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ЕЖЕМЕСЯЧНЫЙ НАУЧНЫЙ ЖУРНАЛ

Медицинские новости Грузии

საქართველოს სამედიცინო სიახლენი

GEORGIAN MEDICAL NEWS

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GMN: Georgian Medical News is peer-reviewed, published monthly journal committed to promoting the science and art of medicine and the betterment of public health, published by the GMN Editorial Board since 1994. GMN carries original scientific articles on medicine, biology and pharmacy, which are of experimental, theoretical and practical character; publishes original research, reviews, commentaries, editorials, essays, medical news, and correspondence in English and Russian.

GMN is indexed in MEDLINE, SCOPUS, PubMed and VINITI Russian Academy of Sciences. The full text content is available through EBSCO databases.

GMN: Медицинские новости Грузии - ежемесячный рецензируемый научный журнал, издаётся Редакционной коллегией с 1994 года на русском и английском языках в целях поддержки медицинской науки и улучшения здравоохранения. В журнале публикуются оригинальные научные статьи в области медицины, биологии и фармации, статьи обзорного характера, научные сообщения, новости медицины и здравоохранения. Журнал индексируется в MEDLINE, отражён в базе данных SCOPUS, PubMed и ВИНИТИ РАН. Полнотекстовые статьи журнала доступны через БД EBSCO.

GMN: Georgian Medical News – საქართველოს სამედიცინო სიახლენი – არის ყოველთვიური სამეცნიერო სამედიცინო რეცენზირებადი ჟურნალი, გამოიცემა 1994 წლიდან, წარმოადგენს სარედაქციო კოლეგიისა და აშშ-ის მეცნიერების, განათლების, ინდუსტრიის, ხელოვნებისა და ბუნებისმეტყველების საერთაშორისო აკადემიის ერთობლივ გამოცემას. GMN-ში რუსულ და ინგლისურ ენებზე ქვეყნდება ექსპერიმენტული, თეორიული და პრაქტიკული ხასიათის ორიგინალური სამეცნიერო სტატიები მედიცინის, ბიოლოგიისა და ფარმაციის სფეროში, მიმოხილვითი ხასიათის სტატიები.

ჟურნალი ინდექსირებულია MEDLINE-ის საერთაშორისო სისტემაში, ასახულია SCOPUS-ის, PubMed-ის და ВИНИТИ РАН-ის მონაცემთა ბაზებში. სტატიების სრული ტექსტი ხელმისაწვდომია EBSCO-ს მონაცემთა ბაზებიდან.

WEBSITE

www.geomednews.com

К СВЕДЕНИЮ АВТОРОВ!

При направлении статьи в редакцию необходимо соблюдать следующие правила:

1. Статья должна быть представлена в двух экземплярах, на русском или английском языках, напечатанная через **полтора интервала на одной стороне стандартного листа с шириной левого поля в три сантиметра**. Используемый компьютерный шрифт для текста на русском и английском языках - **Times New Roman** (**Кириллица**), для текста на грузинском языке следует использовать **AcadNusx.** Размер шрифта - **12**. К рукописи, напечатанной на компьютере, должен быть приложен CD со статьей.

2. Размер статьи должен быть не менее десяти и не более двадцати страниц машинописи, включая указатель литературы и резюме на английском, русском и грузинском языках.

3. В статье должны быть освещены актуальность данного материала, методы и результаты исследования и их обсуждение.

При представлении в печать научных экспериментальных работ авторы должны указывать вид и количество экспериментальных животных, применявшиеся методы обезболивания и усыпления (в ходе острых опытов).

4. К статье должны быть приложены краткое (на полстраницы) резюме на английском, русском и грузинском языках (включающее следующие разделы: цель исследования, материал и методы, результаты и заключение) и список ключевых слов (key words).

5. Таблицы необходимо представлять в печатной форме. Фотокопии не принимаются. **Все цифровые, итоговые и процентные данные в таблицах должны соответствовать таковым в тексте статьи**. Таблицы и графики должны быть озаглавлены.

6. Фотографии должны быть контрастными, фотокопии с рентгенограмм - в позитивном изображении. Рисунки, чертежи и диаграммы следует озаглавить, пронумеровать и вставить в соответствующее место текста **в tiff формате**.

В подписях к микрофотографиям следует указывать степень увеличения через окуляр или объектив и метод окраски или импрегнации срезов.

7. Фамилии отечественных авторов приводятся в оригинальной транскрипции.

8. При оформлении и направлении статей в журнал МНГ просим авторов соблюдать правила, изложенные в «Единых требованиях к рукописям, представляемым в биомедицинские журналы», принятых Международным комитетом редакторов медицинских журналов - http://www.spinesurgery.ru/files/publish.pdf и http://www.nlm.nih.gov/bsd/uniform_requirements.html
В конце каждой оригинальной статьи приводится библиографический список. В список литературы включаются все материалы, на которые имеются ссылки в тексте. Список составляется в алфавитном порядке и нумеруется. Литературный источник приводится на языке оригинала. В списке литературы сначала приводятся работы, написанные знаками грузинского алфавита, затем кириллицей и латиницей. Ссылки на цитируемые работы в тексте статьи даются в квадратных скобках в виде номера, соответствующего номеру данной работы в списке литературы. Большинство цитированных источников должны быть за последние 5-7 лет.

9. Для получения права на публикацию статья должна иметь от руководителя работы или учреждения визу и сопроводительное отношение, написанные или напечатанные на бланке и заверенные подписью и печатью.

10. В конце статьи должны быть подписи всех авторов, полностью приведены их фамилии, имена и отчества, указаны служебный и домашний номера телефонов и адреса или иные координаты. Количество авторов (соавторов) не должно превышать пяти человек.

