

# Curriculum Development on the Human Rights of People with Disabilities for Future Medical Education: Using a modified Delphi

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## Research Article

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## Abstract

## Background

Healthcare workers' negative attitudes towards people with disabilities and limited understanding of disability characteristics create barriers for people with disabilities to access healthcare services. Healthcare workers untrained in treating patients with disabilities may exhibit negative attitudes, such as a doctor's unilateral decisions or insufficient respect for patients' experiences and opinions. This study aimed to develop a systematic medical education curriculum for increasing understanding of people with disabilities and treating patients with disabilities.

## Methods

The authors conducted a systematic literature review to develop and verify the basic framework of the educational content and curriculum. Two surveys were also developed using the Delphi method to evaluate the adequacy and necessity of educational topics. Items with a content validity ratio equal to or greater than the minimum value were considered valid. Survey panels comprised academic experts and healthcare practitioners who were working with people with disabilities. We conducted two surveys, one for a basic and the other for an advanced course, in which 13 to 16 respondents took part.

## Results

The authors selected 13 topics for the 'Basic Introductory Course' and included general educational content on the health rights of people with disabilities focused on improving students' knowledge of disabilities. The authors also selected 12 topics for the 'Care and Communication for Patients with Disabilities Course' designed to improve students' understanding of interviewing and communicating with patients with disabilities.

## Conclusions

In Korea, disability has received little attention in the medical curriculum to date. The curriculum developed in this study provides preliminary data for guiding future directions in medical education and developing specific support plans for education that promotes people with disabilities' health rights.

## Background

The number of registered people with disabilities in South Korea was 2,618,000 as of 2019, accounting for about 5% of the total population [1] with 46.7% aged 65 years and older and 30.6% aged 50 to 64 years old [2]. The number of older adults people with disabilities has increased due to an aging population; thus, there is an increased need to provide effective welfare and medical services for people with disabilities [3].

People with disabilities tend to have poorer health than people without disabilities due to the difficulties they face in receiving early treatment and preventive health management, as well as the increased prevalence of chronic diseases among people with disabilities and their difficulty paying for medical expenses [3–5]. Healthcare for people with disabilities in South Korea remains inadequate due to obstacles to physical access, such as economic burdens, lack of convenient facilities, unsuitable medical equipment, and a lack of understanding of disability among healthcare workers [6]. Moreover, people with disabilities in South Korea experience significant inconvenience in accessing medical care due to healthcare workers' poor understanding of disability characteristics, with 34.8% reporting they have experienced a lack of understanding and care, 26.8% mentioning a lack of amenities, and 14.1% claiming they have experienced difficulty communicating and accessing information [7].

Some global initiatives have attempted to address these problems, such as the European Commission's (EC) European Disability Strategy 2010–2020, which established practical strategies to solve various problems at the national level. The EC acknowledged that people with disabilities have limited access to daily medical services due to inequality unrelated to their disabilities and attempted to ensure equal access to medical services and preventive healthcare across the board. The EC aimed to develop a policy to support the development of national educational programs for healthcare workers and increase awareness of people with disabilities in medical schools [8].

Major medical schools in Western countries include various education curricula to help students gain an understanding of disabilities. For instance, Jacobs School of Medicine and Biomedical Sciences in the United States provides education on the knowledge, attitudes, and skills related to treating people with disabilities, which has been shown to have positive effects on students' attitudes [9]. The Leeds School of Medicine in the United Kingdom provides seminars led by people with intellectual disabilities to help eliminate stereotypes and promote communication [10]. Also, McMaster University School of Medicine in Canada teaches communication with people with disabilities utilizing audio-visual content and a blended educational approach, including interaction with people with disabilities, which improves students' confidence and proficiency in treating those with disabilities [11].

To improve the psychological accessibility of medical services for people with disabilities, South Korea implemented the 'Act on Guarantee of Right to Health and Access to Medical Service for Persons with Disabilities' in December 2017, stipulating that state and local governments should provide periodic education on the health rights of people with disabilities for healthcare workers, such as doctors, nurses, and medical technicians [12, 13]. In addition, the Ministry of Health and Welfare considered including education on understanding disability in university curricula for healthcare students [14]. However, despite the government's plans, there is currently no formal curriculum related to understanding disability in Korea's medical curriculum. Additionally, doctors felt insufficiently prepared and were not confident in prescribing treatments and assistive devices to children with disabilities [15] due to limited education, suggesting there is a need for education that deepens healthcare workers' understanding of disability in medical schools [15, 16].

