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REVIEW ARTICLE

Hearing Loss in Jordan: an Overlooked Public Health Challenge

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Abstract

Hearing loss (HL) is a significant public health issue in developing countries like Jordan, yet it remains under-prioritized due to competing healthcare agendas and limited resources. This review synthesizes the current knowledge on HL in Jordan and provides an overview of the country's hearing healthcare situation. A narrative review was conducted by searching databases including PubMed and Scopus using the search keywords 'hearing loss', 'deaf', 'hearing healthcare', 'audiology', and 'Jordan', to identify relevant literature on HL epidemiology, impact, and hearing healthcare services. Official national statistics on HL across the population are lacking. Estimates of HL from local research for newborns align with international averages but exceed global levels for infants with risk factors. The estimates for adults suggest a lower prevalence compared to global reports. Most studies focus on the negative psychosocial and educational impacts on Jordanians with HL. Enhancements in hearing healthcare services are needed to improve access, affordability, and quality of audiology services across the country. Research and governmental efforts are necessary to establish national-level official statistics, implement effective prevention strategies, and improve audiological services. This requires integrated healthcare policies, community-based interventions, and international cooperation to reduce the burden of HL and foster more inclusive societies in Jordan.

Keywords: Hearing loss, Deaf, hearing healthcare, Jordan

INTRODUCTION

HL is one of the most common disorders that affect millions of people globally with a rising prevalence [1]. It is considered the fourth highest cause of disability globally [1], causing a significant economic burden worldwide [2,3]. A significant number of those affected reside in low- and middle-income countries like Jordan with very

limited access to hearing technologies and support [4]. Globally, it is estimated that 401.4 million individuals need hearing technologies with 83% of them not utilizing them for various reasons [5]. The obstacles to efficient support and hearing technology use include limited public awareness, poor access to specialized healthcare, stigma, and social and economic disparities [6].

Studying HL as a health problem in Jordan is crucial due to its prevalence [7] and significant impact on individuals' quality of life, economic productivity, and educational outcomes [8-10]. Understanding the extent of HL in Jordan and the available healthcare services for the affected people can guide public health strategies, ensure better resource allocation, and promote quality and equity in healthcare. This narrative review aims to provide a comprehensive overview of HL in Jordan by exploring the epidemiology, assessing the impact on the affected population, and reviewing the ongoing initiatives aimed at improving hearing healthcare services.

MATERIALS AND METHODS

A narrative review was conducted using four main databases: Google Scholar, PubMed, Scopus, and Web of Science. These databases were chosen to ensure comprehensive coverage of both medical and public health literature, as well as multidisciplinary studies related to audiology and hearing healthcare. The search was conducted between April and June 2024 to retrieve the most recent and relevant studies. The search terms used included 'hearing loss', 'deaf', 'hearing healthcare', 'audiology', and 'Jordan' to identify articles that addressed various aspects related to HL and audiology within the Jordanian context. Filters were applied where necessary to focus the search on peer-reviewed journal articles and review papers, ensuring high-quality and reliable sources. Studies were selected based on their relevance to the Jordanian population and the topic. There was no publication time restriction for the included studies due to the scarcity of research specific to Jordan in the field of HL and audiology. Exclusion criteria included studies outside the geographical context of Jordan, non-English publications, and papers that were irrelevant to the topic. Further articles were identified through manual searches of reference lists from the initially selected papers, ensuring that no key publications were missed. Additionally, grey literature such as reports from international organizations and government publications was reviewed where applicable, to supplement the academic literature. Where applicable, insights from the author's own field experience in hearing healthcare were integrated to provide a practical perspective, particularly in areas where published data was sparse or where additional contextual understanding was necessary. This was acknowledged where it was used.

RESULTS AND DISCUSSION

A total of 23 articles were included. All identified articles were reviewed and the data was synthesized into three main categories: 1) epidemiology: this includes data on the prevalence and risk factors for HL among different age groups in Jordan. 2) the multidimensional impact of HL: studies that explored the psychosocial, educational, and economic impacts of HL on individuals and the community. 3) current hearing healthcare services: research focusing on the structure, accessibility, and quality of hearing healthcare services in Jordan. By synthesizing the available data, this narrative

review provides a comprehensive overview of the current state of HL and its healthcare implications in Jordan.

