

Baseline Knowledge, Attitudes, and Practices of Healthcare Practitioners in Rizal Province, Philippines toward Implementing the Universal Newborn Hearing Screening Program

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ABSTRACT

Objective. The study describes the current knowledge, attitudes, and practices of healthcare practitioners in Rizal province regarding the implementation of the universal newborn hearing screening program (UNHSP).

Materials and Methods. A descriptive phenomenologic research design through focus group discussions with pediatric and OBGYN consultants in a government hospital, nurses from private primary and secondary hospitals, midwives from private birthing homes, and rural health workers.

Results. *Attitudes.* All participants recognized that they had important roles in implementing the program except the OBGYN consultants as they felt that information about the UNHSP should be provided by pediatricians. *Practices.* The lack of a screening device, trained personnel, and a referral network were the most common barriers in implementing the program. *Knowledge.* Most participants lacked specific knowledge about hearing loss and its implications in the UNHSP.

Conclusion. Most participants were able to determine the advantages and disadvantages of implementing the UNHSP. However, less than half of the participants admitted to have an established protocol to give access to newborn hearing screening services. Establishment of an information dissemination protocol and materials may be beneficial in the absence of funding for screening devices.

Key Words: Universal Newborn Hearing Screening, Hearing for Life Project, KAP

INTRODUCTION

Congenital hearing loss affects approximately 0.1%-4.3% of infants worldwide.¹⁻⁷ Garg, Singh, and Khurana⁸ noted that the reduction of neonatal mortality in India resulted in increasing the need to cope with different disabilities. Locally, a study by Chiong et al.⁹ revealed that bilateral profound hearing loss affected 0.14% of Filipino infants and found to be related with developmental delays. This called for an actionable national policy on universal newborn hearing screening for the benefit of these affected babies.

In 2009, the Philippines implemented Republic Act 9709 otherwise known as the Universal Newborn Hearing Screening and Intervention Act.¹⁰ This feat made the Philippines as one of the few countries that advocated the legislation of universal newborn hearing screening along

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with Great Britain, United States of America, Germany, and Poland.¹¹ Universal newborn hearing screening has been proven to increase early diagnosis and treatment of hearing loss¹²⁻¹⁵ which can prevent speech and language delays¹⁶, reduce the age of cochlear implantation¹⁷, and found to be cost-effective even with a tracking system.¹⁸ Similarly, Santos-Cortez and Chiong¹⁹ reported that a universal newborn hearing screening program was cost-effective in the Philippines.

Awareness, as well as the knowledge and attitudes of the healthcare practitioners also play a role in the effectiveness of the program.^{12,20} Factors affecting maternal attitudes toward universal newborn hearing screening included their own knowledge of the hearing screening process^{21,22} and risk factors,²³⁻²⁴ availability of resources,²⁵ cost, knowledge and attitudes of healthcare professionals^{6,23} and the knowledge and attitudes of an extended family.²⁵

Different healthcare practitioners serve in various ways towards the success of a universal newborn hearing screening program. Biernath, Holstrum, and Eichwald²⁶ suggest that midwives play a significant role in a birthing center setting especially when the center does not have equipment for newborn hearing screening. Midwives are responsible for educating and counseling parents during pregnancy and during the postpartum period regarding the benefits of universal newborn hearing screening. Moreover, they play a critical role in connecting parents to centers who have the necessary equipment for newborn hearing screening as well as collaborate with other professionals to ensure follow-up. Bower and St. John²⁷ emphasize the role of the medical doctor such as otolaryngologist in the routine assessment of hearing status, completion of diagnostic testing for identified children with hearing loss, and referral to other professionals for intervention such as the pediatric audiologist and the speech and language pathologist.

According to Scheepers, Swanepoel, and le Roux,¹² healthcare professional knowledge and team collaboration are some of the significant contributors in the decision-making process of parents regarding newborn hearing screening following cost and parent knowledge. Olusanya, Luxon, and Wirz²⁰ found that physicians play a significant role in early detection of congenital hearing loss by influencing positive parental attitude and adequate parental knowledge. It is important to evaluate the knowledge and attitude of healthcare practitioners towards universal newborn hearing screening in the Philippine setting. Previous studies²⁸⁻²⁹ used questionnaires to gauge the knowledge, attitudes, and practices of different healthcare practitioners involved in newborn hearing screening.

