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Perceptions of Barriers to Inclusion in Students with Disabilities in Higher Education Institutions

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Abstract: This study aimed to analyze the perceptions of students with disabilities regarding the barriers to inclusion in higher education institutions in northeastern Colombia. Employing a mixed-methods approach, data were collected through questionnaires and semi-structured interviews with 28 students with disabilities, focusing on socio-demographic data and their personal university experiences. The findings revealed that physical and visual impairments were the most common (34.6% each) and the primary barriers were insufficient pedagogical strategies. An association between the type of disability and perceived support was identified. In conclusion, this study enabled the development of a comprehensive model for university inclusion in the northeastern region.

Keywords: barriers to inclusion; students with disabilities; inclusive education; higher education

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1. Introduction

Globally, less than 10% of people with disabilities have access to higher education, and in Latin America, this figure varies between 2% and 5% [1,2]. In the European Union, only 24% of people with disabilities have tertiary education, compared to 36% of people without disabilities [3]. In India, this proportion is only 0.63% of all students in higher education [3]. In Israel, the under representation of students with disabilities is extreme, estimated at 1–3% of the total student population, compared to 17% of citizens with disabilities in the total population [4,5].

In Colombia, only 0.58% of students enrolled in higher education institutions are persons with disabilities, which is equivalent to approximately 10,500 students [6]. The inclusion of students with disabilities in higher education in Colombia remains a significant challenge, despite advances in public policies and regulations promoted by the Ministry of National Education. Compared to other countries, Colombia shows limited progress in inclusive education. For example, in the United States, universities have one of the highest

rates of students with disabilities in the world, while in France, although the proportion is lower, there are well-developed institutional mechanisms to guarantee their rights [3].

Barriers to learning and participation (BAP) arise from the interaction between students and their contexts, including factors such as policies, institutions, cultures, and the social and economic circumstances that affect their lives [6]. There are physical and social barriers that limit the full participation of these students in university life [7,8]. Physical barriers include the lack of ramps and accessibility in facilities, which limits mobility and access to educational spaces [9,10]. Pedagogical barriers, such as the lack of adapted materials and assistive technologies, together with the rigidity of academic programs, hinder effective participation [11]. Attitudinal barriers also play an important role, for example, prejudice and stigma affect social inclusion and create a hostile environment for these students. In addition, communicational barriers impede effective interaction between students and teachers and adaptation to diverse educational needs [12–16].

The consequences of these barriers are alarming, evidenced by a high dropout rate among students with disabilities and low academic performance compared to their non-disabled peers [17,18]. The purpose of the research was to analyze the perception of students with disabilities on barriers to inclusion in higher education institutions in northeastern Colombia.

Six universities were selected from Bucaramanga (Santander-Colombia) and Cúcuta (Norte de Santander-Colombia), all of which are members of the Network of Universities for Disability, are leaders in the northeast of Colombia with high-quality recognition, and offer undergraduate education in engineering, sciences, health, social sciences, and humanities. These, in turn, combine the fields of knowledge in activities that constitute the mission functions of teaching, research, and extension. The six universities were selected because they train students with disabilities in their classrooms; moreover, this is precisely where the intentionality of the research is focused, as it seeks to measure the commitment to inclusive education in the university environment.

Specifically, the results aim to contribute to the programs of attention to the population with disabilities developed by the universities and to the process of adaptation, permanence, and successful graduation of students with these characteristics in university contexts. Finally, the intention of this study is to broaden the sources of information in a way that allows for a comparison between institutions, as well as the construction of solid knowledge that will have an impact on policies and programs for inclusive higher education in the medium and long term.

Research on inclusive higher education in Latin America is limited [16,19,20], while developed countries have seen the most progress in implementing inclusive policies [21–24]. These policies are based on the removal of architectural, communicational, and pedagogical barriers, as well as the implementation of flexible and accessible teaching practices [12,16]. The United States and France are examples of this. In the United States, universities have well-developed support centers that provide accommodations, assistance, and support to students with disabilities, implementing federal laws such as the Individuals with Disabilities Education Act (IDEA) and the Americans with Disabilities Act (ADA) [3]. In France, although the proportion of students with disabilities is lower, robust institutional mechanisms are in place to guarantee their rights, with specific support services funded by the Ministry of Education and agreements to promote mobility and employment of students with disabilities [25]. In countries such as Colombia, Bolivia, and Chile, the effectiveness and implementation of inclusive policies vary significantly. In Colombia, the lack of effective inclusive research and policies has resulted in lower access rates and higher barriers to retention and graduation for students with disabilities [21–24,26]. In Bolivia, although there is a tradition of free access to higher education, structural barriers and a

lack of adequate resources remain major obstacles [27]. In Chile, direct access policies and support services have been adopted in some universities, but the implementation and effectiveness of these policies are inconsistent [28].

Most studies have focused on alumni, professors, and service coordinators for students with disabilities in universities, neglecting the direct experiences of undergraduate students [27,29]. In addition, the variation in the implementation of strategies to reduce barriers to inclusion across countries and universities makes the implementation and effectiveness of these policies inconsistent. Therefore, it is necessary to listen to the voice of students active in higher education institutions in northeastern Colombia.

Table 1 presents studies on inclusive education and barriers to learning and participation of students with disabilities in higher education.

Table 1. Review of studies on inclusive education and barriers to learning and participation of students with disabilities in higher education.

