudes toward intersex care based on levels of **procedural knowledge**, $\chi^2(9, N = 208) = 108.91$, $p < .001$, with a large effect size (Cramér's $V = 0.42$). Corrective attitudes were most frequent among participants with low (45.2%) or no procedural knowledge (38.7%) and were considerably less common among those with medium (6.5%) or excellent (9.7%) knowledge. Similarly, indifferent or uninformed attitudes predominated among those with no procedural knowledge (58.7%) but decreased notably at medium (23.9%) and excellent (10.9%) levels.

In contrast, ambivalent attitudes were more prevalent among participants with medium (38.0%) and excellent (43.7%) levels of procedural knowledge compared to those with none (4.2%) or low (14.1%) knowledge. Finally, affirmative or non-normative attitudes increased substantially with higher levels of procedural knowledge, being most frequent among participants with excellent (53.3%) and medium (36.7%) knowledge, while nearly absent among those with none (1.7%) or low (8.3%) knowledge. The linear trend test was also significant, $\chi^2(1) = 66.30$, $p < .001$, indicating that higher procedural knowledge was systematically associated with a greater likelihood of expressing affirmative and non-normative attitudes (see **Table 4**).

Table 4. Distribution of Attitudes toward Intersex Care by Levels of knowledge of sociosanitary procedures.

			Attitudes				Total
			Corrective	Indifferent/ uninformed	Ambivalent	Affirmative	
Procedural Knowledge	None	N	12	27	3	1	43
		%	38,7%	58,7%	4,2%	1,7%	20,7%
	Low	N	14	3	10	5	32
		%	45,2%	6,5%	14,1%	8,3%	15,4%
	Medium	N	2	11	27	22	62
		%	6,5%	23,9%	38,0%	36,7%	29,8%
	Excellent	N	3	5	31	32	71
		%	9,7%	10,9%	43,7%	53,3%	34,1%

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Total	N	31	46	71	60	208
	%	100%	100%	100%	100%	100%

Finally, significant differences were also found in attitudes toward intersex care as a function of **legislative knowledge**, $\chi^2(9, N = 209) = 28.21$, $p < .001$, with a small-to-moderate effect size (Cramér's V = .21). Participants with no legislative knowledge were overrepresented among those who exhibited corrective attitudes (77.4%) and, especially, indifferent or uninformed attitudes (95.7%), as well as comprising the majority of those with ambivalent attitudes (69.0%).

In contrast, participants with excellent knowledge of legislation were more likely to endorse affirmative or non-normative attitudes (18.0%), compared with only 6.5% holding corrective and 2.2% holding indifferent positions. Those with low or medium levels of legislative knowledge occupied intermediate positions, accounting for 23.9% of ambivalent and 27.9% of affirmative/non-normative attitudes.

The linear trend test was also significant, $\chi^2(1) = 15.50$, $p < .001$, confirming that higher levels of legislative knowledge were systematically associated with a greater likelihood of expressing affirmative and non-normative attitudes, and a lower likelihood of adopting corrective or indifferent positions (see **Table 5**).

Table 5. *Distribution of Attitudes toward Intersex Care by Levels of Legislative Knowledge.*

			Attitudes				
			Corrective	**Indifferent/ uninformed**	**Ambivalent**	**Affirmative**	**Total**
Legislation Knowledge	None	N	24	44	49	32	149
		%	77,4%	95,7%	69,0%	52,5%	71,3%
	Low/medium	N	5	1	17	17	40
		%	16,1%	2,2%	23,9%	27,9%	19,1%
	Excellent	N	2	1	5	11	19
		%	6,5%	2,2%	7,0%	18,0%	9,1%
Total		N	31	46	71	61	209
		%	100%	100%	100%	100%	100%

3.2. Relationship between Gender Determinism and Attitudes toward Intersex Individuals, Justification of Corrective Surgeries, and Perceptions of Valid Informed Consent