Epidemiology

Prevalence of hearing loss

HL is a widespread sensory disorder. The HL is labeled as disabling when the deficit is greater than 35 decibels (dB) in the better-hearing ear [11] which is more prevalent in low- to middle-income countries [1]. Globally, around 466 million people currently live with disabling HL, a number that equates to roughly 6% of the world's population [1]. HL should ideally be identified at birth through neonatal hearing screening. Global research suggests that permanent HL identified at birth (congenital) is estimated to range from 0.3–15.0 per 1,000 live births (median = 1.7) [12]. HL later in life increases due to several factors. First, people with risk factors for HL can develop delayed onset HL such as individuals with genetic predisposition [13]. Second, noise exposure and other medical and environmental factors can result in the deterioration of hearing ability. Finally, with the aging global population, the number of individuals with HL is expected to grow rapidly. Estimates suggest that by 2050, more than 700 million people, or 1 in every 4, could experience disabling HL and will require access to hearing care [14].

In Jordan, the prevalence of HL is a significant issue, though comprehensive national data is lacking. The available estimates are largely for children's HL, mainly infants [13,15-19]. The Jordanian research also investigated HL among children in limited locations in Jordan, mainly the north and center, with variations in assessment protocols, the prevalence of HL, and a lack of national-level estimates [13,15-19]. The prevalence of HL in Jordan among middle-aged and older adults, as well as the general population, is largely unexplored. Research suggests that the overall prevalence of HL among infants in Jordan ranges from 1.2 - 13.7 per 1000 newborns [15-17,19] which is within the range of global estimates (0.3–15.0 per 1,000 live births) [12]. If we look at the estimates for well-baby newborns with no risk factors for HL, the numbers fall to 0.51 - 0.7 per 1000 well-baby newborns [17,19]. Among children with HL risk factors and those older (beyond infancy), the numbers rise significantly to reach 307 per 1000 children [13,15]. The rise could be due to a mix of genetic, environmental, and healthcare factors. For example, there could be a role for high consanguinity rates, delayed detection, and limited access to early screening and intervention, particularly in some regions, worsening the issue.

A recently published cross-sectional study investigated the prevalence and characteristics of HL among Jordanians older than 12 years between the years 2018 and 2020, addressing a significant gap in local epidemiological data [7]. Hearing status was assessed for 1000 individuals in the northern and central governorates, revealing a prevalence rate of 63 per 1,000 people (0.06%), which is less than the United States of America 165 per 1000 and the United Kingdom 102 per 1000 [20,21] but close to the estimates in Oman 55.3 per 1000 [22]. The low prevalence could be attributed to the fact that 94% of the Alqudah, Zuriekat [7] sample is composed of individuals less than 65 years of age. This is a very close representation of the Jordanian population as 96.1% of the population is less than 65 years old [23]. Despite the previously discussed researchers' efforts, official governmental institutions have yet to release accurate statistics on the

prevalence of HL in Jordan, particularly, one that targets the entire region of Jordan. While there are legislations in place to create a national registry for individuals affected by HL, this has not yet been fully implemented at the national level. This underscores the need for more robust data collection and reporting to address and manage the burden of HL effectively in Jordan.

Risk factors

Numerous risk factors contribute to developing HL throughout a person's lifetime. These can be viewed as three main subgroups; the first is related to perinatal incidents and health issues including prematurity, low birth weight, hyperbilirubinemia, and hypoxia [24]. The second subgroup constitutes risk factors that mostly occur later in life and lead to gradual or sudden onset deterioration in hearing including aging, noise exposure, cardiovascular diseases, diabetes, smoking, and autoimmune diseases [25]. The third subgroup constitutes risk factors that can occur at any point in a person's lifetime including infections, ototoxic medication use, and head trauma. HL epidemiology and risk factors can vary based on geographic, socioeconomic, and political factors, including the impacts of war conflicts and immigration [15,26-28]. Vulnerable populations including refugees, individuals in war zones, and low to middle-income countries like Jordan require assistance from international organizations to support healthcare efforts to raise awareness, enhance services and their uptake, guide policy-making, and address the higher demand for hearing healthcare [29].

