

# **A cleft care workshop for speech and language pathologists in resource-limited countries: The participants' experiences about cleft care in Uganda and satisfaction with the training effect**

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## **Abstract**

*Objectives:* Workshops and specialized training programs are often inaccessible for speech and language pathologists (SLPs) based in resource-limited countries given the lack of supply, the long travel distances and the excessive participation fees. To stimulate life-long learning opportunities for all, this study described and measured the effect of a free, two-day cleft care workshop for SLPs in Uganda. The workshop included different topics related to the assessment and treatment of children with a cleft of the palate with or without a cleft of the lip (CP ± L).

*Methods:* The participants who presented during the two-day course were asked to complete a pre- and post-workshop questionnaire to evaluate their satisfaction. The pre-workshop form also included some questions concerning cleft care in Uganda. Both the pre- and post-workshop forms included three visual analogue scales to investigate the evolution of the participants' estimation of their knowledge regarding speech in patients with a CP ± L and to assess the changes in their self-confidence in the diagnosis and treatment of this population.

*Results:* Seventeen SLPs completed the pre- and post-workshop questionnaires. In general, the participants were highly satisfied with the different themes covered in the program. After the training course, the participants rated their general knowledge about CP ± L and their self-confidence in the diagnosis and treatment of children with a CP ± L significantly higher than before the workshop.

*Conclusion:* The vast majority of the SLPs reported that cleft care was not easily accessible in Uganda. The most commonly reported obstacle for cleft care was a lack of knowledge about this matter in the SLPs themselves highlighting the importance of the organization of additional education opportunities. The participants reported a significantly higher level of self-confidence in diagnosing and treating children with a CP ± L after the workshop. The content of this workshop can form the basis for future learning opportunities for SLPs based in resource-limited countries.

*Keywords:* Cleft lip and palate; Resource-limited country; Workshop; Speech-related cleft care

## 1. Introduction

The Republic of Uganda is a low-income country located in East-Central Africa, bordered by South-Sudan, Kenya, Tanzania, Rwanda and the Democratic Republic of Congo [1]. According to the World Development Indicators data bank, Uganda has 44.81 million inhabitants [2]. The life expectancy at birth is 60 years for men and 65 years for women [3]. This low life expectancy is partially related to the country's poor health care infrastructure [1]. Only 14 provincial and 2 regional hospitals are available in Uganda resulting in a density of 0.037 to 0.005 hospitals per 100.000 citizens [3]. One of the challenges is the provision of care for children with a cleft palate with or without a cleft lip (CP±L). For Uganda, incidence rates are estimated between 0.73 [4] and 1.34 [5] which means that each year approximately 1128 to 2070 babies are born with a CP±L [1]. From birth on, children with a CP±L ideally receive a multidisciplinary treatment of which speech is one of the most important outcomes [6]. Speech-language pathologists (SLPs) form an important part of the multidisciplinary cleft team addressing the speech disorders in this population. In Uganda, there is a shortage of SLPs to treat all the patients in need of speech and language intervention [1]. Speech and language services in this country have historically been led by foreign health professionals and were inaccessible for the majority of the population [7].

Only a few recognized centers provide care for patients with a CP±L in Uganda. One of these hospitals is the non-profit and non-governmental Comprehensive Rehabilitation Services Uganda (CoRSU) hospital which is a specialized surgical hospital in the Buganda Region (Wakiso District) of Uganda. CoRSU was established in

2006 and provides free and subsidized surgery and rehabilitation for children under the age of 17 years. CoRSU includes an orthopedic unit, a plastic and reconstructive surgery unit and a unit for fistula reconstruction. In the plastic and reconstructive surgery department, surgical intervention and rehabilitation can be provided for children who present with a cleft palate with or without a cleft lip (CP±L). In 2018, more than 300 cleft lip and/or palatal closures were performed at CoRSU hospital [8]. Given the limited supply of other cleft care services, patients come from all over the country and even from neighboring countries to receive appropriate treatment [1]. In 2010, a collaboration between CoRSU hospital and Ghent University was set up in the context of a project that was funded by the Flemish organization VLIR-UOS (project number: ZEIN2009EL28): “Creation of a reference center for congenital facial cleft and benign jaw tumor in Uganda” [1]. Within this project, a speech and language therapy department was established at CoRSU Hospital. After surgical closure of the CP±L, the patients are referred to this department where a speech assessment and, if necessary, speech intervention can be provided. Currently, only one Ugandan SLP works at CoRSU hospital. In 2018, more than 1500 speech and language therapy sessions were provided in this hospital [8].