No significant differences were found in mean gender determinism scores across the four attitudinal categories. In addition, an analysis was conducted to explore whether considering corrective surgeries as appropriate (yes vs. no, excluding intermediate response options) was associated with gender determinism. Results indicated no significant differences in determinism scores between the two groups, $t(88) = 0.69$, $p = 0.245$, Cohen's $d = 0.15$, 95% CI [−0.60, 1.23]. Both analyses suggest that gender determinism did not differentiate between corrective, indifferent, ambivalent, or affirmative/non-normative attitudes, nor was it related to the acceptance or rejection of corrective surgeries among participants.

Regarding the analysis of adherence to traditional gender roles and its relationship with greater support for corrective medical practices or with the belief that informed consent is properly obtained in surgeries performed on minors (addressed by Objectives 3 and 4), chi-square tests were conducted. Results showed no significant associations either between adherence to traditional gender roles and approval of corrective surgeries or between gender-role adherence and the perception that informed consent requirements are fulfilled in such interventions, $\chi^2(18, N = 209) = 15.28$, $p = 0.643$; $\chi^2(18, N = 209) = 26.30$, $p = .093$.

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3.3. Prior Contact with Intersex Individuals and Its Influence on Healthcare Professionals' Knowledge and Attitudes

Prior contact with intersex individuals was associated with higher conceptual knowledge, lower support for corrective interventions, and a more flexible understanding of gender identity construction. Participants who reported previous contact obtained significantly higher scores in basic conceptual knowledge (M = 1.82, SD = 1.20) compared to those without such contact (M = 1.49, SD = 1.03), t(148) = 1.75, p = .041 (one-tailed). Similarly, participants with contact expressed lower support for corrective surgeries (M = 2.78, SD = 0.80) than those without contact (M = 2.98, SD = 0.65), t(149) = −1.69, p = .047 (one-tailed).

Moreover, participants with previous contact were less likely to endorse the belief that gender identity is fixed (M = 1.55, SD = 0.79) than those without contact (M = 1.83, SD = 0.89), t(149) = −1.89, p = .030 (one-tailed). In contrast, no significant differences were observed in legislative knowledge between participants with (M = 0.51, SD = 0.71) and without prior contact (M = 0.43, SD = 0.71), t(149) = 0.63, p = 0.262 (one-tailed) (see **Table 6**).

Table 6. *Independent-Samples t-tests of Knowledge, corrective interventions and gender determinism by Prior Contact with Intersex Individuals.*

Variable	Contact Yes M (SD)	Contact No M (SD)	t	df	p (one-tailed)
Concepts Knowledge	1.82 (1.20)	1.49 (1.03)	1.75	148	.041
Corrective surgeries	2.78 (0.80)	2.98 (0.65)	-1.69	149	.047
Belief in fixed gender identity	1.55 (0.79)	1.83 (0.89)	-1.89	149	.030
Legislation Knowledge	0.51 (0.71)	0.43 (0.71)	0.63	149	2.6

3.4. Variations in Knowledge and Attitudes toward Intersexuality among Professional Groups

The chi-square test revealed significant differences in conceptual knowledge across professional groups, χ^2(20, N = 209) = 34.68, p = .016, with a moderate effect size (Cramér's V = 0.21). Physicians occupied the highest levels of conceptual understanding, accounting for 42.3% of those with adequate knowledge and 81.3% of those with excellent knowledge. In contrast, nurses and students were more frequently represented in the lowest categories, while psychologists and social workers tended to cluster in the intermediate levels. Physiotherapists appeared only sporadically across the different categories (see **Table 7**).

Conversely, the associations between profession and other knowledge domains were not statistically significant. Specifically, no relevant differences were observed between professional groups in procedural knowledge, χ^2(16, N = 208) = 18.37, p = 0.252, V = 0.17, or in legislative knowledge, χ^2(12, N = 209) = 18.56, p = 0.102, V = 0.19.

