



DEVELOPING COMPETENCIES FOR THE DENTAL CARE OF PEOPLE WITH SENSORY DISABILITIES: A PILOT INCLUSIVE APPROACH

ABSTRACT

Objectives: Different training programs for healthcare students that have a biopsychosocial approach have been reported to have a significant beneficial impact on their education, attitudes and competencies towards Persons with Disabilities. In Chile, however, there are no explicit legal obligations to provide healthcare professionals with the skills required to offer their services in public or private healthcare facilities to Persons with Disabilities. Given this situation, a pilot one-semester elective course for dental students was carried out focusing on people with visual disabilities and people with hearing disabilities, incorporating Deaf and blind teachers. The aim of this paper is to describe the perceptions and results of this pilot course aimed at identifying and responding to the healthcare needs of people with visual or hearing disability pilot one-semester elective course for dental students was carried out focusing on people with visual disabilities and people with hearing disabilities, incorporating Deaf and blind teachers.

Materials and methods: A multi-strategy 17-week elective course was carried out in the first semester of Dentistry School with 14 students enrolled. Educational strategies used were lectures, guided discussion (GD), role-play (RP), standardized patients (SP) and case method teaching (CM), with the participation of Deaf and blind teachers. Once the program had finished, the students answered a survey designed with open-ended questions, and GD, RP, SP, CM, attendance and grades obtained were recorded and analyzed.

Results: Attendance was 82–100%. All students passed the course with the highest score, and thus were able to define the medical approach needed in cases of hearing and visual disability, recognize the cultural and linguistic aspects of people with visual disability and people with hearing disability and learn their means of communication.

Conclusions: This course was successful in helping the students to identify and respond to the healthcare needs of people with visual or hearing disability.

Key Words: Sign language, braille, students, dental.

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INTRODUCTION

The current biomedical approach does not encourage the inclusion of People with Disabilities, as it places the *disability* within the person, rather than seeing it as the result of the interactions between the person and the environment.^{1,2} According to the World Health Organization, Persons with Disabilities are two times more likely to find that health-care providers' skills do not meet their needs and three times more likely to report being denied healthcare.³ One of the main reasons for this situation is the lack of training in healthcare professionals regarding subjects such as how to address Persons with Disabilities and the use of a more bio-psychosocial approach, which would satisfy the health-care needs of everyone, including Persons with Disabilities.⁴ In dental health, patients with sensory disabilities have a high prevalence of dental caries and poor oral hygiene.⁵

Visual and hearing disabilities are two of the most prevalent disabilities around the globe,⁶ and according to Bachmann, patients with these disabilities are the most complex population for healthcare providers due to communication barriers.⁴ People with an early onset of moderate to profound hearing loss usually call themselves "Deaf" and define themselves as part of a community with its own culture, values and language, where sign language (SL) is their most important cultural element.^{7,8} People with a visual disability use different devices for reading and writing; people with congenital blindness usually use Braille, screen readers and voice recognition.⁹ People with low vision use optical or electronic magnifiers, prisms, screen readers and voice recognition. It is important to highlight that SL and Braille are recognized worldwide.⁹⁻¹²

Different training programs using a bio-psychosocial approach have been reported to have a significant beneficial impact on healthcare students around the world in terms of their education, attitudes and competencies towards Persons with Disabilities.¹³⁻²⁰ Regarding teaching strategies, it has been established that lectures, guided discussion, role-play, standardized patients

and case method teaching are effective in promoting critical thinking in healthcare students.^{15,19,21-23}

In Chile, even though there are no explicit legal obligations to provide healthcare professionals with the skills required to offer their services in public or private healthcare facilities to Persons with Disabilities,²⁴ to our knowledge, every year more universities incorporate courses to develop such skills among their students. However, most of these courses tend to cover all *disabilities* in one semester or year and do not usually include the active participation of Persons with Disabilities.²²

Given this situation, a pilot one-semester elective course for dental students was carried out focusing on people with visual disabilities and people with hearing disabilities, incorporating Deaf and blind teachers.

The aim of this paper was to describe the perceptions and results of this pilot course aimed at identifying and responding to the healthcare needs of people with visual or hearing disability.

MATERIALS AND METHODS

Design and population

Approval was obtained from the Commission of Research and Bioethics of the School of Dentistry of the Universidad de Concepción, Chile, and the participants gave their informed consent before the study began.