To respond to the discrepancy between the high demand for speech-related cleft care and the limited supply of SLPs, the Makerere University, the Mulago National Referral Hospital and the Voluntary Services Overseas (VSO) collaborated in 2008 to create a training program for SLPs in Uganda [7]. To date, this is the only educational program for SLPs in East-Africa [9]. This bachelor program in speech and language therapy consists of a three year educational course and is part of the Makerere University, College of Health Sciences in Uganda. During the first semester of the third year, the curriculum includes a course that is entirely dedicated

to children with a CP±L [10]. The course provides information about the embryology associated with this condition, the etiology and classification of clefts, the implications of CP±L on early feeding and the development of communication skills, the assessment of feeding and communication skills and treatment approaches [10]. With the development of this bachelor program, there has been an increase in the number of SLPs in Uganda [1]. Despite this increase, there are still insufficient practitioners to reach all patients in need [11]. The most recent official information about the number of SLPs working in Uganda date from 2014, with 19 available SLPs at that time [1]. In other words, there are 0.6 SLPs per 1.000.000 citizens [1]. This is a very limited number of SLPs compared with more developed countries. In Belgium, for example, there are 10.277 available SLPs resulting in a density of 884 speech therapists per 1.000.000 citizens [12].

Lifelong learning opportunities are promoted by the 2030 Agenda for Sustainable Development of the United Nations [13]. For health professionals in resource-limited countries, however, workshops and further training are often inaccessible because most initiatives take place in more developed countries or because the costs are too high to participate [9]. For SLPs in East Africa, it has been reported before that they often have to rely on unreliable internet resources and books for their clinical decision-making [9]. The past years, some initiatives have been set up to organize more accessible training programs in resource-limited countries. One of these initiatives was the First Simulation-Based Comprehensive Cleft Care workshop in the Middle East and North Africa regions [14]. A total of 93 participants (including 46 SLPs, 37 surgeons and 10 nurses) presented during the three-day workshop. The first and third day consisted of multidisciplinary didactic lectures of relevance to all cleft practitioners covering surgical, speech, nursing, anesthetic, pediatric, psychosocial, and

dental considerations and multidisciplinary approaches in cleft care [14]. The second day consisted of surgical courses, speech and language pathology programs, and nursing sessions with more specific focus on the different professions. The high amount of participating SLPs in this workshop highlighted the need for more in-depth training programs or workshops specifically designed for this group of health practitioners.

To respond to this need, a two-day cleft care workshop was provided for SLPs in Uganda. The present study described and measured the effect of the workshop by evaluating the participants' learning and satisfaction. This initiative was in line with the 2030 Agenda for Sustainable Development [13] and should be considered as a strategy to provide and improve evidence-based care for patients with a CP±L in resource-limited contexts. This initiative, which was organized free of charge, aimed to be as accessible and inclusive as possible.

The participants' satisfaction with the workshop was evaluated. Both the pre- and post-workshop forms included three visual analogue scales to investigate the participants' estimation of their knowledge regarding patients with a CP±L and to assess the changes in their self-confidence in the diagnosis and treatment of this population.

## **2. Methods**

The organization of this workshop was part of a larger research project entitled "The long-term impact of early (before the age of 6 months) primary palatal closure on speech characteristics (overall speech intelligibility, articulation, resonance) in children with congenital isolated clefts in Uganda" that was approved

by the Mildmay Uganda Research Ethics Committee (0611–2017) and the Uganda National Council for Science and Technology (HS 2448).