Table 7. *Distribution of Concepts Knowledge by Profession.*

			Concepts Knowledge					
			None	Low	Medium	Adequate	Excellent	Total
Proffesion	Students	N	5	7	0	6	1	19
		%	11,4%	8,9%	0,0%	23,1%	6,3%	9,1%

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	Nurses	N	12	17	8	0	1	38
		%	27,3%	21,5%	18,2%	0,0%	6,3%	18,2%
	Physicians	N	17	38	25	11	13	104
		%	38,6%	48,1%	56,8%	42,3%	81,3%	49,8%
	Psychologists	N	7	13	11	5	1	37
		%	15,9%	16,5%	25,0%	19,2%	6,3%	17,7%
	Social workers	N	2	3	0	2	0	7
		%	4,5%	3,8%	0,0%	7,7%	0,0%	3,3%
	Physiotherapists	N	1	1	0	2	0	4
		%	2,3%	1,3%	0,0%	7,7%	0,0%	1,9%
Total		N	44	79	44	26	16	209
		%	100%	100%	100%	100%	100%	100%

The analysis of attitudes across professional groups revealed a significant association between profession and attitudes toward intersex individuals, $\chi^2(15, N = 209) = 32.00$, $p = .024$, with a moderate effect size (Cramér's V = 0.21). Physicians were overrepresented in corrective and ambivalent attitudes (accounting for 67.7% of corrective and 50.7% of ambivalent responses), suggesting greater support for interventionist practices. In contrast, psychologists were disproportionately concentrated in affirmative and non-normative attitudes (34.4%), reflecting a stronger alignment with diversity-affirming approaches.

Nurses showed a relatively high prevalence of indifferent or uninformed responses (28.3%), while social workers tended to cluster within the affirmative/non-normative category (6.6%). Students were more evenly distributed, with a notable presence in the ambivalent group (12.7%). Overall, these findings highlight clear professional differences in attitudinal orientations toward intersex healthcare: physicians leaned toward corrective practices, whereas psychologists demonstrated greater commitment to affirmative and diversity-respectful approaches (see **Table 8**).

Table 8. *Distribution of Attitudes by Profession.*

			Attitudes				
			Corrective	**Indifferent/ uninformed**	**Ambivalent**	**Affirmative**	**Total**
Proffesion	Students	N	3	4	9	3	19
		%	9,7%	8,7%	12,7%	4,9%	9,1%
	Nurses	N	5	13	13	8	39
		%	16,1%	28,3%	18,3%	13,1%	18,7%
	Physicians	N	21	22	36	24	103
		%	67,7%	47,8%	50,7%	39,3%	49,3%
	Psychologists	N	1	5	10	21	37
		%	3,2%	10,9%	14,1%	34,4%	17,7%
	Social workers	N	0	1	2	4	7
		%	0,0%	2,2%	2,8%	6,6%	3,3%
		N	1	1	1	1	4

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	Physiotherapists	%	3,2%	2,2%	1,4%	1,6%	1,9%
Total		N	31	46	71	61	209
		%	100%	100%	100%	100%	100%

3.5. Differences in Knowledge and Attitudes toward Intersex Care across Medical Specialties

To further explore these findings, the sample was segmented by medical specialty among those directly involved in the care of intersex patients, forming six groups: primary care, surgery, gynecology, endocrinology, urology, and pediatrics. Chi-square analyses were conducted to examine possible differences in levels of knowledge and attitudes across specialties. No statistically significant differences were found between specialty and conceptual knowledge, $\chi^2(20, N = 70) = 18.02$, $p = 0.550$; procedural knowledge, $\chi^2(15, N = 69) = 18.16$, $p = 0.207$; legislative knowledge, $\chi^2(10, N = 70) = 8.16$, $p = 0.620$; or attitudes toward intersex care, $\chi^2(15, N = 70) = 22.09$, $p = .071$.

