



PARENTAL KNOWLEDGE, ATTITUDES, AND BARRIERS TOWARD UNIVERSAL NEWBORN HEARING SCREENING IN NORTH INDIA: A CROSS-SECTIONAL DIGITAL SURVEY STUDY

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ABSTRACT

This research provides an overall analysis of the current measures and procedures available for newborn hearing screening programs in North India. Upon researching, it is found that a lack of awareness about screening programs makes it difficult for parents to initiate the process for their children, resulting in the early detection of any hearing impairment that the child may face. Hence, there needs to be better awareness about such tests among parents by the hospital and clinical authorities. Moreover, accessibility issues can also cause problems in terms of gaining the opportunity and a valid justification for conducting the screening process and finding out about the newborn's hearing condition.

KEYWORDS

Parental Knowledge; Parental Attitudes; Barriers; Universal Newborn Hearing Screening; Infant Hearing Loss; North India

INTRODUCTION

Background of the Study

Newborn hearing screening is often disregarded at the time of birth due to the overarching negligence and lack of communication possibilities from the newborn. In many cases, parents of newborns are unaware of the presence of screening programs. A study revealed that about 57.42% of the participants were unaware of newborn hearing screening (NHS) programs available in hospitals and clinics (Zahir *et al.* 2024). This research is based on the context of a lack of awareness of hearing screening opportunities, as the findings are projected to develop better awareness of the issue. Moreover, developing structured screening programs is needed for better treatment plans and early detection of child hearing loss.

Problem Statement

The primary issue in the research area is that, due to the lack of child hearing intervention capacities, the NHS remains an underfunded and overlooked aspect in hospitals and clinics. Especially due to the inability to communicate with newborns, more specifically, it creates a dissonance between the available screening programs and the caregivers' and the medical practitioners' promptness to inform parents about it. On the other hand, cultural restrictions and social stigmas regarding disabilities also create a disparity among parents wanting to access the NHS for their children (Nicholson *et al.* 2022). The result of this is that unawareness creates problems for the children in later stages of their lives.

Research Aim and Objectives

Aim

This research aims to develop better measures for hospitals and clinics to implement NHS programs by making parents aware of their needs.

Objectives

- To identify the impact of the newborn hearing screening process in hospitals and clinics
- To understand the challenges of the newborn hearing screening process in India's medical facilities
- To understand the cultural repercussions against the newborn hearing screening process in India
- To propose solutions to develop child hearing screening programs in India and their successful facilitation

Research Questions

- What does newborn hearing screening entail for parents and their children?
- What are the challenges of facilitating newborn hearing screening programs in India's medical facilities?
- What are the social repercussions that arise during a newborn's hearing screening process?
- What solutions can be undertaken to ensure a better hearing screening process in India's medical facilities?

Significance of the Study

The significance of this study lies in the understanding that hearing screening programs can create a better opportunity for newborns to get diagnosed with hearing problems at an early age. The lack of awareness and screening program facilitation creates a disparity between the diagnosed and undiagnosed children, causing confusion

among parents regarding their children's well-being. With better solutions and measures for the screening process, newborns in India can have better access to hearing aids, and parents can learn about navigating such conditions for their children as well.

Literature Review

Concept of Newborn Hearing Screening

Newborn hearing screening is the process of running certain screening measures and tests on newborns to identify whether they have hearing impairment. Unaddressed and permanent hearing loss, especially when detected in a later stage of life, can deter the growth opportunity for children to a great extent (Neumann *et al.* 2022). In fact, an unaddressed diagnosis of hearing impairment can even reduce a child's potential to grow up in a more secure environment and learn about measures that can help them navigate life better in the future. The concept of the NHS still holds certain repercussions, making it difficult to get access to screening processes in medical facilities.

Global Perspective on UNHS

The universal potential for developing the NHS is progressing in the current day and age, focusing on the need for early diagnosis of hearing impairments in newborns. Still, there remains a disparity among universal programs developed with the intention of an early screening process among newborns. The global screening programs currently in place are not sufficient to facilitate the screening processes across a wide network of hospitals and clinics (Edmond *et al.* 2022). UNHS programs are also implemented with the intention of identifying Permanent bilateral hearing loss (PBHL) among children. Hence, the global aspects of such programs need to be widely facilitated with proper implementation measures.

