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# TOWARD BETTER COMMUNICATION FOR PATIENTS WITH HEARING IMPAIRMENT IN COMMUNITY PHARMACIES: RESULTS OF A QUESTIONNAIRE

Contributions:  
A Study design/planning  
B Data collection/entry  
C Data analysis/statistics  
D Data interpretation  
E Preparation of manuscript  
F Literature analysis/search  
G Funds collection

Weronika Chodkowska\*<sup>1AC-E</sup> , Magdalena B. Skarzyska\*<sup>2,3,4A-CFG</sup> 

\* These authors contributed equally.

<sup>1</sup> Pharmaceutical Department, Medical University of Warsaw, Poland

<sup>2</sup> Institute of Sensory Organs, Kajetany, Poland

<sup>3</sup> Pharmacotherapy and Pharmaceutical Care, Medical University of Warsaw, Poland

<sup>4</sup> Clinical Trials Department, Center of Hearing and Speech, Warsaw, Poland

**Corresponding author:** Magdalena B. Skarzyska, Institute of Sensory Organs,  
Mokra 1, Kajetany, 05-830 Nadarzyn, Poland; email: m.skarzyska@csim.pl

## Abstract

**Introduction:** People with hearing impairment may experience communication barriers in healthcare, which can reduce understanding of medication instructions and compromise patient safety. Community pharmacies are highly accessible, yet routine verbal counseling may be insufficient for patients with hearing impairment.

**Aim:** To assess communication experiences of patients with hearing impairment in community pharmacies, including perceived communication quality, understanding of pharmacist-provided information, availability of communication aids, and perceived accessibility of support options.

**Material and methods:** We conducted an anonymous, paper-based cross-sectional survey among adults with hearing impairment ( $N = 41$ ) between March and May 2025. The 17-item questionnaire was developed from the literature and refined through expert review and patient feedback for clarity and face validity. Participants were recruited by community pharmacists using convenience sampling. Descriptive statistics are reported as  $n$  [%]. Associations were tested using chi-square or Fisher's exact tests with Cramér's  $V$ . Ordinal logistic regression explored factors associated with reported understanding and accessibility practices.

**Results:** Pharmacists' communication skills were rated high/very high by 56.1% ( $n = 23$ ). However, 51.2% ( $n = 21$ ) reported that pharmacists did not use communication aids adapted to hearing-impaired patients, and medication information was not fully adapted in 78.0% ( $n = 32$ ). Communication difficulties were experienced at least occasionally by 46.3% ( $n = 19$ ). Although 75.6% ( $n = 31$ ) had the opportunity to ask additional questions, only 2.4% ( $n = 1$ ) reported being asked about a preferred communication method. Sign language support was rarely available (92.7% never met a pharmacist able to use sign language;  $n = 38$ ). Greater adaptation of medication-related information was associated with clearer instructions (adjusted OR = 3.47, 95% CI 1.14–10.62;  $p = 0.029$ ), and greater use of communication aids was associated with better understanding of pharmacist-provided information (adjusted OR = 12.24, 95% CI 1.99–75.49;  $p = 0.007$ ).

**Conclusions:** Despite generally positive ratings of pharmacists' communication skills, important accessibility gaps persist in community pharmacies. Routine use of written/visual aids, asking about preferred communication methods, and teach-back to confirm understanding may improve inclusive, patient-centered counseling for people with hearing impairment.

**Keywords:** hearing loss • community pharmacy • accessibility • pharmacist–patient communication • medication counseling

## W KIERUNKU LEPSZEJ KOMUNIKACJI Z PACJENTAMI Z NIEDOSŁUCHEM W APTEKACH LOKALNYCH: WYNIKI ANKIETY

### Streszczenie

**Wprowadzenie:** Osoby z niedosłuchem (różnego stopnia) mogą doświadczać barier komunikacyjnych w opiece zdrowotnej, co może ograniczać zrozumienie zaleceń dotyczących stosowania leków. Apteki są palcówkami z reguły łatwo dostępnymi dla pacjentów, jednak dla pacjentów z niedosłuchem rutynowo stosowana komunikacja werbalna może być niewystarczająca.

