COMMUNICATION-RELATED OUTCOMES
OF COCHLEAR IMPLANT USE BY
LATE-IMPLANTED PRELINGUALLY
DEAFENED ADULTS

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To all the participants in the study: I know that your story will be told (although scientifically) through this dissertation, but I would just like to highlight the fact that I would not have been able to do it without you. You were the centre of all that have been done. Thank you.

Last, but not the least, I want to thank my Saviour and my Friend. If not for You, there would not have been a study or dissertation today. You are my strength and my rock. You are my Love.
“The heavens declare the glory of God;
and the firmament shows and proclaims His handiwork.
   Day unto day pours forth speech,
   and night after night shows forth knowledge.”

~ Psalm 19 verse 1 & 2 ~
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<tbody>
<tr>
<td>ACE</td>
<td>Advanced Combination Encoders</td>
</tr>
<tr>
<td>CELF</td>
<td>Clinical Evaluation of Language Function</td>
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<tr>
<td>CI</td>
<td>Cochlear Implant</td>
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<tr>
<td>CID</td>
<td>Central Institute for the Deaf</td>
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<tr>
<td>CIS</td>
<td>Continuous Interleaved Sampler</td>
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<tr>
<td>HA</td>
<td>Hearing Aid</td>
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<tr>
<td>HL</td>
<td>Hearing Loss</td>
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<tr>
<td>LIPD</td>
<td>Late-implanted Prelingually Deafened</td>
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<tr>
<td>NIH</td>
<td>National Institutes of Health</td>
</tr>
<tr>
<td>NRT</td>
<td>Neural Response Telemetry</td>
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<tr>
<td>PCIP</td>
<td>Pretoria Cochlear Implant Program</td>
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<tr>
<td>PB-Max</td>
<td>Maximum Score for Phonetically-Balanced words</td>
</tr>
<tr>
<td>PTA</td>
<td>Pure Tone Average</td>
</tr>
<tr>
<td>SIR</td>
<td>Speech Intelligibility Rating</td>
</tr>
<tr>
<td>S/N</td>
<td>Signal-to-noise</td>
</tr>
<tr>
<td>SMSP</td>
<td>Spectral Maxima Sound Processor</td>
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<tr>
<td>SPEAK</td>
<td>Speech Processing Strategy: SMSP with 20 Filters</td>
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ABSTRACT

TITLE: COMMUNICATION-RELATED OUTCOMES OF COCHLEAR IMPLANT USE FOR LATE-IMPLANTED PRELINGUALLY DEAFENED ADULTS

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Cochlear implantation of prelingually deafened adults is a contentious issue and information about the outcomes of late-implanted prelingually deafened (LIPD) adults is still largely undocumented. The question this study set out to answer, is what impact a late cochlear implantation has on the communication-related outcomes, both self-reported and objectively measured, of prelingually deafened adults. Consequently, this investigation determined the auditory, language, speech-intelligibility and quality of life outcomes of a group of LIPD adults. A combined qualitative and quantitative cross-sectional research approach was utilized for this multiple case study investigation. A semi-structured interview, audiological test battery and communication assessments were conducted using seven LIPD adults of a well-established cochlear implant program in South Africa. The results of the study indicated that the LIPD adults’ objectively assessed auditory, language and speech intelligibility outcomes are poorer than would be expected from good cochlear implant users, but the self-reported outcomes indicated that they experienced the cochlear implant as worthwhile and positive. The findings of this study provide more in-depth information regarding the communication-related outcomes of this population, and this information may be used by audiologists and speech-language therapists during counselling of prelingually deafened candidates to ensure appropriate expectations.
Key words: Audiologists, cochlear implant, late-implanted prelingually deafened adults, self-reported outcomes, objectively assessed outcomes, audiological functioning, language skills, speech intelligibility, quality of life.
Kogleêre inplantering by prelinguale dowe volwassenes is ‘n omstrede saak en inligting rakende die uitkomste wat laat-geïnplanteerde prelinguale dowe (LIPD) volwassenes ervaar, is steeds grotendeels nie geboekstaaf nie. Die navorsingsvraag wat die studie wou beantwoord, was watter impak ‘n laat kogleêre inplanting op die kommunikasie-verwante uitkomste, beide self-gerapporteerd en objektief geëvalueer, van prelinguale dowe volwassenes kan hê. Gevolglik het hierdie ondersoek die ouditiewe, taal-, spraakverstaanbaarheids- en lewenskwaliteit- uitkomste van ‘n groep LIPD volwassenes bepaal. ‘n Gekombineerde kwalitatiewe en kwantitatiewe navorsingsbenadering is vir hierdie meervoudige gevallestudie gebruik. ‘n Semi-gestruktureerde onderhoud, oudiologiese toetse en kommunikasie-evaluasies is uitgevoer op sewe LIPD volwassenes verbonde aan ‘n goed-gevestigde kogleêre inplantingsprogram in Suid-Afrika.

Die resultate van die studie het aangedui dat die LIPD volwassenes se objektief geëvalueerde ouditiewe, taal- en spraakverstaanbaarheids-uitkomste swakker is as wat van ‘n goeie kogleêre inplanting gebruiker verwag sou word. Die self-gerapporteerde uitkomste het egter getoond dat gebruik van die kogleêre inplanting as waardevol en positief ervaar word. Die bevindinge van hierdie studie het diepgaande inligting oor die kommunikasie-verwante uitkomste van die LIPD-populasie verskaf en hierdie inligting kan deur oudioloë en
sprak-taalterapeute gebruik word tydens die beradingsproses van die prelinguale dowe kandidate ten einde toepaslike verwagtings aangaande die kogleëre inplanting te verseker.

*Sleutelwoorde: Oudioloë, kogleëre inplanting, laat-geïnplanteerde, prelinguale doofheid, volwassenes, self-gerapporteerde uitkomste, objektief geëvalueerde uitkomste, oudiologiese funksionering, taalvaardighede, spraakverstaanbaarheid, lewenskwaliteit.*
CHAPTER ONE

ORIENTATION AND PROBLEM STATEMENT

1.1 Introduction

A relevant research question can only develop from a valid and scientifically formulated problem statement. In this chapter, the researcher’s orientation to the specific field of study is provided as a framework for the problem statement. The problem statement, in turn, provides the rationale for the study as well as the foundation for the research question. The orientation, problem statement and rationale for the study are presented as follows.

1.1.1 Orientation and Problem Statement

The positive impact that a cochlear implant has on the speech recognition skills of individuals with a profound sensory neural hearing loss, especially in the case of postlingually deafened adults, has been widely reported (Dowell, 2005; Bai & Stephens, 2005). The improvement and gains in speech recognition demonstrated by late-implanted prelingually deafened (LIPD) adults are more modest and less significant, however, than those of postlingually deafened adult cochlear implant users (Zwolan, Kileny & Telian, 1996) and therefore implantation of this population remains a particularly contentious issue. There are indications in the literature that LIPD individuals can obtain varying degrees of benefit from a cochlear implant, although the user’s characteristics and subjective experiences seem to be major contributing factors in the improvement of communication-related skills and quality of life (Wooi Teoh, Pisoni & Miyamoto, 2004; Zwolan, Kileny & Telian, 1996).

The general problem within the South African context is that the advantages, limitations and disadvantages of cochlear implantation in prelingually deafened, late implanted adults have been insufficiently explored especially with regard to communication-related outcomes. The decision-making process by cochlear implant teams in terms of candidacy guidelines for this specific population is currently complicated and even frustrated by a lack of scientifically based observations and information. It is also evident that general controversy exists