This was a case study of an elective course aimed at identifying and responding to the healthcare needs of people with visual or hearing disability. The participants were undergraduate dental students in their 2nd to 5th year. The elective course, for 14 students, was one of the elective courses offered by the School of Dentistry, via which they earned course credits. There were no other selection criteria.

Elective course description

The expected learning outcomes of the pilot course were:

1. To define the medical approach towards hearing and visual disability.

2. To recognize the cultural and linguistic aspects of people with visual disability and people with hearing disability.
3. To learn the means of communication of people with visual disability and people with hearing disability.

A multi-strategy 17-week elective course was carried out in the first semester of the Dentistry School, with 14 students enrolled. All agreed to take part in the study. The course involved a two-hour lecture plus a two-hour home assignment per week. For evaluations, the Chilean grading system was used, which ranges from 1.0–7.0, where 4.0 is needed to “pass”.

The course was divided into three stages. The first class was introductory, during which the course program, expected learning outcomes, contents, methodology, length of the course and evaluation system were discussed with the students. All PowerPoint material, the syllabus, instructions, rubrics and additional material such as the Convention on the Rights of Persons with Disabilities, and official national laws regarding people with disabilities, among others, were available in a virtual library. Additionally, a WhatsApp group was created between the students and the teacher (VC) in order to facilitate fluent communication.

First stage: Classes 2–5

1. Role-playing: This activity was based on the Deaf Strong Hospital program which mimics actual healthcare scenarios in a Public Family Health Center (*Centro de Salud Familiar, CESFAM*).¹⁹ After each role-playing activity, debriefing sessions were carried out, in which the students reported their personal experience.

a. First, students experienced deaf people’s barriers in healthcare. Each student received individual written and oral instructions for the activity. Different health scenarios were assigned randomly, and medical exam documents and a Fingerspelling alphabet were handed to each student. Each student had to enter the conditioned classroom and wait in the waiting room where he/she had to communicate with a Deaf SL user receptionist, physician and pharmacist. In each

scenario, the receptionist called out the student’s name by fingerspelling and asked in SL the type of health insurance.

b. In the second role-play, students experienced blind people’s barriers in healthcare. Each student received individual written and oral instructions for the activity. Different health scenarios were assigned randomly, and medical exam documents, a blindfold and a cane were handed to each student. Each student had to enter the conditioned classroom, wearing the blindfold and with the help of the cane, and wait in the waiting room where he or she had to communicate with a receptionist, physician and pharmacist. In each scenario the receptionist asked the student his/her name and type of health insurance and handed out a receipt to sign without offering any help or guidance.

2. Guided discussion

a. Movie analysis: The students’ homework was to watch the Indian movie “Black” (<https://www.imdb.com/title/tt0375611/>), which addresses the life of a deafblind girl, inspired by Helen Keller’s life and struggle. After watching the movie, they had to answer written reflective questions at home, and then discuss them in class. The main topics were “What was Michelle’s childhood like before and after the arrival of the teacher?”, “What did you like the most about the movie?”, “What struck you the most about the movie?” and “Did the movie change your way of thinking about deafblind people?”

b. Article discussion: A copy of the brief Comment “Who has special needs?”²⁵ was handed to each student. After individual reading, a group discussion was carried out about the euphemism *Special Needs* and the term “Persons with Disabilities”.

Second stage: Classes 6–10

1. Lecture: A traditional lecture was given by the teacher (VC) about the current approaches towards people with hearing or visual disability and their healthcare barriers.

2. Interactive class 1: Led by a blind person. The topics were “How to approach a blind person” and

“How to help a blind person to move around”, addressed through a lecture and practical exercises. Students were challenged to guide the blind teacher and/or had to use a blindfold and receive instructions from a peer.

3. Interactive class 2: Led by a Deaf person. The topics were “How to approach a Deaf person” and “Deaf Culture”, addressed through a lecture and practical exercises. Students were challenged to approach the deaf teacher in a Deaf-culturally accepted way.

4. Case Method Teaching Stage 1: Students were grouped in random pairs and had to visit a CESFAM to identify possible barriers for people with visual or hearing disability. They had to navigate through the CESFAM and interview the health staff, and had to take pictures of the possible barriers. For this activity students received constant feedback from the teacher (VC). Then they had to prepare an oral presentation of their visit, in which they had to define each of the barriers.

Third stage: Classes 11–17.