## **2.1. Workshop design**

A free two-day workshop (on the 4<sup>th</sup> and 5<sup>th</sup> of November, 2019) was organized at CoRSU Hospital. The target audience was SLPs working at Uganda. The possible participants were recruited by phone, by e-mail and through social media by the SLP working at CoRSU Hospital using convenience and snowball sampling. The workshop was provided by two SLPs (C.A. and E.D.H.) working at Ghent University with respectively three and twenty years of experience in the diagnosis and treatment of speech disorders in patients with CP±L. A team of five SLPs (L.B., K.B., D.S., K.V.L.), with several years of experience with cleft palate speech disorders, assisted the two instructors with the development of the workshop program. The program included different topics related to speech-related cleft care (Table 1). The content of the workshop was designed in light of the educational theory of Miller's pyramid of competence [15]. This conceptual model reports the essential facets of clinical competence, namely the "knows" (i.e., the basic and factual knowledge), "knows how" (i.e., the use of this knowledge in the development of a plan), "shows how" (i.e., the integration of knowledge and skills into a successful clinical performance) and "does" (i.e., use of knowledge in daily patient care) [15]. The workshop specifically focused on the level "knows, knows how and shows how" [15]. The first day consisted of three parts: the anatomy and physiology of a CP±L (i.e., the "knows" according to Miller's pyramid [15]), the perceptual assessment of speech disorders in patients with a CP±L and the organization of the multidisciplinary care and quality of life in this population (i.e., the "knows how" in Miller's pyramid [15]). The

**Table 1**  
Content of the workshop.

	First workshop day	Second workshop day
Morning	<p>Anatomy and physiology</p> <ul style="list-style-type: none"> <li>- Embryology</li> <li>- Cleft types</li> <li>- Submucous cleft palate</li> <li>- Velopharyngeal functioning</li> <li>- Intraoral examination               <ul style="list-style-type: none"> <li>&gt; Oronasal fistulas</li> <li>&gt; Velopharyngeal closure</li> <li>&gt; Articulators</li> <li>&gt; Dentition</li> </ul> </li> <li>&gt; Hands-on session practicing the intraoral examination</li> </ul>	<p>Instrumental speech assessment</p> <ul style="list-style-type: none"> <li>- Overview of the different measures for the velopharyngeal mechanism and resonance</li> <li>- Hands-on session with A KayPentax Nasometer (model II 6450) (NJ, Lincoln Park)</li> </ul> <p>Treatment of speech disorders part 1</p> <ul style="list-style-type: none"> <li>- Management of velopharyngeal insufficiency [27]</li> <li>- Active versus passive speech disorders and consequence for intervention [28]</li> <li>- Motor-phonetic speech therapy approaches [24,29]</li> <li>- Linguistic-phonological speech therapy approaches [11,26,30,31]</li> </ul>
Afternoon	<p>Perceptual evaluation of cleft-related speech disorders</p> <ul style="list-style-type: none"> <li>- Vowel and consonant classification</li> <li>- Influencing factors: the listeners, the speech sample and speech recordings, the speech parameters and the rating scales</li> <li>- Speech parameters: speech understandability, speech acceptability, hypernasality, hyponasality, nasal emission, nasal turbulence, and cleft-related articulation disorders</li> <li>- Hands-on session listening to external reference tapes</li> </ul> <p>Multidisciplinary cleft care and quality of life</p> <ul style="list-style-type: none"> <li>- The multidisciplinary cleft team</li> <li>- Quality of life definitions</li> <li>- Standardized instruments: The Cleft-Q [32] and the VELO questionnaire [33–35]</li> <li>- Discussion about inclusion of psychosocial outcomes in clinical practice</li> </ul>	<p>Treatment of speech disorders part 2</p> <ul style="list-style-type: none"> <li>- Combined phonetic-phonological speech therapy approaches [11,25,26]</li> </ul> <p>Hands-on session: discussing different cases</p> <p>Speech-related outcomes (studies conducted in Uganda)</p> <ul style="list-style-type: none"> <li>- Studies investigating the timing of palatal closure [36,37]</li> <li>- Speech-related quality of life [35]</li> <li>- Short, intensive speech therapy programs [11,25,29]</li> </ul>