11. Редакция оставляет за собой право сокращать и исправлять статьи. Корректура авторам не высылается, вся работа и сверка проводится по авторскому оригиналу.

12. Недопустимо направление в редакцию работ, представленных к печати в иных издательствах или опубликованных в других изданиях.

При нарушении указанных правил статьи не рассматриваются.

REQUIREMENTS

Please note, materials submitted to the Editorial Office Staff are supposed to meet the following requirements:

1. Articles must be provided with a double copy, in English or Russian languages and typed or compu-ter-printed on a single side of standard typing paper, with the left margin of **3** centimeters width, and **1.5** spacing between the lines, typeface - **Times New Roman** (**Cyrillic**), print size - **12** (referring to Georgian and Russian materials). With computer-printed texts please enclose a CD carrying the same file titled with Latin symbols.

2. Size of the article, including index and resume in English, Russian and Georgian languages must be at least 10 pages and not exceed the limit of 20 pages of typed or computer-printed text.

3. Submitted material must include a coverage of a topical subject, research methods, results, and review.

Authors of the scientific-research works must indicate the number of experimental biological species drawn in, list the employed methods of anesthetization and soporific means used during acute tests.

4. Articles must have a short (half page) abstract in English, Russian and Georgian (including the following sections: aim of study, material and methods, results and conclusions) and a list of key words.

5. Tables must be presented in an original typed or computer-printed form, instead of a photocopied version. **Numbers, totals, percentile data on the tables must coincide with those in the texts of the articles.** Tables and graphs must be headed.

6. Photographs are required to be contrasted and must be submitted with doubles. Please number each photograph with a pencil on its back, indicate author's name, title of the article (short version), and mark out its top and bottom parts. Drawings must be accurate, drafts and diagrams drawn in Indian ink (or black ink). Photocopies of the X-ray photographs must be presented in a positive image in **tiff format**.

Accurately numbered subtitles for each illustration must be listed on a separate sheet of paper. In the subtitles for the microphotographs please indicate the ocular and objective lens magnification power, method of coloring or impregnation of the microscopic sections (preparations).

7. Please indicate last names, first and middle initials of the native authors, present names and initials of the foreign authors in the transcription of the original language, enclose in parenthesis corresponding number under which the author is listed in the reference materials.

8. Please follow guidance offered to authors by The International Committee of Medical Journal Editors guidance in its Uniform Requirements for Manuscripts Submitted to Biomedical Journals publication available online at: http://www.nlm.nih.gov/bsd/uniform_requirements.html
http://www.icmje.org/urm_full.pdf
In GMN style for each work cited in the text, a bibliographic reference is given, and this is located at the end of the article under the title "References". All references cited in the text must be listed. The list of references should be arranged alphabetically and then numbered. References are numbered in the text [numbers in square brackets] and in the reference list and numbers are repeated throughout the text as needed. The bibliographic description is given in the language of publication (citations in Georgian script are followed by Cyrillic and Latin).

9. To obtain the rights of publication articles must be accompanied by a visa from the project instructor or the establishment, where the work has been performed, and a reference letter, both written or typed on a special signed form, certified by a stamp or a seal.

10. Articles must be signed by all of the authors at the end, and they must be provided with a list of full names, office and home phone numbers and addresses or other non-office locations where the authors could be reached. The number of the authors (co-authors) must not exceed the limit of 5 people.

11. Editorial Staff reserves the rights to cut down in size and correct the articles. Proof-sheets are not sent out to the authors. The entire editorial and collation work is performed according to the author's original text.

12. Sending in the works that have already been assigned to the press by other Editorial Staffs or have been printed by other publishers is not permissible.

Articles that Fail to Meet the Aforementioned Requirements are not Assigned to be Reviewed.

ავტორთა საყურადღებოდ!

რედაქციაში სტატიის წარმოდგენისას საჭიროა დავიცვათ შემდეგი წესები:

1. სტატია უნდა წარმოადგინოთ 2 ცალად, რუსულ ან ინგლისურ ენებზე,დაბეჭდილი სტანდარტული ფურცლის 1 გვერდზე, 3 სმ სიგანის მარცხენა ველისა და სტრიქონებს შორის 1,5 ინტერვალის დაცვით. გამოყენებული კომპიუტერული შრიფტი რუსულ და ინგლისურენოვან ტექსტებში - **Times New Roman (Кириллица)**, ხოლო ქართულენოვან ტექსტში საჭიროა გამოვიყენოთ **AcadNusx.** შრიფტის ზომა – 12. სტატიას თან უნდა ახლდეს CD სტატიით.

2. სტატიის მოცულობა არ უნდა შეადგენდეს 10 გვერდზე ნაკლებს და 20 გვერდზე მეტს ლიტერატურის სიის და რეზიუმეების (ინგლისურ, რუსულ და ქართულ ენებზე) ჩათვლით.

3. სტატიაში საჭიროა გაშუქდეს: საკითხის აქტუალობა; კვლევის მიზანი; საკვლევი მასალა და გამოყენებული მეთოდები; მიღებული შედეგები და მათი განსჯა. ექსპერიმენტული ხასიათის სტატიების წარმოდგენისას ავტორებმა უნდა მიუთითონ საექსპერიმენტო ცხოველების სახეობა და რაოდენობა; გაუტკივარებისა და დაძინების მეთოდები (მწვავე ცდების პირობებში).