Parental Knowledge and Awareness Toward Universal Newborn Hearing Screening (UNHS)

UNHS requires not only assistive measures and technical intervention from medical practitioners and facilities, but also active support and initiation from parents. However, potential reluctance and lack of awareness about hearing impairment and losses among newborn children create a dissonance and confusion among parents. According to Alqudah *et al.* (2021), although the majority of people stress the importance of the NHS process, they are mostly not as often exposed to actual screening programs for newborns. This shows that although parents are aware of the screening programs, there are fewer instances of them actually having initiated the screening programs for their children actively.

Barriers to Screening

Despite the growing knowledge about the NHS, disparities in the facilitation process create a significant barrier in terms of better screening test implementations across hospitals and clinics. As noted by Findlen *et al.* (2023), system-level barriers due to the lack of accessibility and proper facilitation of screening processes create a dissonance in the medical system. As a result, many parents are not even aware of such programs, let alone have access to them, resulting in disregarded concerns about their children's hearing loss or impairment.

Research Gap

There are certain gaps in the current research area due to the lack of feasible studies on newborns' specific needs regarding the NHS.

Especially, there is a need for awareness among parents about this issue to ensure proper and early diagnosis for their newborn child. This research attempts to fulfil those gaps by developing better solutions for increasing parents' awareness of hearing screening and ensuring accessibility to these programs.

METHODOLOGY

There are two types of data collection methods which can be applied in research: primary and secondary. However, secondary data collection techniques can border on infringement and copyright bias as the dataset is collected from already published research and literary works. On the other hand, using primary data for research can provide the opportunity for a first-person perspective where the participants can share their own accounts and opinions (Mazhar *et al.* 2021). Using a descriptive design of research, a survey instrument has been employed to conduct this research and gather essential data.

The **Primary Quantitative Data** collected for this research have been analysed using a statistical analysis method. With the help of IBM SPSS software, the dataset has been analysed in the form of graphical descriptions to understand the results more clearly. The use of appropriate statistical testing with the help of IBM SPSS helps in creating a more diverse and quantitative view of the results (Rahayu *et al.* 2024). The statistical analysis has helped to get a better view of the dataset by presenting graphical bars to represent the data variables, correlations and mean standards. Hence, the primary quantitative data has been analysed with a statistical method to increase data validity and reach a definitive conclusion for this research.

RESULTS

Table 1: Descriptive Statistics

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
What is your age? आपकी आयु क्या है?	151	0	3	1.67	1.011
What is your highest level of education? आपकी शैक्षणिक योग्यता क्या है?	151	0	4	2.19	1.262
Where do you live? आप कहाँ रहते हैं?	151	0	1	.44	.498
Are you aware that newborn babies can have hearing problems at birth? क्या आप जानते हैं कि नवजात शिशुओं को जन्म के समय सुनने की समस्या हो सकती है?	151	0	1	.25	.432
Have you heard about Universal Newborn Hearing Screening (UNHS)? क्या आपने यूनिवर्सल न्यूबॉर्न हियरिंग स्क्रीनिंग (UNHS) के बारे में सुना है?	151	0	1	.22	.415
When should hearing screening ideally be done? श्रवण जांच कब की जानी चाहिए?	151	0	3	1.43	1.225
Do you think early detection of hearing loss is important? क्या आप मानते हैं कि सुनने की समस्या का जल्दी पता लगाना महत्वपूर्ण है?	151	0	2	.32	.584

Would you be willing to get your newborn's hearing tested? क्या आप अपने नवजात शिशु की श्रवण जांच करवाने के लिए तैयार हैं?	151	0	2	.30	.554
Should hearing screening be mandatory for all newborns? क्या सभी नवजात शिशुओं के लिए श्रवण जांच अनिवार्य होनी चाहिए?	151	0	2	.27	.516
Do you trust healthcare professionals for guidance on hearing screening? क्या आप श्रवण जांच के लिए स्वास्थ्यकर्मियों पर भरोसा करते हैं?	151	0	2	.30	.577
Has your child undergone hearing screening? क्या आपके बच्चे की श्रवण जांच हुई है?	151	0	2	.28	.534
If yes, where was the screening done? यदि हाँ, तो जांच कहाँ हुई थी?	151	0	3	1.24	1.037
What are the main barriers to newborn hearing screening? (Select all that apply) नवजात श्रवण जांच में मुख्य बाधाएँ क्या हैं? (एक से अधिक चुनें)	151	0	4	1.75	1.442
Have healthcare professionals informed you about hearing screening? क्या स्वास्थ्यकर्मियों ने आपको श्रवण जांच के बारे में बताया है?	151	0	1	.21	.410
Would you participate in awareness programs about hearing screening? क्या आप श्रवण जांच जागरूकता कार्यक्रमों में भाग लेना चाहेंगे?	151	0	2	.29	.573
Valid N (listwise)	151				

(Source: IBM-SPSS)

The descriptive statistics indicate moderate awareness but little knowledge of newborn hearing screening. The lack of information and professional recommendations is a major obstacle to adoption, despite participants' willingness and positive attitudes.

