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Comparison of newborn hearing screening results between well baby and high-risk newborns: Analysis based on the national health policy in Thailand

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Abstract

Newborn hearing screening (NHS) is important for early identification of hearing loss to decrease the negative effects on delayed language and communication skill. The JCIH has recommended the '1-3-6' guidelines for the early detection and intervention of hearing loss; all newborns should be screened by 1 month of age, get an audiological diagnosis by 3 months of age, and enter an appropriate intervention by 6 months of age. Chiangrai Prachanukroh Hospital has been actively implemented of Universal newborn hearing screening (UNHS) following the national health policy of the Ministry of Public Health in Thailand since 2021. Furthermore, Thailand guideline recommended screening before 1 month of age, audiological diagnosis before 6 months of age, and intervention as soon as possible.

Objective

The purpose was to compare NHS results between well baby newborns (WBN) and high-risk newborns (HRN) based on national health policy.

Methods and Materials

Retrospective documentary analysis was compared the percentage of hearing screening, diagnostic evaluation, and rehabilitation outcomes in the hospital from October 2022 to March 2023 according to national health policy between the two groups. The UNHS was performed with a two-stage transient evoked otoacoustic emissions (TEOAE) both WBN and HRN for the two-stages screening because of lack of automated auditory brainstem response (AABR).

Results

During the 6 months, our hospital reported 2,159 births, with 1,758 newborns screened for TEOAE before D/C. Newborns not passing the TEOAE were retested at the ENT department in stage 2. Subsequent failures led to further assessment using ABR, ASSR, and tympanometry, with confirmed cases of hearing loss enrolled in early intervention within 6 months.

Table 1 The UNHS results.

NHS results	WBN		HRN	
	n	%	n	%
Screening TEOAE before D/C	1,447/1,672	86.54	311/487	63.86
Refer in stage 1 before D/C	253/1,447	17.48	96/311	30.87
LTF	115/253	45.45	45/96	46.84
Refer rescreening in stage 2	28/138	20.29	9/51	17.65
Diagnostic ABR	17/28	60.61	5/9	55.56
Normal hearing	13	N/A	2	N/A
SNHL	2	N/A	1	N/A
Fitting HA	1	N/A	1	N/A

WBN: well baby newborns; HRN: high-risk newborns; D/C:discharge; LTF: loss to follow-up

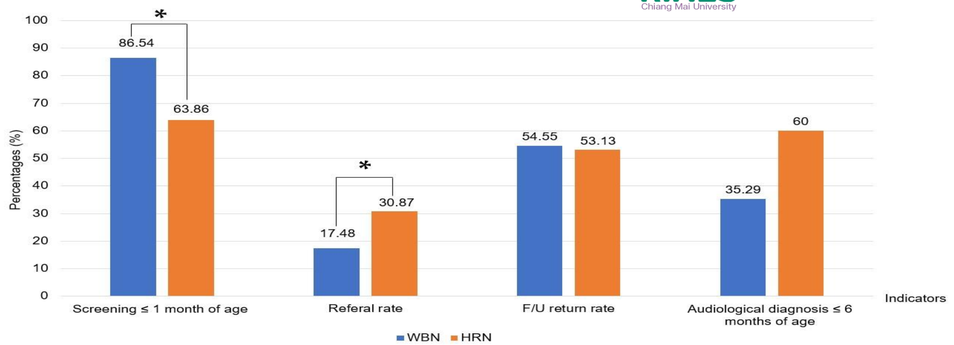

Figure 1 Comparison of indicators between the two groups according to Thailand's national health policy benchmarks.

*Significant at $p < 0.05$. WBN: well baby newborns; HRN: high-risk newborns; F/U: follow-up

Table 2 The distribution of children with sensorineural hearing loss (SNHL).

Children No.	Degree of hearing loss		Risk factors	Intervention
	Right	Left		
1	Mild SNHL	Mild SNHL	No	Watchful waiting and F/U
2	Moderately severe SNHL	Moderately severe SNHL	No	Fitting HA
3	Moderate SNHL	Moderate SNHL	TORCH (Syphilis)	Fitting HA

F/U: follow-up; HA: hearing aid

Conclusion

UNHS is an important to early identification of congenital hearing loss newborns. However, all indicators hadn't met the targets yet in preliminary. The implementation of our hospital should be revised to improve the efficacy of the UNHS program and help to control quality. Moreover, risk factor newborns associated with late-onset or progressive hearing loss should F/U for monitoring even though they passed hearing screening.

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