**Cel:** Celem badania była ocena doświadczeń komunikacyjnych pacjentów z niedosłuchem w aptekach ogólnodostępnych, w tym postrzeganej jakości komunikacji, zrozumienia informacji przekazywanych przez farmaceutów oraz dostępności pomocy komunikacyjnych.

**Materiał i metody:** Anonimowe badanie zostało przeprowadzone wśród dorosłych osób z niedosłuchem ( $N = 41$ ) w okresie od marca do maja 2025 roku. Kwestionariusz zawierał 17 pytań i opracowano go na podstawie literatury, a następnie dopracowano po ocenie eksperckiej oraz po otrzymaniu informacji zwrotnych od pacjentów w celu poprawy jasności i trafności pytań. Uczestników rekrutowali farmaceuci pracujący w aptekach ogólnodostępnych. Statystyki opisowe przedstawiono jako [%].

**Wyniki:** Umiejętności komunikacyjne farmaceutów zostały ocenione jako wysokie lub bardzo wysokie przez 56,1% respondentów ( $n = 23$ ). Jednocześnie 51,2% badanych ( $n = 21$ ) zgłosiło, że farmaceuci nie stosowali pomocy komunikacyjnych dostosowanych do pacjentów z niedosłuchem, a informacje dotyczące leków nie były w pełni dostosowane w przypadku 78,0% respondentów ( $n = 32$ ). Zdecydowana większość respondentów – 75,6% ( $n = 31$ ) – miała możliwość zadawania dodatkowych pytań, jednak tylko 2,4% ( $n = 1$ ) wskazało, że zapytano ich o preferowaną metodę komunikacji. Wsparcie w języku migowym było rzadko dostępne – 92,7% badanych nigdy nie spotkało farmaceuty potrafiącego posługiwać się językiem migowym ( $n = 38$ ). Większe dostosowanie do potrzeb odbiorcy informacji na temat leków sprawiło, że instrukcje były jaśniejsze, a efektem stosowania pomocy komunikacyjnych było lepsze zrozumienie informacji przekazywanych przez farmaceutę.

**Wnioski:** Pomimo ogólnie pozytywnych ocen odnośnie umiejętności komunikacyjnych farmaceutów, w aptekach ogólnodostępnych nadal występują istotne luki w zakresie dostępności. Rutynowe stosowanie form komunikacji niewerbalnej (informacji pisemnych i wizualnych) oraz pytanie pacjentów o preferowane metody komunikacji w celu potwierdzenia zrozumienia informacji mogą poprawić jakość konsultacji farmaceutycznych w przypadku osób z niedosłuchem.

**Słowa kluczowe:** niedosłuch • apteka lokalna • dostępność • komunikacja farmaceuta–pacjent • poradnictwo farmaceutyczne

## Introduction

Hearing loss is a prevalent condition that can affect communication, access to healthcare, and treatment outcomes, and its global burden is increasing, especially in older adults [1,2]. Communication barriers in healthcare settings may lead to misunderstanding of recommendations, reduced adherence, and increased risk of medication-related problems and errors [3,4]. These issues are particularly important in community pharmacies, where pharmacists play a key role in patient education and medication safety.

Community pharmacies are among the most accessible healthcare facilities. However, routine verbal counseling may be insufficient for patients with hearing impairment, especially in noisy environments or when patients rely on hearing aids, cochlear implants, lip-reading, or written communication. Communication support tools (e.g., written instructions, pictograms, graphic aids, and teach-back techniques) may improve the clarity of counseling and reduce the risk of medication-related problems [5–8]. Evaluating patient-reported experiences can identify gaps in accessibility and support improvements in patient-centered pharmaceutical care for hearing-impaired individuals.

The aim of this study was to assess communication experiences of patients with hearing impairment in community pharmacies, including perceived communication quality, understanding of pharmacist-provided information, availability of communication aids, and perceived accessibility of support options.

