



# Enhancing Accessibility of Health Care Services for Deaf and Hard of Hearing People in Israel

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## ARTICLE INFO

### Keywords:

Accessibility, deaf, sign language, inequalities.

## ABSTRACT

Deaf and hard-of-hearing (DHH) people experience inequities in health care services due to communication barriers and poor health awareness and knowledge. Workshops for health care professionals and DHH people are one means of overcoming these barriers. The current study describes a project consisting of workshops aimed to enhance communication in medical situations, and outcomes of workshops. Participants in workshops were health care professionals, deaf people, and sign language (SL) interpreters. Health care professionals filled questionnaires before and after workshops. SL interpreters and deaf people filled questionnaires only after workshops. Descriptive analysis of questionnaires was performed. Results indicated that prior to participation in workshops health care professionals used speech and lip-reading, communication via family members, and note-writing with DHH patients. Only a small portion of respondents used SL with deaf patients, either directly or via SL interpreters. After workshops the majority of health care professionals rated the extent to which workshops provided novel knowledge and were effective to a very high degree. The extent to which workshops improved communication with DHH people was rated as very high or high by the majority of respondents. The majority of deaf respondents stated that they acquired novel knowledge in the workshops, and that they improved their ability to communicate in health care services. The field of medical terms in SL received the highest ratings in all parameters by SL interpreters, meaning that this field of content has the highest potential for professionalization in medical SL interpreting. We concluded that workshops for health care professionals, SL interpreters, and deaf people have the potential of improving access to health care for DHH people.

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Received 10 March 2022; Received in revised form 13 April 2022; Accepted 05 May 2022

Journal of Integrated Health (JIH)

Available online 09 May 2022

Published by URF Publishers.

## Introduction

Deaf and hard-of-hearing (DHH) people use either sign language (SL) or oral language [1]. Deafness is a distinct culture and identity, expressed in SL [2]. Differences in modes of communication (SL vs. oral language) create a great divide between deaf people using SL and hearing people. Deaf people who use SL experience difficulty obtaining special services, and depend on interpreters. Unavailability of SL interpreters is a major barrier that affects all aspects of participation of deaf people within the hearing community [3]. The current study will relate mainly to deaf people, and to some extent to DHH people as a heterogenic group. The term “deaf” will be used in contexts relating to deaf SL users only. The term “DHH” will be used in contexts relating to the entire population described.

The World Health Organization has related to participation as involvement in different life situations. Participation ranges from complete immersion in a certain activity to barely attending an activity [3]. From the perspective of health care services, we are concerned with means of consuming health services and maintaining healthy lives in accordance. Thus, the scope of the present article is improving access to health care for DHH people. It is important to note that many DHH people do not use SL. They comprise a population that also experiences inequities in access to health services [4], but the current article will refer mainly to deaf SL users.

Many DHH people might experience their everyday lives as more challenging compared with hearing individuals, but have significantly fewer opportunities to access suitable information about health prevention or treatment. Existing literature reports significant communication barriers between DHH people and health care professionals [5]. Deaf SL users experience inequities accessing health care and health information, which limits their ability to achieve optimal health for themselves and their families. Addressing language barriers improves adherence with preventive services and may help prevent chronic diseases and enable earlier detection. Accessible health information can help deaf SL users to make decisions about health and health care behaviors associated with chronic disease risk [4].

As mentioned above, SL interpreters are the first preferred line of communication for deaf patients, and are essential for communication between deaf SL users and hearing professionals [4]. In the absence of a SL interpreter, video remote interpretation (VRI) is considered a satisfactory option by many deaf patients [6- 8]. It is important to note that using interpretation services poses issues of independence and privacy. In addition, deaf people find it annoying when hearing people ask their family members to interpret instead of communicating directly with them [3].