Title	Authors	Year	Methodology	Population and Sample	Results
Everyone is normal and everyone has a disability: Narratives of university students with visual disabilities	Almog, N.	2018	Qualitative narrative	University students with visual disabilities	Narratives reflecting the experiences of university students with visual disabilities are presented, highlighting the need for inclusion and accessibility [4].
Higher education and disability: A systematic review of assessment instruments designed for students, faculty, and staff	Lombardi, A., Gelbar, N., Dukes, LL III., Kowitt, J., Wei, Y., Madaus, J., Lalor, AR y., and Faggella-Luby, M.	2018	Systematic review	Published articles (n = 203) on the development of new or refinement of existing instruments were reviewed for traits measured and the psychometric rigor reported	The implications of the findings undergird the urgency to prioritize disability as a facet of diversity within higher-education scholarship, and, furthermore, aid this prioritization by providing a catalogue of robust instruments to researchers and practitioners [5].
Inaccessible accessibility: analysis of inclusive education in universities abroad	Debrenne, M., Rykim, A., Sukhushina, E., & Min, O.	2022	Critical analysis of educational policies	International universities	The study reveals that, despite inclusive policies, many universities still lack effective accessibility for students with disabilities [3].
Academic learning experiences and challenges of students with disabilities in higher education	Li, Y.-F., Zhang, D., Dulas, H.M., & Whirley, M.L.	2024	Qualitative research	Students with disabilities in higher education	Students report multiple academic challenges and a lack of adequate resources to support their learning [16].
Inclusion at university, transition to employment and employability of graduates with disabilities: A systematic review	Moriña, A. & Biagiotti, G.	2022	Systematic review	Graduates with disabilities in various academic disciplines	The review highlights the importance of university inclusion to improve the employability of graduates with disabilities [7].
Inclusive university education in Bolivia: actors and their discourses	Muyor-Rodríguez, J., Fuentes-Gutiérrez, V., De la Fuente-Robles, Y. M., & Amezcua-Aguilar, T.	2021	Qualitative discourse analysis	Educational actors in Bolivia	Different perceptions about university inclusion are identified and strategies are proposed to improve it in the Bolivian context [27].
Assessment as a matter of inclusion: A meta-ethnographic review of the assessment experiences of students with disabilities in higher education	Nieminen, J. H., Moriña, A., & Biagiotti, G.	2024	Meta-ethnography	Students with disabilities in higher education	The study shows that assessment experiences are often exclusionary and suggest necessary changes to ensure fair and inclusive assessment [10].

Table 1. *Cont.*

Title	Authors	Year	Methodology	Population and Sample	Results
University and disability: "The basic strategy is perseverance"	Oviedo-Cáceres, M. & Hernández-Quirama, A.	2020	Qualitative research	University students with disabilities in Colombia	The importance of perseverance and institutional support is emphasized as key to the academic success of students with disabilities [23].
Educational inclusion of students with disabilities in higher education: a systematic review	Paz-Maldonado, E.	2020	Systematic review	Students with disabilities in various universities	The review highlights common barriers faced by students and suggests effective practices to improve educational inclusion [29].
Systematic review on new challenges of yniversity education today: Innovation in the educational response and teaching perspective on students with disabilities	Pérez-Esteban, M. D., Carrión-Martínez, J. J., & Ortiz Jiménez, L.	2023	Systematic review	Students with disabilities in higher education	New challenges in university education are identified, requiring pedagogical innovations to better serve students with disabilities [12].

Studies on barriers to learning and participation of students with disabilities in higher education agree on the need to implement inclusive policies and provide adequate academic support for students with these characteristics [7]. However, there are discrepancies in the perception of the effectiveness of these policies among the different actors involved [23]. Moreover, while some studies highlight the potential of technologies as facilitating tools for learning [30], others point to significant challenges in their implementation in relation to structural and attitudinal barriers [3,27], especially in developing countries. In this context, the capacity of learners to advocate for their rights and needs emerges as a key strategy to overcome barriers and ensure access and quality education [16].

Therefore, this study seeks to analyze the perception of students with disabilities on the barriers to inclusion in higher education institutions in northeastern Colombia in order to socialize recommendations from their perspective and voice, which can be replicated in university contexts [18], and thus favor the academic and personal success of students with disabilities [5,9,10,17].

2. Materials and Methods

2.1. Study Approach

This study adopted a mixed approach to gain a holistic view of the experiences of undergraduate students with disabilities in higher education [31]. A case study design was used to closely examine the experiences and perceptions of students in a variety of university contexts, facilitating the comparison and identification of common patterns [32].

2.2. Sample

The study sample included students with disabilities from six private universities in nor oriente Colombia that are members of the Colombian Network of Higher Education Institutions for Disability. The researchers contacted the leaders of the inclusive higher education processes at these universities, who convened the population enrolled in the program. Students who voluntarily agreed to participate were summoned for the interview process. Finally, a convenience sample of 28 students with disabilities was selected, including those who met the criteria of being active students in undergraduate academic programs, being linked to the university for more than one year, self-identifying as persons

with disabilities, and being linked to the inclusive higher education actions and programs of their universities.

2.3. Data Collection

Data collection was carried out using two main techniques, as follows:

- 'A Day at University' interviews: This interview explores students' daily experience and "School History" focused on students' school trajectories, teaching–learning process, participation, and social relationships.
- Barriers to learning and participation questionnaire (BAP): This questionnaire was designed to identify students' perceived barriers.
- The Washington Group on Disability Statistics (WG) questionnaire is widely used in disability studies due to its ease of application, low cost, and ability to generate internationally comparable data, which allows for the evaluation and planning of public policies for inclusion [33].

The techniques were validated by experts to ensure the reliability and relevance of the data [34] and consistency with the objectives of this study (see Table 2).

Table 2. Characteristics of data collection instruments.

Title	Authors	Dimensions to Evaluate	Items	Application	Duration	Purpose
Washington Group on Disability Statistics Questionnaire (WG) [33]	Washington Group on Disability Statistics	Physical, Auditory, Visual, Psychosocial Disability	6	Individual, directed to students with disabilities	5	Characterize according to disability and level of functionality of the participating students.
Semi-structured Interview—School History [31]	Research Team	Learning Barriers, Active Participation, Social Relationships	9		20	Describe the perception of active participation and social relationships of students with disabilities.
Questionnaire on Learning and Participation Barriers (BAP) [34]		Attitudinal Barriers, Physical Barriers, Information and Communication Barriers, Pedagogical Barriers, Political Barriers, Organizational Barriers, Cross-cutting Barriers, Specific Barriers	15		10	Identify the learning and participation barriers perceived by the student population.
Narrative: "A Day at University" [31]		Teacher–Student Relationship, Peer Relationships, Curricular Flexibility, Reasonable Adjustments	6		10	Understand the teaching–learning processes in students with disabilities in higher education institutions in northeastern Colombia.