1. Braille lessons: Three practical classes were conducted by a blind teacher on this writing system. Students learnt the basics of Stage 1 of Braille. Each student was given a slate and stylus to practice in class and at home.

2. Braille practical exam: The fourth class was a practical exam, in which students had to write a medical prescription for a patient in Braille (Figure 1).



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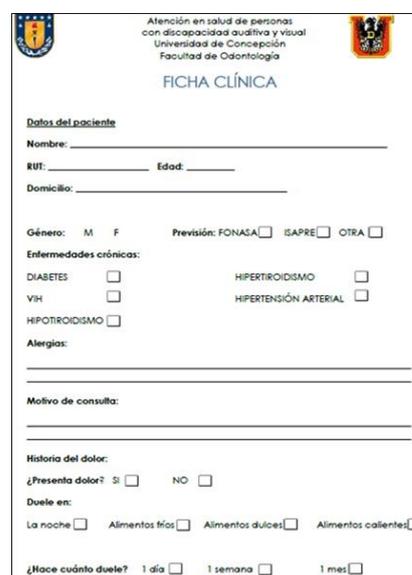
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 Amoxicilina 500 miligramos, 1 comprimido cada 8 horas por 7 días.

Figure 1. Medical prescription for Braille

3. Chilean Sign Language lessons: Three practical classes conducted by a Deaf teacher. Basic signs relating to a general clinical record and specific signs for dental examination were taught. Students had permission to record the teacher.

4. Standardized patients: For the Chilean Sign Language practical exam, the Deaf teacher took the role of a Deaf patient, based on a previous script written by the coordinating teacher. Students were given a clinical record (Figure 2), which they had to complete by asking questions in SL to their Deaf patient. Then, they had to communicate the diagnosis, treatment and the date for a follow-up appointment to the Deaf patient.



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FICHA CLÍNICA

Datos del paciente
 Nombre: _____
 RUT: _____ Edad: _____
 Domicilio: _____

Género: M F Previsión: FONASA ISAPRE OTRA

Enfermedades crónicas:
 DIABETES HIPERTIROIDISMO
 VIH HIPERTENSIÓN ARTERIAL
 HIPOTIROIDISMO

Alergias:

Motivo de consulta:

Historia del dolor:
 ¿Presenta dolor? SI NO
 Duele en:
 La noche Alimentos fríos Alimentos dulces Alimentos calientes
 ¿Hace cuánto duele? 1 día 1 semana 1 mes

Figure 2. Clinical record for SL exam

5. Case Method Teaching Stage 2: The same pairs of students had to present reasonable adjustments to the previous barriers identified by them in the CESFAM. Before the oral presentation, students received constant feedback from the teacher (VC). Directors of the different CESFAMs were invited to attend this activity.

Data collection

Once the course had finished, the students answered a survey designed with open-ended questions, according to Castro *et al.*²⁶, to determine if the new teaching intervention had led to any changes in their understanding of the approach of Persons with Disabilities. Students completed the anonymous questionnaire using the following open-ended questions: 1) “Do you think this course provided you with knowledge or experience that will help you as a

professional? Please explain your answer.”; 2) “In your opinion, what do you think was the most important aspect of the course that influenced your professional training? Please explain your answer.” 3) “Suggestions and comments”. Also, based on the Deaf Strong Hospital survey¹⁵, three questions on a Likert scale 1–5 were added to the survey, 1) “I learned valuable information through my participation in role-play”; 2) “My experience is likely to positively impact my attitudes and behaviors in future interactions with deaf or blind patients.”; 3) “The role-playing time was used effectively”.

In addition, guided discussions, case method teaching, standardized patients, attendance and grades obtained were recorded and analyzed.

Table 1. Quotes from Guided Discussion from movie "Black"

Questions	Quotes
How do you find Michelle’s childhood was before and after the arrival of the teacher?	<i>Before arrival of teacher:</i> “Very dark”; “Lonely”; “Isolated”; “She was treated as an animal”; “Michelle just acted by instinct” <i>After arrival of teacher:</i> “Stable life”; “She learnt how to communicate”; “Happy life”; “Was able to live life”
What did you like the most about the movie?	“The concept of learning and overcoming of Michelle”; “A critic and real vision on how life is for a Deafblind person”; “That the teacher believed in her”; “Michelle was able to be an independent person”
What struck you the most about the movie?	“Michelle’s’ childhood...her parents had forgotten she was a human being”; “To learn how a Deafblind person lives” “No, but I did learn that Deafblind people crave for physical contact”; “Frankly, this subject never came to my mind before watching this movie”;
Did the movie change your way of thinking about deafblind people?	“Yes, I had never dimensioned what it is to live in absolute darkness”; “We usually think they are very dependable and feel pity, but they are just like us”; “Yes, we should respect everyone, as everyone has the same Rights”; “Yes, I realized that Deafblind people also want to achieve what we all want, a profession, a family, etc.”