In summary, there is a global trend for instituting more effective methods in improving awareness, training, and delivery of newborn hearing screening services to increase healthcare practitioner competence and confidence, raise parental knowledge and attitude, and maximize developmental outcomes. The current study is believed

to contribute to the successful implementation of the Universal Newborn Hearing Screening and Intervention Act in Rizal. Furthermore, it aims to describe the knowledge, attitudes, practices of healthcare practitioners in Rizal toward the implementation of the UNHSP.

MATERIALS AND METHODS

Study Design

The study utilized a descriptive phenomenologic research design in exploring the knowledge, attitudes, and practices of healthcare practitioners toward implementing the universal newborn hearing screening program in Rizal province.

Participants

The current study investigated the knowledge, attitudes, and practices of healthcare practitioners involved in the implementation of newborn hearing screening. In the context of this study, purposive sampling was utilized to source five midwives from birthing homes, twelve rural healthcare workers from rural health units, three pediatric consultants, five nurses from primary and secondary hospitals, and three OBGYN consultants from tertiary hospitals in Rizal province. Healthcare practitioners from the Rizal area were chosen due to the limited number of certified universal newborn hearing screening centers in the area, most of which are located within the periphery of Metro Manila (Taytay, Cainta, and Antipolo City) and calls for a strong referral system in the area. Stratified sampling was attempted according to the number of recognized health institutions by the Department of Health Region IV-A Office, however the targeted number of participants was not achieved due to refusal of participation of selected and alternatively selected institutions.

Data Collection

Healthcare institutions from Rizal were randomly selected from the June 2017 registry of certified newborn hearing screening centers provided by the Department of Health Region IV-A Office. Letters of request for approval and participation in the study were given to the Region IV-A Office of the Department of Health and the selected health institutions. After approval, coordination with the staff managers or their equivalent was done to set a schedule for the focus group discussions (FGDs) with the potential study participants. There was a total of 43 health institutions that were invited to participate in the study. However, only 39 institutions were located at the designated addresses provided by the Department of Health. Out of the five tertiary hospitals, only one agreed to participate and sent three pediatric and OBGYN consultants. Of the ten primary/secondary hospitals invited, five agreed to participate and committed to send six participants, however only five were able to attend. Out of the 13 rural health units invited, there were nine who agreed to participate. However, only 12 participants from

the rural health units came from eight institutions. The 12 rural health workers were divided into two groups with six participants each. Out of the 16 birthing homes intended to be included, only 12 were located and only four birthing homes agreed to participate providing a total of five participants.

An external venue was reserved for data collection – the Executive Secretary Room of the Municipal Office of Taytay. A total of 60 healthcare practitioners were intended to participate in the data collection. There were six FGDs conducted grouped according to profession (midwives, nurses, rural health workers, pediatric consultants, and OBGYN consultants). Each participant was given an informed consent form that explains the rationale of the study, potential risks and benefits of participating, access to results, and the confidential and anonymous treatment of collected data. Afterwards, a demographic data sheet was given to characterize the composition of the group. The discussion revolved around their knowledge, attitudes, and practices toward implementing the universal newborn hearing screening program. With free and prior informed consent, the session was recorded using a video and audio recording device. Tokens of appreciation were given after the discussion following a short lecture about the Universal Newborn Hearing Screening and Intervention Act of the Philippines.

Data Analysis

Multimedia recordings from the FGDs were transcribed by an external transcriber hired by the primary researcher. The transcriber was asked to delete all files after turning over the transcriptions. A thematic analysis was done to synthesize the findings from the collected data with the help of the qualitative data analysis program NVIVO 12. Data were coded by one of the primary investigators according to Knowledge (correct and incorrect facts about the UNHSP, and pediatric hearing loss), Attitudes (positive and negative towards their role in implementing newborn hearing screening, and positive and negative towards online modules as a modality for training), and Practices (barriers and facilitating factors to practice). The same investigator then identified themes by reviewing the relationships of the answers of each FGD.

RESULTS

The focus group discussions were held in six separate groups. Two groups were composed of rural health workers, one group of private primary/secondary hospital nurses, one group of OBGYN consultants in a government hospital, one group of pediatric consultants in a government hospital, and another group composed of midwives from private birthing homes. Table 1 shows general characteristics of participants per group while Table 2 shows the specific characteristics of the participants in relation to UNHS.