2.4. Data Analysis

Quantitative analysis: During data analysis, the study variables were identified and classified according to their level of measurement, either nominal or ordinal. To describe how the data are distributed, absolute and relative frequencies (%) were calculated for all categorical variables, and corresponding frequency tables were presented. To explore the association between nominal and ordinal variables, contingency tables were used together with relevant tests of association. The Chi-Square Test of Independence was used to assess the independence between two categorical variables within the contingency tables, with the statistic, degrees of freedom (df), and significance value (p) reported. In the 2×2 contingency tables, the continuity correction was applied to adjust the Chi-Square value and minimize possible Type I errors. In addition, the Likelihood Ratio was used as an alternative to Chi-Square when the expected values in the contingency table were low or

when the conditions for using Chi-Square were not met. In situations where the expected values in any cell of the contingency table were less than 5, especially in the 2 × 2 tables, Fisher's exact test was used, reporting the exact *p*-value and its interpretation. The results were interpreted using a significance level of 0.05 and discussed in terms of their statistical significance and practical relevance. Data analysis was carried out using JAMOVI 2.4.14 statistical software.

2.5. Hypotheses

2.5.1. Association Between Type of Disability and Perceived Level of Support

- Null Hypothesis (H_0): There is no significant association between the type of disability and the level of support perceived by students in higher education institutions.
- Alternative Hypothesis (H_1): There is a significant association between the type of disability and the level of support perceived by students in higher education institutions.

2.5.2. Association Between Type of Disability and Perceived Barriers to Learning and Participation

- Null Hypothesis (H_0): There is no significant association between the type of disability and students' perception of barriers to learning and participation in higher education institutions.
- Alternative Hypothesis (H_1): There is a significant association between the type of disability and students' perception of barriers to learning and participation in higher education institutions.

2.5.3. Association Between Type of Disability and Perceived Barriers

- Null Hypothesis (H_0): There is no significant association between the type of disability and the barriers perceived by students in higher education institutions.
- Alternative Hypothesis (H_1): There is a significant association between the type of disability and the barriers perceived by students in higher education institutions.

Qualitative analysis: The interviews were systematized in a Word file; we confirmed the information with the participants; the research team, after reading the narratives, conducted open, axial, and selective coding to synthesize the information and highlight the barriers perceived by the students, which emerged as a new category of facilitators; and, finally, we represented the explanatory model of inclusive education [35].

2.6. Phases of the Research

The development of the research was structured in three phases, as follows:

Theoretical Phase: Focused on literature review and problem formulation.

Fieldwork Phase: Data collection in the participating universities once the informants and students with disabilities in the six universities were identified.

Analytical Phase: Systematization and analysis of the data to produce a report with recommendations for higher education institutions.

2.7. Validity Considerations

During the research process, the following strategies were applied to ensure the validity of this study [36,37]:

- Expert review of the data collection protocol, validating each instrument.
- To reduce bias in data collection, the professionals who first contacted the students with disabilities were those in charge of the inclusive education program, but the research team, who had no previous relationship with any of the students, oversaw the data collection.

- The interviews were scheduled to avoid the possibility of encounter and communication of the content of the interview between the students.
- Once the interviews were systematized, the students with disabilities were summoned again to review and confirm the content.
- The research team was multiple (7 members) and interdisciplinary, composed of professionals from health and social sciences.

2.8. Ethical Considerations

The research project was submitted to the scientific and ethical committee of the university to which the principal investigator is attached, obtaining the respective approval codes CEI-USB-0438-00 and initiation act code C2060111222. The team members also presented the project to the inclusion and faculty committees of their respective universities to obtain approval for the development of this study. All informants consented to the anonymized use of the data and to their use for scientific and educational purposes only. All research activities followed the guidelines of the Ethics Committee.

2.9. Data Availability

Carrillo, Sandra; Pinzón-Ochoa, María; Rangel-Pico, Angélica-Nohemy; Paris-Pineda, Olga María; Gómez Vásquez, María Fernanda; Álvarez Anaya, William Armando; Rivera-Porras, Diego (2024), "Perceptions of Barriers to Inclusion in Students with Disabilities in Higher Education Institutions", Simon Bolivar University, V1, https://doi.org/10.17632/w6h5kt9n3g.1

3. Results

The results are presented in accordance with the objectives of this study and are based on the data collected from students with disabilities from six universities participating in the Colombian Network of Higher Education Institutions for Disability, starting with the description of the characteristics of the participants in socio-demographic terms, the functional limitations of the participants, and the level of support the participants require according to their limitations.

3.1. Participants

The characteristics of the participants from the universities are presented in Table 3.

Table 3 shows that 53.5% of the participants are women; 46.4% study in universities in the city of Bucaramanga, followed by Cúcuta with 35.7%; 66.6% study from 1 to 5 semesters; 39.1% receive support from the university and 30.4% from the state; 60.7% are economically dependent on their families; and only 35.7% have official disability registration.

Regarding the type of disability, it was found that physical and visual disabilities predominate at 34.6%, followed by hearing disabilities at 11.5%, psychosocial disabilities at 7.7%, and intellectual, hearing impaired with low vision, and multiple disabilities at 3.8% each.

The academic programs studied are physiotherapy, occupational therapy, psychology, and social work at 10.7% each; law, industrial engineering, and medicine at 7.1% each; and surgical instrumentation, business administration, occupational health and safety, systems engineering, foreign trade, speech therapy, telecommunications, optometry and degrees in natural sciences and early childhood education at 3.5% each.

Table 3. Socio-demographic characteristics.