All students agreed that the correct term is Persons with Disabilities, and not the current euphemism *Special Care patients*. They also internalized the concept that Persons with Disabilities are persons with Rights, and no longer of pity.

All students passed the Braille practical exam and the standardized patient practical exam.

Regarding Case Methods stages 1 & 2, the students correctly identified most of the barriers a person with visual or hearing impairment may encounter when visiting a CESFAM. They identified barriers based on scientific literature, their own experience in the role-play and the

Analysis

Descriptive statistics were used to analyze the students’ scores, including average and range scores. Qualitative results were obtained through the identification of relevant quotes, which were grouped by topic.

RESULTS

Eight students had an attendance of 100%, followed by three students with an attendance of 94%, two with 88% and one with 82%.

Quotes from the guided discussion are shown Table 1.

interactive classes. Also, they were able to identify reasonable adjustments to address the barriers identified. They identified the adjustments based on scientific and non-scientific literature.

Six students obtained a final grade of 7.0, and the remaining eight obtained a grade of 6.9.

Students’ perceptions about the role-play and the course in general are shown in Tables 2 and 3.

Table 2. Distribution of Dental students' evaluation of the Role-Play activity

	Strongly Agree	Agree	Not sure	Disagree	Strongly Disagree
1. I learned valuable information through my participation in Role-play.	13	1			
2. My experience is likely to positively impact my attitudes and behaviours in future interactions with Deaf or Blind patients.	14				
3. The role-playing time was used effectively	12	2			

Table 3. Students quotes from open-end survey

<i>"Totally, every day inclusion is stronger, so I feel the responsibility to know about it, and this course was the first encounter with inclusion in dentistry"</i>
<i>"I think it's one of the courses where I've felt the happiest. Every class I learnt something new about Deaf culture and people with visual impairments. This course has encouraged me to fight for a world without communication barriers"</i>
<i>"I think this course gave me knowledge and experience that will help me in the future because we faced situations for which most of us were not prepared and we learn how to solve them"</i>
<i>"Yes, it gave me so much knowledge that will help me in my future career, because I will be able to help people with sensory disabilities, and these people will feel more included by the health system. Besides, now I can understand how these people feel, as I experienced it by myself"</i>
<i>"The knowledge of Braille and SL focused in dental practice"</i>
<i>"To analyse in detail which are the mistakes and offenses we make every day to people with sensory disabilities, and how to fix these mistakes and avoid these offenses"</i>
<i>"I think the most important part was the Role-Playing, because it gave me the chance to put myself in their shoes and understand their challenges. This encouraged me to learn Braille and SL beyond the evaluation, but it is something really necessary to learn, not just as professionals, but as persons"</i>
<i>"The fact that I can effectively communicate with the patients really had an impact on me, because I learnt the basics of Braille and SL"</i>

Comments and suggestions from the students are shown in Table 4.

Table 4. Comments and suggestions from the students.

Suggestions	<i>"This should be a mandatory subject in our academic education" (7); "More Braille and SL lessons" (2); "More interactions with PwD" (2)</i> <i>"A second part of the course" (2); "More spots available"</i>
Comments	<i>"I liked communicating with Blind and Deaf persons, and understanding what they feel, as I put myself in their place and learnt SL and Braille"; "I found the course a pleasant experience"; "I really enjoyed all the activities"; "It was very didactical, the topics weren't boring or anything like that"; "We learnt the contents in a very didactical way"; "It increased greatly my interest, it opened my eyes"; "The course was developed in a very good way, it is well implemented and coordinated"; "Above all, great human support"</i>

DISCUSSION

A 17-week elective course was carried out in the first semester of Dentistry School with 14 students enrolled. All students passed the course with the highest score, and thus were able to define the medical approach to hearing and visual disability, recognize the cultural and linguistic aspects of people with visual disability and people with hearing disability and learn their means of communication. All these learning outcomes were assessed through practical activities and the participation of Deaf and blind teachers.

