German-Translated Norfolk Quality of Life (QOL-DN) Identifies the Same Factors as the English Version of the Tool and Discriminates Different Levels of Neuropathy Severity

Etta J. Vinik, M.Ed.,[1] James F. Paulson, Ph.D.,[2] Stephanie L. Ford-Molvik, M.P.H.,[1] and Aaron I. Vinik, M.D., Ph.D.[1]

Abstract

Background:

The development and validation of Norfolk QOL-DN, a fiber-specific, quality-of-life tool for diabetic neuropathy, was published previously (Part 1). This study (Part 2) defines the psychometric properties of the German-translated Norfolk QOL-DN in a large multicenter (96 sites) population with neuropathy ranging from minimal to severe, comparing them with those in the original English/American version in a 30-center European/North American population with mild neuropathy; determines the power of the German-translated version in a five-staged diabetic peripheral neuropathy (DPN) German population to discriminate different levels of neuropathy severity; and establishes factors having the greatest impact on QOL.

Methods:

One hundred eighty-six German patients were assessed: asymptomatic of DPN ($n = 40$), symptomatic ($n = 46$), DN with foot-ulcer history ($n = 32$), DN with amputations ($n = 22$), and DN amputation history ($n = 46$). German-translated Norfolk QOL-DN was administered to 177 patients with staged DN complications. German-translated Norfolk QOL-DN data were compared with QOL-DN data from the European/American study of 379 mild neuropathy patients. Exploratory factor analysis assessed factor structure consistency in the translated instrument. Ordinal regression analysis (polytomous universal model) was used to evaluate the association between factor scores and complication stages.

Results:

The German translation identified the same five factors in more advanced neuropathy as in the English mild neuropathy population. Total QOL scores differed among each of the five neuropathy severity groups [analysis of variance $p < 0.001$, Tukey–Kramer post hoc, $\alpha = 0.05$]. Two factors emerged as predictors of impaired QOL and disease severity: physical function/large fiber (Wald $\chi^2 = 6.188$, $p = 0.013$) and activities of daily living (ADL)(Wald $\chi^2 = 9.098$, $p = 0.003$).

Author Affiliations: [1]Strelitz Diabetes Institutes, Eastern Virginia Medical School, Norfolk, Virginia, and [2]Center for Pediatric Research, Eastern Virginia Medical School, Norfolk, Virginia

Abbreviations: (ADL) activities of daily living, (ANOVA) analysis of variance, (DN) diabetic neuropathy, (NIS-LL) neuropathy impairment score in the lower limbs, (QOL-DN) Quality of Life for Diabetic Neuropathy, (QOL) quality of life, (PLUM) polytomous universal model, (TNS) total neuropathy score

Keywords: ADLs, autonomic, large fiber, nerve fiber specific, QOL

Corresponding Author: Aaron I. Vinik, M.D., Ph.D., Strelitz Diabetes Institutes, 855 West Brambleton Avenue, Norfolk, VA 23510; email address vinikai@evms.edu

German-Translated Norfolk Quality of Life (QOL-DN) Identifies the Same Factors as the English Version of the Tool and Discriminates Different Levels of Neuropathy Severity

Vinik

Abstract cont.

Conclusions:

Norfolk QOL-DN discriminates levels of neuropathy *within* and *between* populations. Physical functioning and ADL are the most important determinants of QOL. Early occurrence of orthostasis suggests a redefinition of autonomic neuropathy to be more symptom inclusive.

J Diabetes Sci Technol 2008;2(6):1075-1086