Although these associations did not reach statistical significance, the distribution of responses revealed distinct professional patterns worthy of attention. Surgeons and urologists exhibited the most polarized profiles: surgeons were divided between corrective and affirmative positions, whereas urologists concentrated mainly in corrective and indifferent attitudes, with almost no representation in non-normative positions. Gynecologists also displayed a polarized pattern, with approximately one-quarter supporting corrective practices and another quarter endorsing non-normative approaches.

Pediatricians emerged as the group showing the highest support for corrective attitudes (33.3%) and, simultaneously, the highest proportion of indifferent responses (50.0%), reflecting the persistent tension in pediatric practice between traditional interventionist models and emerging critical perspectives. In contrast, primary care and endocrinology demonstrated more critical and reflective profiles, characterized by higher proportions of ambivalent and non-normative attitudes and minimal support for corrective interventions.

Overall, while medical specialty was not a statistically significant predictor, meaningful professional differences emerged: pediatrics and surgical fields remain closer to the interventionist legacy, whereas primary care and endocrinology exhibit greater openness to non-normative, diversity-affirming perspectives (see **Table 9**).

Table 9. Distribution of Attitudes toward Intersex Care by Medical Specialties.

			Actitudes				
			Corrective	Indifferent/ uninformed	Ambivalent	Affirmative	Total
Medical Specialties	Surgery	N	2	0	1	1	4
		%	13,3%	0,0%	4,0%	6,3%	5,7%
	Gynecology	N	4	1	6	4	15
		%	26,7%	7,1%	24,0%	25,0%	21,4%
	Primary care	N	2	3	10	4	19
		%	13,3%	21,4%	40,0%	25,0%	27,1%
	Endocrinology	N	1	0	5	2	8
		%	6,7%	0,0%	20,0%	12,5%	11,4%
	Pediatrics	N	5	7	3	5	20
		%	33,3%	50,0%	12,0%	31,3%	28,6%

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doi:10.20944/preprints202510.0797.v1

	Urology	N	1	3	0	0	4
		%	6,7%	21,4%	0,0%	0,0%	5,7%
Total		N	15	14	25	16	70
		%	100,0%	100,0%	100,0%	100,0%	100,0%

4. Discussion

The findings of this study highlight persistent barriers in healthcare for intersex individuals. First, a significant gap was identified in both knowledge and professional training. Although many healthcare professionals reported generally inclusive attitudes, they also acknowledged the need to expand their competencies to provide appropriate and informed care. Within the analyzed context, this lack of knowledge translated into uncertainty when facing intersex clinical situations, which, in turn, contributed to the persistence of traditional practices whose clinical relevance remains questionable.

The results demonstrate that lower levels of conceptual, procedural, and legislative knowledge about intersexuality are associated with more corrective or indifferent attitudes toward intersex individuals, whereas higher levels of knowledge are linked to more respectful and non-normative attitudes. Thus, **Hypothesis 1 was confirmed**. These findings are consistent with previous research indicating that a lack of understanding of sexual and bodily diversity provides fertile ground for the reproduction of prejudice and interventionist medical practices (Haghighat et al., 2023 [10]; Obedin-Maliver et al., 2011 [20]; Medina & Mahowald, 2021 [21]). Procedural knowledge, recorded at low levels in our sample, emerges as a particularly critical factor, since professionals who have access to clear protocols and experience with diversity-adapted clinical practices tend to exhibit greater self-efficacy and more inclusive attitudes (Sekoni et al., 2017 [22]). In the absence of such knowledge, healthcare providers often rely on cultural heuristics or binary biomedical models, thereby perpetuating corrective practices inherited from outdated paradigms (Davis, 2015 [23]).

In such a sensitive field, the documented absence of clinical guidelines not only heightens professional uncertainty but also exposes patients to unnecessary interventions with lasting consequences, which in many cases leads to avoidance of follow-up visits and medical care (Wang et al., 2023 [24]). Even more concerning is the widespread deficit of legislative knowledge, a transversal gap across all health professions examined. This lack of awareness has particularly serious implications, as it prevents professionals from understanding the human rights framework that should guide their clinical practice.