Correlation study reveals very high positive relationships among awareness, knowledge, attitudes and practices with newborn hearing screening. The moderate impact is on education and residence, and healthcare guidance has a significant effect on awareness, participation, and screening adoption.

Table 2: Correlation

Correlations									
What is your age? आपकी आयु क्या है?	What is your highest level of education? आपकी शिक्षा का स्तर क्या है?	Where do you live? आप कहाँ रहते हैं?	Are you aware that newborn babies can have hearing problems at birth? क्या आप जानते हैं कि नवजात बच्चों को जन्म के समय सुनने की समस्या हो सकती है?	Have you heard about Universal Newborn Hearing Screening (UNHS)? क्या आपने यूनिवर्सल न्यूबॉर्न हियरिंग स्क्रीनिंग (UNHS) के बारे में सुना है?	When should hearing screening ideally be done? श्रवण जांच कब की जानी चाहिए?	Do you think early detection of hearing loss is important? क्या आप सोचते हैं कि श्रवण क्षति का जल्दी पता लगाना महत्वपूर्ण है?	What is your age? आपकी आयु क्या है?	What is your highest level of education? आपकी शिक्षा का स्तर क्या है?	Where do you live? आप कहाँ रहते हैं?
1	.814	.219	.172	.142	.187	.283			
Sig. (2-tailed)	.002	.040	.035	.092	.078	.007			
N	151	151	151	151	151	151	151	151	151
What is your highest level of education? आपकी शिक्षा का स्तर क्या है?		1	.209	.140	.113	.109			
Sig. (2-tailed)	.002		.071	.099	.187	.097			
N	151	151	151	151	151	151	151	151	151
Where do you live? आप कहाँ रहते हैं?			1	.142	.109	.107			
Sig. (2-tailed)	.040	.071		.092	.109	.113			
N	151	151	151	151	151	151	151	151	151
Are you aware that newborn babies can have hearing problems at birth? क्या आप जानते हैं कि नवजात बच्चों को जन्म के समय सुनने की समस्या हो सकती है?				1	.209	.208			
Sig. (2-tailed)	.002	.040	.035		.099	.099			
N	151	151	151	151	151	151	151	151	151
Have you heard about Universal Newborn Hearing Screening (UNHS)? क्या आपने यूनिवर्सल न्यूबॉर्न हियरिंग स्क्रीनिंग (UNHS) के बारे में सुना है?					1	.208			
Sig. (2-tailed)	.002	.040	.035	.099		.099			
N	151	151	151	151	151	151	151	151	151
When should hearing screening ideally be done? श्रवण जांच कब की जानी चाहिए?						1			
Sig. (2-tailed)	.002	.040	.035	.099	.099				
N	151	151	151	151	151	151	151	151	151
Do you think early detection of hearing loss is important? क्या आप सोचते हैं कि श्रवण क्षति का जल्दी पता लगाना महत्वपूर्ण है?							1		
Sig. (2-tailed)	.002	.040	.035	.099	.099	.099			
N	151	151	151	151	151	151	151	151	151

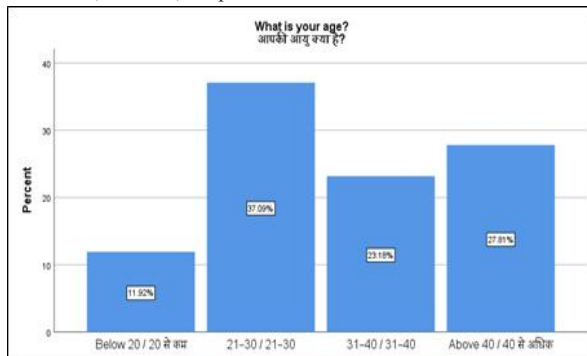
(Source: IBM-SPSS)