Other facilitators to communication with DHH people include gesturing, lip-reading, and use of accompanying family members as interpreters in the case of deaf signers. Although

deaf people prefer use of SL with their doctor [6,7] in many cases they have to rely on lip-reading and note-writing for medical consultation. Neither of these means of communication allows adequate interactions between doctor and patient [6]. Although communication via interpreters is considered to be an important facilitator, health professionals consider a professional SL interpreter a last resort when all other means of communication failed [9].

Deaf people reported difficulties in communication with health professionals. Most of them used help of family members as means of communication [10]. They reported experiencing inconsistent interpreter provision, lack of informed consent for medical treatment via SL, limited access to general health information in SL, and reduced ability to understand and comply with treatment options [11].

Another issue relating to accessibility of health care services for DHH people, especially SL users, is health knowledge and health literacy. Literature reports that many adults who were born deaf, or lost their hearing during early childhood, have low health literacy [4]. Research demonstrates that almost half of the deaf signing population has inadequate health literacy. This prevalence rate warrants further interventions and research [12]. Literature also reports lack in health knowledge among deaf SL users [5]. Thus, it appears that not only matters of accessibility form inequalities in using health care services by deaf people, but also low health literacy and knowledge pose significant challenges in improving participation of this population in health related areas.

In relation with accessible services, there is a need for change in awareness of health professionals to needs of DHH people [6]. Indeed, deaf people using SL emphasize the need to educate hearing people about deaf issues [3]. Research demonstrated that medical staff were unaware of their role in providing an interpreter, and expected the deaf patient to bring the interpreter. Most of them would not know how to access interpreters. They are unaware of policy, and of how the regulations apply to them [9]. Health professionals have to realize that the interpreter is as much for them as for the deaf person [6]. Deaf awareness training is necessary for health staff in order to overcome barriers for deaf people in accessing services, as well as understanding that these barriers are putting deaf people at risk of reduced health [6].

The current study will deal with accessibility of health services for DHH people in Israel. Every resident in Israel is entitled to health services under the National Health Insurance (NHI) Law [13]. The NHI of Israel provides for universal coverage. Every citizen or permanent resident of Israel is free to choose from among four health-plans. The health-plans are insurers that also provide services [14].

Legislation in Israel, as around the world, has noted the importance of delivering linguistically accessible services, including health services. The Patient’s Rights Law [15] stipulates

that medical treatment can be administered to patients only if they have given their informed consent. Clinicians shall provide patients with medical information they need in a reasonable manner, in order to enable them to decide whether they are willing to receive proposed treatments. Thus, medical information must be accessible linguistically to patients [16]. In the case of SL, the Equal Rights for Persons with Disabilities Law [17] in Israel requires accessibility of all public services to DHH people, including SL translation. Never the less, most health services in the country do not offer their own SL translation services for deaf patients.

One special issue of health care for DHH people is attendance of Emergency Departments. Research demonstrates that deaf SL users have a 97% greater likelihood of using the ED over a period of 36 months compared with their hearing peers. Deaf SL users were also more likely to be repeat users of ED during this period. The researchers claimed that this may be due to their lower health literacy and low general health knowledge, resulting in perception for certain symptoms to be alarming and in need of urgent treatment [12]. These findings highlight the need to observe accessibility of emergency health services for deaf people, and address health literacy and health knowledge of this population.

The literature describes approaches to improve access to health care for DHH. Such approaches include resources helpful for health care systems as well as resources specifically for DHH [5]. Approaches helpful for health care systems include attention to the communication preferences of DHH, SL interpretation, use of communication technology, and cultural competency training for medical staff [5,6]. Education of health hearing professionals includes actual teaching of SL as well [3]. Reports on such workshops in the literature are rare. Hoang and colleagues [18] reported upon Deaf culture competency of medical students who participated in a special training program that included teaching of American SL and Deaf culture in the context of a cancer control curriculum. Results demonstrated significantly greater knowledge of medical students enrolled in this program compared with medical students who did not join the program. Another study [19] revealed that medical students that participated in a deaf awareness workshop reported a more confident approach to working with DHH patients following the workshop. Never the less, these reports related to medical students. To the best of our knowledge workshops for health care professionals were not yet reported.