	Variable	n	%
Sex	Male	13	46.43%
	Female	15	53.57%
City	Bucaramanga	13	46.40%
	Cúcuta	10	35.70%
	Floridablanca	5	17.90%
Type of Disability	Physical	9	34.60%
	Visual	9	34.60%
	Mental or Psychosocial	2	7.70%
	Intellectual	1	3.80%
	Auditory	3	11.50%
	Hypoacusia—Low Vision	1	3.80%
	Multiple	1	3.80%
Academic Program	Physiotherapy	3	10.71%
	Occupational Therapy	3	10.71%
	Law	2	7.14%
	Surgical Instrumentation	1	3.57%
	Social Work	3	10.71%
	Early Childhood Education	1	3.57%
	Natural Sciences Education	1	3.57%
	Business Administration	1	3.57%
	Occupational Health and Safety	1	3.57%
	Psychology	3	10.71%
	Industrial Engineering	2	7.14%
	Medicine	2	7.14%
	Systems Engineering	1	3.57%
	Foreign Trade	1	3.57%
	Speech Therapy	1	3.57%
	Telecommunications	1	3.57%
	Optometry	1	3.57%
Semester	1st to 5th Semester	18	66.67%
	6th to 10th Semester	10	37.04%
Benefits	University	9	39.13%
	State	7	30.43%
	None	9	39.13%
	Economic Dependence	17	60.71%
	Disability Registration	10	35.71%

Note: Socio-demographic characteristics of students with disabilities from six universities participating in the Red Colombiana de Instituciones de Educación Superior para la Discapacidad.

3.2. Functional Limitation of the Participants

Contingency Table 4 shows the association between the different types of disability and the level of support perceived by individuals. In the case of hearing impairment, it is observed that most individuals (67%) report a medium level of support, while 33% receive low support, and none have high support. For physical disability, 75% of people also receive medium support, followed by 17% with low support, and only 8% with high support. People with intellectual disabilities are evenly divided between those reporting high and medium levels of support, with no cases of low support. All individuals with multiple disabilities report medium support. In the case of psychosocial disability, there is equal distribution, where 50% of people receive high support and 50% receive medium support. In contrast, people with visual impairment show a different pattern, where 67% report high support, while 33% receive low support and no person is at the medium level. In total, the distribution shows that half of the individuals (50%) receive medium support, 30% have high support, and 20% have low support.

Table 4. Analysis of the levels of support required by pupils with different types of disabilities.

DX/Disability		High Support	Medium Support	Low Support	Total
Hearing Disability	Observed	0	2	1	3
	Row %	0%	67%	33%	100%
Physical Disability	Observed	1	9	2	12
	Row %	8%	75%	17%	100%
Intellectual Disability	Observed	1	1	0	2
	Row %	50%	50%	0%	100%
Multiple Disability	Observed	0	2	0	2
	Row %	0%	100%	0%	100%
Psychosocial Disability	Observed	1	1	0	2
	Row %	50%	50%	0%	100%
Visual Disability	Observed	6	0	3	9
	Row %	67%	0%	33%	100%
Total	Observed	9	15	6	30
	Row %	30%	50%	20%	100%

When analyzing the statistical results, the χ^2 value is 17.44 with 10 degrees of freedom and a *p*-value of 0.065. This indicates that, at the 95% significance level, no statistically significant association is found between the type of disability and the level of support, which implies that the null hypothesis cannot be rejected. However, the Likelihood Ratio yields a value of 23.64 with a *p*-value of 0.009, which is statistically significant, suggesting the possible existence of an association between the variables. This is reinforced by Fisher's exact test, whose *p*-value is 0.005, also highly significant. From these results, although the χ^2 test is not conclusive, both the Likelihood Ratio and Fisher's exact test provide evidence that the type of disability is associated with the level of support received (see Table 5).

Table 5. Hypothesis testing on the association between types of disability and perceived level of support.

Statistic	Value	df	*p*-Value
χ^2	17.44	10	0.065
χ^2 with continuity correction	17.44	10	0.065
Likelihood Ratio	23.64	10	0.009
Fisher's exact test			0.005
N (Sample Size)	30		

4. Barriers to Learning and Participation (BAP) Perceived by Students with Disabilities Studying at Undergraduate Level in Higher Education Institutions in Northeast Colombia

Table 6 presents a contingency table between the type of disability and people's perception of barriers. The table shows that, in the case of people with hearing impairment, 67% do not perceive barriers, while 33% do. On the other hand, 83% of people with physical disabilities perceive barriers, and only 17% do not. For people with intellectual disabilities, all (100%) perceive barriers, as do those with multiple disabilities. For people with psychosocial disabilities, the perception of barriers is equally divided, with 50% perceiving barriers and 50% not perceiving barriers. Finally, all visually impaired people (100%) perceive barriers. In total, 83% of the individuals in the sample perceive barriers, while only 17% do not.

Table 6. Association between type of disability and perceived barriers to learning and participation.

DX/Disability		Does Not Perceive	Perceives	Total
Hearing Disability	Observed	2	1	3
	% of row	67%	33%	100%
Physical Disability	Observed	2	10	12
	% of row	17%	83%	100%
Intellectual Disability	Observed	0	2	2
	% of row	0%	100%	100%
Multiple Disability	Observed	0	2	2
	% of row	0%	100%	100%
Psychosocial Disability	Observed	1	1	2
	% of row	50%	50%	100%
Visual Disability	Observed	0	9	9
	% of row	0%	100%	100%
Total	Observed	5	25	30
	% of row	17%	83%	100%

However, when analyzing the statistical results, the χ^2 value is 9.60 with 5 degrees of freedom and a *p*-value of 0.087. This result is not statistically significant at the 95% confidence level, indicating that no clear relationship between the type of disability and the perception of barriers can be affirmed. The Likelihood Ratio, with a value of 9.63 and a *p*-value of 0.086, also does not show statistical significance, although it is close to the threshold. Fisher's exact test, with a *p*-value of 0.091, reinforces this conclusion, as it is not statistically significant either. Although the descriptive results seem to indicate that certain types of disability, such as physical, intellectual, multiple, or visual, are associated with a greater perception of barriers, the statistical tests do not provide sufficient evidence to confirm this relationship. Therefore, it cannot be conclusively stated that there is a significant association between the type of disability and the perception of barriers (see Table 7).

Table 7. Hypothesis test on the association between the type of disability and the perception of barriers to learning and participation.