## Material and methods

Ethics approval was obtained from the Bioethics Committee (IFPS: KB/Statement No. 2/2025). We conducted a non-invasive, anonymous, paper-based, cross-sectional survey for patients who suffered from hearing impairment and/or were users of hearing aids and/or hearing implants. Patients fill in a questionnaire when they visited participating community pharmacies. The questionnaires were distributed and collected by pharmacists. Data was collected between March and April 2025.

The 17-item questionnaire was developed specifically for this study based on a literature review on communication barriers in pharmacy services for hearing-impaired individuals. Items covered: (1) perceived quality of pharmacist communication, (2) comprehension of counseling and medication instructions, (3) availability of communication support tools, and (4) pharmacy-level accessibility and service improvement needs. Ordinal response options were used to minimize respondent burden and facilitate completion in routine pharmacy settings (estimated completion time 5–7 minutes). The draft instrument underwent expert review and patient feedback to assess clarity and face validity, and minor wording refinements were made before field use. In the end, 41 patients filled in the questionnaire.

## Statistical analysis

Descriptive statistics were summarized as counts ( $n$ ) and percentages (%). For multiple-choice questions, results were reported as the number of selections. Inferential analyses were conducted in a hypothesis-driven manner, based on predefined research questions concerning the relationship between communication accessibility practices and patient-reported outcomes. Specifically, we examined whether (i) the use of communication aids was associated with better understanding of pharmacist-provided information, and (ii) the adaptation of medication-related information was associated with clearer medication instructions. The models included understanding of pharmacist-provided information (Q4) and clarity of medication instructions (Q11) as outcome variables, with communication aids (Q3) and adaptation of medication information (Q8) as main predictors, respectively. All models were adjusted for age group. Results are presented as odds ratios (ORs) with 95% confidence intervals (CIs). Secondary, exploratory analyses were conducted to assess associations between selected categorical variables using the chi-square test of independence or Fisher's exact test when cell counts were  $<5$ . Effect sizes were reported using Cramér's  $V$ . Internal consistency of the 6-item communication accessibility scale (Q3, Q4, Q5, Q8, Q10, Q11; coded 0–2) was assessed using Cronbach's alpha.

**Table 1.** Participant profiles and pharmacy use ( $n = 41$ )

Characteristic	<i>n</i>	[%]
Age 18–44 years	18	44
Age 45–59 years	9	22
Age 60–74 years	7	17
Age 75–79 years	6	15
Age >80 years	1	2
Hearing aid user ( $n = 38$ ): Yes	17	45
Hearing aid user ( $n = 38$ ): No	21	55
Hearing implant user ( $n = 35$ ): Yes	12	34
Hearing implant user ( $n = 35$ ): No	23	66
Pharmacy visit: once a week	10	24
Pharmacy visit: once a month	22	54
Pharmacy visit: less often	9	22

Note: Numbers differ for hearing aid ( $n = 38$ ) and hearing implant ( $n = 35$ ) users due to missing responses

A  $p$ -value  $<0.05$  was considered statistically significant. Analyses were performed using Statistica v. 13.3.

## Results

### Participants

Most respondents reported visiting a community pharmacy once a month (54%,  $n = 22$ ) or once a week (24%,  $n = 10$ ) (Table 1).

Pharmacists' communication skills were rated as high or very high by 56% of participants ( $n = 23$ ). However, 46% ( $n = 19$ ) reported experiencing communication difficulties at least occasionally, indicating that positive interpersonal ratings do not necessarily reflect fully accessible communication.

More than half of respondents (51%,  $n = 21$ ) reported that pharmacists did not use communication aids adapted to hearing-impaired patients. Medication-related information was not fully adapted in 78% of cases (no/partly yes;  $n = 32$ ). Although 76% ( $n = 31$ ) of participants declared that they had the opportunity to ask additional questions, only 2% ( $n = 1$ ) reported being asked about their preferred communication method. Sign language communication was rarely available, with 93% ( $n = 38$ ) reporting no access (Table 2, Figure 1).

### Available communication forms and suggested improvements

The most commonly available communication support was written material (brochures; 74%). Other solutions, such as pictograms, induction loop systems, and digital tools, were infrequently reported. Participants most frequently indicated that additional pharmacist training (29%) and communication-supporting technologies (28%) were needed to improve accessibility (Table 3).