Approaches helpful for deaf people include initiating health education, and primary health care centers for the deaf [5]. Reports upon workshops for enhancing health awareness of deaf people are rare. A randomized control trial reported upon deaf participants that viewed a colorectal cancer education video in American SL [20]. The participants completed surveys pre- and post-intervention. Results revealed that they gained and retained significantly more colorectal cancer knowledge compared with a control group of deaf people who participated in general programs for increasing colorectal cancer knowledge. Another study [21]

reports promising outcomes of an intervention that targeted modifiable risk factors for cardiovascular disease. Such reports support the development of interventions specifically tailored for deaf people. These studies show outcomes of interventions aimed at enhancing health awareness in certain medical fields and took place in restricted geographical areas. To the best of knowledge workshops enhancing knowledge in a variety of medical areas, on national basis, were not yet reported in the literature.

The current study will report upon a unique project aimed at enhancing accessibility of health care services for DHH people in Israel, especially emergency care. Israel's emergency care delivery consists of hospital-based Emergency Departments (EDs), independent urgent care centers, and evening care centers sponsored by the health plans. Emergency health services are also delivered by independent non-profit-making and profit-making ambulance services. Hospital-based emergency care is delivered in EDs of hospitals. The staff consists of physicians and nurses. Staff of ambulance services includes paramedics, Emergency Medical Technicians, physicians and volunteers. Most emergency medical services are reimbursed mainly by the health plans [14]. The project aimed at enhancing awareness of health professionals to issues of language accessibility for DHH people, and enhancing health awareness and knowledge of deaf people. In addition, the project included workshops for SL interpreters, aiming at improving their knowledge of the health system and health professional terms in Israeli SL. To the best of our knowledge this is the first descriptive research to report upon workshops including health care professionals, deaf people, and SL interpreters under one framework.

## The Project

The project was collaboration between the Ministry of Health, the Ministry of Welfare and Social Security, the National Social Security Institute (NSI), and the non-profit-making Israeli association for the deaf and HH "Ma'agalei Shema". The purpose of the program was to enhance awareness and knowledge of medical staff to cultural and linguistic accessibility of health care services to DHH people, and reduce inequalities in receiving health services. Another goal was enhancing awareness of deaf people to their rights in the health system and use of remote interpretation services. Finally, the program aimed at professionalization in medical SL interpretation.

The project consisted of three types of workshops: a) a workshop for health care professionals, especially ED, b) a workshop for deaf people, and c) a workshop for SL interpreters. The workshops for health care professionals were delivered in hospitals nationwide. Workshops were offered to EDs without charges, and health care professionals joined them on voluntary terms during work hours. Workshops for health care professionals included contents of cultural and linguistic aspects of communication with DHH people, and sign in Israeli SL necessary for basic communication with deaf people in health

care services. The workshops for deaf people were delivered in community centers for deaf people and high schools for deaf adolescents nationwide. Managers of community centers were offered workshops without charges, and deaf members of these centers joined workshops voluntarily. Workshops for deaf people included contents of rights, the medical system, and remote SL interpretation. The workshops for SL interpreters took place in Tel-Aviv. All SL interpreters in Israel were offered the opportunity to join workshops without charges. Workshops for SL interpreters included the following contents: a) various aspects of interpreter involvement, b) women health, c) emergency health services, d) mental health services, e) simulations, and f) medical terms in Israeli SL. The workshops took place between the years 2018-2020. The project was funded mainly by the NSI and partially by Ma'agalei Shema. **Table 1** presents the amount of workshops of each type, and the number of participant in each type of workshop.