Statistic	Value	df	*p*-Value
χ^2	9.60	5	0.087
χ^2 with continuity correction	9.60	5	0.087
Likelihood Ratio	9.63	5	0.086
Fisher's exact test		—	—
N (Sample Size)	30	—	—

Considering the second purpose of this study, the following barriers to learning and participation were identified in relation to the types of disability and from the daily experience of students with disabilities at universities.

Physical barriers are the most perceived barriers, affecting 33% of all respondents, followed by policy barriers (23%), absence of barriers (20%), pedagogical barriers (17%), and, to a lesser extent, attitudinal and communication and information barriers (3% each).

Table 8 presents the association between the type of disability and the barriers perceived by people in various categories, such as attitudinal, communication and information, physical, pedagogical, political, or the absence of barriers. For people with hearing impairment, 67% do not perceive any barriers, while 33% perceive pedagogical barriers. For people with physical disabilities, 33% report physical barriers as the most common, while

50% mention political barriers and 17% do not perceive any barriers. People with intellectual disabilities are divided into two equal groups, in which 50% perceive pedagogical barriers and 50% do not perceive any barriers. In the group of people with multiple disabilities, 50% report physical barriers and 50% report pedagogical barriers. Those with psychosocial disabilities are similarly divided, where 50% perceive attitudinal barriers and 50% do not perceive barriers. Finally, in the case of people with visual impairment, 56% perceive physical barriers, 22% pedagogical barriers, 11% communication and information barriers, and 11% political barriers. Overall, physical barriers are the most perceived barriers, affecting 33% of all respondents, followed by policy barriers (23%), absence of barriers (20%), pedagogical barriers (17%), and, to a lesser extent, attitudinal and communication and information barriers (3% each).

Table 8. Types of barriers perceived according to disability type.

Types of Barriers		Disability Type					
		Attitudinal	Communication and Information	Physical	None	Pedagogical	Policy
Auditory Disability	Observed	0	0	0	2	1	0
	% of Row	0%	0%	0%	67%	33%	0%
Physical Disability	Observed	0	0	4	2	0	6
	% of Row	0%	0%	33%	17%	0%	50%
Intellectual Disability	Observed	0	0	0	1	1	0
	% of Row	0%	0%	0%	50%	50%	0%
Multiple Disabilities	Observed	0	0	1	0	1	0
	% of Row	0%	0%	50%	0%	50%	0%
Psychosocial Disability	Observed	1	0	0	1	0	0
	% of Row	50%	0%	0%	50%	0%	0%
Visual Disability	Observed	0	1	5	0	2	1
	% of Row	0%	11%	56%	0%	22%	11%

The statistical tests presented in Table 9 reinforce the above statements. The χ^2 value is 39.50 with 25 degrees of freedom, yielding a *p*-value of 0.033, indicating a significant association between the type of disability and perceived barriers. Although the Likelihood Ratio is not significant at 95% confidence ($p = 0.070$), Fisher's exact test shows a *p*-value of 0.009, providing even stronger evidence that there is a clear association between these variables (see Table 9).

Table 9. Hypothesis tests on the association between type of disability and perceived barriers.

Statistic	Value	df	*p*-Value
χ^2	39.50	25	0.033
χ^2 with continuity correction	39.50	25	0.033
Likelihood Ratio	36.09	25	0.070
Fisher's exact test	—	—	0.009
N (Sample Size)	30	—	—

5. Experiences of Students with Disabilities: Barriers to Learning and Participation in Higher Education Institutions in Northeastern Colombia

This section aims to describe the perceptions of participation and social interactions of students with disabilities in higher education institutions in northeastern Colombia. It seeks to understand the learning processes of these students, highlighting the barriers that they face in their academic and social environments, the challenges and facilitators that impact their educational trajectory, and the recommendations that they, as students, make to their institutions to achieve inclusive and quality higher education.

The process of interacting with other students and teachers reveals attitudinal barriers rooted in the collective due to prejudices and negative stereotypes on the part of the educational staff towards disability, which affect the self-esteem and integration of these students in collaborative activities inside classes and outside of university scenarios. From the point of view of the participants, communication barriers are the absence of educational materials in accessible formats (Braille, audio, and subtitles) and the lack of sign language interpreters, which hinders access to information and makes it difficult to be informed about educational activities, extra-curricular offers, and study material. Thus, all of these are grouped together as organizational barriers, reflecting that even institutional policies and procedures that do not consider the specific needs of students with disabilities can create additional obstacles to their inclusion (see Table 10).

Table 10. Categories of barriers experienced by students with disabilities in university life.

Category/Subcategory	Open Codes	Axial Category
Attitudinal Barriers (Barr_Act)	- Learning and social acceptance (3) - Child cruelty (81) - Bullying (90) - Some prejudices about disabilities (92) - It moves away from you (127) - Attitudes and behavior (147) - Negative perception (148) - Little student disability culture (142)	Perception of academic performance
Physical Barriers (Barr_F)	- Stairs make it difficult to move around (27) - Poor infrastructure (111) - Use of facilities and resources (148) - Lack of signage (140) - Getting around (139)	Personal and family characteristics
Barriers in Information and Communication (Barr_Cominf) / Web Accessibility (BarrWeb)	- Virtual admission examination (19) - Visibility on exams (30) - Noise interference with learning (31) - Lack of participation (35) - Visibility of the board (28) - Communicated needs (57) - Improve interaction and visualization for students with disabilities (77) - English platform (95) - Lack of information (108) - Technology almost nonexistent (92) - Poor infrastructure (113) - Platform not very accessible (115) - Authorization of technological resources (135) - Knowing about new platforms (91)	Institutional, pedagogical, and personal organization and planning strategies in educational processes

