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Exploring critical factors affecting sign language knowledge and motivation for sign language learning in nurses: A cross-sectional study

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ABSTRACT

Introduction: In times when the term inclusion, rights of patients, and the patient as a subject in health care are used more often, the limited availability of written material or sign language interpreters at health services is still a key barrier to health services for people who are hearing-impaired. The aim of this study is to examine nurses' knowledge of communication skills with hearing-impaired patients, their preferred methods, and the possibility of using translation services.

Methods: The study was cross-sectional, and data were collected in September–October 2019. The study included 407 nursing students. A demographic data form and questions divided into three parts, namely, communication skills (six questions), communication methods (three questions), and interpretation services (five questions), were used to collect data. Data were analyzed with descriptive statistics.

Results: The questionnaire was administered among 424 students, and total of 407 students completed the questionnaire. Most of the respondents were female (320 [78.6%]) with 0–5 years of work experience (227 [55.8%]) in the tertiary level of healthcare (184 [45.3%]). The results showed that 326 (80.1%) of the respondents encountered a person with some form of hearing impairment during their work. Sign language was used by 56 (13.8%) of the respondents, but 74 (18.14%) nurses did not communicate when meeting with hearing-impaired patients. Two-thirds of the respondents never had the opportunity to learn sign language, and 43 (10.54%) respondents would choose an official interpreter as support. Male respondents were aware of the importance of communication with hearing-impaired patients and the use of an application for pain assessment ($p < 0.05$). No statistically significant difference was observed regarding the department in which the respondents work ($p > 0.05$).

Conclusion: The results of the study showed insufficient knowledge and skills of nurses to communicate with hearing-impaired people.

Keywords: sign language; nursing knowledge; communication skills; hearing-impaired

INTRODUCTION

According to the World Health Organization, more than 5% of the world's population, that is, 432 million adults and 34 million children, are hearing-impaired. It is estimated that by 2050, more than 700 million people or 1 in 10, will have disabling hearing loss (1).

According to a report on the number of persons with disabilities in 2021, there are 16,369 hearing-impaired persons and 173 deaf-blind people in Croatia, which means that compared to the data from the same register in 2019, there are 913 more hearing-impaired and 15 more deaf-blind persons (2).

For language simplicity, we use the term hearing-impaired person, which includes deaf, deaf people, people with hearing difficulty, and deaf-blind people.

Without barriers to accessibility, access to health care is a clearly defined right of persons with disabilities as stated in the UN Convention on the Rights of Persons with Disabilities (3).

However, some studies have shown that people with hearing impairments have a difficulty in accessing health care precisely because they lack it and have difficulty accessing the health-care system mainly due to communication barriers, resulting in the less frequent seeking of health services than the hearing population (4). Some health professionals have sufficient knowledge and communication skills to approach patients with hearing impairments, whereas some health professionals feel uncomfortable working with hearing-impaired patients (5).

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Numerous studies report that health professionals are unaware of communicating effectively with deaf patients (6-8). The consequences are inadequate communication between health professionals and hearing-impaired persons, lack of understanding of treatment and instructions, dissatisfaction with the service provided, and noncompliance with preferred methods of communication with hearing-impaired persons.

Research has shown that deaf sign language users took too much or too little medication because they were unsure of their doctor's instructions (9). A hearing-impaired person faces inequalities in access to health services due to communication difficulties and the lack of awareness of the communication among health professionals regarding deaf culture (10).

Among many definitions and descriptions of the nurse's role, the most accepted explanation is still that of Virginia Henderson, who emphasizes the importance of patient independence, education, and advocating for patients' rights. Thus, a nurse must communicate with hearing-impaired person through either an interpreter, sign language, or other possible means of communication and must provide him/her with equal access and rights as hearing patients.

The scope of nursing practice includes advocacy for patients, education, and health promotion. Unfortunately, the ability to use sign language as the mother tongue of the Deaf minority or to use other ancillary telecommunications equipment is not widespread in health care. Health-care recognizes the value of a second language, but few health professionals acquire sign language skills as a second language and general knowledge of deaf culture (11).