Universal newborn hearing screening research in Jordan identified risk factors for HL other than those listed by the Joint Committee on Infant Hearing [24]. Abu-Shaheen and Al-Masri [15] suggest that significant odds for HL among Jordanian newborns had the following additional risk factors; living in rural areas, first-degree consanguinity, maternal prenatal chronic health conditions (asthma, epilepsy, diabetes, hypertension, renal disease), birth weight 1.5-2.5 kg, late preterm (34–36 weeks) and post-term (>42 weeks) gestational age, forceps use during delivery, stay in neonatal intensive care unit for more than 5 days. Therefore, targeted neonatal hearing screening programs relying solely on the recommendations of the Joint Committee on Infant Hearing [24] can result in unidentified and unaddressed HL in the Jordanian community. This highlights the need for further research into HL risk factors in Jordan and the necessity of implementing universal newborn screening. For example, it would be worthwhile to research inherited HL and consanguinity's role in HL prevalence in depth. Marriage between family members (e.g. first- and second-degree relatives) is still prevalent in Jordan and similar nearby cultures like Egypt and is estimated to exceed 30% of the population marriages [30,31] increasing the odds of health conditions with genetic predisposition including HL.

Noise-induced HL is another important aspect worth investigating in Jordan. First, noise-related HL among industrial workers is prevalent in Jordan [32]. This can be attributed to a lack of awareness and inadequate enforcement of regulations requiring the use of hearing protection devices among workers exposed to prolonged loud noise. Second, there is an escalating use of personal listening devices accompanied by a lack of awareness of HL and safe listening practices among Jordanians [33]. Similarly, there is unmonitored noise pollution in social

events such as weddings, with a lack of strict governmental legislation and policies to prevent noise pollution in Jordan and most Arab countries [34]. Finally, there is the impact of the ongoing political conflicts, war, forced displacement, and immigration in the Middle East, which constitute significant issues with many untold stories and potential implications for HL.

To start with, immigration and people's displacement from war zones in nearby countries hold implications for HL demographic distribution in Jordan (changes in demographics of HL between genders, the different age groups, and urban vs rural areas epidemiology) [35]. In addition, loud noise exposure is a common traumatic experience in war zones [36,37] and has detrimental effects on people's health that often do not get enough attention [38]. Research on noise-induced HL related to warfare classically focused on Western military personnel but not the impacted civilian populations such as Palestinians, Syrians, and Iraqis with millions of them ending up as refugees in Jordan since 1948 [39,40]. While strains on healthcare services have been a challenge, recent improvements are expected to have a significant impact. The Ministry of Health established 15 new audiology and speech rehabilitation centers across Jordan this year that enhance access to care in the north, middle, and south. However, audiological services among displaced populations still face challenges. Despite ongoing efforts by governmental and nongovernmental organizations, there is still work to be done to address this underdiagnosed and underestimated invisible disability, affecting individuals' wellbeing and the community.

The multidimensional impact of Hearing loss

HL can be mild, moderate, severe, or profound. Usually, it affects both ears but can be unilateral. Deaf people mostly have profound HL, which implies very little or no hearing. They need to use sign language for communication and can benefit from cochlear implantation. Individuals with mild to severe HL are referred to as hard of hearing and usually communicate through spoken language and better benefit from hearing aids, cochlear implants, and other assistive devices. Even a mild degree of HL can negatively impact the affected person [41,42]. Early identification and early intervention of HL is essential, especially for children as any delay may result in lifelong gaps in speech and language acquisition, poor academic performance, employment difficulties, safety risks, and psychosocial as well as economic impacts [2,9,10,41,43-47]. Furthermore, there has been a growing body of research indicating that midlife HL increases the risks of dementia [48]. Currently, it is common knowledge that HL, whether across the lifespan, or in childhood, midlife, or older age significantly impacts an individual's health and wellbeing, with repercussions that extend to their family and the broader community.

