DOI: 10.1590/2317-1782/20152014223

Systematic Review

Revisão Sistemática

Training of Community Health Agents in health hearing children: current perspectives

Capacitação do Agente Comunitário de Saúde na saúde auditiva infantil: perspectivas atuais

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Keywords

Community Health Workers
Training
Hearing
Hearing loss
Deafness
Family Health Strategy

ABSTRACT

Purpose: To characterize the training of Community Health Workers in the field of child hearing health. **Research strategy**: A systematic literature review on Biblioteca Virtual em Saúde (BVS) and Biblioteca Digital de Teses e Dissertações of USP databases was performed. **Selection criteria**: The search strategy was oriented by the specific question: "How have the Community Health Workers been trained to work in the field of child hearing health?" The study selection criteria involved consistency with the proposed theme, belonging to the category of scientific papers, dissertation or thesis, and publication in Brazilian Portuguese. **Data analysis**: A total of 2,687 studies were found. After analyzing the title and abstract, eight studies were chosen for full reading, however, only four of them met the proposed criteria and were included in the review. **Results**: The studies indicated live and virtual classes with the use of video conferencing or CD-ROM as training strategies for Community Health Workers. Trainings were effective. Only one questionnaire about hearing and language monitoring was described. Different possibilities for the activities of Community Health Workers were identified. **Conclusion**: Different learning methodologies have been used for training the Community Health Worker in the field of child hearing health, and all of have proven effective for knowledge acquisition. Community Health Workers play an important role in promoting and monitoring child hearing health.

Descritores

Agentes Comunitários de Saúde
Capacitação
Audição
Perda Auditiva
Surdez
Estratégia de Saúde da Família

RESUMO

Objetivo: Caracterizar a capacitação dos Agentes Comunitários de Saúde (ACS) na área da saúde auditiva infantil. **Estratégia de pesquisa**: Foi realizada uma revisão sistemática da literatura no Portal de Pesquisa da Biblioteca Virtual em Saúde (BVS) e na Biblioteca Digital de Teses e Dissertações da USP. **Critérios de seleção:** A estratégia de busca foi direcionada por uma questão específica "Como tem sido realizada a capacitação do Agente Comunitário de Saúde na área de saúde auditiva infantil?". Os critérios de seleção dos estudos envolveram a coerência com o tema proposto, pertencer à categoria artigo, dissertação ou tese e ser publicado na língua portuguesa. **Análise dos dados:** Foram localizados 2.687 estudos. Após análise do título e resumo, 8 estudos foram selecionados para leitura completa. Destes, apenas 4 atenderam aos critérios propostos e foram incluídos na revisão. **Resultados:** Os estudos apontaram como estratégias de capacitação dos ACS a aula presencial e as aulas a distância com o uso de videoconferência ou de CD-ROM. As capacitações foram consideradas efetivas. Foi apontado apenas um questionário de monitoramento sobre a audição e linguagem. Distintas possibilidades de atuação dos ACS foram identificadas. **Conclusão:** Atualmente, diferentes modalidades de ensino têm sido utilizadas para a capacitação do ACS na área de saúde auditiva infantil, todas se mostrando efetivas quanto à retenção do conhecimento. O ACS desempenha um papel importante na promoção e vigilância da saúde auditiva infantil.

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Received: 12/18/2014

Accepted: 03/17/2015

CoDAS 2015;27(6):616-22

Study carried out at the Speech-Language Pathology and Audiology Department at the Dental School of Bauru – USP – Bauru (SP), Brazil, in partnership with Hospital Samaritano de São Paulo – São Paulo (SP), Brazil.
(1) Specialization Course in Hearing Habilitation and Rehabilitation of children with hearing impairment: emphasis in the age range of 0 to 3 years old at the School of Odontology of Bauru, Universidade de São Paulo – USP – Bauru (SP), Brazil.
Financial support: Programa de Apoio ao Desenvolvimento Institucional do Sistema Único de Saúde – PROADI/SUS.
Conflict of interests: nothing to declare.

