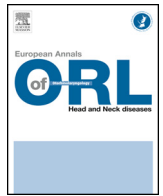




Available online at  
**ScienceDirect**  
[www.sciencedirect.com](http://www.sciencedirect.com)

Elsevier Masson France  
**EM|consulte**  
[www.em-consulte.com/en](http://www.em-consulte.com/en)



Original article

# Impact of a multimedia support on the understanding of medical information by hearing-impaired patients before cochlear implantation

C.-E. Rouf<sup>a</sup>, E. Lescanne<sup>a,b</sup>, A. Villeneuve<sup>a</sup>, K. Reffet<sup>a</sup>, S. Kim<sup>a,b</sup>, D. Bakhos<sup>a,b,\*</sup>

<sup>a</sup> Service ORL et chirurgie cervico-faciale, CHU de Tours, 2, boulevard Tonnellé, 37000 Tours, France

<sup>b</sup> Service ORL et CCF, ENT department, université François-Rabelais de Tours, CHRU de Tours, UMR-S930, 2, boulevard Tonnellé, 37000 Tours, France

## ARTICLE INFO

### Keywords:

Cochlear implant  
Memorization  
Medical information  
Multimedia  
Hearing loss

## ABSTRACT

**Introduction:** The medical information provided in medical consultations is exhaustive but poorly assimilated by patients and relatives. Hearing loss seems to be a further obstacle. The main objective of this study was to compare medical information about cochlear implantation delivered in oral and written form (“standard” group) versus oral, written and digital form (“multimedia” group). The secondary objective was to assess hearing loss as a negative factor for understanding medical information, by comparing understanding in patients with unilateral versus bilateral profound hearing loss.

**Patients and method:** A prospective single-center single-blind study was carried out from September 29, 2015 to June 22, 2016. Twenty-nine CI candidates were included: 11 in the “standard” group, 12 in the “multimedia” group and 6 in the “unilateral hearing loss” group. The primary endpoint was the result on a validated questionnaire (score from 0 to 14) assessing memorization of medical information. Patient satisfaction regarding the information delivered was assessed on a Likert scale.

**Results:** Memorization scores were  $4.6 \pm 2.7$  and  $9.7 \pm 2.4$  respectively for the “standard” and the “multimedia” group ( $P=0.0006$ ) and  $9.05 \pm 1.9$  for the “unilateral hearing loss” group. Comparison between the “standard” and “unilateral hearing loss” groups showed a significant difference ( $P=0.01$ ). Satisfaction scores were highest for digital compared to the other forms of medical information delivery.

**Conclusion:** This study showed that a digital support improved understanding of medical information by candidates for cochlear implantation and that hearing loss was an obstacle to understanding medical information.

© 2017 Elsevier Masson SAS. All rights reserved.

## 1. Introduction

The right to medical information has been strengthened over recent years by developments in patients’ mentalities, notably in developed countries, followed up by changes in jurisprudence and legislation. The physician has a duty of information toward the patient, defined in article R4127-35 of the French Public Health Code as modified by the Decree of May 7, 2012 [1]: “The physician has a duty to provide the person, he or she examines, treats or advises with honest, clear and appropriate information regarding the patient’s health status and the investigations and treatments proposed”. This information improves the doctor-patient relationship. It aims to enable the patient to give free informed consent, especially in case of surgery. Information regarding the

surgical procedure is delivered in medical consultation in the form of oral discourse and of a written form drawn up by experts in the specialty, such as the head and neck surgery information sheets published by the French College of ENT and head and neck surgery teachers. The information covers the principles, risks, complications and alternatives regarding surgery and also helps explain the consequences of not implementing surgical treatment.

The patient’s understanding and memorization of the risks of surgery after this medical information has been delivered, have rarely been studied. Studies have reported gaps in the patient’s understanding of the medical information delivered ahead of head and neck surgery or in case of tumoral [2] or functional pathology [3]. They focused mainly on memorization of surgical risks [4].

For cochlear implantation (CI) candidates, impaired hearing is a further obstacle to understanding medical information, deteriorating the quality of communication between physician and patient. CIs are devices that patients find difficult to understand in terms of both their functioning and of the surgical principles involved.

\* Corresponding author. Fax: +33 247 473 600.  
E-mail address: [david.bakhos@univ-tours.fr](mailto:david.bakhos@univ-tours.fr) (D. Bakhos).

For CIs, medical information is provided by the patient's physician, speech therapist and psychologist and by the device setter, each of whom supplies complementary information. This medical information is essential for the patient to be able to provide free and informed consent to the surgical procedure. It also enhances treatment compliance. In France, a written document, "medical information ahead of CI surgery" was drawn up for patients by the National ENT Professional Council (CNPORA), National Syndicate of ENT and Head and Neck Surgery Specialists (SNORL), French College of ENT and Head and Neck Surgery and French Society of ENT and Head and Neck Surgery (SFORL). It details the aim, performance, immediate and secondary risks and complications of the procedure.

Complementary oral and written information seems necessary to improve understanding in hearing-impaired patients. In recent years, the development of digital techniques has created a real social upheaval, which some have described as a "digital revolution", so great has been the progress, from the introduction of the personal computer in the 1980s, to the advent of touch-screen tablets and smartphones. Digital technology and especially file-sharing techniques such as podcasts (audiovisual digital documents shared via the Internet) may be a promising means of information. Podcasts have the advantage of being available on demand, without limitation, in a calm (e.g., home) environment.