In Middle Eastern communities, the family serves as the central pillar and heart of the social structure, influencing cultural, social, occupational, and economic dynamics as well as health behaviors and outcomes. In the Jordanian context, scientific research on the impact of HL is very limited. From the family perspective, HL research seems to be scarce in Jordan. Two identified studies that had families involved studied parental satisfaction with newborns' hearing screening efforts and the coping of families with Deaf children [49,50]. Both studies revealed that while families view newborn screening positively, children identified with HL face

challenges later in school and social settings, highlighting the need for more inclusive educational and social systems in Jordan. The Family-centered approach in audiology healthcare is encouraged and believed to have positive outcomes [51] but it needs in-depth research taking into account cultural, social, and religious issues before implementation in the Arabic communities.

The few available scientific Jordanian publications focused on HL individuals' psychosocial and mental health issues as well as educational needs assessment [44,52,53]. Alqudah and Zuriekat [44] recently explored the emotional, psychological, and social impact of HL among 300 Jordanian adults with hearing difficulties using the Hearing Handicap Inventories for adults and the elderly. The participants' self-reported results suggest that Jordanians with HL experience significant negative psychological impacts due to HL and that they reported higher psychological disability when compared to other populations such as Brazil [54]. The higher impact may stem from Jordan's educational system, which needs tailored programs and accommodations for students with HL, including involving specialized teachers, and assistive technologies. Additionally, stigma and scarce mental health resources in Jordan may exacerbate these challenges. Alramamneh, and Sabayleh [52] conducted a survey in 2020 to investigate the psychological and social experiences of Deaf Jordanian students and their coping. Results suggested that those individuals experience social difficulties as well as psychological detriments such as fear of public places and fear of being exposed to violence. Individuals with HL, especially Deaf and severely disabled persons with HL, require special assistance in terms of communication and academic learning needs, in addition to hearing healthcare and rehabilitation to achieve their full potential compared to their age-matched peers [53].

Current hearing healthcare services

Auditory Assessment and Diagnosis

Jordan, as well as many other developing countries, suffers from a deficiency in hearing screening programs or poor implementation and a lack of adequate audiology services, especially outside the capital Amman. Despite notable strides by the Ministry of Health to improve hearing healthcare in Jordan, there remains a pressing need for further enhancements to meet the population's needs effectively. Jordanians disabled by HL commonly receive a late diagnosis, especially among children [13], and those in need of hearing aids, cochlear implants, or aural rehabilitation and counseling face several challenges in obtaining them. This includes limited hearing care services in the country's periphery as the main providers of audiology services are located in the capital Amman (central) and Irbid Governate (north of Jordan) including governmental and teaching hospitals as well as private audiology services. The private audiology services provide state-of-the-art hearing technologies and quality services; yet their limited geographic distribution across the country and their high cost of hearing aids and cochlear implants render them inaccessible to a large sample of the population, mainly low- and middle-income families.

Newborn hearing screening efforts in Jordan are progressing at a slow pace. The diagram in Figure 1 outlines the current state of newborn hearing screening and interventions in Jordan from the authors' experience. This overview highlights the following aspects: national regulations and guidelines, implementation challenges, service quality, the establishment of a

national registry, and the importance of early intervention for infants with HL. Newborn hearing screening has been implemented in all governmental hospitals across Jordan but is yet to be implemented in private hospitals. The preliminary data from the public hospitals suggest that screening coverage is relatively low. Contributing factors include that screening is often conducted by nurses who have other responsibilities in the hospital, which may limit the time they can dedicate to performing the test and accurately reporting its results. Another factor could be the lack of awareness among parents about the importance of the screening. Additional key issues include limited resources, geographic barriers, and the need for comprehensive guidelines and training.