**Table 1:** Amount of workshops and the number of participants.

Type of workshop	Amount of workshops ( <i>N</i> )	Participants ( <i>N</i> )
Health care professionals	32	587
Deaf people	24	715
SL interpreters	3	36

The purpose of the present study was to evaluate efficiency of workshops for participants of all three groups who joined workshops. Specifically, we explored the degree to which participants perceived they received novel knowledge and were prepared for effective future interactions involving deaf and HH people in the health care system. Since these workshops took place for the first time in Israel, at this stage of the project only descriptive data will be presented.

## Methods

### Participants

Five hundred and eighty seven health care professionals participated in workshops for this population. Demographic data was available only for 218 participants who completed questionnaires. Out of respondents, 65% were female and 29% were male. The rest of them did not indicate their gender. Young participants aged 21-30 years comprised 35% of respondents, participants aged 31-40 year comprised 22% of respondents, participants aged 41-50 years comprised 17% of respondents, and 19% of respondents were 51 years or older. Their occupations were divers: 28% of respondents were nurses, 13% were doctors, 9% were medics, 15% were administrative managers, and 5% were other health care professionals (technicians, audiologists, physical therapists, and professional accessibility supervisors). Participants with a professional experience of two to five years comprised 32% of respondents, participants with a professional experience of six to ten years comprised 13% of respondents, and veterans with

a professional experience of ten years or more comprised 37% of respondents. Most respondents (*N* = 190, 87%) did not join previous workshops on communication with deaf and HH people. Only 20 respondents (9%) joined previous workshops of the kind.

Seven hundred and fifteen deaf people participated in workshops for this population. Demographic data was available only for 69 participants who completed questionnaires. Out of respondents, 55% were female and 38% were male. The rest of them did not indicate their gender. Young participants aged 16-20 years comprised 13% of respondents, participants aged 21-30 years comprised 29% of respondents, participants aged 31-40 year comprised 29% of respondents as well, participants aged 41-50 years comprised 17% of respondents, and 9% of respondents were 51 years or older. The majority of respondents preferred either arriving with a SL interpreter to health care services (58%) or using remote SL interpretation service (27%). Only 9% of respondent preferred not to use SL interpretation in the health care services.

Thirty six SL interpreters participated in workshops for this population. Eighty eight percent were female and 12% were male. Young participants aged 21-30 years comprised 11% of respondents, participants aged 31-40 year comprised 28% of respondents, participants aged 41-50 years comprised 25% of respondents, and 5% of respondents were 51 years or older. Participants with a professional experience of two to five years comprised 50% of respondents, participants with a professional experience of six to ten years comprised 19% of respondents, and veterans with a professional experience of ten years or more comprised 31% of respondents.

### Instruments

Communication means of health care professionals with deaf patients before participation in workshops was evaluated by a check-list containing nine different possible means. The means were as follows: 1. "Communication via SL interpreter", 2. "Speech and lip-reading", 3. "SL", 4. "Note-writing", 5. "Communication via family member of deaf patient", 6. "Communication via assistance of other staff members", 7. "Not able to communicate", 8. "Other", and 9. "I never had to communicate with a deaf patient". Awareness of health care professionals to accessible services was evaluated by one question relating to their knowledge of existing accessible services in their institute. Participants had to choose either "yes", "no", or "I don't know". Items of the survey were partially derived from previous questionnaires [18].

Proficiency of SL interpreters in interpreting medical matters before participation in workshops was evaluated by using one question relating to the degree to which their professional medical knowledge is suitable for interpreting in the health care system. This question was rated on a Likert-type scale, ranging from a very high degree to a poor degree. Outcomes of workshops for health care professionals were evaluated by three questions relating to enhancement of knowledge and awareness to communication with DHH people following participation in workshops. The questions

were as follows: 1. “To which degree will the workshop improve your communication with DHH people?”, 2. “To which degree the workshop offered you novel knowledge?”, and 3. “To which degree was the workshop effective?”. The questions were rated on a Likert-type scale, ranging from a very large degree to a poor degree.