It is required that doctors have an understanding of people with disabilities and the necessary knowledge, attitudes, and skills for treating various disabilities to provide effective medical services [17]. This can be acquired through education on disability and frequent contact with people with disabilities [18–20]. Therefore, this study aimed to develop a systematic curriculum to help medical students understand disabilities and better interact with patients with disabilities. A framework of the education curriculum on the health rights of people with disabilities for medical students was prepared after conducting a systematic review of this type of education program both domestically and abroad. The validity of the proposed education curriculum was verified using a modified Delphi method. This study was conducted according to a total of 5 steps towards developing a curriculum for the right to health of people with disabilities.

## Methods

Understanding the current status and actual condition of a person with a disability

We investigated the concept and public understanding of disability, the current status of health problems among the disabled, the current health services available for them, the factors of medical use, and the domestic and international health care policies and systems in place for the disabled.

Systematic Literature Review

By systematically considering the current status of education on the health rights of the disabled in both domestic and foreign medical schools, this study conducted a systematic literature review process to identify recent research trends and analyse effective educational content. The 'PICOTS-SD' strategy was used to search for literature that met the study objectives. A total of 5 databases (i.e., PubMed via MEDLINE, EMBASE via Elsevier, Cochrane CENTRAL, RISS, and KoreaMed) were used. Papers published before April 17, 2020, were considered.

Initial Draft

We systematically reviewed current medical education resources for people with disabilities both domestically and abroad to develop a basic curriculum framework and identify educational items using the process developed by Kim and colleagues [21]. We analysed 32 studies and excluded 6 due to a high risk of bias. None of the studies analysed came from the Korean literature. Educational items were divided into the 'Basic Introductory Course' and 'Care and Communication for Patients with Disabilities Course'. The initial draft contained 14 educational topics each, including necessity, area, goal, content, and method. The 'Basic Introductory Course' contained general educational content on the health rights of people with disabilities and focused on improving students' knowledge. The 'Care and Communication for Patients with Disabilities Course' was designed to improve healthcare professional's interview and communication skills when treating patients with disabilities based on the content learned in the 'Basic Introductory Course'.

Expert survey using the Delphi method

The selection of an expert panel is very important because the results of the Delphi survey depend entirely on expert knowledge, opinions, and intuition [22]. Therefore, we conducted a purposeful sampling of academic experts and practitioners in health fields such as medical education, rehabilitation medicine, preventive medicine, and social welfare to form a panel of experts suitable for our research purposes. Our panel of experts consisted of assistant professors, academics in more senior positions in their field of study, and experts who were team leaders or in higher positions in related organizations. All members of the panel were selected according to the purpose and characteristics of this study.

We divided questionnaires and selected separate expert panels for the 'Basic Introductory Course' and 'Care and Communication for Patients with Disabilities Course'. Two surveys with different panels for each course were conducted via e-mail between August and September 2020. For the 'Basic Introductory Course', 16 and 15 people responded to the first and second surveys, respectively, while for the 'Care and Communication for Patients with Disabilities Course', 14 and 13 people responded, respectively. This study was approved by the Institutional Review Board at Kyung Hee University in Korea, and informed consent was obtained from all participants (KHSIRB-20-320 [RA]).

The first Delphi survey evaluated the necessity and adequacy of each potential educational item on a 4-point Likert scale (1 = *not necessary/adequate at all*, 4 = *very necessary/adequate*). Necessity indicated whether the item was essential to medical students, while adequacy indicated whether the educational content and method were adequate for the educational topic. For the second Delphi survey, we revised the questionnaire based on the results of the first survey and sent them to the expert panel for re-evaluation of items upon which agreement was lacking in the first survey. Based on the results of the second survey, we composed the final draft of the curriculum. We analysed the survey results by calculating the content validity ratio (CVR) for each item. Based on Lawshe's method (1975) [23], we considered only items with a CVR value equal to or above the minimum based on the number of respondents at a significance level of 0.05 as valid.