Table 10. *Cont.*

Category/Subcategory	Open Codes	Axial Category
Political Barriers (BarrPol)	- Long process and lack of inclusion policies (18) - Inclusion projects (21) - Student welfare (110) - Special ICfes (106) - I have the permission, I have the excuse, and I have the right to present it (93.1) - Everyone has that equality (99) - Diverse classrooms (103)	Evolving processes: requiring vigilance
Organizational Barriers (BarrOrg)	- Time organization (153) - Schedules and routines (158) - As for times that are not very clear (97) - Planned days with exercises and interviews (72) - Failures in logistics (141) - Working time (152)	Lack of communication with inclusive parameters
Transversal Barriers (Barr_trnasv)	- I am very distrustful of people (80) - I demand a lot from myself (81) - The same issue of self-esteem (94) - There is no financial support (122) - They do not know that I study (123) - Personality characteristics (156)	Shortcomings in the physical infrastructure of higher education institutions
Specific Barriers (BarrEsp)	- I leave around 9:00 or 9:30 (86) - I arrive a little late (87) - If I don't study, I don't participate. Academic loss (88) - It makes me uncomfortable (124) - I lose my subjects (130)	Discriminatory actions

Participation and interpersonal relationships between disabled and non-disabled peers are essential to foster an inclusive environment that decreases the perception of rejection and difficulty in socializing, or in the students' words "few friends", "depending on confidence level", and "self-isolation". Communication spaces between teachers and students implies from the students' perspective regular meetings to express specific needs, personalized tutorials, and the use of digital platforms to facilitate the exchange of information, such as "I am repeating English", which, together with inclusive methodological strategies, favors academic performance, such as "incentives and active methodologies" (see Table 11).

Table 11. Categories of learning process and participation of students with disabilities in higher education institutions.

Category/Subcategory	Open Codes	Axial Category
Pedagogical Barriers (BarrPed)	- Lack of methodology (4) - Inclusion and methodological strategies (5) - Practical adjustments needed (29) - Working group (112–114) - Pandemic (145) - Variable schedules with classes and tutorials (71) - Reading (138)	Insufficiency of inclusive methodological strategies
Teacher–Student Relationship Barriers	- Teacher attention (1) - Attentive principal and the need for empathy in teachers (25)	Communication spaces between teacher and student
Relationship Between Peers	- Few friends due to lack of time (49) - Selectivity based on trust (50) - Confidence with precautions (51) - Few friends because of fear of rejection (52) - Few friends because of strong temperament (53) - Few friends due to self-isolation (54)	Need to promote participation and interpersonal relationships among classmates
Curricular Flexibility	- I am repeating English (96) - Varied academic routine (70) - Audiovisual strategies (137)	Academic dynamics
Reasonable Accommodations	- Support and adapted exams (6) - Positive process with necessary adjustments (15) - Reasonable adjustments (23) - Focus on learning (32) - Progressive adaptation (60) - Support in school life (73) - Inclusion and empathy with reasonable accommodation (75) - Incentives and methodologies for each disability (76)	Strategies for the appropriation of learning that equalize opportunities

6. Inclusive Education: Facilitators Identified by Students with Disabilities in Higher Education Institutions in Northeastern Colombia

The perception of students with disabilities in higher education institutions in northeastern Colombia reveals a range of affirmative actions in both educational and personal settings that facilitate participation and reduce barriers. These facilitators, identified by the students themselves, include environmental modifications, institutional support, family commitment, and individual resources. For instance, the availability of elevators and auxiliary furniture, teacher support, and family commitment to the inclusion process significantly enhance their educational experience. Moreover, effective communication and cordial relationships with peers and academic staff also play a crucial role in creating an inclusive environment. These facilitators not only promote the active participation of

students with disabilities, but also contribute to more accessible and equitable education, as described in Table 12.

Table 12. Inclusive education: Facilitators identified by students with disabilities in higher education institutions in northeastern Colombia.

Emergent Category	Open Codes	Axial Category
Environmental Modification Facilitators	- Elevators facilitate mobility (26) - Auxiliary furniture (136)	Personal commitment to the educational process
	- Quick process (14) - Postulation of the mayor's office and contact with the university (16) - Direct contact with directives (17) - Normal proces (20) - Human quality and educational strategies (22) - Good communication (46) - Good friends with positive support (47) - Good relationship and adaptation (55) - Respect and healthy coexistence (56) - Normal and cordial relationship (59) - Talking to the teacher (98) - Teacher support (101) - Closeness (104) - Friends with and without disabilities (128) - There are 20- and 26-year-old classmates (129) - All I have worked with all of them (131) - We collaborate (132) - I have rotated (133) - Organize plans (143) - Duration and permanence (160) - Contextual resource () - Interpersonal resources (161)	Family commitment to the inclusion process
Institutional Facilitators	- Authorization of resources (2) - Excellent inclusion (58) - Simple interview (107) - Quota request (109) - ICT training (134) - Peace of mind and sports benefits (77) - Excellent participation (38) - Organization and integral support (39) - Achievements and challenges about disability (74) - Entrepreneurship fairs (154) - Academic events (155)	Managerial and directive will with the inclusion processes

Table 12. *Cont.*

Emergent Category	Open Codes	Axial Category
Family Facilitators	- Stable relationship (42) - Good relationship with stable support (43) - Mutual support and family values (44) - Healthy stable relationship (45) - Family support in the absence of friends (48) - I talk to my grandmother (119) - Maternal family (125) - They are ready (126) - Family recommendations (10) - Familiarity and staying in the city (11) - Independence with few difficulties (31) - Good support (36) - Family guidance and independence (37) - Family and motivational support (40) - Emotional and financial support (41)	Adequacy in the internal and external institutional social relations
Institutional Facilitators	- Tolerant (82) - Responsible (84) - I am very competitive (83) - Going to study is very cool for me (89) - Talking to the teacher (102) - Career passion (105) - Lack of time (116) - Applying for help (117) - New experience (118) - Clinical psychology (146) - Self-discipline (150) - Consistency and constancy (151) - Individual resources (159)	Adequacy in the institutional physical environment

7. Comprehensive Model on Barriers to Learning and Participation in Higher Education Institutions from the Perspective of Students with Disabilities

The students refer to some barriers in the teaching and learning processes such as the lack of sufficient pedagogical and methodological strategies that favor inclusion, which became more evident with the COVID-19 pandemic. They suggest the implementation of the necessary practical adjustments, the adjustment of timetables so that they are variable, and the use of tutorials, as well as the importance of group work and reading. The perception of students with disabilities on participation and social interaction in university contexts led to the compilation of recommendations that guide and promote future actions for the reduction in barriers to inclusion by higher education institutions, as described in Table 13.