As emphasized by international organizations, respect for bodily integrity and informed consent are foundational principles for eliminating unnecessary medical interventions in intersex individuals (Council of Europe, 2017 [25]; United Nations, 2014 [26]; Office of the High Commissioner for Human Rights, 2019 [27]). Without awareness of this normative framework, intersex people remain vulnerable to procedures that, while medically questionable, may still be legitimized in practice due to the absence of legal and ethical reference points within professional training. This finding underscores the urgent need to integrate not only biomedical content but also **ethical and legal literacy** into medical education, enabling clinicians to align their practice with international human rights standards.

However, the relationship between knowledge and attitudes is neither linear nor homogeneous. At intermediate levels of training, ambivalent responses emerged, suggesting a transitional stage in which professionals begin to question traditional assumptions but still lack the critical and applied resources to sustain a fully respectful approach. This pattern aligns with previous findings indicating that superficial awareness, when not supported by structured education, may lead to uncertainty and inconsistent responses in clinical practice (Haghighat et al., 2023 [10]; Sekoni et al., 2017 [22]; White et al., 2015 [28]). In other words, tangential exposure to the topic is not sufficient, what is needed is comprehensive, cross-cutting, and sustained education.

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Overall, the results align with a growing body of evidence directly linking educational deficits to the perpetuation of normative models of healthcare. Obedin-Maliver et al. (2011) documented that the absence of systematic content on sexual and gender diversity in medical education not only creates conceptual gaps but also perpetuates pathologization as a reference model. Qualitative research with intersex individuals further confirms that these gaps translate into experiences of invisibility, non-consensual treatments, and violations of fundamental rights (Haghighat et al., 2023 [10]; Human Rights Watch & interACT, 2017 [29]). The present findings extend this evidence by demonstrating that solid, structured knowledge is systematically associated with more respectful attitudes and a lower likelihood of reproducing interventionist practices.

A notable finding of this study is that neither gender determinism nor adherence to traditional masculine or feminine roles was associated with healthcare professionals' attitudes toward intersex care. No associations emerged between these variables and the approval or rejection of corrective surgeries, nor with the perception that such interventions comply with the principles of informed consent. Therefore, the results did not confirm our second, third, and fourth hypotheses. In other words, personal beliefs did not appear to be differential factors explaining the attitudinal positions of the professionals surveyed. This finding contrasts with classical literature that links essentialist and rigid beliefs about gender to the reproduction of stereotypes and to less accepting attitudes toward non-normative identities (Bem, 1981 [30]; Haslam et al., 2000 [31]; Prentice & Carranza, 2002 [32]; Cole, 2009 [33]). It also challenges prior hypotheses suggesting that a fixation on binary categories underlies the historical tendency to recommend "normalizing" surgeries on intersex bodies (Davis, 2015 [23]). These results suggest that other sociocognitive factors, such as specialized clinical knowledge, direct experience, or institutional frameworks, may exert a stronger influence than ideological orientations toward gender. Thus, even professionals who hold more traditional views may adapt their practices if they have access to updated protocols and clear clinical guidelines.

Considering the broader cultural and institutional context of Spain, recent data indicate that society as a whole no longer adheres to traditional gender roles as strongly as in the past, although tensions and resurgences persist among certain groups, particularly younger men (Palomino-Suárez & Aparicio García, 2025 [34]**)**. In this context, the relative weakness of the "role adherence" variable in our study may reflect this broader social transformation: gender stereotypes no longer automatically shape professional decision-making, which now appears to depend more on biomedical training and institutional frameworks guiding clinical practice (Carpenter, 2016 [35]).