Table 3: Reliable Statistics

Reliability Statistics	
Cronbach's Alpha	N of Items
.809	15

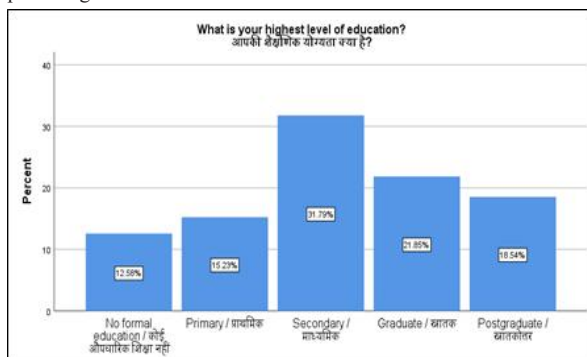
(Source: IBM-SPSS)

The Cronbach's Alpha of 0.809 shows that there is good internal consistency and thus the questionnaire is reliable and can measure awareness, attitudes, and practices.

**Figure 1: Age**

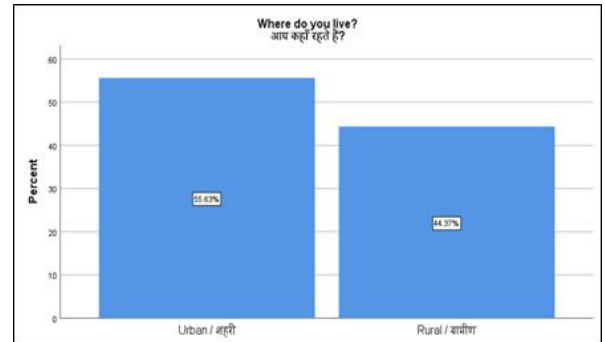
(Source: IBM-SPSS)

According to the chart, the sample is dominated by young adults, as the majority of the respondents 37.09% are in the 21-30 age bracket. It is followed by, above 40 years 27.81% and 31-40 years, 23.18%. A lower percentage 11.92% are below 20.

**Figure 2: Education Level**

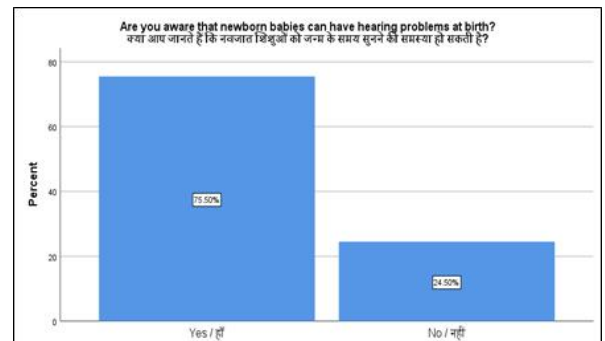
(Source: IBM-SPSS)

According to the chart, the largest group is secondary education, 31.79%. This is succeeded by graduates 21.85% and postgraduates 18.54%. Primary education participants are 15.23%, and no formal education is 12.58%.

**Figure 3: About Living Area**

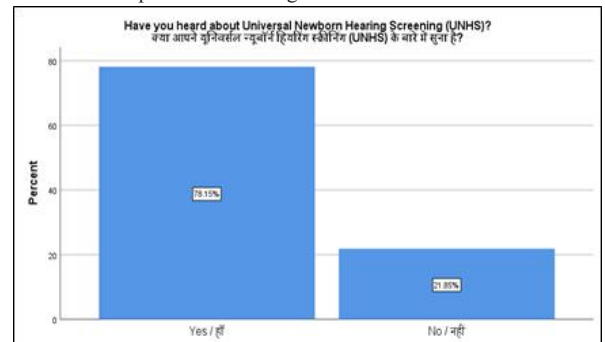
(Source: IBM-SPSS)

The majority of the respondents are urban residents 55.63% and rural residents 44.37%.

**Figure 4: Awareness of Hearing Problems of Newborns**

(Source: IBM-SPSS)

The majority of respondents are informed, 75.50%, and 24.50% are unaware of the problem of hearing a newborn.

**Figure 5: Knowledge about UNHS**

(Source: IBM-SPSS)

The majority of the respondents are not aware of UNHS, with only 21.85% aware and 78.15% not aware.