anatomy and physiology provided an overview of the embryology, the different cleft types and the velopharyngeal functioning. This theoretical module was supplemented with a hands-on session to practice the intra-oral examination. After the participants were given information about the physical aspects of a CP±L, the perceptual assessment of speech disorders was discussed. The trainers and workshop participants went through the different factors that could influence the validity and reliability of the perceptual assessments (e.g., the listeners, the speech sample and speech recordings, the speech parameters and the rating scales) [16-21]. The different speech parameters (i.e., speech understandability, speech acceptability, hypernasality, hyponasality, nasal emission, nasal turbulence, and cleft-related articulation disorders) were discussed and the workshop participants could listen to external reference tapes that were collected with the consent of the patients in the context of the larger research project. At the end of the first day, multidisciplinary care in children with a CP±L was discussed. In addition, an overview of the assessment of quality of life in patients with a CP±L was provided. Different opportunities to integrate psychosocial outcomes in resource-limited countries were explored with the participants.

The second workshop day consisted of two parts: the instrumental assessment of speech disorders in patients with a CP±L and the treatment of speech disorders related to CP±L. The instrumental assessment module provided an overview of the tools that are currently used to assess the velopharyngeal mechanism and the presence or absence of resonance disorders in this population (e.g., nasopharyngoscopy, videofluoroscopy, nasometry, the Nasality Severity Index 2.0) [22, 23]. Different speech therapy approaches were addressed during the treatment module. The use of motor-phonetic [6, 24] and linguistic-phonological [11, 25, 26] speech



therapy approaches was included. The participants were provided time to develop and discuss treatment plans for several cases (i.e., the “shows how” in Miller’s pyramid [15]). During the workshop, several discussion moments were included to talk about viewpoints and common practices.

## **2.2. Questionnaire**

### **2.2.1. Pre-workshop questionnaire**

A pre-workshop questionnaire was distributed at the beginning of the first day (Appendix 1). This form collected some demographic information (i.e., gender, age, nationality, degree, years of experience, professional position, years in the current position, specialty). The participants were also asked if sufficient information about a CP±L was included in the curriculum of their education and if they felt confident to treat this population. Some questions were related to cleft care in resource-limited countries. The participants were asked if cleft care was accessible and if there were any obstacles for cleft care in their country. Questions regarding the referral to a multidisciplinary team or a specialized SLP in cases of hypernasality were also included in the pre-workshop questionnaire. The questions related to cleft care were developed based on the expertise of the different authors since no validated questionnaires on this topic were available.

### **2.2.2. Post-workshop questionnaire**

The participants were asked to complete a post-workshop questionnaire at the end of the second day (Appendix 2). The participants' satisfaction with the workshop was evaluated based on 5 parameters with 2

sub-items each: (1) content (objectives clarity and content relevance to the profession), (2) design (learning stimulation and difficulty appropriateness), (3) instructors (preparedness and helpfulness), (4) results (accomplishment of objectives and applicability of knowledge to the profession), and (5) delivery (delivery pace and suitability), similar to the satisfaction form used in the Comprehensive Cleft Care Workshop that was organized by the Global Smile Foundation [14]. The participants were asked to score the sub-items using an ordinal rating scale from 1 (strong dissatisfaction) to 5 (strong satisfaction) [14]. A total score of 10 for each parameter was then generated by adding up the scores of the 2 sub-items for that parameter. An overall workshop satisfaction score of 50 was then calculated by summing the scores of the 5 parameters [14].

Both the pre- and post-workshop questionnaires included Visual Analogue Scales (VAS) to assess the SLPs' self-reported evolution on several parameters. To investigate the participants' estimation of their own knowledge regarding patients with a CP±L, a bar was provided including the label "I have no knowledge concerning these patients" (0mm) at the left end and the label "I have a profound knowledge concerning these patients" (100mm) at the right end. The participants' self-confidence in diagnosing these patients was assessed with a bar with the label "I feel extremely unconfident" (0mm) at the left end and the label "I feel extremely confident" (100mm) at the right end. A third bar with the same labels was provided to assess the participants' self-confidence in treating these patients.

