



## Original research

# Exploring an educational assessment tool to measure registered nurses' knowledge of hearing impairment and effective communication strategies: A USA study



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## ABSTRACT

Poor communication between the Registered Nurse and a hearing impaired patient can affect quality of care and health outcomes. Communication skills training programs for healthcare providers are needed to improve patient centered care. A descriptive research study, using a knowledge assessment tool developed and validated by the researcher, was conducted on 339 Registered Nurses to identify knowledge deficits to be addressed in a communication skills training program being designed. The educational tool measured the Registered Nurses' knowledge across four areas - hearing impairment, hearing aids, communication strategies, and regulations regarding access to care for a person with a hearing disability. Knowledge deficits were detected in all four areas. Using this educational assessment tool may enable nurse educators to tailor communication skills training programs to specifically address the gaps identified regarding hearing impairment and how to effectively communicate with the hearing impaired patient. Post training program, nurse educators can use the tool to evaluate effectiveness.

## 1. Introduction

Hearing loss is the third most common chronic health condition in the United States (U. S.) (Barnett et al., 2014; Chaseng et al., 2010; Hardin, 2012). Approximately 48 million adult persons in the U.S. have some degree of hearing loss (Hardin, 2012; Lin et al., 2011; Shuler et al., 2013). Approximately three million children in the U.S. have hearing loss (National Institution on Deafness and Other Communication Disorders, 2015).

Hearing impairment is often described as an invisible condition, as there are no visual indications that the person has any impairment, and the only thing seen are its effects, such as confusion and being seen as unfriendly (Jaccarino, 2009). Halpin et al. (2009) reported that patients do not inform the health care provider (HCP) that they have a hearing loss and HCPs may not document this condition in the medical record.

Effective communication between the HCP and the patient is vital to providing safe, high quality care to the patient. Healthcare providers may lack knowledge and awareness of the effect that impaired communication with the hospitalized patient has on that patient's "ability to communicate, learn and care for oneself" (Scheier, 2009, p. 9). Registered Nurses (RNs) on the inpatient nursing units provide important components of direct patient care that includes admission assessment,

ongoing nursing assessment, patient teaching, and discharge care. Poor communication between the HCP and the patient could lead to misdiagnoses, medication errors, unnecessary transfers, poor assessments, noncompliance with care, missed appointments, increased testing, higher hospital admission rates, and inadvertent patient harm (Matthews et al., 2011).

## 2. Background/literature

Several studies indicated that hearing impairment and deafness affected the individual's speech perception, communication, social interaction, and satisfaction with care (Barnett et al., 2014; Hallam and Corney, 2014; Wie et al., 2010). Other studies found that the hearing impaired or deaf patient experiences communication difficulties when: (a) interacting with health care providers in poor acoustic surroundings, (b) background noise is present, and (c) there is limited visual access to lip reading or facial cues (Hallam & Corney, 2014; O'Halloran et al., 2011; Pope et al., 2013; Wie et al., 2010). Background noise, a noisy hospital environment, and the physical environment or acoustics of the facility impairs communication by affecting speech intelligibility, key word recall and identification (O'Halloran et al., 2011; Pope et al., 2013; Wie et al., 2010). To compensate when background noise is

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present, the hearing impaired person utilizes lip reading, avoidance, and disengagement tactics when interacting with the HCP (Hallam & Corney, 2014).

A small number of studies focused on determining the patient preferences in communicating with their HCPs (Middleton et al., 2010; Diamond et al., 2009). Several supported the need for provider awareness of communication tactics to use in interacting with the hearing impaired patient, including the use of interpreters (Diamond et al., 2009; O'Halloran et al., 2011; Middleton et al., 2010; Trotter et al., 2014).

The literature search and review reflect a lack of research specifically focused on determining the RNs' knowledge and awareness about hearing impairment and deafness, as well as effective communication strategies in the care of the hearing impaired patient. There was also a lack of studies that specifically investigated the effectiveness of an educational program to improve the RNs' knowledge of hearing impairment and effective communication tactics in caring for hearing impaired patients. There were no comparative assessment tools found that measured the RNs' knowledge of hearing impairment and effective communication strategies when caring for and interacting with the hearing impaired hospitalized patient.