INTRODUCTION

Hearing loss in childhood causes great damage to children's development, especially in verbal language[1].

On the basis of the information from the World Health Organization (WHO), in 2005, 278 million people had moderate-to-severe hearing loss. Of them, 80% lived in developing countries[2]. In Brazil, data from the 2010 census conducted by *Instituto Brasileiro de Geografia e Estatística* (IBGE) indicated that 9.7 million Brazilians have hearing impairment, and about 1 million of them are children and adolescents aged up to 19 years[3]. Epidemiological studies in Brazil have shown that the prevalence of hearing impairment has been of 1 to 2:1,000 in the Universal Neonatal Hearing Screening (NHS) and of 20 to 50:1,000 in hearing screenings at Neonatal Intensive Care Unities[4,5].

Most cases of hearing impairment could have been prevented, and its effects could have been reduced, if diagnosis and intervention had been performed early. The NHS is a great contribution to identify hearing impairment early, enabling a more effective intervention. Hence, the first NHS programs were implemented in Brazil in the 1980s, and now there are about 237 programs in 22 states of the country[6].

However, great advances in the field could only be seen after the creation of national public policies addressing hearing health. In 2004, the publication of Decree 587, from October 7, 2004, determined the Hearing Health Care National Policy and was important for the Brazilian hearing health rights. The publication of Law n° 12,303, in 2010, which establishes the mandatory performance of the NHS in public hospitals and maternity wards in the country, may also be considered as an important step toward the establishment of early diagnosis and intervention of hearing impairment[7,8].

Nevertheless, the reality of hearing health services still presents higher number of late hearing impairment diagnoses. Several factors contribute with this reality, such as the NHS programs that are still being developed in the country; the distribution of these programs in major urban centers; the difficulties to continue diagnosis and intervention due to an ineffective reference and counterreference system; the difficulty regarding the adherence of families; the possibility of late or progressive hearing loss; and the lack of follow-up programs regarding the hearing development of these children[9].

On this issue, a measure of great importance and complementarity to Childhood Hearing Health programs would be to follow-up these children using the Family Health Strategy, especially Community Health Workers (CHW). This would provide a more direct contact with families and lead to higher chances of promoting child hearing health.

This professional was first introduced to the actions addressed to child hearing health by the inclusion of CHW Practical Guide of information regarding the "ear test", which is part of the National Program of Neonatal Hearing Screening[10]. However, it was only after *Plano Viver Sem Limites* (Live without boundaries) (Decree number 7,612/2011), aiming at amplifying access and care qualification for people with impairment, that the role of the CHW in child hearing health was effectively determined. Among the CHW actions, this plan predicts the restructure of the current search system and follow-up of children diagnosed with hearing impairment, therefore showing the importance of the CHW performance[11].

It is assumed that the CHW's performance is of great relevance for child hearing health programs. Such professionals are side by side with families, therefore, they may support the early identification of hearing impairment by rescuing families that did not continue in the NHS process and/or hearing diagnosis, identifying children with possible acquired hearing disorders, leading these patients to hearing health services, as well as to participating in rehabilitation programs[12]. Literature started, therefore, presenting proposals to train CHW, aiming at a more effective performance of this professional to promote child hearing health[13,14].

OBJECTIVE

To describe the training of CHW addressed to child hearing health using a literature systematic review.

This characterization aimed at identifying where the CHW may work at, as well as at identifying the most effective training strategies, besides which instruments can be established as facilitators for the work of this professional.

RESEARCH STRATEGY

Search strategy

The search strategy was oriented by a specific question: "How have the CHW been trained to work in the field of child hearing health?" Aiming at finding studies about the proposed question, a search was conducted between January and June 2014 in electronic databases found in the Research Website of Biblioteca Virtual em Saúde (BVS) and Biblioteca Digital de Teses e Dissertações of Universidade de São Paulo (USP). Two evaluators searched for papers, and did proper independent and blind analyses in every stage of the research to guarantee the quality of the methodology applied in the literature systematic review.