### **2.3. Statistical analysis**

Statistical analysis was performed using SPSS version 26.0 (IBM corp., Armonk, NY). The significance level was set at  $p \leq 0.05$ . For all continuous variables, normality was tested based on the descriptive statistics

that were generated for all collected data (histogram, boxplot, Q-Q plot) and the results of the Shapiro-Wilk test. The satisfaction scores were non-parametrically distributed and hence Mann Whitney U-tests and Kruskal-Wallis tests were performed to investigate variation in these scores based on the different demographic parameters. Paired Student *t*-tests were performed to compare the mean VAS-scores before and after the workshop given that these variables were normally distributed.

### 3. Results

The total number of participants in the workshop was 20 including 18 SLPs (90.0%). Despite that the workshop mainly focused on SLPs, 2 plastic surgeons (10.0%) working at the department of plastic and reconstructive surgery at CoRSU hospital also participated in the two-day workshop. The response rate for the pre- and post-workshop questionnaires was 85.0% with 17 SLPs completing both forms. The demographic information of these 17 SLPs is provided in Table 2. Four SLPs (23.5%) were a member of a cleft team. Eleven participants (64.7%) treated 1 to 3 patients with a CP±L per year and one participant (5.9%) treated 10 to 20 patients with this condition per year. Two SLPs (11.8%) reported that they treated more than 20 patients with a CP±L per year. Three workshop participants (17.6%) had no previous experience with this condition. When asking about the participants' pre-workshop expectations, fourteen SLPs (82.4%) indicated that they expected to receive up-to-date, evidence-based information about the treatment of speech sound disorders in this population. The expectation to receive information about the diagnosis of speech disorders was reported by five SLPs (29.4%). Two SLPs (11.8%) expected to receive information about the instrumental assessment of speech disorders and about the management of swallowing disorders in children with a CP±L.

**Table 2**  
Demographic information of the workshop participants ( $n = 17$ ).

Demographic information	$n$ (%)
Gender	Females ( $n=11$ , 64.7%) Males ( $n=6$ , 35.3%)
Age in years (mean, <i>SD</i> )	29.99 years (6.518) age range: 22.09–46.28 years
Country of birth	Uganda ( $n=13$ , 76.5%) Kenya ( $n=1$ , 5.9%) U.K. ( $n=1$ , 5.9%) Scotland ( $n=1$ , 5.9%) South Sudan ( $n=1$ , 5.9%)
Degree	Bachelor degree ( $n=14$ , 82.3%) No degree ( $n=2$ , 11.7%) <sup>a</sup> Master degree ( $n=1$ , 5.9%) <sup>b</sup>
Years after graduation as an SLP (mean, <i>SD</i> )	2.94 years (1.784)
Additional degree	special needs, nursing, psychology ( $n=3$ , 17.6%)
Working district	Kampala (Uganda) ( $n=9$ , 52.9%) Gulu (Uganda) ( $n=3$ , 17.6%) Buikwe (Uganda) ( $n=1$ , 5.9%) Fort Portal (Uganda) ( $n=1$ , 5.9%) Kabarote (Uganda) ( $n=1$ , 5.9%) Kigali (Rwanda) ( $n=1$ , 5.9%) Jinja (Uganda) ( $n=1$ , 5.9%)
Current position	Rehabilitation center ( $n=7$ , 41.2%) Hospital ( $n=6$ , 35.3%) Private practice ( $n=3$ , 17.6%) Children's and babies' home ( $n=1$ , 5.9%)
Years in current position (mean, <i>SD</i> )	2.52 years (1.521)
Expertise/specialty	No expertise ( $n=5$ , 29.4%) Cleft lip and palate ( $n=4$ , 23.5%) Speech and language disorders ( $n=3$ , 17.6%) Neurological disorders ( $n=2$ , 11.7%) Dysphagia in children ( $n=1$ , 5.9%) Autism spectrum disorders ( $n=1$ , 5.9%) Voice disorders ( $n=1$ , 5.9%)

*SD*: standard deviation <sup>a</sup>These two participants had finished their bachelor program but will graduate in January 2020 <sup>b</sup>This master degree was obtained in Scotland.