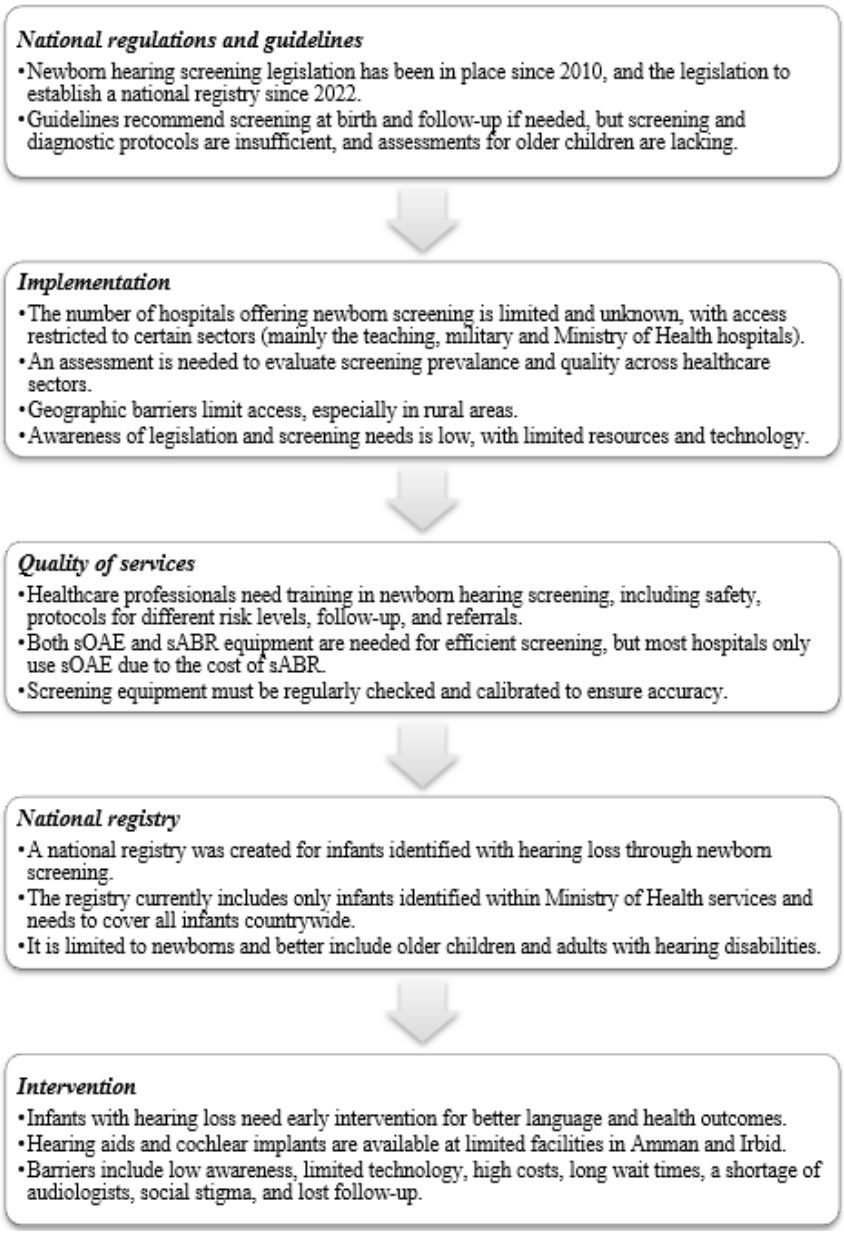

Figure 1: Status of childhood hearing screening and interventions in Jordan. The first and last authors are academic and clinical audiologists and board members of the hearing loss-related committee at the Ministry of Health who contributed their expertise to the information in this diagram. sOAE: screening otoacoustic emissions, sABR: screening auditory brainstem response.

Globally, screening for childhood HL beyond infancy is still not widely adopted. The prevalence of HL escalates from neonatal to school age due to cases missed at newborn screening, delayed onset HL, and other environmental factors [24]. A child who is found to have normal hearing as an infant and begins to lose hearing by 3 years of age is considered to have delayed-onset HL [55]. Delayed-onset HL happens more frequently in children with specific risk factors such as genetic predisposition and congenital cytomegalovirus infection [55,56].