The approach to health care for deaf patients, patients with hearing difficulty, and deaf-blind patients are a global challenge. Official interpreter services have been identified as an example of good practice, but hospitals and health systems in 30 countries have limited access to a qualified sign language interpreter (12). The consequences of incomplete and ineffective communication and untimely care due to communication barriers lead to poorer treatment, longer waiting periods, and the emergence of chronic non-communicable diseases such as cardiovascular disease, hypertension, diabetes, and depression (13).

In 2015, the Croatian Parliament passed the Croatian sign language and other communication systems for the deaf and deaf-blind people in the Republic of Croatia, which means that deaf and deaf-blind people were given the right to serve, inform, and educate through the communication system for the deaf and deaf-blind. A Croatian sign language is recognized by law as the minority language of the deaf and thus identical to the spoken language. Furthermore, Croatian sign language is included in the list of preventively protected assets as an intangible cultural asset (14).

Formal education in sign language learning in Croatian nursing education is still new. Sign language was introduced as an optional subject in medical school in 2012, but this is not the standard of practice in all secondary schools. At the University of Applied Health Studies, Zagreb, Croatia, students had the opportunity to enroll for the first time in an elective course in sign language in 2020/2021, and since then, there has been an increase in interest in this subject. This is certainly an area that needs to be further developed and is striving to become the standard of every institution that educates nurses.

The primary objective of this study is to examine nurses' knowledge of sign language, deaf culture, communication skills, and methods of communication with hearing-impaired persons. The secondary objective is to determine the connection between knowledge of Croatian sign language and learning in medical school. The purpose of the study is to identify knowledge gaps and the use of sign language in the health system among the population of nurses.

METHODS

This is a cross-sectional study conducted in the Department of Nursing of the University of Applied Health Studies, Zagreb, Croatia. The study sample consisted of 1st-, 2nd-, and 3rd-year part-time undergraduate students who attended the 3-year nursing program for BA degrees in the 2019–2020 academic year. In part-time studies, students already work as professional nurses. Part-time studies are undertaken exclusively by students with a license to work as nursing assistants after graduation from a vocational school of nursing.

The research was conducted at the University of Applied Health Sciences, Zagreb, Croatia, on the population of part-time nursing students in all 3 years of study. The sample consisted of licensed nurses from the work system with a minimum of 1 year of work experience from all parts of Croatia. All respondents were employed nurses, but for ease of data collection and because hospitals were closed at the time of the survey, we gathered them all at the university that they attend. The coauthors of this study distributed questionnaires on their course before the lecture, and in this way, all groups of students were covered. Participants were informed regarding the purpose of the study. The proposed research was voluntary. The study was conducted in accordance with ethical principles of research involving human subjects based on the principles of the Declaration of Helsinki and with all applicable guidelines of the profession's code of ethics. The university's Ethics Committee approved the research (Approval number: 251-379-1-19-02; Class. 602-04/19-18/633).

A descriptive analysis was conducted using the Statistical Package for the Social Sciences to describe nurses' relationship with hearing-impaired persons in terms of communication skills, preferred communication methods, and use of interpretation services. For the independent sample, a t-test was used to examine differences in knowledge and skills in terms of gender, clinical department, years of work experience, and previous learning of sign language.

For this study, a questionnaire with multiple-choice answers was developed and adopted from a survey conducted by Czerniejewski (15), translated, modified, and adapted to our conditions. The given questionnaire was chosen after a literature search because the questions most closely resembled the primary goal of our study. The written permission of the author for the translation and use of the questionnaire was obtained.

Because we were interested in whether our respondents knew Croatian sign language, the modification of the

original questionnaire was precisely in these questions. Instead, of asking if they knew American Sign Language, our respondents were asked if they had the opportunity to learn Croatian sign language. As the Croatian language has recently been officially recognized and is still insufficiently presented and as little is known regarding it, a new question has been added: "*Do you know that Croatian sign language was voted as the official language of the deaf by the Croatian Parliament in 2015"*? In addition, for easier monitoring and later data processing, we divided the questionnaire into three parts, unlike the original version, where the whole questionnaire is consistent, and questions follow one after another.