Table 13. Perception and recommendations of students with disabilities for inclusive higher education.

Type of Disability	Main Recommendations for Reducing Barriers to Inclusion in Higher Education Institutions from the Perspective of Students with Disabilities
Visual	Promote accessibility in infrastructure, economic discounts, close communication, teacher training, individualized support, and adapted study methods.
Physical	Ensure accessible infrastructure, reasonable adjustments, teacher training, avoid public exposure, and celebrate diversity.
Auditory	Sign language courses, dialogue spaces, and adaptation of learning rhythms.
Intellectual	Abandon traditional methods and offer support for professional development.
Psychosocial	Continuous monitoring of specific needs.
Cognitive	Activities to foster self-awareness and acceptance of differences.
Multiple	Certified training for university staff on disability issues.

A comprehensive model of the barriers to learning and participation in university institutions in the northeastern Colombia is constituted, which provides an opportunity through strategies of social appropriation of knowledge to make the recommendations of students viable and mobilize a greater number of facilitators and institutional affirmative actions (see Table 14).

Table 14. Comprehensive model on barriers to learning and participation in Colombian higher education institutions in northeastern Colombia.

Comprehensive Model on Barriers to Learning and Participation in Higher Education Institutions in Northeastern Colombia		
Barriers to Learning and Participation	Students with disabilities in universities	Perception based on their university experience
Facilitators of Learning and Participation		Recommendations by type of disability
Network of Higher Education Institutions for Disability Appropriation of Knowledge for Relevant Issues		

The comprehensive model on barriers and facilitators for learning and participation in higher education institutions in northeastern Colombia helps us to understand how students with disabilities face challenges related to physical accessibility, institutional policies, and social attitudes during their academic life. On the other hand, facilitators are essential elements that enhance their university experience, such as the implementation of assistive technologies, the design of accessible environments, and cooperation among professionals. Additionally, the use of innovative pedagogical strategies, such as collaborative learning and accessible virtual platforms recommended by students with disabilities, promotes greater student participation and engagement. In this context, collaboration between institutions and the dissemination of inclusive knowledge are fundamental to building equitable educational spaces that meet the needs of the entire community.

8. Discussion

8.1. Characteristics of Students with Disabilities

In universities in northeastern Colombia, physical and visual disabilities predominate, with a higher presence of women. Most students with disabilities require a medium or high level of support, depending on the type of disability. Architectural barriers and the need for support vary by disability. Similarities with other countries include challenges with architectural barriers and the need for significant support [38,39]. However, there are differences in gender representation and prevalence of disability types [9,10,23,29]. This underlines the urgency of implementing concrete measures to remove these barriers and ensure equitable access [9,10,16,26].

Currently, differences in gender representation and prevalence of disability types in higher education are notable and vary by context. In the United States, transgender students with disabilities face higher rates of unmet medical needs, underscoring the influence of gender identity on accessibility [29,40]. On the other hand, in the United Kingdom, males have a higher prevalence of specific disabilities, such as learning disabilities and mental health problems, compared to females, suggesting an unequal distribution by gender and type of disability [9,11,19,41].

In Colombia, barriers to accessing higher education are also evident, especially for students with disabilities. Educational coverage in Colombia for students with disabilities is still insufficient, which highlights the urgent need for inclusive policies [42], and these differences reflect how social, cultural, and health factors affect the educational experiences of students with disabilities in different countries, so it is necessary to implement concrete measures to remove barriers and ensure equal access to education without discrimination [9,10,16,26].

8.2. Description of the Perception of Participation and Social Relationships of Students with Disabilities in Universities in Northeastern Colombia

The perceptions of the active participation and social relationships of students with disabilities in universities in northeastern Colombia reveal significant challenges related to their full integration [42]. The COVID-19 pandemic exacerbated these issues by highlighting the lack of inclusive pedagogical methodologies and limiting opportunities for participation due to difficulty in accessing technological resources, Internet, and communication platforms that did not implement accessibility adjustments in a timely manner [43]. In response, students suggest practical measures, such as adapting timetables, personalized tutoring, and fostering teamwork, to strengthen their social and academic inclusion. However, their exclusion from student representation spaces highlights the need for more inclusive and effective institutional policies [44]. In addition, it is essential to design institutional activities, such as walks, festivals, and campaigns, that include the active participation of students with disabilities, creating opportunities beyond the classroom for social interaction and the construction of truly inclusive communities.

8.3. Barriers to Learning and Participation Perceived by Undergraduate Students with Disabilities in Higher Education Institutions in Northeastern Colombia

The barriers to learning and participation perceived by students with disabilities in higher education institutions in northeastern Colombia vary according to the type of disability. Students with hearing disabilities report fewer barriers compared to those with physical, cognitive, visual, or multiple disabilities, who face significant challenges in their educational process. Physical barriers are particularly common, affecting the educational experience due to poor infrastructure [45]. In addition, barriers related to information and communication, such as the lack of adaptations in virtual platforms, represent significant obstacles [9,10]. At the attitudinal level, discrimination and prejudice limit social interaction and learning, creating a non-inclusive environment [46,47].

At the policy level, the absence of clear inclusion policies and bureaucratic processes make it difficult to implement adaptive measures [16,48]. Organizational barriers include inadequate time management and rigid academic timetables, while those related to academic performance include difficulties in participating in classes and missing classes [7–10,49]. Comparative studies confirm that physical and attitudinal barriers are predominant, although there are differences in perception depending on the type of disability [14,50]. To improve inclusion, these barriers need to be addressed through clear policies, accessible infrastructure, and disability awareness. In addition, the implementation of programs that

promote effective communication and institutional support can significantly improve the educational experience of students with disabilities.