What students valued the most was the active presence of Deaf and blind people, because for most of them this was their first encounter with a Deaf or a blind person, and because they felt that they were the appropriate persons to teach about their own experience, difficulties and ways of communication. This elective course fulfils the Convention on the Rights of Persons with Disabilities statement, specifically on *"Recognizing the valued existing and potential contributions made by persons with disabilities to the overall well-being and diversity of their communities..."* and *"Considering that persons with disabilities should have the opportunity to be*

actively involved in decision-making processes about policies and programmes, including those directly concerning them".¹² The importance of the latter is that, even though there is an increasing number of training programs for healthcare students around the world for the care of Persons with Disabilities, none of them involves the active participation of Persons with Disabilities as teachers, which, in our case, promoted a real sense of inclusion. In this regard, role-play was a fulfilling experience, as most students felt that they learnt valuable information that impacted positively on their future interactions with Deaf or blind patients. This type of experience, which has been well documented by Rochester University, has been shown to have a similar effect on pharmacy and medical students.^{15,19,27}

Based on the comments and suggestions, it can be inferred that the students enrolled on this course thinking it would be a rather traditional course, with lectures and written tests and exams. In contrast, they were pleased that the program had a more practical approach, with standardized patients, where their skills were tested through simulated situations with Deaf and blind persons, promoting reflective thinking. The visits to CESFAMs in their own community to identify the barriers a Deaf or a blind person may encounter were also a positive way to promote reflective thinking through the Case Method approach, as they later, on their own and with the teachers' guidance, were able to find a way to address them.^{22,23,28-30} It has been established that the Case Method approach promotes reflective thinking, resulting in confident and consciously competent students, and that standardized patients promote the skills required to offer a better service to patients who have disabilities.^{21-23, 28-33}

Moreover, the Case Method approach was a highly effective strategy, as students (guided by their tutor) were able to identify the barriers a person with visual or hearing impairment may encounter; this situation went beyond the planned scenario, as students identified barriers in the streets near the CESFAMs, and also investigated their access through means of transport, as in some CESFAMs the nearest bus stop was 6 blocks away. In the second stage, the students proposed a number of reasonable adjustments to the problems

they had identified earlier. Reasonable adjustments, i.e. solutions that do not involve significant alterations to the structure or procedure aimed at removing barriers towards full participation, are of great importance since resources in Public Health Centers are very limited, and expensive or time-consuming solutions would be too impractical.^{12,24,34} The reasonable adjustments proposed by the students were shared with directors from the different CESFAMs, in order to give them ideas on how to address the barriers observed.

Regarding the guided discussion (movie analysis), students watched a movie about a deafblind girl, who with her determination and her teacher's assistance learnt to read and to sign, went to university and finally, got her degree. As this story is based on the famous biography of Hellen Keller, it was a great way to change the students' views of Persons with Disabilities, because during the discussion panel the students revealed that they were amazed to discover what Persons with Disabilities with assistance and determination can achieve. This situation helped the students to understand that Persons with Disabilities need to be empowered, that they are subjects of legal rights and not subjects of charity.^{12,35} This topic was also addressed in the article discussion, in which it was reinforced that the correct term is Persons with Disabilities, not deaf-mute, deaf-dumb, the blind or retarded, and that the current euphemism *Special Care patients* should not be used.^{12,25,35}

Among the educational strategies used, WhatsApp was an excellent tool for fluent coordination. The teacher and students were able to share news and events related to People with Disabilities, and send videos regarding specific SL signs and pictures of Braille, and exchange information related to Deaf or blind people in a very informal environment. Also, as the nature of the course was elective, sometimes the established schedule had to be modified or suspended since tests or exams from core courses in the dental undergraduate program were prioritized. This was mitigated through the instant communication that

WhatsApp allows, making it easy to arrange a solution between the students and the teachers.³⁶

The main limitation is that this study was only conducted in one dental school and had a small sample size. Even though it was a small sample, having more than 14 students would affect the interaction between students and teachers, hindering both interaction and learning.³⁷⁻³⁹

Next year, it is expected to incorporate students from multiple undergraduate healthcare programs, so that a greater variety of healthcare disciplines can offer better opportunities to promote collaborative and interdisciplinary work. Also, it is planned to develop a second level of this course, in order to enhance the skills acquired by the students.

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The authors report no conflicts of interest.

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