A recently published study in Japan investigated delayed onset childhood HL among a screened population and they found that neonatal screening is insufficient if not accompanied by serial follow-up given that delayed-onset HL is frequently observed [57]. Underdiagnosed and late-diagnosed cases of HL among children were also observed among Jordanian children at risk of HL and among school-aged Jordanian children due to the lack of screening at birth and school-age hearing checks [13,18]. The lack of comprehensive childhood screening programs, along with delayed identification and intervention, significantly hampers children's speech and language development, affecting their future career opportunities, overall health, and quality of life [10,24,58]. Ideally, all newborns should be screened shortly after birth as universal newborn hearing screening programs proved their efficiency in early identification of HL and better speech and neurodevelopment [59]. Then those at risk should be rechecked a few times when they grow older for delayed-onset HL [24].

General practitioners, family doctors, and pediatricians should refer all children with risk factors or those who fail neonatal screening to otorhinolaryngology and audiology services for hearing assessment to avoid under and late diagnosis of childhood HL and its repercussions on the individual and community. Reliance on patients and families to approach audiology services is problematic due to the poor public awareness of audiology services observed in Jordan [60]. This is complicated by the restriction of audiology services to urban areas, which can significantly delay the diagnosis and intervention for residents of rural areas [61]. According to the WHO [62], there is disproportionate and inadequate distribution of hearing care services across low- to middle-income countries similar to Jordan. Therefore, there is a need to improve access to audiological services across the country, raise public awareness about HL and audiology services, and stakeholders to provide clear guidance for healthcare professionals to improve early HL diagnosis and management.

Managing hearing loss; prevention to rehabilitation

Managing HL requires a comprehensive approach that matches an individual's specific needs. Management strategies should be tailored for each case taking into account several factors including the individual's age, lifestyle, and occupation as well as the etiology, type, and severity of HL. While modern medical treatments, surgical options, and advanced hearing technologies can significantly improve hearing and enhance quality of life, prevention remains the gold standard for eliminating the onset of disease. Many of the factors contributing to HL can be effectively mitigated through well-crafted healthcare policies, public health strategies, and clinical interventions implemented throughout an individual's life. The prevention of HL, from the prenatal stage to old age, is of paramount importance. Preventable causes of HL are numerous and can lead to millions of new HL cases yearly

such as ototoxicity, otitis media, and meningitis [63]. In children, nearly 60% of HL results from avoidable causes that can be effectively prevented through public health measures [64]. Similarly, the most common causes of HL in adults, such as exposure to loud noises, are largely preventable with appropriate interventions.

According to Prasad, Borre [63], Youngs [65], Byrne, Themann [66], and WHO [64], there are several effective strategies for preventing HL throughout life. These start from good maternal and childcare practices and genetic counseling. The early identification and management of common ear conditions, along with occupational hearing conservation programs, are crucial as well. In recreational settings, adopting safe listening practices and reducing exposure to loud sounds is important. Monitored and rational use of medicines to avoid ototoxicity and implementing audio standards for personal devices also play a role. Public health measures, including screenings and vaccinations, can prevent significant portions of HL, especially among at-risk populations like young adults and those with high noise exposure. Preventing HL also can be achieved by screening and identifying high-risk individuals or those with acoustic vulnerability, which helps avoid the use of ototoxic pharmaceuticals in these cases.

Otorhinolaryngologists' role in approaching HL for all patients' age groups is quintessential. Many cases of HL can be reversed or mitigated medically or surgically such as otitis media with effusion and congenital cytomegalovirus infection, however, cases of permanent HL require a comprehensive and multidisciplinary approach. This includes otorhinolaryngologists, audiologists, speech therapists, pediatricians, educators, and occupational therapists. As most cases in Jordan encounter the otorhinolaryngologist first, it is crucial for Otorhinolaryngologists to have adequate understanding and skills to diagnose and manage HL and refer to other services. Zaitoun and Rawashdeh [67] explored the knowledge and skills of 40 Jordanian otorhinolaryngologists regarding hearing screening and management using an adapted version of the Moeller, White [68] questionnaire.