According to the guidelines of the World Health Organization for the translation and adaptation of the instrument, the following steps were performed: forward translation, back translation by an expert panel, preliminary testing with cognitive interview, and the final version of the instrument (16). In this study, a sign language interpreter and two PhD candidates for nursing translated the research instrument from English into Croatian independently. Two bilingual lecturers from the Department of Nursing of the University of Applied Health Sciences reviewed the translated questionnaire. Then, an expert panel (a group of lecturers from the Department of Nursing of the University of Applied Health Sciences and native translators and experts with experience in developing and translating instruments) held a meeting, discussed the newly translated questionnaire, and gave feedback. A back translation was conducted by an independent translator, a native English speaker, who did not know the questionnaire. The expert panel then held a meeting, discussed the translated instruments, and presented its observations.

A pilot test of the Croatian questionnaire version was conducted involving 20 nurses from the secondary care system. There were no problems with interpretation due to cultural differences in understanding the issue. After the pilot testing, revisions of the questionnaire were not required.

The final version of the questionnaire consisted of three items and general demographic questions (age, gender, place of employment/department, and total years of service). The first particle examined (1) communication skills – six questions that examined previous experience of communicating with hearing-impaired persons and knowledge of using sign language; (2) communication methods: three questions that sought to find out which communication methods nurses consider most effective when working with hearing-impaired patients; and (3) interpretation services: five questions related to knowledge of the availability and use of official interpreter service in nursing practice. The survey also had one open-ended question where respondents had the opportunity to leave a personal comment on the topic.

RESULTS

A total of 424 participants were recruited in the cross-sectional study, and the participants consisted of 1st-, 2nd-, and 3rd-year nursing students in the 2019–2020 academic year. A group of 407 students agreed to participate and were included in the study (the response rate was 96%).

Table 1 shows the distribution of students according to sociodemographic data. Most of the respondents were female (320 [78.6%]) from the tertiary levels of healthcare (184 [45.3%]) with 0–5 years of work experience (227 [55.8%]).

Table 2 shows that the distribution of the responses shown in percentages and selected according to each particle separately.

As the results showed, most respondents (326 [80.15%]) encountered a hearing-impaired person during their nursing career. Respondents who met with a hearing-impaired person answered the following question: how do they communicate with them? When answering this question, they were able to choose from several answers. Most of them picked paper and pencil as their communication approach and relied on the interlocutor's good lip reading. Of the total number of respondents, 56 (13.73%) used sign language and 26 (6.37%) used the services of an official interpreter. A total of 74 nurses (18.14%) rounded up the answer that they did not communicate.

A total of 115 respondents answered that they know Croatian sign language, of which 112 (97.4%) had the opportunity to learn it during their medical school education and only three voluntarily enrolled in one of the sign language courses at the Association of the Deaf and Hard of Hearing.

A total of 303 nurses (74.26%) think that being able to communicate with a hearing-impaired person is very critical; 91 (22.5%), somewhat critical; and 1, not critical at all.

The second particle examined communication methods. The respondents knew that Croatian sign language is the mother tongue of the Deaf minority, and most of the respondents chose sign language (238 [58.33%]) when asked which method of communication that they would like to use with hearing-impaired persons, although two-thirds of the respondents never had the opportunity to learn the language. From the total number of respondents, 43 (10.54%) would choose an official interpreter as a method of communication. They believe that a device

TABLE 1. Participants' demography

Items	N	%
Gender		
Female	320	78.6
Male	87	21.4
Total	407	100.0
Years of work experience		
0–5	227	55.8
6–10	64	15.7
11–15	45	11.1
16–20	35	8.6
21 and more	36	8.8
Total	407	100.0
Levels of healthcare		
Primary	59	14.5
Secondary	160	39.3
Tertiary	184	45.3
Incomplete	4	0.9
Total	407	100.0