### 3. Objectives of the study

The overall objective of the study was to develop, validate, and test a knowledge assessment tool to measure the RNs' knowledge of (a) hearing impairment, (b) hearing aids and other assistive listening devices, (c) effective communication strategies in interacting with the hearing impaired patient, and (d) laws and policies regarding interacting and caring for persons with a hearing disability. The assessment test tool identified knowledge deficits regarding hearing impairment and effective communication strategies when interacting with the patient. The baseline assessment will provide the foundation for future educational programming.

## 4. Research design

### 4.1. Ethical considerations

Academic Institutional Review Board (IRB) approval and IRB exemption from the hospital where this study took place were obtained. There were no anticipated risks to the RNs participating in this study. Potential benefit for RNs participating in the study was increased knowledge about hearing impairment and effective strategies to be used in communicating with the hearing impaired patient.

The RNs' participation in this study was voluntary with no compensation provided. No participant identifiers were attached to the assessment test tool. The researcher informed the study participants via a cover letter attached to the assessment test tool that (a) completion of the test tool signified his/her consent to be part of this study, (b) his/her identity remained anonymous and, (c) the assessment test answers were kept confidential. The study results and test question answers were made available to the RNs via hospital wide email after the completion of the study.

### 4.2. Setting and participants

The descriptive research study was conducted in a 232 bed community hospital in Pennsylvania. The minimum sample size of 128 participants needed for the study was determined through the use of a power analysis (Cohen, 1992). The minimum sample size was also estimated using a confidence interval calculation (Bluman, 2009). The final sample size needed ( $n = 251$ ) was based on the confidence interval calculation since it was the more conservative approach. A target convenience sample of a minimum of 251 RNs was recruited from 15 nursing units in this community hospital to complete the knowledge

assessment test.

### 4.3. Instrument development and data collection

The researcher developed the assessment test tool to obtain the data. The test consisted of six demographic questions (Appendix A) and 22 knowledge questions (Appendix B). The six demographic questions included the participant's (a) age, (b) highest level of academic nursing education, (c) number of years worked in patient care as a RN, (d) assigned nursing unit, (e) having a hearing impairment or knowing a hearing impaired person, and (f) if the participant has had a prior course on hearing impairment and effective communication strategies when interacting with the hearing impaired patient.

The knowledge questions, adapted from the literature review, were divided into four categories of knowledge: general knowledge of hearing impairment, hearing aids and assistive listening devices, communication strategies in interacting with the hospitalized patient, and laws and policies regarding interacting and caring for persons with a hearing disability. Multiple choice and true/false questions were utilized in the assessment tool.

The 22 question knowledge assessment test was reviewed and validated by an expert panel consisting of (a) three Master's prepared Speech-Language Pathologists, (b) two Master's prepared board certified Audiologists, and (c) a hearing impaired RN. The item content validity index was 1.00 for each test question calculated. The scale content validity index, using the averaging approach, was 1.00 indicating excellent content validity (Polit and Beck, 2012).

There were no other directly comparable tools available to guide the research. Prior studies in analogous research found the average test score ranging from 50% to 83% (Dimitrov and Rumrill, 2003; Kelly and Bishop, 2013; Rosneck et al., 2014). An average test score of less than 75% in the pilot test group was utilized as a "cut off" to determine the need for an educational intervention.

A pilot test study of 20 RNs was completed to determine usability of the assessment test tool. The pilot test study assessment test tool was distributed between September 11, 2015 and September 30, 2015. These 20 RNs' test results were not included in the main study sample population. Cognitive questioning of the pilot test study participants was conducted with findings suggesting no need for any further modifications to the assessment test tool.

A total of 425 knowledge assessment test tools were distributed to the RNs at departmental staff meetings, the hospital's health fair, and nursing workshops between October 10, 2015 and January 27, 2016. Of the 425 assessment test tools distributed, 339 participants completed the test for a return rate of 80%.

### 4.4. Data analysis

The data was entered into an Excel spreadsheet and analyzed using statistical analysis software SAS version 9.4 (SAS Institute Inc., Cary, NC). The 15 nursing units were aggregated to five categories in order to support effective analyses: critical care, medical/surgical, emergency department, labor and delivery/postpartum, and surgical services. Descriptive statistics were used to (a) describe the study participants in the pilot and main studies who had completed the knowledge assessment test questions, and (b) assess the RNs' knowledge of hearing impairment and effective communication strategies when caring for a hearing impaired patient. The focus of the data analysis and results are on the main study population except where significant differences are noteworthy.

## 5. Results

### 5.1. Demographic summary of main study population

The six demographic questions of the knowledge assessment test

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