Drawing the final draft

Based on the results of the second Delphi survey, the curriculum (final draft) for the right to health for people with disabilities was formed. This curriculum proposes possible future directions for medical education to ensure the health rights of people with disabilities.

## Results

Initial draft

Our review of previous studies revealed that various educational methods (e.g., blended learning incorporating theoretical and practical education) and educational strategies (e.g., blended education including all school-based, community-based, and clinical-based practice training) have been trialled [24–26].

Thus, we organized the draft curriculum using a blended education method, including school-based lectures as well as clinical practices and community-based activities.

In addition, we found that when people with disabilities and their families or guardians participated in educational programs and interacted directly with students, this positively influenced students' attitudes towards people with disabilities [27, 28]. Therefore, our initial draft included the participation of people with disabilities and their families and guardians in the education curriculum. Furthermore, we found that previous education methods aimed at improving knowledge about disabilities and improving the interview and communication skills of those interacting with people with disabilities [29–31]. Thus, we followed a similar approach in our curriculum. Moreover, international studies suggested the necessity of some common traits in future education.

As previous studies have focused on one-time or short-term education, long-term effects on students' knowledge, attitudes, and skills were not determined in the proposed curriculum. Medical students who participated in such short-term education programs stated that they were insufficient, and that additional education was required [24, 25, 31–36]. Therefore, long-term education programs on the health rights of people with disabilities are necessary. We developed 14 educational topics in the initial drafts of the 'Basic Introductory Course' and the 'Care and Communication for Patients with Disabilities Course' to address this need.

Finally, as the characteristics of people with disabilities vary according to disability type, we considered comprehensive medical education on various disabilities to be necessary [24, 25, 30]. As such, our curriculum included various disabilities: physical disabilities, hearing impairment, visual impairment, and developmental disorders.

Analysis of expert survey results using Delphi method

## Expert panel characteristics

The sex distribution of the panels was relatively even. Over half of the respondents had 10 to 20 years of experience in their fields. The panel for the 'Basic Introductory Course' included more practitioners from associations and organizations for people with disabilities, while the 'Care and Communication for Patients with Disabilities Course' panel included more academic experts in rehabilitation medicine (Table 1).

Table 1  
General Characteristics of the Delphi Expert Panel

Division		First survey	Second survey
		n (%)	n (%)
<b>- Basic Introductory Course</b>			
Sex	Men	9 (56%)	8 (53%)
	Women	7 (44%)	7 (47%)
Specialty and major	Academia	7 (44%)	6 (40%)
	- Rehabilitation medicine	4 (57%)	4 (67%)
	- Social welfare	2 (29%)	2 (33%)
	- Preventive medicine	1 (14%)	0 (0%)
	Field (associations and organizations)	9 (56%)	9 (60%)
Career	Less than 10 years	3 (19%)	3 (20%)
	10 to 20 years	11 (69%)	10 (67%)
	More than 20 years	2 (13%)	2 (13%)
Total		16	15
<b>- Care and Communication for Patients with Disabilities Course</b>			
Sex	Men	8 (57%)	7 (54%)
	Women	6 (43%)	6 (46%)
Specialty and major	Academia	12 (86%)	11 (85%)
	- Rehabilitation medicine	9 (75%)	9 (82%)
	- Medical education	2 (17%)	2 (18%)
	- Preventive medicine	1 (8%)	0 (0%)
	Field (associations and organizations)	2 (14%)	2 (15%)
Career	Less than 10 years	1 (7%)	1 (8%)
	10 to 20 years	11 (79%)	10 (77%)
	More than 20 years	2 (14%)	2 (15%)
Total		14	13
*Percentages (%) are rounded to the nearest whole number.			

## First survey results

The survey for the 'Basic Introductory Course' contained eight items with a CVR value of 0.49 or higher for necessity and adequacy (Table 2). These items were not re-evaluated in the second survey. However, five items required re-evaluation (Table 2). One item (disability experience education ) was deleted as it had a low CVR value for both necessity and adequacy. Experts in the first survey noted that this item 'can make students feel more negative about people with disabilities' and that education should teach students that 'inconveniences are caused by social and environmental problems'.