TABLE 2. Distribution of responses by particles

Item	Offered answers	N	%
Particle 1: Communication skills	1. Have you ever had to treat a deaf patient, a patient with hearing difficulty, or deaf-blind patient?		
	Yes	326	80.1
	No	81	19.9
	2. How did you communicate with that patient? *(It is possible to mark more answers)*		
	Sign language	56	13.73
	Paper and pen	239	58.58
	Writing on the palm	21	5.15
	Speech and lip reading	223	54.66
	Using an interpreter	26	6.37
	I did not communicate	74	18.14
	3. Do you know Croatian sign language?		
	Yes	115	28.25
	No	292	71.75
	4. Where did you learn it?		
	Medical school	112	97.4
	Independent initiative	3	2.6
	5. Did you have any instruction on communicating with deaf patients in medical school?		
	Yes (Croatian sign language)	112	98.25
	6. How critical is it that you to be able to effectively communicate with your patients?		
	Very critical	303	74.26
	Somewhat critical	91	22.30
	Slightly critical	10	2.45
	Not critical at all	1	0.25
Particle 2: Communication methods	1. If you were to treat a patient who was deaf, how would you communicate with them?		
	Sign language	238	58.33
	Paper and pen	126	30.88
	Writing on the palm	0	0.00
	Using an interpreter	43	10.54
	I would not communicate	0	0.00
	2. If you had to choose a device to communicate with a deaf patient, which would you choose?		
	Communication boards (pictures of your needs)	60	14.71
	Wireless keyboard (two keyboards that allow you and the patient to type back and forth)	61	14.95
	Communication device that can produce sign and spoken language	286	70.10
	3. If you could have a device that could sign to your patient would you use it to…? (circle all that apply)		
	Vitals	182	44.61
	Self-care	214	52.45
	Mobility	105	25.74
	Pain assessment	257	62.99
	Emotions	193	47.30
	Just to chat	263	64.46
Particle 3: Interpretation Services	1. Do you know if interpreters are available 24/7?		
	Yes	54	13.24
	No	353	86.52
	2. Have you ever had to use a hospital interpreter?		
	Yes	18	4.41
	No	389	95.34
	3. If your answer is “yes,” how long did it take the interpreter to arrive?		
	1 h	3	16.66
	1.5 h	1	5.55
	10 min	1	5.55
	2 h	2	11.11
	24 h	1	5.55
	30 min	2	11.11
	He came accompanied by a patient.	3	16.66
	I do not remember	5	27.77
	4. Do you know which interpretation service you can contact and how?		
	Yes	24	5.88
	No	383	93.87
	5. Do you know that in 2015, the Croatian sign language was voted as the official language of the deaf by the Croatian Parliament and that it is recognized by law?		
	Yes	135	33.09
	No	272	66.67

that translates spoken language into sign language and *vice versa* (286 [70.10%]) would be most beneficial due to technology and modern achievements in communication with hearing-impaired persons. At the same time, in smaller percentages, they chose an interactive photo board and recorded sign application. If they had the opportunity to use such a sophisticated device in the future, they would mainly use it in regular everyday communication with a patient (263 [64.46%]), pain assessment (257 [62.99%]), and self-care communication (214 [52.45%]). The importance of communicating regarding emotions was chosen by 193 (47.30%) of the respondents, regarding vital signs by 182 (44.61%), while the least was chosen by mobility 105 (25.74%) as segments of nursing care for which they would like to have the help of technology in communication.

From the total number of respondents, 18 (4.4%) used the services of an official interpreter during their internship, and on average, they waited for 2 h.

Tables 3 and 4 show the answers in which the most significant differences were observed regarding gender and length of service.

Male respondents were aware of the importance of communication with hearing-impaired persons and the use of an application for pain assessment ($p < 0.05$).

The respondents with 0–5 years of work experience have a significantly more extent knowledge regarding methods and skills communication than other groups of respondents ($p < 0.05$) in the following questions: *How did you communicate with that patient: sign language? Do you know Croatian sign language? Do you know how to use any form of manual communication*? *Did you have any instruction on communicating with Deaf patients in medical school? Do you know that Croatian sign language was voted as the official language of the deaf by the Croatian Parliament in 2015 and that it is recognized by law*?

The test value was more than 0.05 ($p > 0.05$), which means that no statistically significant difference was observed for the department in which the respondents work.