The following combination of keywords was used for the search: "Agentes Comunitários de Saúde" AND "Audição", "Agentes Comunitários de Saúde" AND "Perda Auditiva", "Agentes Comunitários de Saúde" AND "Surdez", "Agentes Comunitários de Saúde" AND "Capacitação", and "Estratégia de Saúde da Família" AND "Capacitação". This combination was investigated only in Brazilian Portuguese because the objective was to specifically know the actions that CHW take in child hearing health in Brazil.

Selection Criteria

Studies have been chosen in two stages. Firstly, titles and abstracts of all studies were analyzed. Inclusion criteria were the following:

1. the main theme being CHW and child hearing health;
2. presentation of CHW training to promote child hearing health;

3. being published in Portuguese; and
4. being part of the article, dissertation, or thesis category.

In the second stage, the most relevant papers were fully read, besides an analysis of their compliance with the proposed inclusion criteria.

Data analysis

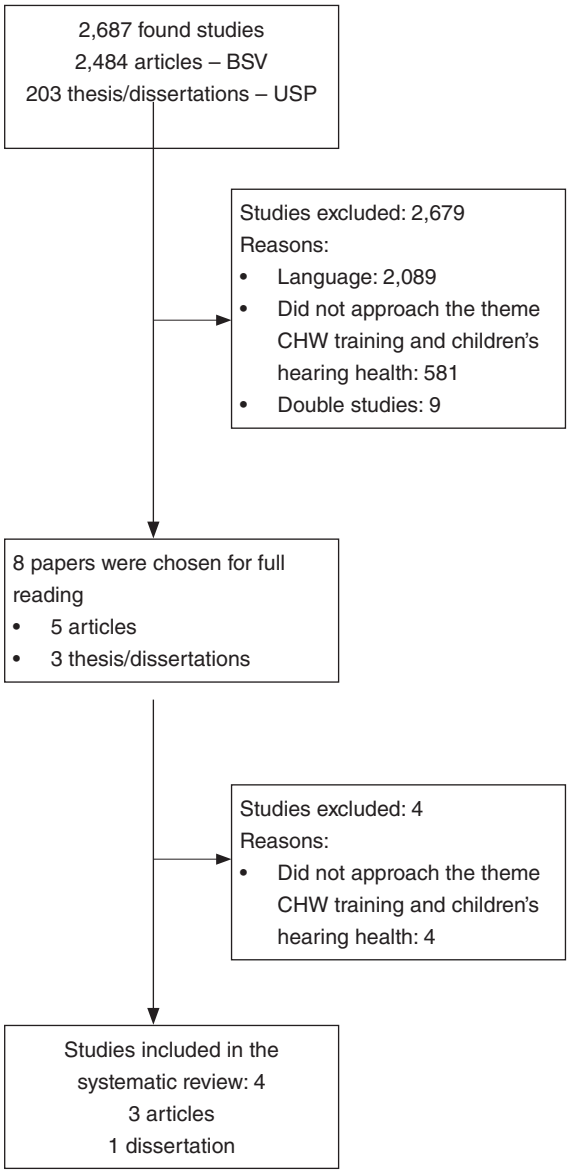
For each paper chosen in the second stage, a predetermined protocol was used including topics such as CHW training strategies in the field of child hearing health, effectiveness of trainings, work possibilities for CHW to promote child hearing health, and instruments used by CHW in the field of child hearing health.

RESULTS

The process to obtain potentially relevant studies for the systematic review comprised two stages based on the criteria that were previously determined in the search strategy (Figure 1). After the conclusion of this process, three articles and a dissertation were included in the systematic review, whose relevance was proved after a strict reading process. A brief description of the four studies included in the literature systematic review is presented in Table 1.