The survey for the 'Care and Communication for Patients with Disabilities Course' had nine items with a CVR value of 0.51 or higher for both necessity and adequacy (Table 2). These items were not re-evaluated in the second survey. We re-evaluated two items with a CVR value of 0.51 or higher for necessity and adequacy (consensus reached) that were modified by referring to common expert opinions and one item with a CVR value lower than 0.51 for necessity and adequacy (Table 2). Two items (patient consent  and patient consent ) were deleted as they had low CVR values for necessity and adequacy. Experts in the second survey stated that it would be difficult to plan and conduct meetings with patients with disabilities in busy hospitals and suggested 'replacing clinical-based education with community-based education'. Experts also noted that role-playing activities may be inappropriate for developmental disorders, as they require an in-depth understanding of the disability.

## Second survey results

All five re-evaluated items for the 'Basic Introductory Course' had a CVR value of 0.49 or higher, indicating high validity, and were included in the final draft. Likewise, all three re-evaluated items for the 'Care and Communication for Patients with Disabilities Course' had a CVR value of 0.54 or higher, indicating high validity, and were included in the final draft (Table 2).

We revised the curriculum contents based on the survey results. We selected 13 topics for the 'Basic Introductory Course' and 12 topics for the 'Care and Communication for Patients with Disabilities Course' (Supplementary Information, Additional File 1).

## Discussion And Conclusion

The results of this study suggested that people with disabilities and their families and guardians should be included in educational programs and students should be allowed to interact with them. This was in line with previous research [37]. For instance, previous studies found panel discussions that included patients with disabilities to be an effective and meaningful educational method for medical students [24]. Contact-based education through direct encounters or interactions helps medical students build communication skills and gain confidence in treating people with disabilities. Clinical practice and community-based education in rehabilitation hospitals could provide students with the opportunity to engage in real contact with people with disabilities [28]. In addition, education programs that use standardized patients help medical students face real-world situations, preparing them for the reality of a clinical environment in a space where students can learn from their mistakes, receive feedback, and reflect [38]. However, there are some practical obstacles to using standardized patients. First, it may be difficult to accurately portray subtle differences in characteristics exhibited by people with disabilities. In addition, stereotypes may be inadvertently reflected, which can negatively affect students and reduce the effectiveness of education. Therefore, real patients with disabilities should be included in education programs whenever possible [39].

Additionally, an appropriate form of evaluation is required to determine whether medical students' knowledge, attitude, and skills related to the treatment of people with disabilities have improved. Education should focus on improving students' skills, such as treatment and communication skills, when caring for patients with disabilities, rather than simply providing knowledge. Such skills can be evaluated using clinical performance tests, observation and feedback through video recording, self-reporting, and student discussion [30, 34]. If specific goals or evaluation criteria are not presented to students, their interest may decrease and they may avoid active participation [29, 40]. Therefore, appropriate evaluation methods should be considered when designing educational programs [41].

Furthermore, improper education on the health rights of people with disabilities can instil negative perceptions of disability. Theoretical education may emphasize the medical aspects of disability, such as disability characteristics, onset, and causes. Therefore, education must also be based on social and environmental rather than solely medical perspectives, focusing on preventive healthcare rather than on the health problems of people with disabilities to prevent the development of prejudice.

Moreover, education must be continuous and educational methods that increase student motivation should also be considered. As noted above, the long-term effects of short-term education on student attitudes and behaviour are unknown [11, 24, 31, 40]. Furthermore, as positive attitudes towards people with disabilities may decrease over time [29, 42, 43], continuous education may be required for practicing doctors. Education with low levels of response and participation may be less effective and may feel like a burden, perceived as merely a credit requirement by students. Some medical schools offer education on the health rights of people with disabilities as an elective course. The effectiveness of such electives is uncertain, as students who choose these courses are likely to already have an interest in or a positive attitude towards people with disabilities [26, 28, 31]. However, the elective nature of these courses may simultaneously increase student interest and participation.

