

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

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**Submitted in partial fulfilment of the requirements for the
degree of M. Communication Pathology
in the Department of Communication Pathology,
Faculty of Humanities at the University of Pretoria.**

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April 2009

ACKNOWLEDGEMENTS

Thank you to my study leaders – Dr. Catherine van Dijk and Mrs. Emily Groenewald. Catherine, thank you for guiding me through this whole process. Thank you for expanding my passion for this field after each draft and every try. Your continuous support and critical, but positive approach inspired me to complete this study. Mrs. Groenewald, thank you for your expert opinion and excellent recommendations, even though it has been a difficult time for you.

Thank you to my family. For all my mums and dads who supported me and encouraged me to complete this challenge. Thank you for believing in me. Without your help, I would not be able to have completed it.

A special thank you to my husband, Franscois. Without your love, support and everlasting encouragement, I would not have come so far. I appreciate your more and more and my love for you can only increase with time. I love you.

I also want to thank Dr. Elsie Naudé for the language editing that she did. The quality of the editing was excellent.

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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LIST OF ABBREVIATIONS

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

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.

OPSOMMING

TITEL: **KOMMUNIKASIE-VERWANTE UITKOMSTE VAN KOGLEËRE
INPLANTING GEBRUIK BY LAAT-GEÏNPLANTEERDE
PRELINGUALE DOWE VOLWASSENES**

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Kogleëre 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 kogleëre inplanting op die kommunikasie-verbante uitkomste, beide self-gerapporteerde 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 kogleëre 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 kogleëre inplanting gebruiker verwag sou word. Die self-gerapporteerde uitkomste het egter getoon dat gebruik van die kogleëre inplanting as waardevol en positief ervaar word. Die bevindinge van hierdie studie het diepgaande inligting oor die kommunikasie-verbante uitkomste van die LIPD-populasie verskaf en hierdie inligting kan deur oudioloë en

spraak-taalterapeute gebruik word tydens die beradingsproses van die prelinguale dowe kandidate ten einde toepaslike verwagtings aangaande die kogleêre inplanting te verseker.

Sleutelwoorde: Oudioloë, kogleêre inplanting, laat-geïnplanteerde, prelinguale doofheid, volwassenes, self-gerapporteerde uitkomst, objektief geëvalueerde uitkomst, oudiologiese funksionering, taalvaardighede, spraakverstaanbaarheid, lewenskwaliteit.

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