Finally, the finding that gender beliefs did not predict attitudes toward corrective surgeries may also be interpreted as evidence of a broader cultural and generational shift within medicine. Although the gender binary remains the dominant social framework, early interventions on intersex minors are increasingly questioned from ethical and human rights perspectives (Carpenter, 2016 [34]; Human Rights Watch & interACT, 2017 [29]).

The results show that prior contact with intersex individuals is associated with higher levels of conceptual knowledge, corroborating hypotheses 5, lower support for corrective surgeries, and a less rigid view of gender identity. These findings confirm our fifth hypothesis and support the idea that direct interaction is a key sociocognitive factor in reducing prejudice and fostering more respectful attitudes. In line with intergroup contact theory (Allport, 1954 [36]), exposure to intersex individuals, particularly when accompanied by institutional support, appears to reduce social distance and challenge previously internalized binary assumptions, fostering greater willingness to recognize bodily and gender diversity as part of natural human variation. Previous studies with other populations have demonstrated that interpersonal contact helps reduce negative attitudes and enhance healthcare professionals' cultural competence toward LGBTIQ+ patients (Herek & Capitanio, 1996 [37]; Pettigrew & Tropp, 2006 [38]). Quinn (2015) and colleagues have further examined knowledge gaps and attitudinal barriers among health professionals toward LGBTQ+ patients, emphasizing the need for educational interventions to reduce institutional prejudice (Schabath et al., 2019 [39]; Quinn et al., 2015 [40]). Our results suggest that this same mechanism operates in the case of intersexuality, where direct contact functions as a catalyst for questioning the

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perceived necessity of corrective interventions and for fostering more flexible beliefs regarding gender. Alongside these benefits, a noteworthy finding is that such contact was not associated with greater legislative knowledge, highlighting that while personal interaction may transform attitudes and beliefs, it does not necessarily provide information on normative frameworks or specific legal rights. As noted by Carpenter (2016) and Davis (2015), the lack of awareness regarding legislation and human rights related to intersexuality remains a structural deficit in medical education, one that cannot be remedied solely through interpersonal experiences.

In line with **Hypothesis 6,** the results of this study reveal significant professional differences in both the level of knowledge about intersexuality and attitudes toward intersex healthcare, thereby confirming the sixth hypothesis. In terms of knowledge, physicians occupied the highest positions in conceptual understanding, while nurses and students tended to cluster at the lowest levels, and psychologists and social workers were more frequently positioned at intermediate levels. This pattern suggests that medical education provides a stronger conceptual foundation.

However, it is particularly noteworthy that no differences were observed between professions in procedural or legislative knowledge. This finding indicates that educational gaps are transversal, affecting all professional profiles in a similar manner. Nonetheless, this is especially concerning in the case of physicians, as they bear the greatest responsibility for clinical decision-making regarding intersex patients and therefore require a clear command of clinical protocols and the legal framework governing medical practice. The absence of differences in these domains suggests that even professionals with greater conceptual knowledge often lack applied tools and sufficient legal literacy to guide their decisions in accordance with human rights standards and international recommendations. Professional differences became more evident at the attitudinal level. Physicians were disproportionately concentrated in corrective and ambivalent attitudes, reflecting greater adherence to interventionist and "normalizing" practices. This finding aligns with previous literature documenting how the biomedical tradition, centered on the correction of bodily variations, has shaped medical practice with a deeply ingrained interventionist bias that remains difficult to dismantle (Davis, 2015 [23]; Human Rights Watch & interACT, 2017 [29]). In contrast, psychologists were more frequently positioned within affirmative and non-normative attitudes, demonstrating a more respectful orientation toward bodily diversity. This profile can be explained by psychology's emphasis on psychosocial factors and the defense of personal autonomy, which fosters greater sensitivity to the ethical implications of medical interventions in intersex individuals (Carpenter, 2016 [34]). The finding that nurses more frequently exhibited indifferent or uninformed attitudes is consistent with studies describing the lack of specific training on sexual and bodily diversity in nursing curricula, which often leads to uncertainty and misinformation in managing these cases (Sekoni et al., 2017 [22]). Social workers, in turn, tended to align with affirmative positions, consistent with their historical role in rights advocacy and community-based care. Finally, students presented a more heterogeneous distribution, with a substantial proportion of ambivalent attitudes, a pattern that may reflect a transitional stage in their training process. They begin to question some normative practices but still lack the conceptual and clinical resources necessary to sustain a fully affirmative approach.