During the FGDs, the participants were seemingly reluctant to fully engage when asked about knowledge on the UNHSP. However, when asked about their attitudes and practices regarding UNHSP, participants were much more expressive. There were participants who were dominating each topic discussed, but all participants were given the chance to share their insight from their practice or institution's settings. There were instances where participants in the FGD involving the RHU staff discussed topics among themselves, but these were opened up to the group. After each topic was discussed, a general summary was given to which participants agreed that the summary reflected how they viewed the UNHSP. The FGDs lasted for 40 to 90 minutes. A total of four themes were identified after the FGDs shown in Table 3.

DISCUSSION

Currently, the Newborn Hearing Screening Reference Center (NHSRC) not only maintains records of newborns who have undergone the service. They also disseminate certification courses on the policies and procedures related to the UNHSP including stop criteria during testing with otoacoustic emission (OAE) and automated acoustic brainstem response (AABR), counseling, referral to health professionals, PhilHealth reimbursement, and reporting of results to the NHSRC. Dissemination of protocols for those without OAE and AABR are stipulated in the Manual of Procedures, but do not have their own certification course.²⁹

Table 1. General Demographics of Participants Divided by Focus Group Discussion Groupings

Focus Group Discussion	Sex		Age (years) Range	Mean Age	Standard Deviation Age	Years of Experience Range	Mean Years of Experience	Standard Deviation Years of Experience
	M	F						
Rural Health Workers 1	0	6	22 - 61	46.33	13.19	2 - 27	11.83	9.81
Rural Health Workers 2	2	4	25 - 58	42.67	11.86	1 - 25	13.83	9.89
Private Primary/Secondary Hospital Nurses	0	5	23 - 44	30.4	8.14	0.83 - 10	5.37	3.83
Government Hospital Pediatrician Consultants	0	3	37 - 51	43.33	7.09	8 - 21	13.00	7.00
Government Hospital OBGYN Consultants	0	3	33 - 54	40.67	11.59	3 - 21	10.00	9.64
Private Birthing Home Midwives	0	5	19 - 49	36.4	12.28	0.5 - 38	17.10	15.50

Table 2. Specific Demographics of Participants Divided by Focus Group Discussion Groupings

Focus Group Discussion	Sex		Claimed to know about UNHS	Source of Information about UNHS	Presence of UNHS in Affiliated Facility	Refers to Facilities with UNHS	Directly Involved in Screening Babies
	M	F					
Rural Health Workers 1							
Barangay Health Worker	0	1	1	Patients	0	0	0
Nurse	0	3	3	Grandchildren, Colleagues, Practice	1	1	1
Midwife	0	2	2	Seminar, Books/Journals	2	1	1
Rural Health Workers 2							
RHU Liaison	1	0	1	Classroom	0	1	0
Midwife	0	2	2	Seminar, Books/Journals	0	2	0
Medical Technologist	1	1	2	Seminar, Books/Journals	0	1	1
Nurse	0	1	0	N/A	0	0	0
Private Primary/Secondary Hospital Nurses							
NICU Nurse	0	2	2	Colleagues, Practice	2	1	2
OR Nurse	0	2	2	Seminar, Colleagues	1	2	1
Nursing Assistant	0	1	1	Colleagues	1	1	1
Government Hospital Pediatrician Consultants							
Pediatrician Consultants	0	3	2	Colleagues	0	0	0
Government Hospital OBGYN Consultants							
OBGYN Consultants	0	3	2	Colleagues, Private Hospitals	0	0	0
Private Birthing Home Midwives							
Birthing Home Owner and Midwife	0	3	1	Seminar	1	0	0
Staff Midwife	0	2	1	Classroom	0	0	0
Overall	2 / 28	26 / 28	22 / 28		8 / 28	10 / 28	7 / 28