Outcomes of workshops for deaf people were evaluated by two questions relating to enhancement of knowledge and improving service consuming following workshops. We used simple language in order to make the questions accessible for most participants. The questions were as follows: 1. “Did you learn something new that you didn’t know before?”, and 2. “Would it be easier for you to get along in health services with the information you received in the workshop?”. Participants had to choose either “yes”, “no”, or “a little”.

Outcomes of workshops for SL interpreters were evaluated by questions relating to fields of content included in the workshops. The participants had to respond to the following for each field of content: 1. “I received genuine knowledge”, 2. “I received professional tools for SL interpreters”, 3. “I improved my interpretation abilities”, and 4. “I received adequate training for being a medical SL interpreter”. Each item was rated on a Likert-type scale, ranging from totally disagree (1) to totally agree (6).

### Procedure

Health care professionals and SL interpreters completed questionnaires before and after participation in workshops. Deaf participants completed questionnaires only after workshops. Out of 587 health care professionals only 218 participants completed questionnaires before workshops, forming a response rate of 37%. Only 199 of them completed questionnaires after workshops, forming a response rate of 34%. Out of 715 deaf participants only 69 completed questionnaires after workshops. Thus, the response rate for this group was around 10%. One reason for the low response rate for this group is possibly low literacy abilities of participants, especially participants above the age of 50. All SL interpreters (N = 36) completed questionnaires before and after workshops. Thus, the response rate for this group was 100%.

## Results

### Before workshops

We performed descriptive statistical analysis. Health care professionals were asked to indicate means of communication they used in the past while delivering services to DHH people. Participants were asked to mark one or more means they used from a closed checklist. **Table 2** presents the number of health care professionals that used each mode of communication in delivering services to DHH people before participation in the workshops described above.

**Table 2:** Use of means of communication by health care professionals to deliver services to DHH people before workshops.

Mode of communication	Amount of users (N)
Communication via SL interpreter	9 (4%)
Speech and lip-reading	70 (32%)
SL	12 (6%)
Note-writing	48 (22%)
Communication via family member of deaf patient	58 (27%)
Communication via assistance of other staff members	9 (4%)
Not able to communicate	22 (10%)
other	8 (4%)
I never had to communicate with a deaf patient	53 (24%)

As shown in **Table 2**, speech and lip-reading was the most common means of communication among health care professionals. Communication with deaf patients via family members was reported by more than half of the respondents. Note-writing was reported by nearly half of the respondents. Only a small portion of respondents used SL, either directly or via SL interpreters.

Health care professionals were asked whether their institute had accessible services. Seventy two respondents (33%) indicated that their institute had accessible services. Forty respondents (18%) indicated that their institute did not have accessible services. A hundred and two respondents (47%) did not know whether their institute had accessible services or not.

Proficiency of SL interpreters in interpreting medical matters before participation in workshops was evaluated by using one question relating to the degree to which their professional medical knowledge is suitable for interpreting in the health care system. Out of participants who answered this question, only two (6%) indicated that their professional medical knowledge is suitable for interpreting in the health care system to a very high degree. Thirteen respondents (36%) indicated that their professional medical knowledge is suitable for interpreting in the health care system to a high degree. Sixteen respondents (44%) indicated that their professional medical knowledge is suitable for interpreting in the health care system to a fair degree. Two respondents (6%) indicated that their professional medical knowledge is suitable for interpreting in the health care system to a poor degree.

### After workshops

Outcomes of workshops for health care professionals were

evaluated by three questions relating to three categories: improving communication with deaf and HH people, acquiring novel knowledge, and effectiveness of workshop. **Table 3** presents distribution of degrees of evaluation of respondents in each category.