The descriptive analysis of the relationship between medical specialty and levels of knowledge or attitudes toward intersex care revealed distinctive professional patterns. In particular, surgical specialties (surgery and urology) were positioned closer to corrective or indifferent attitudes. This finding is consistent with previous literature identifying surgical practice as the central axis of interventionist traditions in this field, long legitimized as technical solutions to the perceived "challenge" of bodily diversity (Davis, 2015 [23]; Carpenter, 2016 [34]).

The case of pediatrics is particularly significant. This group simultaneously showed strong support for corrective interventions and a high proportion of indifferent attitudes. Such ambivalence reflects the historical tension within pediatrics regarding intersexuality, as pediatricians are often the first specialists to face pressure from families and institutions, historically resulting in hasty and poorly informed decisions (Karkazis, 2008 [2]). The prevalence of indifferent responses further

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suggests a persistent lack of specific training, leaving many pediatricians without the necessary tools to approach these situations critically, consistent with studies documenting insecurity and the absence of coherent clinical guidelines in this area (Lundberg et al., 2021 [41]).

In contrast, primary care and endocrinology exhibited more open and critical attitudes, characterized by a greater proportion of ambivalent and non-normative responses and minimal support for corrective practices. This profile may be explained by the type of clinical relationship these professionals establish: primary care, with its longitudinal focus, and endocrinology, through its involvement in developmental and hormonal management, tend to promote more cautious and less interventionist approaches that emphasize observation, listening, and patient accompaniment (Hughes et al., 2006 [42]). Furthermore, sustained contact with families and patients in non-surgical contexts may facilitate a greater questioning of traditional approaches.

The pattern observed in gynecology, divided between corrective and affirmative positions, reflects a discipline in transition. As previous studies have shown, gynecology has historically been involved in normalizing interventions but has also been one of the fields in which debates on autonomy, consent, and sexual health have opened spaces for more critical approaches (Karkazis, 2008 [2]). The coexistence of these contrasting orientations can be interpreted as a symptom of ongoing change within the discipline, albeit one that has yet to be fully consolidated.

5. Limitations

This study has several limitations. Although the sample size was adequate for the planned statistical analyses and included professionals from multiple healthcare disciplines, recruitment relied on voluntary participation through professional networks and online distribution. Consequently, the sample could not be considered fully representative. The use of a non-probabilistic and self-selected sample may have introduced selection bias, as those with greater sensitivity or prior interest in gender and diversity issues might have been more likely to participate. Conversely, it is not possible to determine whether non-respondents declined due to lack of knowledge about intersex variations or simply a lack of interest in the topic, which could have affected the diversity of perspectives included.

Another limitation concerns the scarcity of validated instruments specifically designed to assess intersex-related knowledge and attitudes. The Intersex Knowledge Questionnaire used in this study has not yet undergone formal psychometric validation; however, it was developed based on a comprehensive review of international guidelines, academic literature, and ethical-legal recommendations related to intersex healthcare. Its items were reviewed to ensure content relevance and conceptual clarity. Despite its methodological rigor, the absence of internationally standardized and validated tools in this field limits the comparability of results across studies. Future research should therefore prioritize the development and cross-cultural validation of psychometrically robust instruments capable of capturing conceptual, procedural, and legislative dimensions of intersex healthcare.