Greater adaptation of medication-related information (Q8) was significantly associated with clearer and more

understandable medication instructions (Q11) in an ordinal logistic regression adjusted for age group (OR = 3.47, 95% CI: 1.14–10.62;  $p = 0.029$ ).

Similarly, greater use of communication aids (Q3) was significantly associated with better understanding of pharmacist-provided information (Q4) (OR = 12.24, 95% CI: 1.99–75.49;  $p = 0.007$ ) (Table 4).

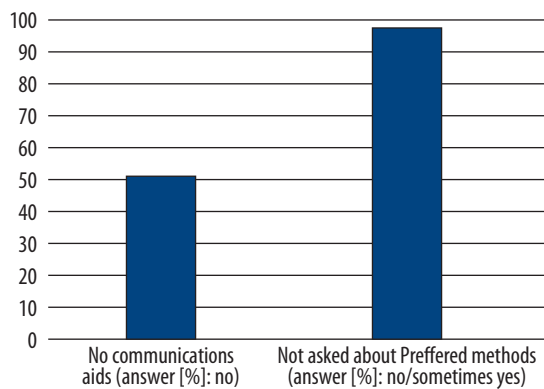
Secondary exploratory analyses examining associations between selected variables and communication difficulties did not demonstrate consistent statistically significant relationships.

## Discussion

Communication accessibility remains a critical yet under-addressed component of pharmaceutical care for hearing-impaired individuals. While community pharmacists are often the most accessible healthcare professionals, effective counseling requires not only interpersonal competence but also structured strategies that ensure information is delivered in an accessible format and understood by the patient. In our study, respondents generally rated pharmacists' communication skills positively; however, the results simultaneously reveal substantial accessibility gaps in routine community pharmacy counseling. This discrepancy suggests that patients may perceive pharmacists as polite, engaged, or helpful, while still experiencing structural barriers that limit the accessibility and safety of medication-related communication. Similar challenges have been described in qualitative work among hospital pharmacists, who reported uncertainty regarding optimal communication approaches and emphasized the need for structured tools and training to support interactions with hearing-impaired patients [9]. A pharmacist-focused needs assessment likewise demonstrated gaps in communication competencies and highlighted the importance of targeted education to improve patient-centered care for hearing-impaired individuals [10].

**Table 2.** Communication experience and accessibility support in community pharmacies (n = 41)

Question	No [%]	Sometimes yes [%]	Yes [%]		
Q3. Communication aids used	51.2	36.6	12.2		
Q4. Understand pharmacist information	7.3	31.7	61.0		
Q5. Opportunity to ask questions	2.4	22.0	75.6		
Q8. Medication information adapted	24.4	53.6	22.0		
Q9. Information about support options	61.0	21.9	17.1		
Q10. Asked about preferred method	73.2	24.4	2.4		
Q11. Clear medication instructions	7.3	34.1	58.5		
Q12. Sign language available	92.7	4.9	2.4		
	<b>Very low [%]</b>	<b>Low [%]</b>	<b>Average [%]</b>	<b>High [%]</b>	<b>Very high [%]</b>
Q2. Communication skills	2.4	7.3	34.1	41.5	14.6
	<b>Very often [%]</b>	<b>Often [%]</b>	<b>Occasionally [%]</b>	<b>Rarely [%]</b>	<b>Never [%]</b>
Q7. Communication difficulties	7.3	22.0	17.1	39.0	14.6
	<b>No [%]</b>	<b>Partly yes [%]</b>	<b>Yes [%]</b>		
Q16. Understanding patient needs	20.0	45.0	35.0		



