

PRELIMINARY STEPS TOWARDS IMPLEMENTATION OF UNIVERSAL NEONATAL HEARING SCREENING IN ALBANIA

Birkena QIRJAZI¹, Ervin TOÇI^{2,3}, Enver ROSHI²

¹ ENT department, Faculty of Medicine, University of Medicine, Tirana, Albania;

² Department of Public Health, Faculty of Medicine, University of Medicine, Tirana, Albania;

³ Institute of Public Health, Tirana, Albania.

INTRODUCTION

Early detection, diagnosis and treatment, otherwise known as “screening”, of quite a wide range of diseases and other health conditions, is a practice that has resulted in substantial improvements and benefits in terms of health and well-being of targeted human populations. Newborns present a population group often subjected to extensive screening programs in an effort to promptly detect congenital anomalies, metabolic errors and other problems that can be cured, alleviated or prevented from further worsening [1]. Among these, neonatal hearing impairment has emerged as an excellent candidate condition to be screened for, due to the adverse consequences and personal, family and societal costs associated with the late diagnosis and/or treatment [2]. Such adverse consequences of non-timely diagnosed and/or treated unilateral or bilateral neonatal hearing impairment include jeopardized speech and language development, which then become the foundations of non-effective or non-optimal emotional, behavioral, societal, academic, vocational, employment and economic functioning of the affected individuals [3].

The prevalence of neonatal bilateral hearing impairment varies between 1-5 newborns per 1000 live births whereas the permanent unilateral hearing loss affects up to 8 out of every 1000 newborns [3-5]. In order to detect all babies born with hearing impairment it is necessary to screen all the newborns because about half of all affected infants do not have any known risk factor [6].

Toward this potential objective (i.e. implementation of universal newborn hearing screening), a group of experts of Albania, through the University of Medicine, successfully managed to be part of the EUSCREEN project, a European Commission funded project, in the framework of Horizon 2020 program. EUSCREEN is a consortium of international partners including Netherland, United Kingdom, Sweden, Germany, Romania and Albania, that will assess the “implementation of cost-optimized childhood vision and hearing screening programmes in middle-income countries in Europe” [7]. In Albania, the project aims to determine the cost-effectiveness of newborn hearing screening in an attempt to determine a cost-optimised evidence-based childhood hearing screening program that could be implemented in low-to-middle income countries [7].

Therefore, the aim of this study is to provide the readers with insights regarding the initial phase and the current state

BACKGROUND: Delayed diagnosis and/or treatment of the hearing impairment could jeopardize the future personal and social development of affected infants. Universal newborn hearing screening is an important instrument that enables the detection of most babies born with hearing impairment, but this practice needs to meet certain criteria in order to be implementable. The EUSCREEN project in Albania offers an opportunity to determine a cost-optimized model of childhood hearing screening that could be implemented in different low-to-middle income countries. In this context, the present study focuses on describing the current state of affairs of this project in Albania.

METHODS: We provide the readers with a general description of activities that have been carried out in the framework of the preparatory phase and the implementation of EUSCREEN project activities in Albania. In addition, screening tests and procedure is explained and the preliminary prevalence of hearing impairment among newborns is calculated.

RESULTS: EUSCREEN project in Albania has gone through multiple meetings among local partners. It is being implemented in three socio-economically diverse districts of the country. Various theoretical and practical sessions have taken place and a large number of informative materials are produced. The screening covered about 95% of all targeted newborns in selected project sites.

Conclusion: So far, the EUSCREEN project in Albania is providing valuable information about the newborn hearing screening procedures, which will be used by the international team of experts to determine a cost-optimized model of childhood hearing screening.

Keywords: Albania, EUSCREEN, hearing impairment, horizon 2020, screening.

of play of EUSCREEN project in Albania, including some preliminary data on the number of hearing tests done and the prevalence of hearing impairment among newborns, as a preliminary step towards the achievement of the ultimate goal of the project.

METHODS

This is a descriptive study reporting on the actual state of affairs of EUSCREEN project in Albania.

The reporting is focused on a general description of the main activities that have taken place so far and that have enabled the ongoing of the project. The main stakeholders will be described in addition to the human resources involved and their specific roles in the project and the project sites within the country.

In order for the readers to have a complete picture of the EUSCREEN project in Albania we also provided information about the number of tests done so far (between January 1st 2018 – December 31st 2018) and the rate of false/positive screening tests within each phase of screening.

Newborn hearing screening is done through two types of examinations: the evoked Otoacoustic Emissions tests (OAE) and the Automated Auditory Brainstem Response (aABR) test. The final diagnosis of hearing impairment is done through the ABR diagnostic test. The diagnostic test is only performed on babies that have failed the respective hearing screening test(s).

The information about the number of babies being tested and the screening result is retrieved from the online-platform of data-entry, which has been developed in →

the framework of this project. This tool enables us to monitor the number of screening tests done in “real-time” as well as the results of screening, and also it provides us with many other variables associated with the newborns being tested (such as birth weight, gender, various health conditions present at birth, etc.) and information about babies’ mothers including a wide range of socio-economic variables. All this information will be used, in a later stage, to determine the cost-efficiency of universal newborn hearing screening in Albania as well as the associated risk factors.

RESULTS

General description of EUSCREEN project in Albania

The European project "EUSCREEN", which is being developed within the framework of the European Union program "Horizon 2020", is a research collaboration between 6 countries: Netherland, Albania, England, Germany, Romania, and Sweden. The purpose of the project in Albania is to identify the most cost-effective model of early hearing screening in accordance with the level of economic development of the country. The overall aim is to identify a cost-optimized model of universal newborn hearing screening that can be implemented in similar settings in low and middle income countries all over the world. Albania has been selected to participate in this collaboration specifically for this element of the project.