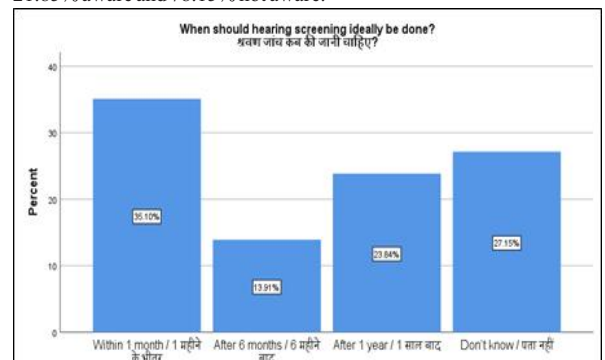
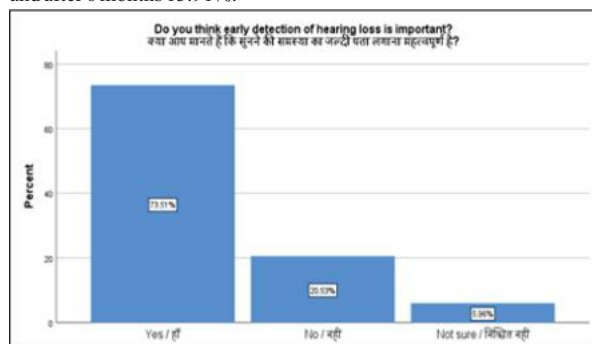


Figure 6: Screening Hearing is Significant

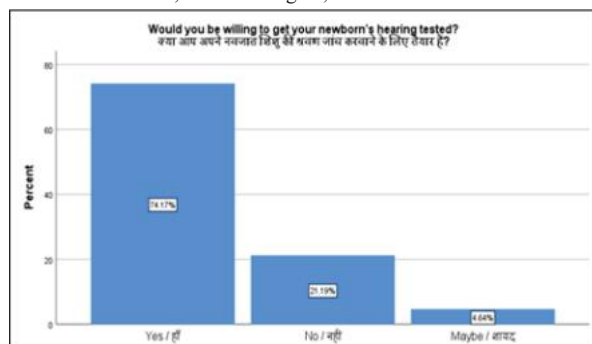
(Source: IBM-SPSS)

The majority of respondents think that screening should take place within 1 month 35.10%, then don't know 27.15%, after 1 year 23.84%, and after 6 months 13.91%.

**Figure 7: Early Detection is Necessary**

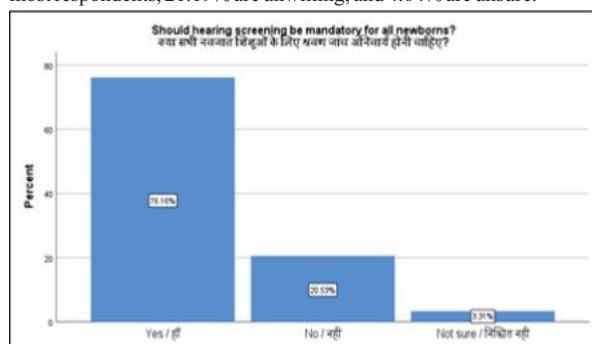
(Source: IBM-SPSS)

The majority of the respondents support the importance of early detection is 73.51%, 20.53% disagree, and 5.96% are unsure.

**Figure 8: Willing to get Newborn Hearing Test**

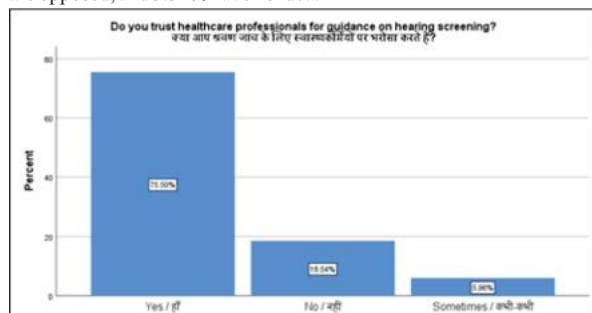
(Source: IBM-SPSS)

The willingness to undergo newborn hearing testing is 74.17% among most respondents, 21.19% are unwilling, and 4.64% are unsure.