**Figure 1.** Key communication accessibility gaps reported by participants

Our findings align with and extend community pharmacy evidence indicating that hearing-impaired individuals experience unmet needs and barriers when accessing pharmacy services, including limitations in counseling quality, privacy, and accessible delivery of information [5]. In our study, communication aids such as written notes, pictograms, or graphic support were not routinely implemented, and medication information was frequently only partially adapted to the needs of hearing-impaired patients. Importantly, these accessibility gaps were not merely descriptive: our analyses demonstrated that accessibility-related practices were meaningfully associated with patient-reported outcomes. The greater use of communication aids, the better understanding of pharmacist-provided information, and the better adaptation of medication information was associated with clearer medication instructions. These findings provide quantitative support for conceptualizing accessible communication strategies as quality indicators of pharmaceutical care rather than optional additions to counseling. This is consistent with prospective observations from community pharmacy settings

showing that communication adaptation remains an important and often insufficiently addressed component of pharmaceutical counseling for hearing-impaired patients [11].

From a patient safety perspective, communication barriers may increase the likelihood of medication-related problems, particularly when counseling relies heavily on verbal instructions delivered in time-limited and potentially noisy environments. For hearing-impaired patients, insufficient adaptation of information may translate into misunderstanding of dosing regimens, missed contraindications, or failure to recognize key safety warnings. A systematic review and meta-analysis of communication between healthcare professionals and patients with hearing loss emphasized that communication barriers are common and can negatively affect patient understanding and care outcomes, reinforcing the need for structured approaches to improve accessibility [3]. This concern is further supported by broader evidence that individuals with sensory impairment face barriers to safe and effective medication use, including challenges in receiving and interpreting medicine-related information [4]. In addition, the global burden of hearing loss continues to increase, particularly in older adults, making communication accessibility in frontline healthcare services increasingly relevant [1,2].

A notable and clinically relevant finding in our study was the limited availability of sign language communication in community pharmacies. Most respondents reported that sign language support was not available, which significantly restricts access to counseling for patients who rely on sign language as their preferred method of communication. At the same time, pharmacists rarely ask patients about their preferred communication method, indicating limited personalization of counseling. This is an important service design gap according to other authors too [7]. Similarly, studies exploring barriers and facilitators in community pharmacy settings have described

**Table 3.** Multiple-choice items: available communication forms and suggested improvements (multiple selections)

Question	Answer	[%]
Q6. Available communication forms	Brochures	74.5
	Induction loop stations	10.6
	Pictograms	6.4
	Information displays	4.3
	Mobile applications	2.1
	Other	2.1
Q13. Suggested improvements	Additional training	28.8
	Mobile applications	27.5
	Graphic materials	16.3
	Sign language knowledge	11.3
	Induction loops	11.3
	Pictograms	5.0

**Table 4.** Hypothesis inferential analyses

Hypothesis	Model/Test	Result	p-value
Communication aids and understanding	Q3 → Q4 (adjusted for age)	OR = 12.24 (95% CI 1.99–75.49)	0.007
Adapted information and clarity	Q8 → Q11 (adjusted for age)	OR = 3.47 (95% CI 1.14–10.62)	0.029

environmental and workflow-related obstacles, including time pressure, lack of training, and limited access to tailored communication tools [6]. The results of our study suggest that low-cost, scalable interventions could be prioritized to improve accessibility without requiring extensive structural changes. Additionally, pharmacies may implement standardized prompts in workflow (e.g., “Do you prefer written or oral communication?”) and provide visible information about available support options (e.g., written counseling, quiet consultation areas, communication cards). Such approaches are consistent with patient-centered care principles and align with calls for targeted training and structured communication support identified in pharmacist-focused studies [9,10]. Moreover, digital communication supports – including mobile applications, electronic written instructions, or pharmacy-based visual displays – may offer feasible solutions, particularly when staff are not proficient in sign language [6,10].

Several limitations should be acknowledged. First, the study was conducted in a relatively small sample ( $n = 41$ ), which may limit generalizability and reduce statistical power to detect associations, particularly in subgroup analyses. Second, the questionnaire-based design may be subject to self-report bias, and some response categories included low counts, requiring Fisher’s exact testing in selected analyses. Additionally, several items demonstrated floor or ceiling effects (e.g., sign language availability), which may limit variability and reduce the ability to detect subgroup differences. Despite these limitations, this study provides actionable patient-reported evidence that highlights specific gaps in community

pharmacy communication accessibility and identifies practical strategies for service improvement. Future multi-site studies with larger and more diverse samples are needed to validate these findings, evaluate structured interventions, and support the development of standardized measures for communication accessibility in pharmacy practice.