TABLE 3. Comparison of the gender of the respondents

Item	Gender						*p**
	Female		Male		Total		
	N	%	N	%	N	%	
Have you received any in-service training on communicating with deaf patients?							
Very critical	248	78.0%	54	62.8%	302	74.8%	0.011
Somewhat critical	63	19.8%	28	32.6%	91	22.5%	
Slightly critical	7	2.2%	3	3.5%	10	2.5%	
Not critical at all	0	0.0%	1	1.2%	1	0.2%	
If you had to choose a device to communicate with a deaf patient, which would you choose?							
Yes	213	66.6%	43	49.4%	256	62.9%	0.003
No	107	33.4%	44	50.6%	151	37.1%	

TABLE 4. Comparison of the work experience of the respondents

Item	Work experience										*p**
	0–5		6–10		11–15		16–20		21 and above		
	N	%	N	%	N	%	N	%	N	%	
How did you communicate with that patient: sign language											
Yes	43	18.9%	2	3.1%	4	8.9%	4	11.4%	3	8.3%	0.010
No	184	81.1%	62	96.9%	41	91.1%	31	88.6%	33	91.7%	
Total	227	100.0%	64	100.0%	45	100.0%	35	100.0%	36	100.0%	
Do you know Croatian sign language?											
Yes	101	44.5%	4	6.3%	4	8.9%	5	14.3%	1	2.8%	0.000
No	126	55.5%	60	93.8%	41	91.1%	30	85.7%	35	97.2%	
Total	227	100.0%	64	100.0%	45	100.0%	35	100.0%	36	100.0%	
Have you used any form of manual communication?											
Yes	112	49.6%	8	12.5%	6	13.3%	9	25.7%	3	8.6%	0.000
No	114	50.4%	56	87.5%	39	86.7%	26	74.3%	32	91.4%	
Total	226	100.0%	64	100.0%	45	100.0%	35	100.0%	35	100.0%	
Did you have any instruction on communicating with deaf patients in medical school?											
Yes	123	54.7%	3	4.7%	2	4.4%	2	5.7%	4	11.1%	0.000
No	102	45.3%	61	95.3%	43	95.6%	33	94.3%	32	88.9%	
Total	225	100.0%	64	100.0%	45	100.0%	35	100.0%	36	100.0%	
Do you know that in 2015, the Croatian sign language was voted as the official language of the deaf by the Croatian Parliament and that it is recognized by law?											
Yes	96	42.5%	13	20.3%	8	17.8%	10	28.6%	8	22.2%	0.000
No	130	57.5%	51	79.7%	37	82.2%	25	71.4%	28	77.8%	
Total	226	100.0%	64	100.0%	45	100.0%	35	100.0%	36	100.0%	

The last question was an open-ended type where the nurses could comment on the topic. Eighteen nurses stated that they should be provided with education in this area and that sign language should be taught at all levels of education, not just as an elective subject in medical school. A total of 14 nurses wrote that each health facility should have an interpreter to assist both hearing-impaired persons and other health professionals.

DISCUSSION

This research showed that most nurses have insufficient knowledge and communication skills with hearing-impaired persons. The study showed that nurses are not so familiar with how they can communicate with hearing-impaired persons and that there are shortcomings in education. They are aware of the deficiencies in knowledge and suggest additional education in Croatian sign language. More than half of the respondents did not use any form of manual communication nor did they know sign language.

Although more than 80% of the respondents encountered a deaf person during their nursing practice, their communication methods and skills were insufficient, identical to the results of another research (17). Although sign language is the mother tongue of the Deaf, 28% of the respondents stated that they know it, but in practice, 13.73% used it, and practical experience shows that knowledge of sign language is not widespread among nurses (18). These results are consistent with those in a study by Alselai and Alrashed (in Saudi Arabia), who found that 71% of the respondents did not know how to communicate with patients with hearing impairment and 90% did not know regarding the possibility of a 24/7 available interpreter (19).

As mentioned earlier in the Introduction, the Croatian sign language was voted in the Croatian Parliament in 2015 as the official language of the community of deaf people, people with hearing difficulty, and deaf-blind people. Even though 6 years have passed since then, almost 67% of the respondents do not know this information, nor do they know that there is a translation service that works 24/7 and that they can turn to when receiving a hearing-impaired person. Furthermore, regarding the services of an official interpreter, more than 90% of the respondents do not know that there is an interpretation service or whom they can contact, and as many as 95% of them have never used the services of an official interpreter. Velonaki *et al.* (Greece) also described that as many as 80% of nurses did not use the services of an official interpreter (20).