4. სტატიას თან უნდა ახლდეს რეზიუმე ინგლისურ, რუსულ და ქართულ ენებზე არანაკლებ ნახევარი გვერდის მოცულობისა (სათაურის, ავტორების, დაწესებულების მითითებით და უნდა შეიცავდეს შემდეგ განყოფილებებს: მიზანი, მასალა და მეთოდები, შედეგები და დასკვნები; ტექსტუალური ნაწილი არ უნდა იყოს 15 სტრიქონზე ნაკლები) და საკვანძო სიტყვების ჩამონათვალი (key words).

5. ცხრილები საჭიროა წარმოადგინოთ ნაბეჭდი სახით. ყველა ციფრული, შემაჯამებელი და პროცენტული მონაცემები უნდა შეესაბამებოდეს ტექსტში მოყვანილს.

6. ფოტოსურათები უნდა იყოს კონტრასტული; სურათები, ნახაზები, დიაგრამები - დასათაურებული, დანომრილი და სათანადო ადგილას ჩასმული. რენტგენოგრამების ფოტოასლები წარმოადგინეთ პოზიტიური გამოსახულებით **tiff** ფორმატში. მიკროფოტოსურათების წარწერებში საჭიროა მიუთითოთ ოკულარის ან ობიექტივის საშუალებით გადიდების ხარისხი, ანათალების შეღებვის ან იმპრეგნაციის მეთოდი და აღნიშნოთ სურათის ზედა და ქვედა ნაწილები.

7. სამამულო ავტორების გვარები სტატიაში აღინიშნება ინიციალების თანდართვით, უცხოურისა – უცხოური ტრანსკრიპციით.

8. სტატიას თან უნდა ახლდეს ავტორის მიერ გამოყენებული სამამულო და უცხოური შრომების ბიბლიოგრაფიული სია (ბოლო 5-8 წლის სიღრმით). ანბანური წყობით წარმოდგენილ ბიბლიოგრაფიულ სიაში მიუთითეთ ჯერ სამამულო, შემდეგ უცხოელი ავტორები (გვარი, ინიციალები, სტატიის სათაური, ჟურნალის დასახელება, გამოცემის ადგილი, წელი, ჟურნალის №, პირველი და ბოლო გვერდები). მონოგრაფიის შემთხვევაში მიუთითეთ გამოცემის წელი, ადგილი და გვერდების საერთო რაოდენობა. ტექსტში კვადრატულ ფჩხილებში უნდა მიუთითოთ ავტორის შესაბამისი N ლიტერატურის სიის მიხედვით. მიზანშეწონილია, რომ ციტირებული წყაროების უმეტესი ნაწილი იყოს 5-6 წლის სიღრმის.

9. სტატიას თან უნდა ახლდეს: ა) დაწესებულების ან სამეცნიერო ხელმძღვანელის წარდგინება, დამოწმებული ხელმოწერითა და ბეჭდით; ბ) დარგის სპეციალისტის დამოწმებული რეცენზია, რომელშიც მითითებული იქნება საკითხის აქტუალობა, მასალის საკმაობა, მეთოდის სანდოობა, შედეგების სამეცნიერო-პრაქტიკული მნიშვნელობა.

10. სტატიის ბოლოს საჭიროა ყველა ავტორის ხელმოწერა, რომელთა რაოდენობა არ უნდა აღემატებოდეს 5-ს.

11. რედაქცია იტოვებს უფლებას შეასწოროს სტატია. ტექსტზე მუშაობა და შეჯერება ხდება საავტორო ორიგინალის მიხედვით.

12. დაუშვებელია რედაქციაში ისეთი სტატიის წარდგენა, რომელიც დასაბეჭდად წარდგენილი იყო სხვა რედაქციაში ან გამოქვეყნებული იყო სხვა გამოცემებში.

აღნიშნული წესების დარღვევის შემთხვევაში სტატიები არ განიხილება.

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HOW PRIMARY HEALTH CARE PHYSICIANS IN SAUDI ARABIA HANDLE SUDDEN SENSORINEURAL HEARING LOSS: A CROSS-SECTIONAL STUDY

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Abstract.

Background: In order to enhance patient outcomes, Sudden Sensorineural Hearing Loss (SSNHL) must be diagnosed and treated quickly. In the early detection and treatment of SSNHL, primary care physicians (PCPs) are essential. The purpose of this study was to assess Saudi Arabian primary healthcare physicians diagnostic abilities, knowledge and practices related to SSNHL.

Methods: A cross-sectional survey of 371 PCPs in Saudi Arabia was carried out. An electronic questionnaire measuring participants knowledge, diagnosis and management methods, referral practices of SSNHL was used to gather data. SPSS version 26 was used for the statistical analysis, and a p-value of <0.05 was considered significant.

Results: 124 (33.4%) of participants showed good knowledge, 123 (33.2%) fair knowledge, and 124 (33.4%) poor knowledge, with a mean knowledge score of 10.58 ± 3.85. Most physicians 282 (76%) attempted to differentiate between sensorineural and conductive hearing loss, primarily using tuning fork tests 261 (70.4%) and audiological evaluations 258 (69%). While 327 (88.1%) recognized SSNHL as requiring urgent referral for audiological testing, only 184 (49.6%) could accurately define the condition within the critical 72-hour window. Corticosteroids were prescribed by 138 (37.2%) for suspected SSNHL and 185 (49.9%) for confirmed cases. Good knowledge was significantly associated with fewer years of practice, urban-based patient care, and walk-in clinic settings ($p < 0.05$).

Conclusion: Although the majority of Saudi Arabian PCPs agree that SSNHL is urgent, there are still gaps in their understanding and adherence to evidence-based practices. To increase diagnostic accuracy, timely referrals, and the effective management of SSNHL cases, more training and education are advised.

Key words. Sudden sensorineural hearing loss, primary health care physicians, Saudi Arabia.