Figure 2 provides the result of the analysis of contents that were discussed in the four studies included in the review after they were individually verified.

The current public policies regarding child hearing health are more and more aimed at the early diagnosis of hearing impairment, to provide this population with early intervention, thus maximizing the potentials of hearing and verbal language development. The CHWs play an important role in this process because these professionals are close to the families, and work for the surveillance and promotion of these children's hearing health. In the following topics, contents regarding this theme, whose analysis was done in the systematic review, will be approached.



Caption: CHW = Community Health Worker
Figure 1. Synthesis of the process to find studies that were chosen for the systematic review

Training Strategies of Community Health Workers

The four studies included in this review established different teaching modalities as CHW training strategies:

1. live classes;
2. virtual classes using technological resources, such as videoconference or CD-ROM, both with the support of a tutor; and
3. use of handouts with contents regarding the studied subject for future consultations as a reinforcement.

Another training strategy that was found, but not added to this systematic review, since it did not meet the inclusion criteria (scientific event annals), provided training through a system based on web for tele-education, the cybertutor[15].

The identified teaching modalities point out to the current tendency of virtual training, which allows reaching different regions in the country and permanent education of these professionals.

The Basic Care National Policy, approved by Decree n° 2,488, from October 21, 2011, determines the revision of guidelines and standards for the organization of Basic Care for Family Health Strategy and CHW, emphasizing the importance of permanent education. The permanent education proposal was established in Decree n° 2546, from October 28, 2011, which redefined and extended the *Programa Telessaúde Brasil*, which was then called *Programa Nacional Telessaúde Brasil Redes*. This decree emphasizes that tele-education (conferences, classes, and courses) will be provided to professionals and workers from the Brazilian Unified Health System Care Network, applied by using information and communication technologies[16,17].

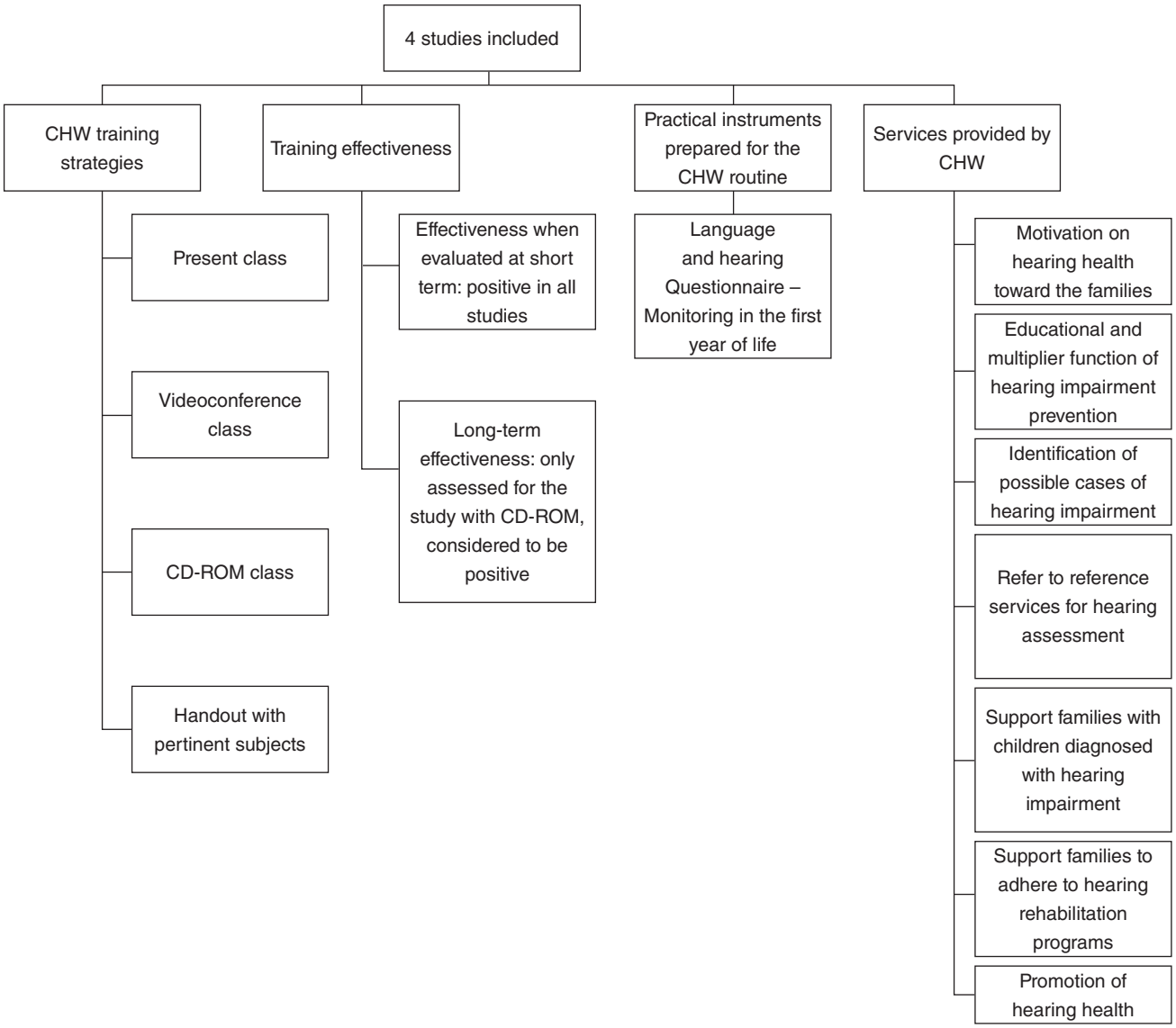
Table 1. Description of studies included in the bibliographic systematic review