Regarding communication methods, research has shown that paper and pens and lip reading are the main methods used when nurses communicate with hearing-impaired persons, which indicates their preference for this method regardless of the availability of other means of communication, which may be due to the lack of knowledge. The same results were described by some previous research on the topic of communication methods of nurses (18).

Furthermore, most health-care providers do not understand deaf culture and do not accept the cultural and linguistic demands of deaf people. For example, practitioners often believe that lip reading and writing notes ensure effective health communication, leading to assumptions and misconceptions regarding providing care (8).

Many deaf patients who use sign language are not familiar with written language. Giving documents to the deaf in written language does not necessarily mean that they will understand their meaning. That is especially problematic when health professionals ask deaf people to read and sign consent or other written documents (21). Furthermore, writing notes is often limited by deficiencies in health literacy and limited of the "fund of information" deficits (22). Because Croatian sign language has grammar that is different from written and spoken language, instructions available only in written language leave room for misunderstanding if the patient is not fluent in written Croatian. Therefore, it could be dangerous to assume that a deaf sign language user can understand all instructions only if they are written to him. It is also believed that all people with hearing impairments can read lips, although it has been proven that they can read 30–45% at most (11,20). Lip reading requires some time and concentration, so it is unfounded to get carried away with communicating only by reading from the lips, and the results of our study show that nurses prefer to choose this way of communication. It is an ineffective method of communication.

In an extensive study on the preferred communication of deaf people and people with hearing difficulty in clinical settings in the United Kingdom, 50% of sign language users would choose an official interpreter as a method of communication. Our study showed that nurses do not know interpreter service contact and how to contact them. Middleton *et al.* have proven that the most appropriate way to communicate between health professionals and hearing-impaired persons is knowledge of sign language. Efforts to raise awareness of the deaf culture would benefit all staff and patients as it can directly affect health improvement (10).

A total of 75% of the respondents believed that it is very critical to be able to communicate with hearing-impaired patients effectively and successfully. They stated that they think that they lack theoretical and practical work in this area and that sign language should be a compulsory course in all medical schools at all levels. These results are identical to those of the research of Hornakova and Hudakova (Slovakia), who described that half of the respondents (51%) believed that it is necessary to train health professionals to communicate with deaf patients during theoretical classes and to be better prepared to meet deaf patients (23).

Many other studies have concluded that nurses' communication with deaf patients is inadequate, and that additional education should be provided in this area (18), as shown in our results. According to the study results, nurses' skills in communicating with deaf patients, patients with hearing difficulty, and deaf-blind patients are insufficient and require further and additional education and further efforts to improve.

The most appropriate for all nurses would be a certain level of knowledge of sign language, especially medical terminology, and targeted training so that they could conduct consultations directly without an interpreter. Efforts to raise

the awareness of the deaf people would benefit all nurses and hearing-impaired persons because if we truly work within a health-care system that offers patients choice, then services to establish adequate communication must be available (10).

Furthermore, research has shown that previously completed sign language education significantly increases readiness for communication because these nurses have better-developed communication skills and methods.

One study showed that educational programs or specific interventions improve attitudes toward hearing-impaired persons, which indicates the importance of education regarding hearing impairment, understanding hearing impairment, and communicating with hearing-impaired persons (24).

Moreover, the present findings of the authors are consistent with those of Steinberg *et al.* (in Pennsylvania), who reported that health-care providers do not have sufficient knowledge to communicate with patients with hearing impairment due to the lack of formal education (25).

The place of employment does not significantly affect the way of communication, and it has been proven that age, gender, and length of service, especially among younger nurses and females with less work experience, affect communication skills. The same can be attributed to the fact that sign language has been taught for a decade, so nurses who previously completed medical school did not have the opportunity to learn sign language and only a small number (2.6%) decided to enroll in one of the sign language courses.