The EUSCREEN project is planned to be running during 2017-2020 time period.

In Albania, the EUSCREEN partner is the University of Medicine. The study is being conducted in Tirana, Kukes and Pogradec, which are three distinct districts in Albania (Figure 1). Each district represents a different socioeconomic level: Kukës represents an economically poor region; Pogradec is considered to have an intermediate level of development and has other specifics while Tirana, the capital city of Albania, has a high level of development.

Different hearing screening protocols are currently being

Figure 1. EUSCREEN sites in Albania



applied in each of these districts and namely: in Kukes district we are using the aABR screening test; in Pogradec district the OAE & aABR tests are being used, in the same applies for Tirana, where two different tests are also being used. These various and different models of hearing screening, alongside the respective inputs in terms of human resources and other resources, and taking in consideration the settings where the screening is taking place (i.e. Kukes, Pogradec and Tirana districts), will be used and analyzed by the team of international experts contracted by EUSCREEN project in order to identify the most cost-effective hearing screening model.

The screening procedures comprise of three stages (three attempts) and when the baby fails all three attempts, the subject is then referred for definitive hearing impairment diagnosis.

In Tirana the universal hearing screening is being implemented in both public maternity hospitals, whereas in Kukes and Pogradec districts the screening is taking place in each of the respective public maternity hospitals.

The preparatory phase of the project took place in 2017 and the screening of newborns in the selected project sites within each district started on January 1st 2018.

The preparatory phase has included intensive meetings between all partners, including leaders of the international consortium, the Ministry of Education, the Ministry of Health and relevant institutions that play different roles in this project. Didactic and training materials, including posters, leaflets, etc. have been developed in the framework of this project in Albania.

In addition, a series of trainings with the health staff (nurses) that is implementing the screening in the selected project districts have been provided. These trainings have combined the provision of theoretical information with the practical sessions for the correct use of the screening equipment.

In the premises of the "Mother Teresa" University Hospital Center (UHC) the project enabled the establishment of the most advanced audiometry booth in the whole country, which fulfills all the standards for establishing of the final diagnosis of hearing impairment. This modern audiometric booth will be used for the diagnosis of hearing impairment for other patients as well (actually it is being used for this purpose) and it will remain as an asset of the UHC infrastructure even after the completion of the project. In addition, all screening equipment will be under the UHC administration after the completion of the project, thus representing an additional added value and concrete benefits to UHC and University of Medicine of Albania.

For the country, the ultimate goal of the project is to include universal newborn hearing screening in the routine service protocol offered to newborns, as probably the most cost-effective intervention to address these issues and maximize the benefits for the affected patients, respective families and the society.

DISCUSSION

The present article provided a quite detailed description of efforts undertaken to enable the implementation of EUSCREEN project in Albania, a multinational ongoing research project in the framework of Horizon 2020 programme [7]. The final aim of EUSCREEN project →

in Albania is to determine the most cost-optimized childhood hearing screening program that can be implemented in various low and middle income countries, across various settings and through various modalities.

The paper highlighted the most crucial moments in the phase of “conceiving” the project in Albania, partners involved, selection of projects sites followed by general information on theoretical and practical trainings that were carried out, the array of materials produced, screening tests used and the way of recording screening results and other relevant information about the newborns and respective mothers.

The preliminary data showed that among all the newborns screened during 2018 in all project sites, the prevalence of hearing impairment was in concordance with the international literature suggesting a prevalence of newborn hearing impairment between 1 and 5 cases per 1000 live births [4, 8-10].

Besides the dramatic impact of undiagnosed and/or untreated hearing loss on affected individuals and respective families, according to a recent report of the World Health Organization (WHO) the annual global economic cost of unaddressed hearing loss varies between 750 to 790 billion dollars (2015 international dollars), with health care and education sucking between 71-101 billion dollars (between 63%-73% of these costs occur in middle and low-income countries), loss of productivity costing some extra 105 billion dollars and other societal costs accounting for an additional 573 billion dollars annually [11]. It is very likely that the estimation of the total global annual economic cost of unaddressed hearing impairment could be even higher due to lack of data from low and middle income countries [11].

Since about half of all newborns with hearing impairment do not have any risk factor, then evidence suggests that all newborns should be screened in order to increase the possibility of detecting all such cases. In other words, a universal screening program would be suitable in this case. However, in order for a population or universal screening program to be justified, certain criteria referring to the: condition itself, the test, the intervention, screening programme, and implementation, have to be met [12]. Apparently, with regard to universal newborn hearing screening, all the above criteria are satisfactorily fulfilled as various international committees and the Joint Committee on Infant Hearing recommend it [13]. Nevertheless, the introduction of such practice in countries where there is still no universal screening program will have to show that, among other criteria, the practice is cost-effective. This element, the cost-effectiveness of the screening program is even more important in the framework of austerity and economic crisis [14], especially for small countries with not well-consolidated, under-reform and under-financed health systems such as the case of Albania, a small post-communist country in the Western Balkans. Albania could use this opportunity to assess the feasibility for the implementation of universal hearing screening of newborns in this country, a practice currently nonexistent in this Western Balkan region.

CONCLUSION

The information collected for the implementation of universal hearing screening in Albania will enable the international teams of experts to determine a cost-optimized model for the implementation of hearing screening in similar set-

tings across the globe. With regard to Albania, EUSCREEN project is of fundamental importance as a scientific tool to determine the cost-effectiveness of universal hearing screening in this middle-income country and the spreading of this practice throughout Albania based on solid and sound evidence.

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