Introduction.

Sudden Sensorineural Hearing Loss (SSNHL) is a medical emergency that must be addressed immediately, as waiting can have negative long-term consequences [1]. On a pure tone audiogram, SSNHL is commonly characterized as a unilateral hearing loss lasting 24 to 72 hours with a loss of 30 dB or more across at least three consecutive frequencies [2]. Cerebellopontine angle tumours, autoimmune illnesses, infections, vascular issues, and inner ear abnormalities can all induce SSNHL, however the exact reason is often unknown [3]. This sickness has a significant impact on both patients and the healthcare system since people affected see a wide range of medical professionals, including otolaryngologists, emergency medicine specialists, and primary care physicians [3]. Early detection and treatment by primary care physicians are critical to improving outcomes [4]. A comprehensive history and physical examination should be performed, and steroids are often used to treat refractory instances, either orally or intra-tympanically [4].

In 2020, Newsted conducted a study in the United States with the goal of providing family physicians with an effective, evidence-based method for managing patients with hearing loss. The study was carried out by searching the MEDLINE and PubMed databases for English-language studies, reviews, and guidelines on hearing loss that were published between 1980 and 2020. Level II or III evidence was presented in most of these articles. The results showed that family doctors are qualified to explain the psychological effects of hearing loss and promote conservative treatment options because they are primary care physicians. To avoid potential consequences, timely referrals and diagnostic imaging may be required to confirm diagnosis and initiate appropriate therapy [5].

In Canada, Benjamin NG conducted a study in 2021 to assess family physicians' knowledge and practices on the diagnosis and management of SSNHL. A survey consisting of eighteen questions was given to fifty-two family physicians. The findings indicated that 73.1% of respondents felt that further testing was necessary to distinguish between conductive and sensorineural hearing loss, while 94.2% of respondents recognised unilateral SSNHL as a medical emergency requiring referral. Furthermore, 76.9% said they preferred to manage SSNHL cases with corticosteroid prescriptions. Overall, the study found that the majority of Canadian family physicians recognise the importance of SSNHL and properly refer and treat patients. However, several physicians advocated for more extensive diagnostic procedures to precisely identify the specific kind of hearing loss [1].

In the United Kingdom, a research led by Conlin in 2007 sought to do a complete meta-analysis of all randomised controlled trials (RCTs) that investigated therapies for SSNHL. Five of the twenty identified RCTs met the criteria for inclusion in the meta-analysis. The analysis of data from two RCTs comparing steroids to placebo revealed no statistically significant difference between treatment groups. The study indicated that, despite the current practice in North America of utilising systemic steroids for SSNHL, the meta-analysis did not discover sufficient evidence to support steroids' superiority over placebo. Furthermore, there was no evident benefit from combining antiviral medication with systemic steroids, nor did systemic steroids outperform other active therapies [6].

In Malaysia, Ali did a study in 2018 that identified immune system-mediated pathways as the primary aetiology of SSNHL. In the study, a 35-year-old woman complained of intermittent dizziness and right-sided hearing loss after first visiting her obstetrician for vaginal bleeding. The results highlighted how important it is for people with SSNHL to seek initial care at primary care centres. Because SSNHL has many underlying causes, physicians need to perform comprehensive examinations and investigations [7].

In 2021, Sajid carried out an observational study in Pakistan to evaluate the efficacy of oral corticosteroid therapy in treating SSNHL and identify the factors affecting the prognosis. During the trial, which was carried out at the Ayub Medical Complex in Abbottabad, 62 SSNHL patients received prednisolone. The way they responded to treatment was closely observed. Variables such as patient age, gender, the extent of hearing loss, and the length of symptoms at initial presentation were noted in order to assess their influence on treatment outcomes. The study found that oral corticosteroid therapy is a reasonable treatment option for SSNHL, particularly for patients with moderate hearing loss who seek otologist care right away [8]. In 2013, Shima Arastou conducted research in Iran to evaluate if systemic steroids alone or in conjunction with intratympanic steroids were more effective in treating idiopathic SSNHL in patients with poor prognosis. The randomised clinical trial comprised 77 individuals with idiopathic SSNHL and at least one unfavourable prognostic feature. The majority of these patients benefited from the combination therapy regimen, with 44 showing improvement in hearing tests. According to the study's findings, systemic prednisolone combined with intratympanic dexamethasone outperformed systemic treatment alone [9].

A cross-sectional study was carried out in Riyadh, Saudi Arabia, in 2022 to evaluate primary care physicians' knowledge of SSNHL. Of the eighty-four respondents, twenty-one (15%), thirty-four (40.5%), and twenty-nine (34.5%) had limited, intermediate, and extensive knowledge, respectively. Sixty-four (76.2%) participants were unsure of their ability to administer and interpret tuning fork tests (TFT) to differentiate between sensorineural and conductive hearing loss, while twenty (23.8%) participants were confident in their ability. Additionally, 22 participants (26.2%) expressed uncertainty about their ability to distinguish between sensorineural and conductive hearing loss from a formal audiogram, whereas 62 participants (73.8%) expressed confidence in this ability [10].

This study aimed to assess how primary healthcare physicians in Saudi Arabia diagnose and manage cases of SSNHL.

Subjects and Methods.

Study design, setting and time: a cross-sectional study done in Saudi Arabia from January 1 to December 31 2024.

Study participants: the study included primary health care physicians practicing in Saudi Arabia from various healthcare settings encompassing clinics, primary care centers, and hospitals. The inclusion criteria were primary health care family physicians, residents, fellows, and consultants in all family medicine subspecialties. And the exclusion criteria were medical interns, general practitioners, and other specialties in PHC centers.