Study/authors	Study description	Study conclusion
Araújo ES. Ensino a distância na capacitação de agentes comunitários de saúde na área de saúde auditiva infantil: análise da eficácia do CD-ROM [Distant teaching in CHW training in children's hearing health area: analysis of CD-ROM effectiveness][9]	The objective of the study was to assess CD-ROM efficacy as an interactive tele-education tool to train CHW in children's hearing health area. There were 43 CHW from Bauru, São Paulo (G1) that received a previous course in hearing health and 47 CHW from Itajaí, Santa Catarina (G2), with no previous formation. The "*Saúde Auditiva Infantil*" CD-ROM was developed in a project and comprised five modules that included topics from prevention to hearing rehabilitation. Work stages: first – training in basic computing; second – CHW training; third – preparation of a simulator of daily situations; fourth – CD-ROM validation as an interactive tele-education tool: use and learning of content were assessed through comparison of the performance in the questionnaire before and after immediate training, of performance in a daily situation simulator and through a qualitative questionnaire regarding the used interactive tele-education tool; fifth – data analysis. Comparison of performance before and after immediate training showed differences for both groups in total scores and in different domains evaluated in the questionnaire. With regard to CHW performance in the daily situation simulator, there was a difference among the groups, with better performance of the G1. No significant correlation was seen between immediate posttraining performance and evaluation through the simulator. The qualitative analysis of CHW opinion about the CD-ROM showed great acceptability of this interactive tele-education tool.	The author concluded that the *"Saúde Auditiva Infantil*" CD-ROM is an efficient interactive tele-education tool to train CHW in children's hearing health area. It represents a resource that may help CHW to provide complete care with quality to the population all over the country.
Alvarenga KF, et al. Prosposta para capacitação de agentes comunitários de saúde em saúde auditiva [Proposal for CHW training in hearing health][13]	The objective of the study was to verify the efficacy of a training program for Community Health Workers (CHW) from the *Programa de Saúde da Família* in the field of child hearing health. Two groups were created: A, 31 CHWs in the city of Bauru, São Paulo; and B, 75 CHWs in Sorocaba, São Paulo. Training was performed through live classes for both groups; however, group A used a handout adapted from the WHO (2006) so that the CHW could follow their activities interactively. Training approached the themes: hearing and hearing impairment (HI), types, prevention and causes of HI, HI identification and diagnostic techniques, and HI general aspects. For validation, a questionnaire was applied before and after training with questions about the subjects that were discussed throughout the course to analyze content assimilation. The training was effective, with an increase in the total score achieved in the questionnaires before and after training.	Authors believed that the results proved the efficacy of the training program with use of interactive material and approaches proposed for community health workers from *Programas de Saúde da Família.*
Alvarenga KF, et al. Questionário para monitoramento do desenvolvimento auditivo e de linguagem no primeiro ano de vida. [Questionnaire for monitoring hearing and language development in the first year of life][14]	The study aimed to validate a monitoring questionnaire regarding the development of hearing and oral functions, applied by CHW in the first year of life. Seventy-six CHW previously trained in children's hearing health applied the questionnaire to families of 304 children aged 0 to 1 year. It comprised questions regarding the development of hearing and oral functions. All age ranges have the question "Does your son hear well"? Its validation was verified through analysis of false-positive and false-negative rates of the investigated children. A double-blind study was carried out in which all children investigated in the questionnaire underwent audiological assessment performed by speech language pathologists. Four children (1.32%) were diagnosed with sensorineural hearing loss, where 2 were unilaterally, and 69 children (22.7%) had conductive hearing loss. The follow-up questionnaire showed a 96% specificity and 67% sensitivity with a 33% false-negative rate for not identifying unilateral hearing losses and 4% false-positive rate.	Using the proposed questionnaire was viable and pertinent to the actions developed by the CHW from the Family Health Strategy. It shows high specificity and moderate sensitivity. Use of a validated instrument should be considered as a complement to Neonatal Hearing Screening Programs to identify hearing alterations of acquired character or late beginning.