Regarding cleft care in Uganda, eight SLPs (47.1%) reported that they were not aware of any other SLP treating this condition in Uganda. The vast majority ( $n=14$ , 82.4%) of the participants reported that cleft care was not easily accessible in Uganda (Table 3). Different obstacles were reported: a lack of knowledge in the speech therapists ( $n=10$ , 58.8%), long travel distances ( $n=9$ , 52.9%), a lack of multidisciplinary teams ( $n=8$ , 47.01%), a lack of awareness ( $n=8$ , 47.01%), high costs for the patients ( $n=4$ , 23.5%) and limited availability of speech therapists ( $n=1$ , 5.9%).

The SLPs' responses demonstrated high satisfaction with the workshop content (mean: 9.35/10,  $SD$ : 1.222), the workshop design (mean: 8.48/10,  $SD$ : 1.698), the instructors (mean: 9.294/10,  $SD$ : 0.919), the results (mean: 8.59/10,  $SD$ : 326) and the delivery (mean: 8.47/10,  $SD$ : 1.231). The mean overall satisfaction with the workshop was 44.12/50 ( $SD$ : 4.241). The Mann Whitney U-test demonstrated no statistically significant difference in overall satisfaction with the workshop when comparing SLPs who were related to a cleft team and SLPs who did not work in a cleft team ( $U=24.50$ ,  $p=0.871$ ). Based on Kruskal-Wallis tests, no statistically significant differences in overall satisfaction with the workshop were found based on the years of experience or the current position ( $\chi^2 (3) = 2.345$ ,  $p=0.487$  for years of experience and  $\chi^2 (3) = 3.827$ ,  $p=0.281$  for the current position).

**Table 3**  
Cleft care in Uganda.

Cleft care	n (%)
Accessibility of cleft care	Cleft care is not accessible (n=14, 82.4%) Cleft care is easily accessible (n=2, 11.7%) I don't know (n=1, 5.9%)
Referral to multidisciplinary team (MDT)	I would refer to an MTD (n=15, 88.2%) I would not refer to an MTD (n=1, 5.9%) I don't know (n=1, 5.9%)
Referral to a specialized speech therapist (SLP)	I would refer to an SLP (n=16, 94.1%) I would not refer to an SLP (n=1, 5.9%)
Referral to an SLP with more experience	I would always refer (n=12, 0.6%) I would refer sometimes (n=5, 29.4%)
Referral in case of hypernasality	I would refer to a cleft team (n=11, 64.7%) I would refer to an ear, nose and throat specialist (n=9, 52.9%) I would refer to an SLP (n=8, 47.01%) I would refer to a surgeon (n=6, 35.3%) I would refer to a dentist (n=2, 11.7%) I would refer to a psychologist (n=2, 11.7%) I would refer to a social worker (n=1, 5.9%)
Sufficient information through education	There was insufficient information about a CP ± L in the educational program (n=9, 52.9%) There was sufficient information about a CP ± L in the educational program (n=6, 35.3%) I don't know (n=1, 5.9%)
Sufficient information to treat patients with a cleft	Yes, I have sufficient knowledge about a CP ± L (n=8, 47.01%) No, I don't have sufficient knowledge about a CP ± L (n=6, 35.3%) I don't know (n=3, 17.4%)
Take initiative to get new information about patients with a cleft	Yes, by asking information to colleagues (n=10, 58.8%) Yes, by following additional educations (n=9, 52.9%) Yes, by reading scientific articles (n=5, 29.4%)

**Table 4**

The results for the comparison of the pre- and post-workshop VAS-scores based on the paired Student's *t*-test.

Parameter	Pre-workshop score (mean, <i>SD</i> )	Post-workshop score (mean, <i>SD</i> )	<i>t</i>	<i>p</i>
Knowledge	4.76 (1.091)	7.76 (1.44)	-7.295	<i>p</i> < 0.001 <sup>a</sup>
Confidence diagnosis	5.06 (1.819)	7.91 (1.482)	-5.841	<i>p</i> < 0.001 <sup>a</sup>
Confidence treatment	4.65 (1.935)	7.56 (1.223)	-5.616	<i>p</i> < 0.001 <sup>a</sup>

<sup>a</sup> Statistically significant difference (*p* < 0.050).