Sample size: using Epi Info statistical software, version 7.2, the sample size of 362 primary healthcare physicians was calculated at a confidence level of 95% and a 5% margin of error. This sample size was estimated at 6,107 [11], representing the total number of primary healthcare physicians in Saudi Arabia.

Data collection: a survey was conducted using an electronic questionnaire written in English. The questionnaire is adopted from a previous Saudi study [10]. the questionnaire collected data about participants' work-related data, number of patients presenting with hearing loss, waiting time for patients with hearing loss till be seen by a specialist or till be referred, and practice and experience related to hearing loss and knowledge about sudden sensorineural hearing loss (SSNHL). Data was collected via the internet and through visits to PHCs.

Ethical considerations: an ethical approval for the study was obtained from the Institutional Review Board (IRB) of the regional research ethics committee, Qassim province, Saudi Arabia (approval number 607/46/81).

Data analysis: Data were statistically analyzed using the (SPSS) application version 26. To investigate the association between the variables, the Chi-squared test ($\chi 2$) was applied to qualitative data that was expressed as numbers and percentages. Quantitative data was expressed as mean and standard deviation (Mean ± SD). A p-value of <0.05 was considered as statistically significant. The correct answer was given a score of " 1" and the wrong answer was given a score of "0" leaving a total knowledge score ranging from 0-17. The participant was considered as having a poor knowledge level if answered less than 50% correctly, a fair knowledge level if answered between 50% and 75% correctly, and a good knowledge level if answered more than 75% correctly [10-13].

Results.

Of the studied 371 physicians, the majority 223 (60.1%) had less than five years in practice, while 12 (3.2%) had more than 20 practice years. For most of them 278 (74.9%), the primarily serve patients were from urban geographical regions and for 141 (38%) their primary practice takes place in the central region of Saudi Arabia. About 161 (43.4%) of the participants considered their primarily practice setting as a walk-in clinic (Table 1).

Table 2 demonstrates that most of the studied physicians 282 (76%) reported that the number of patients presenting to them with complaints of unilateral, acute or sudden-onset hearing loss, not as a result of cerumen impaction in the past 6 months

Table 1. *Distribution of studied participants according to work-related data, number of patients presenting with hearing loss, waiting time for patients with hearing loss till be seen by a specialist or till be referred (no.: 371).*

Variable	No. (%)
Years in practice	
<5	223 (60.1)
5 – 10 years	84 (22.6)
11 – 15 years	38 (10.2)
16 – 20 years	14 (3.8)
>20	12 (3.2)
Geographical region in which you primarily serve patients would be considered	
Rural	29 (7.8)
Suburban	64 (17.3)
Urban	278 (74.9)
Region where you primarily practice takes place	
Central region	141 (38)
Eastern region	88 (23.7)
North region	4 (1.1)
South region	48 (12.9)
Western region	90 (24.3)
Setting in which you primarily practice would be considered	
Academic Group or Team	76 (20.5)
Non-Academic Group or Tea	17 (4.6)
Solo practice	51 (13.7)
Urgent Care or Emergency Department	66 (17.8)
Walk-in clinic	161 (43.4)

Table 2. *Participants' practice and experience related to hearing loss (no.: 371).*

Variable	No. (%)
In the past 6 months, number of patients presenting to you with complaints of unilateral, acute or sudden-onset hearing loss, not as a result of cerumen impaction:	
<5	282 (76)
5 – 10	62 (16.7)
11 – 15	15 (4)
16 – 20	6 (1.6)
>20	6 (1.6)
In the past 12 months, typical wait-time for your patients to be seen by an otolaryngologist, referred for unilateral, sudden-onset hearing loss:	
≤ One week	108 (29.1)
1 – 4 weeks	92 (24.8)
1– 3 months	47 (12.7)
3 – 6 months	21 (5.7)
Greater than 6 months	8 (2.2)
Greater than 12 months	1 (0.3)
I don't know	94 (25.3)
Do you feel confident in administering and interpreting the results of tuning fork tests to differentiate between conductive hearing loss and sensorineural hearing loss?	
No	134 (36.1)
Yes	237 (63.9)
Do you feel comfortable interpreting a formal audiogram to differentiate between a conductive hearing loss and sensorineural hearing loss?	
No	158 (42.6)
Yes	213 (57.4)

was less than five patients. While only 6 (1.6%) reported the presentation of more than 20 patients. For 108 (29.1%) of the participants, the typical wait-time for patients to be seen by an otolaryngologist, referred for unilateral, sudden-onset hearing loss in the past 12 months was ≤ One week. While it ranged from 1-4 weeks for almost one quarter of patients 92 (24.8%). Most of participants 237 (63.9%) were confident in administering and interpreting the results of tuning fork tests to differentiate between conductive hearing loss and SNHL. At the same time, more than half 213 (57.4%) were feeling

Table 3. *Participants' knowledge about sudden sensorineural hearing loss (SSNHL) (no.: 371).*