Table 3. Thematic Analysis Matrix

Domain	Theme	Examples
Knowledge	Lack of Specific Knowledge on Rationale and Implementation of UNHSP	Risk Factors
		Age of hearing detection
		Submission of records to NHSRC
		Referral after detection of hearing loss
Attitudes	Lack of Information Dissemination Protocol	Interdependence of midwives, nurses, OBGYN, pediatricians, and RHWs on information dissemination
		Unclear roles for OBGYN
		NHS is not a privilege
		No biases on infant's risk factors
Practices	Cognitive Dissonance Regarding Roles Played in Implementing the UNHSP	Determined benefits of UNHSP
		Does not refer to facilities
		Does not follow up on NHS
		Does not know how to become certified
Practices	Lack of Accessibility to Training and Services	Suggested to make information for parents and practitioners more available (ex: directories)
		Certification with CPD points
		Open to online modules as a modality for training, except RHW

Lack of Specific Knowledge on Rationale and Implementation of UNHSP

All participants had various ideas with regard to how hearing loss can affect the life of a child and the family. The most common responses included its negative effects on accomplishing tasks and developing skills that require normal hearing such as understanding verbal instruction, acquiring normal speech, learning concepts especially in school, and developing cognitive skills. All participants also recognized that hearing loss can negatively affect a child's psychosocial development. More than half of the participants shared how a child with hearing loss becomes vulnerable to bullying especially in school.

“As far as I know, infection lang pero I don't know lang kung related kasi, parang wala pa naman akong na literature about dun sa alcohol and then dun sa nicotine at yung mga drugs. I'm not really ano.” (As far as I know, infection is the only cause, but I don't know if it's related to alcohol, nicotine, and drugs since I haven't read literature regarding it.) 31, female, Staff Midwife

All the participants mentioned that the impact of a child with hearing loss also extended to the family of the individual with normal hearing. Most commonly this relates to family communication, coping with grief and stigma of having a “special child”, and the economic impact of managing the condition. The participants cited varied causes of hearing loss in children. All participants mentioned prenatal and postnatal infections and accidents as cause of hearing loss in children. However, when asked for specific infections, only a few were able to give examples, most of which revolved around cerumen impaction, and foreign objects.

Similar to the findings of Ignacio, Olveda, and Yap,²⁸ participants had limited knowledge on the screening itself. When asked how hearing loss could be detected, almost all participants referred to newborn hearing screening as a “hearing test” that can detect hearing loss in newborns. Most cited effects on developmental milestones relating to hearing and speech. Less than half however said that relying on developmental milestones was not enough. One pediatrician shared that hearing loss can be detected though clapping hands during a follow up physical examination. However, a pediatrician consultant rebutted the statement by acknowledging the different severities of hearing loss in which clapping of hands may not be effective. This sentiment was shared by one midwife/clinic owner as well.

All participants shared that if hearing loss would be detected during screening, they would refer to a specialist such as an ENT or EENT doctor. When asked what kind of intervention could be done, only less than half gave specific examples. Surgery was cited as a possible intervention by a majority, however none were able to specify what would be done. Hearing aids were also cited. Cochlear implants and

additional diagnostic testing were only mentioned by one pediatrician consultant. When parents refuse UNHS, half of participants that offer the service did not seek written consent. Across facilities that offered newborn hearing screening, less than half reported that the service is not reimbursable through Philhealth.

Cognitive Dissonance regarding Roles Played in Implementing the UNHSP

Similar to findings of Moeller, White, and Shisler³⁰ all participants recognized that newborn hearing screening should be given to all newborns as “it is not a privilege”. Some cited that having the child screened is a parent's duty and is mandated by law. There was no mention in prioritizing newborn hearing screening according to number of risk factors. However, most midwives, OBGYNs, and pediatricians had reservations to tell parents of patients about newborn hearing screening due to cost and accessibility of additional testing and intervention services. Most nurses shared their doubts with the newborn hearing screening device due to inconsistent results.

“Sa akin, bale, hindi mo made-detect kung ano po ba talaga yung condition niya: kung siya ba'y autistic, or late lang ba talaga. Kasi di po ba may kanya-kanyang katagorya 'yan?” (For me, you won't detect the true condition, if the child has autism or has delays, because these conditions have their own categories, don't they?) 47, female, Rural Health Unit Midwife

All participants shared that there were benefits to the universal newborn hearing screening program. These benefits centered around early detection and intervention to prevent any developmental delays. Two rural health midwives shared that it is important to screen for hearing loss so that specialists may give an accurate diagnosis to the parent of the child in case other conditions exist that are associated or similar to the presentation of hearing loss in a child.