The comparison of the pre- and post-workshop VAS-scores are presented in Table 4. The paired Student's *t*-tests demonstrated a statistically significant increase in knowledge, confidence in diagnosis and treatment after participating in the workshop ( $p < 0.001$ ).

After the workshop, every participant ( $n=17, 100\%$ ) indicated that they would participate again in a similar workshop, that they would recommend this workshop to a colleague and that the acquired knowledge was useful for their clinical practice. Six SLPs (35.3%) suggested the organization of another workshop discussing swallowing and feeding difficulties in this particular population.

#### **4. Discussion**

The present study described and measured the effect of the organization of a free, two-day cleft care workshop for speech and language pathologists in Uganda. The Ugandan SLPs were also asked about their perceptions on cleft care in this country.

The bachelor program for speech and language therapy at the Makerere university was installed as a response to the need for SLPs in Uganda. This was reflected in the young age and the limited years of experience of the workshop participants (Table 2). Speech and language therapy is a fast-growing part of health care and with more than 3 million Ugandans in need of these services, it is highly important to train these SLPs adequately [38]. The provision of this workshop was in line with the third and fourth goal of the 2030 Agenda for Sustainable Development [13], namely "ensure healthy lives and promote well-being for all at



all ages and ensure inclusive, equitable and quality education and promote lifelong learning opportunities for all". One of the sub-items of the 2030 agenda is ensuring that all learners and professionals acquire the knowledge and skills needed to promote sustainable development [13]. Training of the health workforce in developing countries was reported as a manner to ensure these lifelong learning opportunities.

Almost half of the participants were not aware of other SLPs treating patients with a CP±L in Uganda. Interestingly, this result was in line with the findings of the first Simulation-Based Comprehensive Cleft Care Workshop that was held in the Middle East and North Africa region [14]. The major part of the participating SLPs reported that they would refer a patient to a (more) specialized colleague if necessary (Table 3). Unawareness of the existence of other practitioners might hamper an adequate referral or dialogue between colleagues influencing optimal patient care. To date, no professional organization for SLPs exists in Uganda. Some unofficial attempts (e.g., on the social media) are made to connect and inform the different SLPs [39, 40]. These efforts should be encouraged not only for changes on the local levels but also for possible policy shifts on a larger scale [41]. As suggested before, SLPs must collaborate to enhance equitable services for people with a disability in resource-limited countries [41].

The vast majority of the SLPs reported that cleft care was not easily accessible in Uganda (Table 3). Surprisingly, the most important factor hampering the accessibility of cleft care was a lack of knowledge about patients with a CP±L in the SLPs themselves. In accordance, more than half of the SLPs indicated that their educational program included insufficient information about this population (Table 3). The limited availability of SLPs, on the contrary, did not emerge as an impediment for cleft care. It has been reported before that

stereotyping obstacles are not necessarily true and do not apply to all resource-limited countries [14]. For most SLPs, and more generally all health professionals in the East-African countries, workshops and further training in diagnosis and intervention are difficult to access because additional educational programs often take place in foreign countries with excessive entrance fees [9]. This finding highlights the importance of the organization of learning opportunities such as this workshop. Educational initiatives should be encouraged and should always be adapted to the local needs, barriers and challenges to reach optimal effectiveness [14].

One of the challenges in Uganda is the stigma that is still linked to patients with a CP±L [1, 9]. When asking the participants to whom they would refer in case of hypernasality, 2 participants (11.7%) indicated that they would refer the child to a psychologists and 1 participant (5.9%) reported a referral to a social worker. These responses might create the impression that some SLPs still have the idea that cleft-related speech disorders have a psychological foundation. It must be noted, however, that participants were not asked about the rationale for any particular referral. It might also be possible that the SLPs indicated these answers because of the possible psychosocial impact of a CP±L [42]. In the East-African countries, some caregivers hide their children with a CP±L out of fear of being rejected by other community members [9]. Awareness-raising campaigns provided by trained SLPs can help to eliminate these existing viewpoints.