Variable	No. (%)
According to your definition, sudden sensorineural hearing loss (SSNHL) is defined as hearing loss that can develop over a period of	
Less than 24 hours	105 (28.3)
48 hours	51 (13.7)
72 hours *	184 (49.6)
7 days	31 (8.4)
Which of the following referrals do you make upon presentation of suspected unilateral SSNHL?	
Lab work	68 (18.3)
CT	89 (24)
Neurology consultation	92 (24.8)
Emergency Department	79 (21.3)
MRI	83 (22.4)
Audiological evaluation *	262 (70.6)
Otolaryngology consultation *	279 (75.2)
In your practice, does unilateral, sudden-onset hearing loss warrant urgent referral for audiological testing?	
No	44 (11.9)
Yes *	327 (88.1)
In your practice, does unilateral SSNHL warrant urgent referral to otolaryngology?	
No	50 (13.5)
Yes *	321 (86.5)
When presented with unilateral, acute or sudden-onset hearing loss, do you attempt to differentiate between conductive and sensorineural hearing loss?	
No	89 (24)
Yes *	282 (76)
Do you use tuning fork tests to differentiate between conductive and sensorineural hearing loss?	
No	110 (29.6)
Yes *	261 (70.4)
When presented with unilateral, sudden-onset hearing loss, which of the following do you use to inform management decisions?	
Lab work	63 (17)
Audiological evaluation *	258 (69)
Tuning fork test(s) *	244 (65.8)
Case history *	274 (73.9)
Otoscopy *	239 (64.4)
As a family physician, which of the following pharmacologic agents do you prescribe as treatment when presented with suspected unilateral SSNHL, prior to confirmation with audiological testing?	
Corticosteroids *	138 (37.2)
Antivirals	39 (10.5)
Thrombolytics	18 (4.9)
Vasodilators	12 (3.2)
Other (e.g. antibiotics)	28 (7.5)
None of the above	29 (7.8)
I do not prescribe any pharmacologic agents when presented with suspected SSNHL	160 (43.1)
As a family physician, which of the following pharmacologic agents do you prescribe as treatment when presented with confirmed, unilateral SSNHL?	
Corticosteroids *	185 (49.9)
Antivirals	34 (9.2)
Thrombolytics	19 (5.1)
Vasodilators	19 (5.1)
Other (e.g. antibiotics)	26 (7)
Family physicians should not prescribe any treatment for SSNHL	120 (32.3)
None of the above	22 (5.9)
Which of the following topics do you include as part of counselling to patients presenting with unilateral SSNHL?	
Possible causes *	219 (59)
Available treatment options and associated risks/benefit *	160 (43.1)
Impact on Quality of Life *	169 (45.6)
Rehabilitation options (e.g. hearing aids) *	119 (32.1)
None of the above	23 (6.2)
I do not counsel patients presenting with SSNHL as I am rarely certain of the diagnosis upon initial presentation	70 (18.9)

*N.B.: * = Correct answer.*

comfortable interpreting a formal audiogram to differentiate between a conductive hearing loss and SNHL.

Participants' responses to knowledge items about sudden SSNHL are illustrated in (Table 3). It was found that almost half of the participants 184 (49.6%) correctly knew that sudden SSNHL is defined as hearing loss that can develop over a period of 72 hours. The majority 262 (70.6%) and 279 (75.2%)) correctly make audiological evaluation referral and otolaryngology consultation referral upon presentation of suspected unilateral SSNHL respectively. Of them, 327 (88.1%) of them agreed that unilateral, sudden-onset hearing loss warrant urgent referral for audiological testing and 321 (86.5%) agreed that unilateral SSNHL warrant urgent referral to otolaryngology. Of them, 282 (76%) attempt to differentiate between conductive and sensorineural hearing loss when the patient is presented with unilateral, acute or sudden-onset hearing loss. While 261 (70.4%) use the tuning fork tests to differentiate between conductive and sensorineural hearing loss. When asked if the patient is presented with unilateral, sudden-onset hearing loss, the most commonly reported measures used to inform management decisions were case history 274 (73.9%), audiological evaluation 258 (69%), tuning fork test(s) 244 (65.8%) and otoscopy 239 (4.4%). About 138 (37.2%) of the participants reported prescribing Corticosteroids as treatment when a patient is presented with suspected unilateral SSNHL, prior to confirmation with audiological testing. While 185 (49.9%) would prescribe the same treatment when presented with confirmed, unilateral SSNHL. The participants were asked about topics included as part of counselling to patients presenting with unilateral SSNHL. The most reported topics

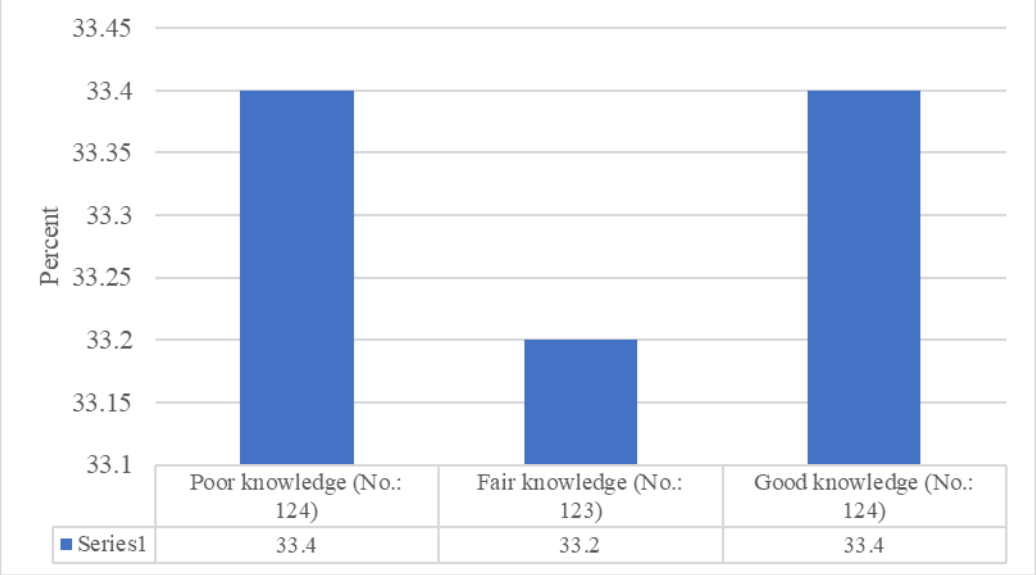

Figure 1. *Percentage distribution of knowledge level about sensorineural hearing loss (SSNHL) (no.: 371).*