All participants except the OBGYN consultants felt that it was their duty to at least inform parents regarding the universal newborn hearing screening. Rural health workers share that information on the UNHSP should be given during pre-marital counseling. Only those directly involved in the newborn hearing screening procedure mentioned that they have the duty to explain to the parents the initial results of the screening, such as to look out for the child's response to sounds and speech development.

Moreover, rural health workers and private birthing home midwives feel that their role is to facilitate the parent's access to a comprehensive service. For pediatrician consultants, they admitted that upholding the UNHSP is pertinent in their duty as doctor, pediatrician, and government employee. Participating nurses added that promoting and implementing the universal newborn hearing screening program is important to avoid being reprimanded

by their superiors when patients claim they do not know about the service. Rural health workers shared that they had a responsibility to advocate within their respective municipalities/cities the establishment, budgeting, and strict implementation of the UNHSP through collaboration with their municipal health officers and local investment plan for health in Rizal. Findings from hospital and lying-in based practitioners were consistent with previous studies.^{20,26-27}

Knowing their roles and benefits of the program, but not implementing the UNHSP has created conflict among the healthcare practitioners, similar to that of Festinger's concept of cognitive dissonance.³¹ As one midwife/birthing home owner expressed her discontent with behavioral methods of hearing screening, and has outsourced newborn hearing screening services. For some pediatric consultants, they would inform patients from private hospitals regarding the UNHSP.

The participants shared various challenges with regard to the implementation of the universal newborn hearing screening program. Most notable was the absence of a universal newborn hearing screening program within their facility. All participants except the private primary/secondary hospital nurses, and two midwives however claimed to be unaware of nearby facilities that have newborn hearing screening services.

Lack of Information Dissemination Protocol

One Operating Room (OR) nurse shared that it would be best if OBGYN doctors would be the first to inform the parents about newborn hearing screening, to which all other private primary/secondary nurses agreed. However, the OBGYN consultants felt that informing parents regarding the UNHSP was outside of their scope of practice and should be handled by the pediatricians which they cited as not a problem in a hospital setting due to the quick turnover of patients. The pediatrician consultants however expressed that they found it difficult to fulfill their roles to have regular follow-ups with their patients as they express that most of their patients prefer to go to the nearest rural health unit for follow-ups services such as immunizations. The pediatrician consultants shared that they only see their patients again when the child has other illnesses wherein follow-up on UNHS is less of a priority.

"Usually kasi nagiging problem talaga yung medyo oldies kasi. Kasi parang they follow yung old way talaga. Katulad yung sa example yang pagbibigkis kasi diba usually uso tayo dati bigkis. Ngayon kasi hindi na e. Parang sila, 'Bakit? Bakit ganyan?' Tapos di mo lalagyan. Pag akkyat mo meron na silang bigkis." (Usually the problem is with the older people, because they follow the old ways. For example, wrapping the practice of bigkis, when it's outdated. They usually react with 'Why? Why not put a bigkis?' When you don't put one, and you visit them upstairs, you'll find that they have put a bigkis already.) 23, female, OR Nurse

This gives insight that parents had no standard point-person to gain information regarding the UNHSP. This coincides with experiences of participants who are involved in the procedure regarding difficulty to communicate the benefits and importance of UNHS to new parents and extended family which relates to other newborn care practices of new parents and extended family.

Lack of Accessibility to Training and Services

Rural health unit medical technologists and nurses, as well as one private birthing home midwife/clinic owner were interested to become certified newborn hearing screening personnel. However, half of the private birthing home midwives were more concerned with coordinating with certified personnel to start providing the service. Across all participants, access to easy-to-read reference materials such as pamphlets to be given to parents, or posters to put in the facility can help them to implement the newborn hearing screening program. Private primary/secondary nurses suggested that these materials can be given to parents upon admission. Rural health workers expressed that these materials could also help discuss newborn hearing screening during pre-marital and pre-natal counseling programs. Private birthing home midwives asked if there could be multimedia materials about newborn hearing screening to present in their waiting rooms and share within their professional Facebook groups.