Learning sign language can be beneficial to anyone in the field of healthcare. Communication through sign language provides opportunities to communicate with hearing-impaired persons, and the ability to understand more than one language among nurses is a highly sought-after skill. In everyday nursing practice, there is a possibility of contact with patients whose Croatian is not their mother tongue, so learning sign language is helpful. In recent years, laws have been passed guaranteeing the rights of deaf community members. The law includes the requirement that all hospitals have an obligation to provide an official interpreter if a patient requests. Open communication in health care is a priority, and the rights of deaf patients are protected by hospitals and health-care providers who ensure understanding between staff and patients. Insight into the obtained results showed that nurses are not familiar with the law on hearing-impaired persons, and their initiative seeks additional training in the field of sign language to overcome the proven shortcomings.

On the basis of the obtained results and personal comments of the participants, sign language was introduced in the following academic year as an elective course in the study of nursing, which is a direct implication for the improvement of evidence-based health care.

Furthermore, it is essential to note that this is the first study and that in addition to deaf people and people with hearing difficulty, deaf-blind people are described, who are also classified as hearing-impaired.

There were several limitations to this study that affects the generalizability of the findings. This study was carried out in one nursing education institution in Croatia. Therefore, findings cannot be generalized to other settings. The small size of the sample also affected the generalization of the findings. Many of the respondents in the sample did not have previous education in sign language. We used a cross-sectional design in the study. A longitudinal approach could be helpful in measuring knowledge regarding communication skills with hearing-impaired persons among students before and after nursing courses.

Among the limitations of this study, we must consider that sign language in nursing is still less discussed, which may explain the reduced number of publications addressing the theme.

CONCLUSION

This study reported limitations in communication skills and methods between nurses and hearing-impaired persons.

The study proved that those nurses who learned sign language in medical school had more developed communication skills in interacting with people with hearing impairment. Although 6 years have passed since sign language became official, almost 67% of the respondents are not familiar with this information and more often use paper and pencil as a means of communication.

The introduction of sign language in the education curriculum for nurses is a direct implication for improving health care. The responsibility of all nurses is to build academic training skills for effective communication with all people with hearing impairments. Sign language courses must become mandatory for graduate nurses following the law regarding Croatian sign language as the language of the deaf community in Croatia.

DECLARATION OF INTEREST

Authors declare no conflict of interest.

REFERENCES

1. World Health Organization. Deaf and Hearing Loss. Geneva: World Health Organization; 2021. Available from: https://deafnessandhearingloss(who.int) [Last accessed on 2022 Sep 04].
2. Hrvatski Zavod za Javno Zdravstvo. Report on Persons with Disabilities in the Republic of Croatia. Microsoft Word - Bilten Invalidi; 2021. Available from: https://m3.docx (hzjz.hr) [Last accessed on 2022 Sep 04].
3. United Nations. Convention on the Rights of Persons with Disabilities. Treaty Series 2515; 2006. p. 3. Available from: https://www.un.org/development/desa/disabilities/convention-on-the-rights-of-persons-with-disabilities.html [Last accessed on 2022 Sep 04].
4. Barnett S. Communication with deaf and hard-of-hearing people: A guide for medical education. Acad Med 2002;77(7):694-700.
   https://doi.org/10.1097/00001888-200207000-00009
5. Abou-Abdallah M, Lamyman A. Exploring communication difficulties with deaf patients. Clin Med (Lond) 2021;21(4):e380-3.
   https://doi.org/10.7861/clinmed.2021-0111
6. Steinberg AG, Barnett S, Meador HE, Wiggins EA, Zazove P. Health care system accessibility: Experiences and perceptions of deaf people. J Gen Intern Med 2006;21(3):260-6.
   https://doi.org/10.1111/j.1525-1497.2006.00340.x
7. Ubido J, Huntington J, Warburton D. Inequalities in access to healthcare faced by women who are deaf. Health Soc Care Community 2002;10(4):247-53.
   https://doi.org/10.1046/j.1365-2524.2002.00365.x
8. Iezzoni LI, Roger B, Davis JS, Soukup J, O'Day B. Quality dimensions that most concern people with physical and sensory disabilities. Arch Intern Med 2003;163(17):2085-92.
   https://doi.org/10.1001/archinte.163.17.2085