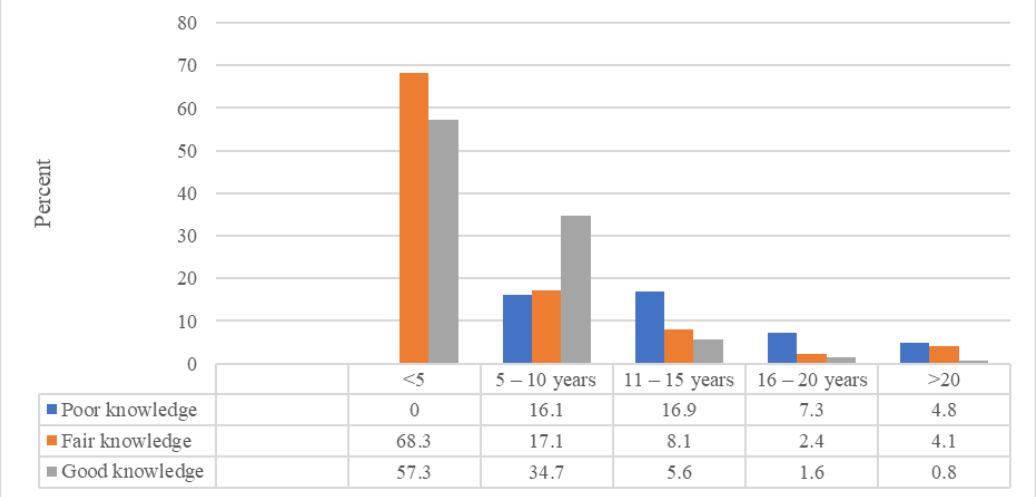

Figure 2. *Relationship between knowledge level about SSNHL and years in practice (no.: 371).*
N.B.: ($\chi 2$ = 32.18, p-value = ***<0.001****)*

Table 4. *Knowledge score about sudden sensorineural hearing loss (SSNHL) (no.: 371).*

Variable	
Knowledge Score (lowest possible score = 0, maximum possible score = 17)	
Minimum	1
Maximum	17
Mean	10.58
Standard deviation	3.85

Table 5. *Relationship between knowledge level about SSNHL and participants' work-related data, number of patients presenting with hearing loss, waiting time for patients with hearing loss till be seen by a specialist or till be referred (no.: 371).*

Variable	**Knowledge level**			**χ2**	**p-value**
	Poor knowledge No. (%)	**Fair knowledge No. (%)**	**Good knowledge No. (%)**		
Years in practice					
<5	68 (54.8)	84 (68.3)	71 (57.3)	32.18	**<0.001**
5 – 10 years	20 (16.1)	21 (17.1)	43 (34.7)		
11 – 15 years	21 (16.9)	10 (8.1)	7 (5.6)		
16 – 20 years	9 (7.3)	3 (2.4)	2 (1.6)		
>20	6 (4.8)	5 (4.1)	1 (0.8)		
Geographical region in which you primarily serve patients would be considered					
Rural	16 (12.9)	7 (5.7)	6 (4.8)	16.47	**<0.001**
Suburban	40 (32.3)	19 (15.4)	5 (4)		
Urban	68 (54.8)	97 (78.9)	113 (91.1)		
Setting in which you primarily practice would be considered					
Academic Group or Team	19 (15.3)	22 (17.9)	35 (28.2)	30.64	**<0.001**
Non-Academic Group or Tea	10 (8.21)	5 (4.1)	2 (1.6)		
Solo practice	18 (14.5)	20 (16.3)	13 (10.5)		
Urgent Care or Emergency Department	22 (17.7)	34 (27.6)	10 (8.1)		
Walk-in clinic	55 (44.4)	42 (34.1)	64 (51.6)		
In the past 6 months, number of patients presenting to you with complaints of unilateral, acute or sudden-onset hearing loss, not as a result of cerumen impaction:					
<5	90 (72.6)	100 (81.3)	92 (74.2)	19.67	**0.012**
5 – 10 years	18 (14.5)	14 (11.4)	30 (24.2)		
11 – 15 years	9 (7.3)	5 (4.1)	1 (0.8)		
16 – 20 years	4 (3.2)	1 (0.8)	1 (0.8)		
>20	3 (2.4)	3 (2.4)	0 (0.0)		
In the past 12 months, typical wait-time for your patients to be seen by an otolaryngologist, referred for unilateral, sudden-onset hearing loss:					
≤ One week	40 (32.3)	45 (36.6)	23 (18.5)	14.2	**0.001**
1 – 4 weeks	26 (21)	26 (21.1)	40 (32.3)		
1– 3 months	12 (9.7)	7 (5.7)	28 (22.6)		
3 – 6 months	9 (7.3)	7 (5.7)	5 (4)		
Greater than 6 months	4 (3.2)	1 (0.8)	3 (2.4)		
Greater than 12 months	1 (0.8)	0 (0.0)	0 (0.0)		
I don't know	32 (25.8)	37 (30.1)	25 (20.2)		
Region where you primarily practice takes place					
Central region	29 (23.4)	36 (29.3)	76 (61.3)	11.98	**<0.001**
Eastern region	24 (19.4)	44 (35.8)	20 (16.1)		
North region	3 (2.4)	0 (0.0)	1 (0.8)		
South region	29 (23.4)	18 (14.6)	1 (0.8)		
Western region	39 (31.5)	25 (20.3)	26 (21)		

were possible causes 219 (59%), impact on quality of life (169: 45.6%), available treatment options and associated risks/ benefits 160 (43.1%) and rehabilitation options (e.g. hearing aids) 119 (32.1%).