In general, the participants reported high satisfaction with the workshop. After the workshop, the SLPs rated their general knowledge about CP±L significantly higher than before the workshop (Table 4). Similar results were found for their self-confidence in the diagnosis and treatment of these children (Table 4). The authors therefore believe that the content of this workshop can form the basis for initial learning (e.g., the

curricula of bachelor or master programs in speech-language pathology) and continuous learning (e.g., to keep more experienced health practitioners informed about the current approaches). To which extent the subjective impressions of the SLPs after the workshop will affect their clinical decision-making remains a topic for further research. The Miller's Pyramid of Assessment provides a useful framework to match the intended learning outcomes (i.e. the envisaged clinical competencies after the workshop) with the expectations of the participants [43]. The hands-on sessions that were organized during the workshop to practice intra-oral examination and to develop and implement a treatment plan for patients with a CP±L were learning opportunities in which the SLPs could demonstrate the integration of knowledge and skills into successful clinical performance (i.e. the "shows how" in Miller's Pyramid of Assessment [15]. In Miller's framework, a distinction is made between "action" and the lower levels in the pyramid. "Action" (i.e. the "does" in Miller's Pyramid [15]) is related to actual clinical practice rather than artificial testing and can only be assessed by direct observation in clinical settings [15]. The organizational context of this workshop provided no possibilities to assess if the SLP's routine clinical actions changed after participation in the program (i.e. the "does"). Nevertheless, the findings of the post-workshop questionnaire revealed that the SLPs were more confident with their own clinical performance after the workshop. In addition, they indicated that the content of the workshop, especially the hands-on sessions ("shows how" [15]) were useful for their clinical practice. Considering the success of the "shows how" activities during the workshop, which is the second-highest level to assess the SLPs performance in realistic contexts [15], one can hypothetically assume that the workshop positively influenced the SLP's clinical performance.

To the best of our knowledge, this was the first report of a workshop concerning speech-related cleft care for SLPs in resource-limited countries. As reported before, participants' satisfaction is not a reliable parameter to evaluate the effectiveness of a workshop in terms of the acquisition of knowledge and practical skills [14]. Additionally, it should be mentioned that the post-workshop questionnaire was filled in immediately after the workshop. It is possible that the self-evaluation of knowledge and self-confidence in the diagnosis and treatment of this population will return to the baseline value a few months after the workshop. Moreover, the use of a questionnaire to investigate satisfaction might result in participants answering in a socially desirable way. The different questions related to cleft care were designed based on the expertise of the different authors of this paper. Therefore, the findings of the present study need to be interpreted carefully in absence of validity and internal consistency testing of the pre- and post-workshop questionnaires. Regardless of these limitations, the participants' views and suggestions after the workshop provided important insights in the current needs, which is highly important when organizing future workshops. More than a third of the SLPs, for example, indicated the need of a workshop concerning swallowing and feeding difficulties in children with a CP±L. This workshop focused specifically on SLPs providing the opportunity to elaborate on the diagnosis and treatment of speech disorders in this population. It is internationally accepted, however, that patients with a CP±L should be treated and supported by multidisciplinary teams [44]. As suggested before, workshops including different health care practitioners might enhance multidisciplinary learning, intellectual exchange

and networking [14]. Future workshops in resource-limited countries could therefore invite the different disciplines and include both joint and separate workshop sessions.

## **5. Conclusion**

The present study described and measured the effect of a free, two-day workshop concerning speech-related cleft care for SLPs in Uganda. In general, the participants indicated a high satisfaction with the different aspects of the workshop. The vast majority of the SLPs reported that cleft care was not easily accessible in Uganda. The most commonly reported obstacle for cleft care was a lack of knowledge about this matter in the SLPs themselves highlighting the importance of the organization of opportunities for additional education. After the workshop, the participants rated their general knowledge of a CP±L and their self-confidence in the diagnosis and treatment of these children significantly higher than before the workshop suggesting the positive effects of this initiative. To what extent these subjective impressions will have an impact on their clinical decision-making remains a topic for further research.

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