**Table 3:** Distribution of degrees of evaluations of outcomes of workshops by health care professionals.

	Improving communication with DHH people	Acquiring novel knowledge	Effectiveness of workshop
To a very high degree ( <i>N</i> )	60 (30%)	117 (59%)	148 (74%)
To a high degree ( <i>N</i> )	76 (38%)	65 (33%)	42 (21%)
To a fair degree ( <i>N</i> )	48 (24%)	15 (8%)	8 (4%)
To a poor degree	12 (6%)	1 (0.5%)	-
Not at all ( <i>N</i> )	1 (0.5%)	1 (0.5%)	1 (0.5%)

As shown in Table 3, the majority of respondents rated the extent to which workshops provided novel knowledge and were effective to a very high degree. The extent to which workshops

improved communication with DHH people was rated as very high or high by the majority of respondents.

Outcomes of workshops for deaf participants were evaluated by two questions relating to acquisition of novel knowledge and improving communication in health care services. **Table 4** presents distribution of responses to each question.

**Table 4:** Distribution of evaluations of outcomes of workshops by deaf people.

	Acquisition of novel knowledge	Improving communication in health care services
Yes ( <i>N</i> )	42 (61%)	38 (55%)
No ( <i>N</i> )	8 (11%)	11 (16%)
A little bit ( <i>N</i> )	17 (25%)	19 (28%)

As shown in Table 4, the majority of respondents stated that they acquired novel knowledge in the workshops, and that they improved their ability to communicate in health care services.

Outcomes of workshops for SL interpreters were evaluated separately for each field of content that was included in workshops. (2). **Table 5** presents mean scores for each field of content. As shown in Table 5, the field of medical terms in SL received the highest ratings in all parameters.

**Table 5:** Mean scores and standard deviations for each field of content in workshops for SL interpreters.

	Various aspects of interpreter involvement	Women health	Emergency health services	Mental health services	Simulations	Medical terms in SL
I received genuine knowledge	3.85 (1.2944)	4.21 (.9771)	4.47 (.7174)	3.87 (1.3601)	3.66 (1.2929)	4.68 (.5674)
I received professional tools for SL interpreters	3.85 (1.1897)	4.00 (1.0632)	4.06 (.9105)	3.94 (1.3870)	3.75 (1.6839)	4.65 (.6439)
I improved my interpretation abilities	3.35 (1.3548)	3.67 (1.1293)	3.82 (1.4246)	3.75 (1.3904)	3.43 (1.2831)	4.65 (.5671)
I received adequate training for being a medical SL interpreter	3.74 (1.2508)	3.58 (1.1001)	4.06 (1.1974)	3.81 (1.4245)	3.66 (1.1801)	4.53 (.7288)

## Discussion

The purpose of the present study was to evaluate efficiency of workshops for health care professionals, deaf people, and SL interpreters aimed at enhancing accessibility of health care services to DHH people. The purpose of the program was to enhance awareness and knowledge of medical staff to cultural and linguistic accessibility of health care services to DHH people, and reduce inequalities in receiving health services. Another goal was enhancing awareness of deaf people to their rights in the health system and use of remote interpretation services. Finally, the program aimed at professionalization in medical SL interpretation. Specifically, we explored the degree to which participants perceived they received novel knowledge and were prepared for effective future interactions involving DHH people in the health care system.

As descriptive analysis demonstrates, prior to participation in workshops health care professionals communicated with DHH people mainly by means of speech and lip-reading. Another common mean of communication was via family members of the DHH patient. Note-writing was also commonly used. Neither of these means of communication allow adequate interactions between doctor and patient [6]. Use of SL interpretation was rare, although SL interpreters are the first preferred line of communication for deaf patients, and are essential for communication between deaf SL users and hearing professionals [4]. These findings are consistent with previous research showing that major means of communication with deaf people in health services are not the ones preferred by deaf people [5-7, 9]. The findings question the extent to which DHH people can receive adequate health care in Israeli hospitals. Linguistically competent treatment in health care services is a medical necessity [16], but in the case of SL it seems that a competent treatment is rare. A previous study conducted in Israel [16] revealed that Israeli hospitals promote culturally and linguistically competent healthcare. Practitioners who participated in this study described striving to communicate with patients in a language they understand or else used interpreters, since they were aware of the policy on this matter. It seems that what appears trivial for spoken languages in Israel is not the routine for SL.