**Figure 9: Hearing Screening is Mandatory for All Newborns**

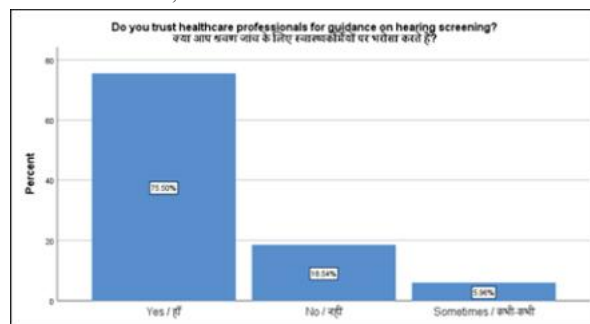
(Source: IBM-SPSS)

The majority of the respondents are in favour 76.16% though 20.53% are opposed, and 3.31% have no idea.

**Figure 10: Trust Healthcare Professionals**

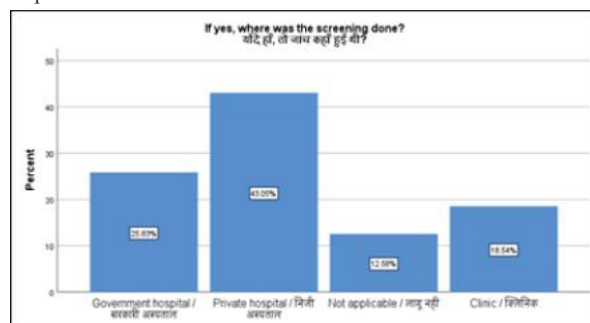
(Source: IBM-SPSS)

The majority of respondents trust healthcare providers, 75.50% and 18.54% do not trust, and 5.96% trust sometimes.

**Figure 11: Child Experienced Hearing Screening**

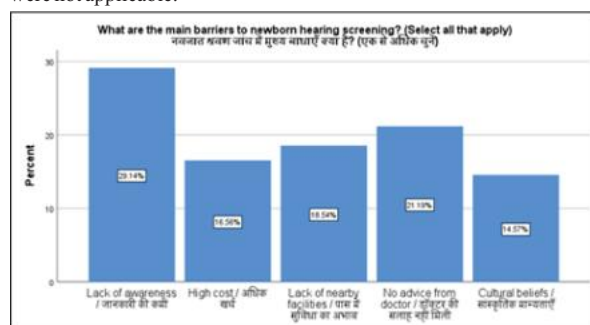
(Source: IBM-SPSS)

The majority of respondents claim they have their child screened 75.50% and 20.53% have not been screened, and 3.97% have not responded.

**Figure 12: Place of Hearing Screening**

(Source: IBM-SPSS)

Mostly in private hospitals, 43.05% of the screening was done, then in government hospitals 25.83% and then in clinics 18.54% and 12.58% were not applicable.

**Figure 13: Obstacles**

(Source: IBM-SPSS)

The principal obstacles are: lack of awareness 29.14% no recommendation of the doctors 21.19%, lack of nearby facilities 18.54%, high cost 16.56% cultural beliefs, 14.57%.

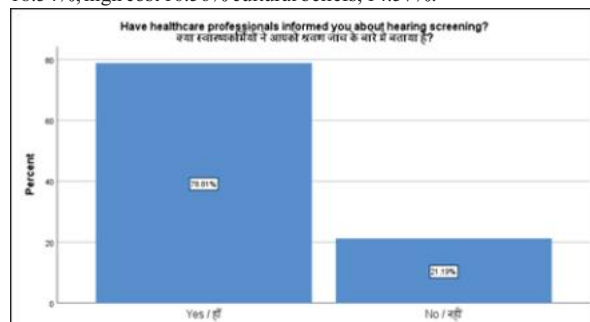
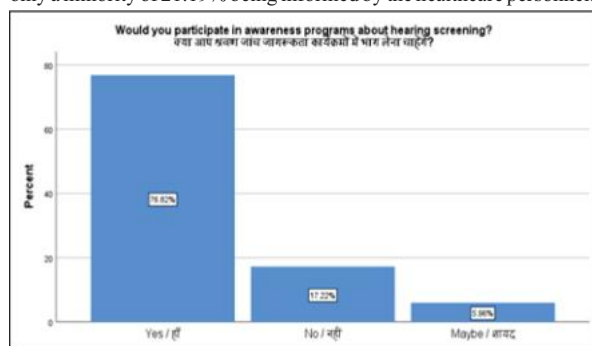


Figure 14: Information from Healthcare Professionals
(Source: IBM-SPSS)

The majority of the respondents have not been informed 78.81% with only a minority of 21.19% being informed by the healthcare personnel.



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