Finally, although the inclusion of different medical specialties strengthens the study's ecological validity, contextual variables such as institutional culture, local clinical guidelines, or exposure to intersex patients were not systematically controlled. These unmeasured factors may moderate the observed relationships and should be incorporated into future research.

6. Conclusions

This study provides empirical evidence that helps to more precisely understand the barriers and underlying factors shaping healthcare for intersex individuals, an area in which academic research remains limited and clinical practices continue to be influenced by normative and educational tensions (Davis, 2015 [23]; Carpenter, 2016 [34]; Human Rights Watch & interACT, 2017 [29]).

The findings indicate that conceptual, procedural, and legislative knowledge functions as the most immediate modulator of professional attitudes. Greater literacy in these domains is associated

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with lower support for corrective interventions and greater openness to affirmative and diversity-affirming approaches. However, the study identified a structural and cross-disciplinary training deficit, particularly severe regarding procedural and legislative aspects, even among medical specialties that require such knowledge to ensure safe, rights-based clinical practice.

Furthermore, while prior contact with intersex individuals was linked to higher conceptual understanding and reduced support for normalizing surgeries, this contact alone proved insufficient to strengthen legislative and ethical comprehension. This underscores the need to complement experiential learning with formal education in applied ethics and legal frameworks (Carpenter, 2016 [34]; Fenway Institute & Lambda Legal, 2018 [43]).

These findings confirm that clinical attitudes are not explained solely by gender stereotypes but are primarily shaped by the availability of specialized training, institutional organization, and the presence, or absence, of clear normative frameworks. Where educational references and regulatory guidance are lacking, the inertial weight of gender binarism persists, subtly permeating clinical decision-making. Conversely, when knowledge is solid and structured, more affirmative attitudes and practices emerge, better aligned with ethical and human rights standards (Haghighat et al., 2023 [10]).

Although the disciplinary differences observed did not reach statistical significance across all analyses, they offer valuable interpretative insights. Surgical and pediatric specialties remain closer to the interventionist legacy, whereas primary care and endocrinology demonstrate greater openness to non-normative perspectives, and psychosocial fields tend to align with rights-based frameworks. This pattern suggests that current practices do not stem from an immutable cultural determinism but rather from specific disciplinary socializations that can be transformed through targeted educational and regulatory policies (Carpenter, 2016 [34]).

In summary, the results suggest that the primary field for intervention lies not in professionals' individual willingness but in the structural absence of consistent training and regulatory frameworks. This finding delineates a clear course of action: the development of curricular programs that integrate conceptual, procedural, and legislative content, complemented by formative experiences with intersex individuals capable of humanizing care and fostering affirmative attitudes. Viewed constructively, this study shows that clinical practice can be aligned with ethics and human rights not so much by confronting deeply rooted cultural paradigms as by strengthening education, regulation, and the institutionalization of affirmative care protocols (Obedin-Maliver et al., 2011 [20]; Sekoni et al., 2017 [22]; Quinn et al., 2015 [39]).

Author Contributions: Conceptualization, C.P.-S. and M.E.A.G.; methodology, C.P.-S.; formal analysis, C.P.-S.; investigation, C.P.-S.; data curation, C.P.-S.; writing—original draft preparation, C.P.-S.; writing—review and editing, M.E.A.G.; visualization, C.P.-S.; supervision, M.E.A.G. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted in accordance with the Declaration of Helsinki, and approved by the Ethics Committee of COMPLUTENSE UNIVERITY OF MADRID protocol code CE_20250508_02_SOC 29/05/2025.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: The data presented in this study are available on request from the corresponding author.

Acknowledgments: The authors would like to express their sincere gratitude to Ruth de Salazar Peña for her valuable assistance during the data collection process and the distribution of questionnaires. Her support was essential to the successful completion of this research.

Conflicts of Interest: The authors declare no conflicts of interest.

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Abbreviations

The following abbreviations are used in this manuscript:

ANOVA	One-way analysis of variance
BSRI	Bem Sex Role Inventory

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