9. Royal National Institute for the Deaf. A Simple Cure: A National Report into Deaf and Hard of Hearing people's Experiences of the National Health Service. England: Royal National Institute for the Deaf; 2004.
10. Middleton A, Turner GH, Bitner-Glindzicz M, Lewis P, Richards M, Clarke A, et al. Preferences for communication in clinic from deaf people: A cross-sectional study. J Eval Clin Pract 2010;16(4):811-7.
https://doi.org/10.1111/j.1365-2753.2009.01207.x
11. Lieu CC, Sadler GR, Fullerton JT, Stohlmann PD. Communication strategies for nurses interacting with patients who are deaf. Med Surg Nurs 2007;16(4):239-45.
12. Kung MS, Lozano A, Covas VJ, Rivera-González L, Hernández-Blanco Y, Diaz-Algorri Y, et al. Assessing medical students' knowledge of the deaf culture and community in Puerto Rico: A descriptive study. J Med Educ Curr Dev 2021;8:2382120521992326.
https://doi.org/10.1177/2382120521992326
13. Emond A, Ridd M, Sutherland H, Allsop L, Alexander A, Kyle J. The current health of the signing deaf community in the UK compared with the general population: A cross-sectional study. BMJ Open. 2015;5(1):e006668.
14. Official Gazette. Zakon o Hrvatskom Znakovnom Jeziku i Ostalim Sustavima Komunikacije Gluhih i Gluhoslijepih osoba u Republici Hrvatskoj. New Delhi: Official Gazette; 2015.
15. Czerniejewski EM. A System to Enhance Patient-Provider Communication in Hospitalized Patients Who Use American Sign Language. (Master's thesis). Iowa city, Iowa: The University of Iowa; 2015.
16. World Health Organization. Process of Translation and Adaptation of Instruments. Geneva: World Health Organization; 2020. Available from: https://www.who.int/substance_abuse/research_tools/translation/en [Last accessed on 2019 Aug 28].
17. Adib-Hajbaghery M, Rezaei-Shahsavarloo Z. Nursing students' knowledge of and performance in communicating with patients with hearing impairment: Communicating with the hearing impaired. Jpn J Nurs Sci 2015;12(2):135-44.
https://doi.org/10.1111/jjns.12057
18. Ljubičić M, Zubčić S, Sare S. Communication between Nurses and Deaf People in Helath Instututions. In: CBU International Conference on Innovations in Science and Education. Prague, Czech Republic; 2017.
19. Alselai SA, Alrashed AM. Patient-nurses-relationship with in deaf and hard of hearing (D&HH) population. J Nurs Health Sci 2015;4(1):81-5.
20. Velonaki VS, Kampouroglou G, Velonaki M, Dimakopoulou K, Sourtzi P, Kalokerinou A. Nurses' knowledge, attitudes and behavior toward deaf patients. Disabil Health J 2015;8(1):109-17.
https://doi.org/10.1016/j.dhjo.2014.08.005
21. Fileccia J. Sensitive care for the deaf: A cultural challenge. Creat Nurs 2011;17(4):174-9.
https://doi.org/10.1891/1078-4535.17.4.174
22. Kuenburg A, Fellinger P, Fellinger J. Health care access among deaf people. J Deaf Stud Deaf Educ 2016;21(1):1-10.
https://doi.org/10.1093/deafed/env042
23. Hornakova A, Hudakova A. Effective communication with deaf patients. Eur J Bioeth 2013;4(7):157-66.
24. Klooster PM, Dannenberg JW, Taal E, Burger G, Rasker JJ. Attitudes towards people with physical or intellectual disabilities: Nursing students and non-nursing peers. J Adv Nurs 2009;65(12):2562-73.
https://doi.org/10.1111/j.1365-2648.2009.05146.x
25. Steinberg AG, Wiggins EA, Barmada CH, Sullivan VJ. Deaf women: Experiences and perceptions of healthcare system access. J Womens Health (Lasrchmt) 2002;11(8):729-41.
https://doi.org/10.1089/15409990260363689