The mean knowledge score about SSNHL was 10.58 ± 3.85 (Table 4). And based on the knowledge score classification, 124 (33.4%) of studied physicians had good knowledge, 123 (33.2%) had fair knowledge, while 124 (33.4%) had poor knowledge (Figure 1).

Table 5 and Figure 2 show that the prevalence of good knowledge about SNHL was significantly higher among participants with the shortest duration of years in practice (<5 years) (71 (57.3%)), who primarily serve patients from urban geographical region 113 (91.1%), and who consider their primarily practice Setting is a Walk-in clinic 64 (51.6%) (p=<0.05). At the same time, good knowledge was significantly higher among participants who had less than five patients presented to them with complaints of unilateral, acute or sudden-onset hearing loss, not as a result of cerumen impaction in the past 6 months 92 (74.2%) (p=<0.05). The same significant association was observed between knowledge level and waiting time till being seen by an otolaryngologist, referred for unilateral, sudden-onset hearing loss (p=<0.05). It was also revealed that good knowledge was significantly higher among participants whose primary practice takes place in the central region of Saudi Arabia 76 (61.3%) (p=<0.05).

Discussion.

Sudden Sensorineural Hearing Loss (SSNHL) is a medical emergency that requires urgent intervention. The diagnostic and treatment decisions made by primary healthcare providers (PCPs) are crucial for improving clinical outcomes, enhancing patient health, and ensuring adherence to evidence-based standards for managing the condition [14,15]. This study aimed to assess how primary healthcare physicians in Saudi Arabia diagnose and manage SSNHL cases.

The current study found that although primary care providers were aware that SSNHL is a medical emergency requiring urgent treatment, the majority were unable to recognize it immediately. Only 184 (49.6%) could accurately define the condition within the critical 72-hour window, while most were unaware of this golden period. A significant proportion of participants (282, 76%) attempted to determine whether the hearing loss was conductive or sensorineural when patients presented with unilateral, acute, or sudden-onset hearing loss. This initial, rapid, and crucial step in SSNHL management is particularly important for patients with indistinguishable SNHL [16].

Furthermore, distinguishing between sensorineural and conductive hearing loss is a crucial first step for primary healthcare providers in managing sudden hearing loss, as each requires a different treatment approach. Our study found that a significant majority of participants (261, 70.4%) used tuning fork tests (TFTs) to differentiate between conductive and sensorineural hearing loss. Similarly, studies by Ma et al. [17] and Bayoumy et al. [18] supported this finding, reporting TFTs as the preferred method for the initial evaluation of unilateral sudden hearing loss. Referring physicians are expected to recognize SSNHL during the initial visit, rule out conductive hearing loss, and promptly refer the patient to an otolaryngologist.

The current study revealed that when faced with suspected unilateral SSNHL, the majority of primary care providers made appropriate referral decisions, including audiological evaluation (262, 70.6%) and otolaryngology consultation (279, 75.2%). These were the correct choices in cases where no immediate treatment could be provided. Only a minority of primary care providers ordered unnecessary tests. The study observed that about 138 (37.2%) of the primary care providers administered corticosteroids without first consulting an otolaryngologist, suggesting that they had established that the hearing loss was sensorineural; an intervention aimed at enhancing patients' hearing recovery. Nearly half of the primary care providers (185, 49.9%) reported administering corticosteroids for confirmed unilateral SSNHL. This suggests that not all participants were aware of the potential benefits of this therapy in the initial management of SSNHL. While the study by Conlin and Parnes found no statistically significant benefits associated with corticosteroid use, their administration and the decision for immediate referral to an otolaryngologist depend on the referring physician's judgment in cases of SSNHL [19]. The majority of primary care providers did not prescribe any pharmacologic agents for suspected unilateral SSNHL, believing it could resolve spontaneously. This aligns with Mattox and Simmons' assertions that approximately 32–65% of cases recover spontaneously [20].

The most commonly reported measures that need to be considered in management decisions were case history (274, 73.9%), audiological evaluation (258, 69%), tuning fork tests (244, 65.8%), and Otoscopy (239, 64.4%). This may be attributed to the fact that primary care providers do not frequently encounter cases of sudden hearing loss, limiting their opportunities to perform these tests regularly and maintain their skills. Regarding knowledge of SSNHL, nearly one-third of the physicians (124, 33.4%) had good knowledge, 123 (33.2%) had fair knowledge, and 124 (33.4%) had poor knowledge. This highlights an overall insufficient knowledge level among primary care providers, emphasizing the need for enhanced training and education to improve diagnostic and therapeutic decision-making and ensure adherence to standard SSNHL management guidelines.

The limitations of this study were carefully considered when interpreting the findings. Considering the limited sample size and the fact that majority of the primary care providers had fewer than five years of relevant experience, it is important to note that not all responses may reflect the expert management practices of all primary healthcare physicians in Saudi Arabia.

Conclusion.

Healthcare physicians should consider SSNHL as a medical emergency require rapid diagnosis to improve patient recovery because these conditions require immediate intervention. The study found that, while most Saudi physicians recognize SSNHL as an urgent condition, their knowledge and practices differ significantly. To properly manage patients, doctors must

differentiate SSNHL from conductive hearing loss at the initial assessment using standard clinical methods such as tuning forks and audiology tests before prescribing corticosteroids and referring them to otolaryngology. Continuous education and training must be implemented immediately in order to increase physician confidence and expand evidence-based SSNHL management throughout primary care.

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