8.4. Learning Processes in Students with Disabilities in Higher Education Institutions in Northeastern Colombia

This study identifies several pedagogical barriers faced by students with disabilities in higher education, highlighting the insufficiency of inclusive methodological strategies. The lack of adapted methodologies restricts learning opportunities, as many teachers do not have the necessary training to implement accessible pedagogical approaches. This lack also affects the relationship between teacher and student, due to the absence of adequate spaces for communication and limited infrastructure, which hinders students' interaction and active participation [28,51]. To overcome these limitations, it is crucial to promote activities that foster empathy and social interaction, as well as to provide continuous training for teaching staff in inclusive strategies. In addition, the implementation of accessible learning resources is essential to ensure equity in access to knowledge and full participation of students with disabilities in higher education [30].

In response to academic demands and in the absence or insufficiency of institutional support, students with disabilities develop various strategies to advance in their learning process. These include perseverance and self-organization, as evidenced by studies on inclusive assessment and academic experiences [3,16,23]. They also rely on informal support networks, such as peers and family members, who provide help with homework and access to study materials. In addition, assistive technologies, such as voice recognition software and audio books, are key tools to compensate for the lack of institutional accommodations [9]. These strategies enable students with disabilities to address the significant barriers present in their educational environment.

The tensions between standardized assessment and student diversity in higher education highlight the need to reform evaluative practices to ensure equity and inclusion. While standardization aims for uniformity, it often overlooks the contexts and needs of students with disabilities, resulting in assessment experiences perceived as rigid and exclusionary. Addressing these limitations requires a transparent approach that values diversity and places student experiences at the heart of assessment design [9]. This rethinking would enable the development of systems that respect individuality and foster an inclusive educational environment.

A flexible curriculum is essential for addressing diversity in education, as it maintains general objectives for all students while adapting teaching to their social and cultural contexts and learning styles. This approach incorporates pedagogical adaptations and specific resources that, when combined with Universal Design for Learning, meet the individual needs of students with disabilities. Through observation and direct communication, strategies are developed to foster their development, participation, and autonomy, ensuring both equal opportunities and the fulfillment of their rights. These practices strengthen an inclusive and equitable educational environment [46,52,53].

8.5. Facilitators of Inclusive Higher Education

Facilitators in the context of inclusive higher education are emerging due to a growing recognition of the need to ensure equal opportunities for all students, regardless of their disabilities. This change has been driven by several factors, such as the advancement in the understanding of the barriers faced by students with disabilities and the growing social and educational demand for inclusive policies [54]. In addition, changes in international and national regulations on human rights and accessibility have forced educational institutions to adapt and create more accessible and equitable environments [51].

The adoption of assistive technologies and the implementation of inclusive pedagogical methods, such as online facilitation, collaborative learning, and project-based learning, enable students with disabilities to participate more effectively, thereby fostering their inclusion in the educational process [55]. Furthermore, the development of accessible infrastructure and the enforcement of inclusive policies address not only regulatory requirements, but also a deeper understanding of the diverse needs of students [56].

In this context, inclusive education should be regarded as a comprehensive process that encompasses not only modifications to physical and social environments, but also institutional commitment, family collaboration, and students' personal dedication. Environmental adaptations, such as the installation of lifts and the use of appropriate furniture, are crucial for eliminating architectural barriers and ensuring mobility for students with disabilities [50,51,57–59].

Students with disabilities also recommend several strategies to enhance inclusion, as follows: improving infrastructure accessibility, offering financial discounts, maintaining close communication, training educators, providing individualized support, and adapting teaching methods. These recommendations, combined with institutional commitment to inclusive education [7,8,60] and the emotional and financial support of families, are crucial for the retention and academic success of students with disabilities [51,57,58].

9. Conclusions

This study has highlighted that students with disabilities in higher education institutions in northeastern Colombia perceive a range of barriers that hinder their full inclusion. These barriers are primarily concentrated in pedagogical, infrastructural, and communication aspects. While this study is limited by its small sample size, the findings underscore the need to implement more inclusive strategies within educational institutions in the region.

Noteworthy affirmative actions by institutions aimed at reducing barriers were also identified in the studied region. These include institutional, familial, and personal facilitators, such as effective communication with administrative staff, peer support within classrooms, and academic processes, as well as the commitment and resilience of students and their families.

The teaching and learning processes for students with disabilities in higher education institutions in northeastern Colombia remain challenging, particularly in recognizing specific educational support needs, providing tailored assistance, and enhancing the capacity of academic staff to implement reasonable adjustments. These challenges are partially mitigated by educational strategies that prioritize effective communication between teachers and students. A holistic approach is required to address pedagogical barriers effectively.

The proposed comprehensive model, based on the voices of students with disabilities, highlights the necessity of inter-institutional collaboration to create inclusive educational environments in northeastern Colombia. By combining the reduction in physical and attitudinal barriers, teacher training, and the use of accessible technologies, optimal learning conditions can be established for all students. It is essential for educational institutions to implement sustainable policies that ensure access, retention, and academic success for students with disabilities.

In broader terms, the findings emphasize the urgency of adopting institutional policies that promote more robust inclusive education. Future research should delve deeper into the relationships between types of disability, pedagogical strategies, and academic outcomes.

The implications of this study extend beyond the immediate context of northeastern Colombia. Policymakers should consider these findings to develop and implement more effective inclusive education policies at both national and regional levels. Educational insti-

tutions should adopt best practices from regions with more advanced inclusive education systems, such as the United States and France, to enhance their own strategies. Practically, universities should invest in continuous professional development for academic staff to better support students with disabilities, including training in inclusive pedagogical practices and the use of assistive technologies. Additionally, institutions should foster a culture of inclusivity by promoting awareness and reducing stigma associated with disabilities.

For future research, it is crucial to explore the long-term impact of inclusive education policies on academic outcomes and social integration of students with disabilities. Comparative studies across different regions and countries can provide valuable insights into the effectiveness of various inclusive strategies. Moreover, longitudinal studies tracking the progress of students with disabilities from enrolment to graduation can help to identify critical factors that contribute to their success. By addressing these broader implications, this study contributes to the ongoing discourse on inclusive education and provides a foundation for future policy, practice, and research initiatives aimed at improving the educational experiences of students with disabilities.

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