The results suggest that most Otorhinolaryngologists were aware of the importance of hearing screening but that is not coupled with good awareness of audiological and speech services including assessment and management. 75% of the participants seemed unaware of the need to refer patients with HL to audiology and speech services. Similar findings were also observed among physicians with varying specialties in Jordan and demonstrated insufficient education and training in this area for healthcare providers [69]. The research findings underscore the need for enhanced training in audiology and speech services for professionals in Jordan. However, a larger-scale investigation with more participants is needed for more generalizable results. According to Zaitoun and colleagues (2022), nearly half of the participants were young trainees with less than 5 years of experience, primarily from teaching hospitals. Qualitative approaches in future research could be used to reveal their educational and training needs to improve their knowledge, skills, and ultimately patient care.

Hearing aids are the main management strategy for patients with permanent HL. These devices amplify sounds in a nonlinear way to make it easier for people with various degrees of HL to communicate and participate in daily activities. Modern hearing aids come in different styles to provide comfort and reduce cosmetic worries and

advanced features that meet patient needs to enhance the overall hearing experience. Fitting hearing aids involves a comprehensive audiological evaluation and a programming process to the specific needs of each individual followed by aural rehabilitation to ensure that they get optimal benefit in day-to-day life. When considering congenital hearing impairment, achieving the maximum benefit from hearing aids and minimizing the disability associated with hearing impairment is closely tied to fitting the hearing aid at a very young age, ideally, as soon as the HL is confirmed through a comprehensive diagnostic audiological workup. This further highlights the critical importance of implementing a robust newborn hearing screening program. Unfortunately, low- and middle-income countries bear a disproportionate burden of HL and the WHO estimates that global hearing aid production covers just 3% of the need in these countries [64,70].

A recent cross-sectional study examined the attitudes of working-age adults in Jordan toward HL and hearing aid use [71]. To achieve the study aims, the authors translated and validated the Attitude Toward Loss of Hearing Questionnaire into Arabic language. The study involved 237 adults with HL from across the country, revealing that only around 1/3 of participants used hearing aids. Nearly half of the participants were under 34 years old, held a bachelor's degree, and most participants were identified as having low income. The study found that negative coping strategies had the highest mean scores, raising concerns about coping mechanisms among working-age adults. Those who did not use hearing aids tended to exhibit higher levels of denial, rely more on negative coping strategies, and experience reduced manual dexterity, vision, and self-confidence. Future research could shed more light on the obstacles to accessing hearing healthcare and barriers to using hearing aids, serving as an initial step in overcoming these challenges. It should also consider different age groups, including families of children with HL and older adults. By addressing barriers such as psychosocial and economic factors, research can enhance hearing support and promote greater collaboration among healthcare professionals and stakeholders in the country and worldwide.

Cochlear implantation is an additional advanced hearing technology and management strategy for individuals with severe to profound HL who could not benefit from hearing aids. The implantation process involves a comprehensive audiological assessment and a surgical procedure followed by a full program of aural rehabilitation. The surgery is considered safe with a low rate of complications in Jordan [72]. Cochlear implantation can be done at any age, but early childhood implantation has been advocated for the most due to its positive outcomes. In a recent study in Jordan, cochlear implantation showed a positive impact on speech and language development, with the most significant benefits seen when the procedure is performed at an earlier age [73].

While cochlear implantation can be life-changing for severe to profoundly deaf individuals, the very high cost can render it inaccessible to those who need it in low- to middle-income countries like Jordan. In 2024, the Ministry of Health launched cochlear implantation services through two of its main tertiary referral hospitals in Amman and Irbid. Any patient can be referred to these centers from all over the country. This program is mainly focused on pediatric implantation and offers life-changing support to individuals with severe to profound HL and their families. Still, many

citizens and refugees do not have governmental insurance and cannot benefit from it. International support, such as Hear the World Foundation-funded projects at Jordan University Hospital/ University of Jordan as well as Jordan University of Science and Technology have a paramount role in supporting these patients through cochlear implant device donations. Several patients benefited from this support in 2024 at both project sites.