Prior to participation in workshops less than half of SL interpreters indicated that their professional medical knowledge was suitable for interpreting in the health care system to a very large or large degree. This finding is unique to the present study, since to the best of our knowledge no previous study has examined suitable knowledge of SL interpreters for performing interpretation in health services. These findings cast doubt on the quality of SL translation in health care services when they exist. The field of SL interpreting in general has been longitudinally engaged in the process of professionalization. Never the less, while the pool of interpreters is being increased, in reality the pool of qualified interpreters may remain relatively static or only modestly increased. One way to close the gap that exist in the competencies of interpreters is through guided continuing education [22]. The issue of professionalization of SL interpreters requires special caution in terms of health services, due to lexical gaps in SL for purposes of health communication [23]. The workshops described in the current study have the potential of meeting the needs of professionalization in medical SL interpretation.

The findings of the current study revealed that most health care professionals graded the degree to which workshops improved their communication with DHH people as very high or high. These findings are consistent with previous research showing that pharmacy students enrolled in a training to increase awareness to communication barriers with DHH patients agreed or strongly agreed that the experience would likely impact the quality of their future interactions with patients [24]. This finding is encouraging and shed light on the necessity of workshops in order to reduce inequalities in receiving health services. Enhancing awareness

and knowledge of health care professionals to language rights and needs of DHH people is crucial to avoid precluding them from gaining proper health care and health care information [2]. Thus, the workshops described in the current study are only the first step in promoting linguistically and culturally adequate services to the DHH community. Further efforts should be made by authorities to engage more hospitals and medical centers in orientation workshops.

Deaf people who participated in workshops had to indicate whether they acquired novel knowledge workshops and improved their communication in health care services. More than half of participants that answered questionnaires indicated that workshops contributed to their knowledge and communication in health care services. Never the less, around a quarter of respondents indicated that workshops contributed only a little bit to their knowledge and communication, and some of them indicated that workshops did not have any contribution to them in terms of knowledge and communication. Thus, even though workshops were effective for the majority of respondents, the large proportion of respondents who indicated non or little benefits from workshops needs caution. Previous studies on interventions for enhancing health knowledge of deaf people focused on examining health knowledge of participants [20-21]. The few studies that exist did not relate to subjective benefits of deaf people who participated in such interventions. Future workshops for deaf people have to refine needs and contents regarding health literacy and health knowledge.

Workshops for SL interpreters included several contents. Participants had to indicate the degree to which they agree with statements regarding acquisition of genuine knowledge, receiving professional tools for SL interpreters, improving their interpretation abilities, and receiving adequate training for being a medical SL interpreter regarding each field of content. The field of medical terms received the highest grading. Since the current study reported descriptive data only, we do not know whether there is a significant difference between grading of this field of content and other fields of content presented in the workshops. We can conclude with caution that teaching specific terms in SL has the highest advantage for professionalization of SL interpreters in the medical system. To the best of our knowledge no previous study has reported outcomes of workshops for SL interpreters in the field of health services. Thus, this possible insight needs further exploration.

The current study has a few limitations. Response rates for health care professionals was low, and response rates for deaf people was very low. Thus, data presented in the present study cannot be generalized for the entire population. In addition, health care professionals participated in workshops voluntarily. Professionals who chose to participate in workshops might be the ones who were aware in advance to the necessity of delivering linguistically adequate services to DHH people. This group might be composed of professionals who are willing to make

the necessary efforts in order to gap linguistic barriers in health services. Whether the medical system as a whole is willing to take responsibility for proper adjustments for DHH remains unknown.

## Conclusions

Workshops for health care professionals, SL interpreters, and deaf people have the potential of improving access to health care for DHH people. Contents of workshops for deaf people needs refinement. Workshops for SL interpreters have to include mainly medical terms in the local SL.

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