## Conclusions

Despite generally positive ratings of pharmacists’ communication skills, important accessibility gaps remain in community pharmacy counseling for hearing-impaired patients: communication aids and medication information adapted to patients’ needs are not routinely provided, sign language communication is rarely available, and pharmacists seldom ask patients about their preferred communication method. These findings suggest that improving the standardized use of written/visual aids and structured communication support may enhance medication safety and patient-centered pharmaceutical care.

## Declaration



The authors declare no conflict of interest. The data supporting the findings of this study are available from the corresponding author upon reasonable request.

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## References

1. World Health Organization. World Report on Hearing. Geneva: World Health Organization; 2021. Available from: <https://www.who.int/publications/i/item/world-report-on-hearing> [Accessed 20.01.2026].
2. Van Camp G, Van Eyken E, Van Laer L. The complexity of age-related hearing impairment: contributing environmental and genetic factors. *Audiol Neurootol*, 2007; 12(6): 345–58. <https://doi.org/10.1159/000106478>
3. Weerapol N, Leelakanok N. Communication between healthcare professionals and patients with hearing loss: a systematic review and meta-analysis. *Am J Health Syst Pharm*, 2024; 81(12): 521–30. <https://doi.org/10.1093/ajhp/zxae045>
4. Wook L, Kwak N. Barriers to safe and effective medication for individuals with sensory impairment: a systematic literature review. *J Pharm Soc Korea (Yakhak Hoeji)*, 2023; 67(2): 103–17. <https://doi.org/10.17480/psk.2023.67.2.103>
5. Lim T, Tsai M, Reyes A, Kapanen A, D'Amato F. Deaf, deaf-blind, and hard of hearing needs and perceptions of community pharmacy services. *Can Pharm J (Ott)*, 2025; 158(2): 90–97. <https://doi.org/10.1177/17151635241291863>
6. Thomas S, Griffiths J, Saunders G, Phipps D, Todd C, Lewis P. Exploring the barriers and facilitators to effective communication with people with age-related hearing loss in community pharmacy settings. *Explor Res Clin Soc Pharm*, 2025; 19: 100573. <https://doi.org/10.1016/j.rcsop.2025.100573>
7. Ferguson MC, Liu M. Communication needs of patients with altered hearing ability: informing pharmacists' patient care services through focus groups. *J Am Pharm Assoc (2003)*, 2015; 55(2): 153–60. <https://doi.org/10.1331/JAPhA.2015.14147>
8. Ferguson MC, Shan L. Survey evaluation of pharmacy practice involving deaf patients. *J Pharm Pract*, 2016; 29(5): 461–66. <https://doi.org/10.1177/0897190015592750>
9. Alorfi NM, Alshehri FS, Ashour AM, Wali SM, Almuzaini OK, Ainousah BE, et al. Hospital pharmacists' perspectives on communicating with hearing-impaired patients in pharmacy settings: a qualitative study. *Int J Gen Med*, 2025; 18: 5989–94. <https://doi.org/10.2147/IJGM.S556005>
10. Al Aloom N, Alanazi M, Alotaibi N, Alwhaibi M. Pharmacists' communication skills with deaf and hard of hearing patients: a needs assessment. *PLoS One*, 2023; 18(6): e0286537. <https://doi.org/10.1371/journal.pone.0286537>
11. Chodkowska W, Skarżyńska M. Communication between a pharmacist and a patient with hearing loss in a community pharmacy: prospective, non-invasive questionnaire study. *Prospect Pharm Sci*, 2025. <https://doi.org/10.56782/pps.790>

Weronika Chodkowska, email: [chodkowska.wer@gmail.com](mailto:chodkowska.wer@gmail.com) •  0009-0008-6117-7922  
 Magdalena B. Skarzynska, email: [m.skarzynska@csim.pl](mailto:m.skarzynska@csim.pl) •  0000-0003-3340-1698