Finally, medical education on disabilities and skills for caring for people with disabilities must have its basis in a systematic curriculum that ensures that graduates have the required attitudes and skills [25, 34]. However, including such courses as regular curricula in medical schools may be challenging. Several practical problems may arise, such as obtaining the approval and budget for a new educational program, organizing the appropriate faculty, and establishing the necessary community network [26]. These issues require universities and communities to make a collective effort. Awareness of the necessity of education for the health rights of people with disabilities must increase among university faculty members, government policymakers, and the community as a whole.

This study divided the curriculum of medical education on the health rights of people with disabilities into the 'Basic Introductory Course' and the 'Care and Communication for Patients with Disabilities Course'. This paper presents details of the educational topics, needs, areas, goals, content, and methods of these courses. However, the effectiveness of the curriculum proposed by this study has not yet been evaluated. Future research should test the effectiveness of this curriculum by applying it in a real educational context.

This study emphasized the need for education on the health rights of people with disabilities among medical students in South Korea, where there is currently a lack of awareness. To improve access to medical services for people with disabilities, South Korea aims to include modules on the understanding of disability in its medical school curricula [14]. The curriculum proposed in this study is in line with this national policy. It offers a foundation for the development of mid- to long-term education in this field. In addition, the curriculum proposed here would facilitate cooperation with people with disabilities living in the community, a method that has not been considered in medical school curricula to date. This would enable people with disabilities to be perceived as fellow members of society rather than individuals that make us feel uncomfortable. The learning opportunities provided by this curriculum will develop individuals' senses of social accountability and will help medical students to actively engage in and establish working partnerships with patients with disabilities.

Finally, the proposed curriculum would allow medical students to understand the causes of the difficulties people with disabilities face in accessing medical services and to consider possible solutions. This curriculum is likely to help medical students acquire professional skills and attitudes, as well as increase their sense of social accountability when treating patients with disabilities.

## Abbreviations

## Declarations

### Acknowledgement

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### Authors' contributions

BL contributed to the study concept, study design, data analysis, data interpretation and writing the manuscript. SYP conceived the study, and reviewed the manuscript. All authors approved the final manuscript.

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### Availability of data and materials

NA

### Ethics approval and consent to participate

This study was approved by the Institutional Review Board at Kyung Hee University in Korea, and informed consent was obtained from all participants (KHSIRB-20-320 [RA]).

### Consent for publication

All authors approve to publish the work.

### Competing Interests

The authors declare that they have no competing interests.

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## Tables

### Table 2 Results of the First and Second Delphi Surveys

- Basic Introductory Course

\*minimum CVR: 0.49 (first and second survey)

- Care and Communication for Patients with Disabilities Course

\*minimum CVR: 0.51 (first survey), 0.54 (second survey)

## Figures

First Delphi		Second Delphi					
Topic	CVR	Results		CVR	Results		
		Necessity	Adequacy		Necessity	Adequacy	
1	Concept of disability and understanding of disability	1.00	1.00	Selected	-	-	Selected (first)
2	Definition and characteristics of disability	0.75	0.88	Selected	-	-	Selected (first)
3	Laws and policies related to people with disabilities at home and abroad	0.75	0.63	Selected	-	-	Selected (first)
4	Health of people with disabilities	1.00	1.00	Selected	-	-	Selected (first)
5	Obstacles to using medical services I	1.00	0.88	Selected	-	-	Selected (first)
6	Obstacles to using medical services II (special lecture by people with disabilities)	1.00	0.88	Selected	-	-	Selected (first)
7	Understanding assistive technology devices for people with disabilities	0.63	0.38	Reevaluation required	0.63	0.73	Selected (second)
8	Disability experience education III	0.25	0.25	Reevaluation required	0.73	0.60	Selected (second)
9	Etiquette for various disabilities	0.63	0.50	Selected	-	-	Selected (first)
10	Communication with people with disabilities	0.88	0.63	Selected	-	-	Selected (first)
11	Disability experience education IV	0.00	0.00	Deleted	-	-	Deleted (first)
12	Community service	0.63	0.38	Reevaluation required	0.63	1.00	Selected (second)
13	Meeting people with disabilities in the community	0.25	0.38	Reevaluation required	0.87	0.73	Selected (second)
14	Research related to people with disabilities	0.50	0.25	Reevaluation required	0.50	0.73	Selected (second)