Continue...

Table 1. Continuation

Study/authors	Study description	Study conclusion
Melo TM, et al. Capacitação de agentes comunitários de saúde em saúde auditiva: efetividade da videoconferência [Training for community health workers in hearing health: videoconference effectiveness][18]	The study assessed the effectiveness of training for Community Health Workers (CHW) through videoconference in the field of child hearing health. Fifty CHWs were randomly divided into two groups according to the teaching methodology: 31 participated in the live training and 19 had the videoconference. The activity took place during an 8-hour meeting with expositional classes about the taught content and use of an adapted material called *Primary ear and hearing care training resource – basic, intermediate, and advanced levels*, simultaneously for both groups. Training was organized and assessed based on the proposal of a previous study. Both groups presented differences regarding the performance presented before and after training, with a more expressive result in the group that took part in the live training, both in the analysis of the total score or when the themes were considered separately.	Authors concluded that the videoconference used as a teaching tool was effective for CHW training in the hearing health area, but it should be used as a complement of the live training.



Caption: CHW = Community Health Workers
Figure 2. Analysis of articles included in the systematic review

Training Effectiveness

The effectiveness of trainings performed with CHW was discussed in three studies, which were analyzed by the application of questionnaires before and after training (right after training), aiming at showing the retention of the analyzed contents[9,13,18].

A study[18] compared knowledge retention between the group of CHW that attended the live class and that in the videoconference class. Both of them presented a significant retention of contents, which was more expressive, however, in the group that attended the live training.

Only one study[9] assessed the CHW long term knowledge retention using a tool called "simulator of daily situations". It verified the performance of the CHW in situations associated with child hearing health. Although the participation of the CHW in the second stage of the investigation was lower (only about 40% of the professionals that attended the training were assessed with regard to long-term knowledge retention), results showed an incorporation of theoretical contents in the actions that the CHW develops on a daily basis.