The objective of the present study was to demonstrate the contribution of a digital support in complement to standard medical information for CI candidates.

## 2. Patients and method

A single-center single blind prospective study was performed from September 29, 2015 to June 22, 2016, after institutional review board approval (n 2015-044).

### 2.1. Patients

Inclusion criteria comprised: age over 18 years; indication for CI; Mini Mental State Examination (MMSE) score greater than 24 [5]; and meeting French Health Authority criteria for CI [6] or with unilateral profound hearing loss receiving CI according to the protocol for unilateral hearing loss.

Exclusion criteria comprised: non-French speaking; already with CI; unable to fill out the questionnaire on medical information and lacking a computer. Data were collected for age, gender, socio-occupational category on the INSEE (Institut National de la Statistique et des Études Économiques) classification [7], information-to-assessment interval, MMSE score and mean pure-tone hearing threshold (between the two ears, at 500, 1,000, 2,000 et 4,000 Hz).

CI candidates included during the first 4 months of the study were provided standard information: oral information in consultation, plus a written document (French College of ENT and Head and Neck Surgery CI information sheet). This standard information covered the pathophysiology of hearing loss, CI indications and basic principles, surgical stages and risks, post-discharge course and the need for follow-up of auditory rehabilitation (medical follow-up, speech therapy and CI setting). These patients were included either in the "standard" group if they met the Health Authority CI criteria (notably including assisted speech audiometry score < 50% at 60 dB), or in the "unilateral hearing loss" group if they showed unilateral profound hearing loss. The "unilateral hearing loss" group enabled assessment of the impact of bilateral profound hearing loss on the understanding of medical information. Within the department, two surgeons specializing in CI took pains to deliver identical standard information. Patients included between February and June 2016 constituted the "multimedia" group, which received the

same information as the "standard" group plus a digital document on a USB data-stick, which they were given during the medical consultation for use on their computer at home. All patients in this group met the Health Authority CI criteria [6].

### 2.2. Method

An explanatory document concerning CI was created using the Adobe Presenter10<sup>®</sup> application. It comprised video and audio material accessible on a computer or touch-screen tablet, concerning general aspects of CI (anatomy, the physiology of hearing loss, description of the equipment, pre-CI assessment), surgical principles, surgical risks, and post-implantation course (CI setting and speech therapy), the whole lasting 11 minutes. It included surgical illustrations and animated anatomic diagrams, with an off-screen voice giving explanations, accompanied by a transcript for visual reinforcement in hearing-impaired users. It also included 5 interactive questions, which the patient had to answer in order to continue reading. It was accessible to patients and their family at any time up to admission.

A questionnaire was drawn up to assess understanding and memorization of the medical information, with 14 multiple-choice questions covering 5 items (see Appendix 1): pathophysiology of hearing loss (3 questions), pre-implantation assessment (1 question), surgery (5 questions), post-implantation period (4 questions) and financing (1 question). Scoring was: 1 point for no errors, 0.5 points for 1 error, 0.2 points for 2 errors and 0 for more than 2, resulting in a grade between 0 and 14. The questionnaire was validated on 10 normal-hearing subjects not under treatment (mean age,  $34.4 \pm 11.8$  years) after viewing the digital support. All had mean pure-tone hearing thresholds < 20 dB HL and normal otoscopic findings. The mean memorization score for the normal-hearing group was  $10.9 \pm 2.2$  (= 79% correct responses).

A satisfaction questionnaire regarding the information delivered (Appendix 1) was drawn up, comprising 5 multiple-choice questions with a Likert scale, grading satisfaction from 1 to 5: 5 = "totally agree", 1 = "totally disagree".

The questionnaires were self-administered at admission, without outside help, after checking that the digital document had been viewed. Collection was performed blind by a person not acquainted with the information supplied.

The main end-point was the memorization questionnaire result.

Socio-occupational level was analyzed as 2 groups, "high" and "low", based on the INSEE classification [7]. The "high" group comprised classes 3 (executive and higher intellectual profession), 23 (CEO with  $\geq 10$  employees), 42 (teacher and assimilated) and 44 (clergy); other classes were counted as "low".

## 3. Statistical analysis

Groups were compared by non-parametric Mann-Whitney U test for quantitative variables and Fisher test for qualitative variables. The significance threshold (alpha risk) was set at  $P \leq 0.05$ .

## 4. Results

Thirty-eight patients aged over 18 years received CIs during the study period; 29 (10 female) were included in the prospective study. Nine were excluded: 6 with MMSE score < 24.2 not speaking French, 1 already implanted. Understanding of medical information was compared between the "standard" and "multimedia" groups; 11 patients received "standard" (oral + written) information and 12 received the "standard" information + the digital document ("multimedia" group). Patient characteristics by group are shown in Table 1; groups were comparable for gender (odds

Download English Version:

<https://daneshyari.com/en/article/8805990>

Download Persian Version:

<https://daneshyari.com/article/8805990>

[Daneshyari.com](https://daneshyari.com)