When asked how they view online modules as a modality for training newborn hearing screening personnel, all participants except rural health workers agreed that this would be beneficial for them. The private primary/secondary hospital nurses were very interested as they see it as an opportunity to gain continuing professional development (CPD) points for their professional license renewal. They were particularly interested in learning the actual protocol for newborn hearing screening since they claim that the one they use in their respective facilities were vague. Private birthing home midwives admitted that they find it difficult to leave their facility for CPD seminars, so they shared how online modules would be beneficial for them. Moreover, they shared that they have an online portal for registered midwives to access CPD training modules to gain points. Pediatricians and OBGYN consultants also claimed to be interested in learning the process of newborn hearing screening as a means to expand their skillset. Cost of the online training was also a concern among interested participants.

Rural health workers expressed their apprehension with regard to online modules. More than half pointed out that it would be difficult for people who do not yet know how to use a computer. Less than half expressed their apprehension with the quality of learning that they may receive from an online course. All rural health workers preferred to have hands-on and face-to-face training. Less than half suggested to cascade the training modules to local government units instead. Only

rural health workers recognized however, that they have to utilize the online modality since some of their work already requires the use of a computer such as PhilHealth claims.

CONCLUSION

The current study explored the knowledge, attitudes, and practices of healthcare practitioners in Rizal province, Philippines with regard to the implementation of the universal newborn hearing screening program. The FGDs revealed that the participants had a lack of specific knowledge regarding the rationale and implementation of the UNHSP. This includes risk factors for hearing loss, when newborn hearing screening should be administered, when hearing loss could be detected, the need to submit records of UNHS results, and steps to take after a confirmed refer result with the newborn hearing screening device.

All, except the OBGYN consultants shared that their role in implementing the universal newborn hearing screening program is to inform parents about the benefits, and facilitate access to these services. All participants admitted that newborn hearing screening services should be provided to all newborns, and that it is beneficial to the child, however more than half of participants do not refer their patients to facilities with this service. Additional costs in accessing these services were also cited by a majority of participants as a reason why they do not refer patients to UNHS services.

Participants were reliant on other healthcare practitioners to first inform parents about universal newborn hearing screening. Participating nurses suggested that it should be first introduced by OBGYN practitioners (OBGYNs), however OBGYNs felt that it is within the scope of the pediatricians, who on the other hand, find it difficult to follow up on newborn hearing screening since most patients consult in rural health centers rather than in hospitals.

Prevalent among the responses of the participants in the focus group discussions were the claims of not knowing how one can apply to become a certified newborn hearing screening personnel or center. All except rural health workers saw online training modules as a viable modality for training to become newborn hearing screening personnel.

Recommendations

Development of an information education campaign targeted for healthcare practitioners and parents would be beneficial in the implementation of the UNHSP in the area. Print and multimedia materials were among the most suggested forms for the informational material containing Philhealth coverage, risk factors, developmental milestones, and additional steps for those with a refer result. Alongside the campaign, an information dissemination protocol can benefit the implementation of the program as it builds ownership to healthcare practitioners to inform and facilitate parents' access to newborn hearing screen services. Furthermore, building a regularly updated local

directory of facilities with screening, diagnostic, and intervention services can encourage healthcare practitioners to connect their patients to more accessible institutions. Proactive coordination with uncertified centers to facilitate the certification process can also be beneficial for the surveillance, monitoring, and evaluation of the program.

Implementation of online training modules may best target private hospital nurses, private birthing home midwives, and pediatricians, as they expressed their interest in the modality. Rural health workers however felt that cascading the modules down to local government units would be best as they are skeptical with regard to the validity of learning the concept through an online medium, as well as their ability to use a computer. A blended learning approach may also be beneficial in implementing the online training modules.

For future researchers, it is recommended that a psychometric tool to assess knowledge, attitudes, and practices of healthcare practitioners be developed for a more efficient data collection. The inclusion of more healthcare practitioners in different settings such as otorhinolaryngologists, municipal health officers, and general practitioners can give a clearer picture of the situation in the locality. It is also recommended that future researchers replicate this study in other rural areas of the Philippines to gain insight on unique situations healthcare practitioners are in with regard to implementation of the program. Comparative analyses between and among areas in the Philippines can also give deeper insight to the current state of the program's implementation.

Statement of Authorship

All authors participated in data collection and analysis, and approved the final version submitted.

Author Disclosure

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