Another study[19], in agreement with these results, analyzed the retention of information offered to CHWs in a training course about child hearing health with the use of a cybertutor. The CHW answered a questionnaire immediately after training, and another one after 15 months. Results showed the decreasing general knowledge of the CHW regarding child hearing health, therefore, the CHW training should be a continuous action.

It is also important to consider not only the objective performance evaluations used in every study, but also the opinion of professionals who took part in the trainings. Two articles[13,18] presented statements and commentaries of CHWs, who reported the importance of trainings, as well as their impact on their professional behaviors afterwards.

Another study[20] analyzed the opinion of CHWs about the use of videoconference for child hearing health training. Fifty CHWs participated in the study and were divided into two groups: one attended live classes, and the other had classes via videoconference. The efficacy evaluation of both teaching tools showed similar results. Professionals reported the easy understanding of the content and good interaction with the professional in charge of training. Thus, the videoconference was a valid and accepted tool by professionals.

In the study about the CD-ROM efficacy[9], a questionnaire was applied after training with the aim of assessing the opinion of the CHW regarding the use of such a tool. They considered it to be a didactic resource that allows the understanding of subjects, besides raising interest, providing an active participation in the learning process, and presenting proper audiovisual resources.

These data point out to the effectiveness of trainings through current technological resources. On the great extension of the Family Health Strategy (ESF, acronym in Portuguese) program that, in 2011, already had more than 32,000 teams around Brazil, these training proposals using tele-education seem to be ideal for reaching more than 204,000 CHWs around Brazil[21].

Practical instruments prepared for the CHW routine

Only one article[14] in this review used a practical instrument to be added in the CHW routine for monitoring hearing and language skills in the first year of life. The authors developed a questionnaire with 35 objective questions regarding behaviors expected for each month, which were divided into periods from 0 to 1 year, with "yes" or "no" answers. This instrument seemed viable and adequate for the actions developed by the CHW. Its use allowed identifying acquired or late hearing changes.

Two studies[13,18] used handouts based on the material proposed by the WHO, which was adapted and validated to Brazilian Portuguese. This material was used so that the CHW could attend classes in the training and consult them later. Practical instruments that could help the CHW to identify hearing changes in older children were not found in the present literature review.

Thus, it is worth emphasizing the actions that the Ministry of Health promoted with the aim of providing CHWs with financial support to develop the work, such as the CHW Practical Guide. With regard to hearing health, this guide comprises clarifications about the ear test, orientations about hearing and speaking monitoring, information about the necessary follow-ups for hearing assessment if possible alterations are found, as well as information regarding the Individual Sound Amplification Device (AASI, acronym in Portuguese)[10].

Services provided by CHW

The papers included in this review[9,13,14,18] indicated different possibilities of services provided by the CHW, such as:

- motivation of families regarding hearing health;
- education and multiplication of knowledge on hearing impairment prevention;
- identification of possible cases of hearing impairment and follow-up of the pertinent cases to reference services for hearing assessment;
- support to families of children who were diagnosed with hearing impairment;
- support to families in the adherence to hearing rehabilitation programs; and
- hearing health promotion.

It is clear that there are several possibilities of services provided by the CHW in the field of child hearing health, and they comprise both the promotion and the surveillance of hearing health, in agreement with the determinations of the Ministry of Health regarding the role of the CHW[10].

CONCLUSION

It was possible to identify different teaching modalities used for characterizing CHW training in the field of child hearing health, which were all effective regarding knowledge retention.

The importance of the services provided by the CHW in the field of childr hearing health was shown, also regarding the promotion and surveillance actions. They are essential for a continued education to maintain an effective and good service.

New studies should be carried out to prepare practical instruments to be used by the CHW in their routine, therefore extending their services.

**TTOC was in charge of theme definition, data collection and analysis, article writing, and final version approval; FZ substantially contributed for the analysis, critical review on the content and conclusion of findings, article writing, and final version approval.*

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