The Ministry of Health's cochlear implantation program could further expand to the south of Jordan. Moreover, there is a need to improve post-implantation support through comprehensive speech therapy and financial assistance for device malfunction or updates. Notably, new speech rehabilitation centers established by the Ministry of Health, along with existing centers affiliated with other ministries such as the Ministry of Social Development and the Ministry of Education, are now providing valuable speech services across Jordan. There is also a need to enhance the efficiency and quality of cochlear implant service delivery by employing a multidisciplinary approach [74,75]. The involvement of various disciplines can address different aspects of patient care and ensure a comprehensive management plan. The disciplines that should be included are audiologists, speech-language pathologists, otorhinolaryngologists, psychologists, educational specialists, and hearing therapists for rehabilitation. All of these can help in addressing medical, psychological, educational, and rehabilitative needs, leading to improved patient outcomes and satisfaction. Providing specialized education and raising public awareness about available services can further boost satisfaction with cochlear implantation services and lead to better experiences [74]. Finally, management with hearing technologies needs to be accompanied by a comprehensive aural rehabilitation program to help individuals with HL understand speech and environmental sounds and improve their ability to communicate. Tye-Murray [76] provides a comprehensive overview of aural rehabilitation approaches. It begins with a deep assessment approach followed by different strategies (such as auditory training, lip reading, using visual cues, adjusting hearing aids or cochlear implant fitting, and counseling) and plans including educational programs for patients and their families. The aural rehabilitation process enables HL patients to maximize their communication skills, enhance their social participation, and maintain high quality of life [76].

CONCLUSION

In conclusion, addressing HL and improving hearing care in Jordan, requires a multifaceted approach. This includes developing and properly implementing national policies for the prevention, early identification, and management of HL, supported by both government and international organizations. Essential steps are further research on the epidemiology of HL, establishing nationwide audiology services, particularly in rural areas, improving healthcare infrastructure, and investing in professional training. Raising awareness through targeted campaigns can also enhance the effectiveness of hearing care services. Jordan's current lack of official national statistics underscores the need for comprehensive data collection to inform healthcare strategies and policy development.

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Ethics statement

This narrative review does not require approval from institutional human research review committees or animal welfare committees, nor is it necessary to follow ethical guidelines for writing this article.

Competing interest

The authors declare no competing interest.

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ضعف السمع في الأردن: تحدٍ صحي عام غير معالج

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الملخص

ضعف السمع هو قضية صحية عامة هامة في البلدان النامية مثل الأردن، ولكنه يظل ليس أولوية بسبب الأجندات الصحية المتنافسة والموارد المحدودة. تستعرض هذه المراجعة المعرفة الحالية حول ضعف السمع في الأردن وتقدم لمحة عامة عن وضع الرعاية الصحية السمعية في البلاد. تم إجراء مراجعة سردية من خلال البحث في قواعد البيانات مثل PubMed و Scopusباستخدام كلمات البحث "ضعف السمع"، "الصمم"، "الرعاية الصحية السمعية"، "علم السمع"، و"الأردن"، لتحديد الابحاث ذات الصلة حول علم الأوبئة، التأثيرات، وخدمات الرعاية الصحية السمعية. لا يوجد إحصائيات وطنية رسمية عن ضعف السمع في السكان. تتشابه التقديرات البحثية المحلية لضعف السمع بين حديثي الولادة مع المستويات الدولية لكنها تتجاوز المستويات العالمية للأطفال الرضع ذوي عوامل الخطر. وتشير التقديرات المتعلقة بالبالغين إلى انخفاض نسبة ضعف السمع مقارنةً بالتقارير العالمية. تركز معظم الدراسات على التأثيرات النفسية والاجتماعية والتعليمية السلبية على الأردنيين الذين يعانون من ضعف السمع. هناك حاجة لتحسين خدمات الرعاية الصحية السمعية لتعزيز الوصول اليها، والتكلفة، وجودة خدمات السمعيات في جميع أنحاء البلاد. يتطلب ذلك جهود بحثية وحكومية للحصول على إحصائيات رسمية على المستوى الوطني، وتطبيق استراتيجيات وقائية فعالة، وتحسين الخدمات السمعية. وهذا يتطلب سياسات صحية متكاملة، وتدخلات مجتمعية، وتعاون دولي لتقليل عبء ضعف السمع ,و الحصول على مجتمع شمولي في الأردن.

الكلمات الدالة: ضعف السمع، الصمم، الرعاية الصحية السمعية، الأردن.