

Critical Review: What is the Efficacy of Prescribing Frequency Lowering Devices for Adult Patients?

Jennifer Nicholson

M.Cl.Sc. (AUD) Candidate

University of Western Ontario: School of Communication Sciences and Disorders

This critical review seeks to determine the efficacy of prescribing frequency lowering devices for adults patients. This review specifically examines the use of nonlinear frequency compression (NFC). The studies included in this review are single group pre-posttest design, single subject design and a systematic review. The studies examined suggest inconclusive results because of the methodological limitations found in most of the studies. Future considerations and clinical recommendations are examined and discussed.

Introduction

Frequency lowering, specifically, nonlinear frequency compression (NFC) is a technology that reduces the bandwidth of the outgoing signal by a specific ratio (Glista, Scollie, Begatto, Seewald, Parsa and Johnson, 2009). This is necessary due to the inability for hearing instruments without this technology to amplify high frequency sounds and also because of dead regions that may exist in patient's cochlea (Simpson, 2009, Baer, Moore, and Kluk, 2002).

Many hearing instrument manufacturers have different frequency lowering techniques. Phonak is an example of a hearing instrument manufacturer

both are valid for a single group pre-posttest design. The statistical treatment of data was appropriate for this design.

This particular study is suggestive that adults could benefit from the use of NFC with a short acclimatization period. Despite some methodological limitations, the validity of the methods was rated as suggestive. The methodological limitations do decrease the validity of the research; especially considering the dated technology used, but does support the prescription of NFC in adult hearing instrument users.

Simpson, Hersbach and McDermott (2006) reevaluated their previous results with this consecutive study with opposite results. The researchers used the same NFC scheme as in their previous study and tested speech in quiet, speech in noise and used questionnaires for participants to subjectively evaluate the performance of the NFC processor. The researchers suggested in the prior study that this type of processor might adversely effect music. Secondly, the cut-off frequencies are based on the participants' subjective ear. In the previous study, steeply sloping hearing losses were not included which is why the researchers sought to examine the use of NFC with steeply sloping hearing losses.