First Delphi		Second Delphi					
Topic	CVR		Results	CVR		Results	
	Necessity	Adequacy		Necessity	Adequacy		
1	What is communication?	0.71	0.71	Selected	-	-	Selected (first)
2	Building rapport with patients with disabilities	1.00	0.86	Selected	-	-	Selected (first)
3	Communication with patients with disabilities: type ☒ (patients with visual impairment)	1.00	0.86	Selected	-	-	Selected (first)
4	Communication with patients with disabilities: type ☒ (patients with hearing impairment)	0.86	0.71	Selected	-	-	Selected (first)
5	Communication with patients with disabilities: type ☒ (patients with developmental disorders)	0.86	0.71	Reevaluation required	1.00	0.85	Selected (second)
6	Patient consent ☒ (theory)	0.71	0.57	Reevaluation required	1.00	0.85	Selected (second)
7	Patient consent ☒ (consent for contrast media)	0.29	0.29	Deleted	-	-	Deleted (first)
8	Patient consent ☒ (organ donation)	-0.14	-0.29	Deleted	-	-	Deleted (first)
9	Basic principles of treatment of patients with disabilities	1.00	1.00	Selected	-	-	Selected (first)
10	Treatment of patients with disabilities: type ☒	1.00	1.00	Selected	-	-	Selected (first)
11	Treatment of patients with disabilities: type ☒	0.57	0.57	Selected	-	-	Selected (first)
12	Meeting patients with disabilities	0.43	0.43	Reevaluation required	0.54	0.69	Selected (second)
13	Mock interviews using standardized patients ☒ (patients with visual impairment)	0.71	0.57	Selected	-	-	Selected (first)
14	Mock interviews using standardized patients ☒ (patients with intellectual disabilities)	0.86	0.57	Selected	-	-	Selected (first)

<b>Step 1</b>	<b>Understanding the current status and actual condition of a person with a disability</b>
	<ul style="list-style-type: none"> <li>• Understanding the current situation and status of people with disabilities in South Korea.</li> <li>✓ Investigation of the concept of disability and understanding of disability, health problems of people with disabilities, healthcare service use for people with disabilities and obstacles to using medical services, and domestic and overseas healthcare policies and systems for people with disabilities.</li> <li>• Investigation of education on improving awareness of people with disabilities in South Korea.</li> <li>✓ Analysis of the contents of education on the health rights of people with disabilities stipulated in the 'Act on Guarantee of Right to Health and Access to Medical Service for Persons with Disabilities'.</li> </ul>
⇩	
<b>Step 2</b>	<b>Systematic Literature Review</b>
	<ul style="list-style-type: none"> <li>• Understanding education on the health rights of people with disabilities for medical students at home and abroad through a systematic literature review.</li> <li>• The "PICOTS-SD" strategy was used to search for literature that meets the objectives of this study.</li> <li>• Total of 5 databases (PubMed, EMBASE, Cochrane CENTRAL, RISS, KoreaMed) was used.</li> </ul>
⇩	
<b>Step 3</b>	<b>Initial Draft</b>
	<ul style="list-style-type: none"> <li>• The curriculum (initial draft) was designed in the system consisting of educational topics, necessity, areas, goals, content, and methods.</li> <li>• It consisted of the Basic Introductory Course (14 topics) and Care and Communication for Patients with Disabilities Course (14 topics).</li> </ul>
⇩	
<b>Step 4</b>	<b>Expert Survey using the Delphi Method</b>
	<ul style="list-style-type: none"> <li>• Verification of the basic framework and educational items of the curriculum (initial draft) for education on the health rights of people with disabilities for medical students.</li> <li>• Two Delphi surveys were conducted after review and approval by the Institutional Review Board (IRB).</li> </ul>
⇩	
<b>Step 5</b>	<b>Drawing the final draft</b>
	<ul style="list-style-type: none"> <li>• Education on the Health Rights of People with Disabilities for Medical Students (Final Draft).</li> <li>✓ It consisted of the Basic Introductory Course (13 topics) and Care and Communication for Patients with Disabilities Course (12 topics).</li> <li>• We suggest future directions for education on the health rights of people with disabilities for medical students.</li> </ul>

Figure 1

System for Conducting Research

## Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Appendixfn.docx](#)