

Intervention consideration: utility of prescription hearing aid to reduce post-deployed Veteran's neurological symptom burden with high blast exposure history

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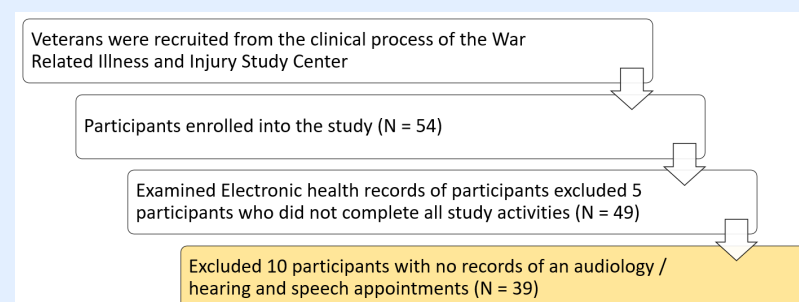
BACKGROUND

Post-deployed veterans' experiences multiple military related exposures, particularly blast related incidents, that are detrimental towards brain health. Recent findings indicated service members who were exposed to blast that still retain normal hearing function may still exhibit auditory and cognitive challenges, and that hearing aid (HA) prescriptions can yielded auditory and lifestyle benefits. Amongst veterans, with complex medical conditions, finding possible interventions to relieve their symptom burden can be of value.

OBJECTIVE

Therefore, this study aims to examine the relationship and impact of hearing loss (HL) and the potential benefits of HA on veterans' neurological symptoms and quality of life.

METHODS



Veteran patients at the Washington DC, War Related Illness and Injury Study Center (DC WRIISC) were recruited into the study (N: 39). The neurobehavioral symptom inventory (NSI), PTSD Checklist for DSM-5 (PCL-5), Blast Exposure Threshold Survey (BETS), and Quality of Life in Neurological Disorders (Neuro-QoL) were administered. Participants audiology histories were extracted through medical charts review. Multivariate regression models were conducted to examine the interactive effects of HL and HA on veterans' subjective rating of neurological symptom and quality of life, while accounting for blast exposure histories.

Concept

Health = Exposure + Disease + Treatment + Disease x Treatment

Regression Formula

Subjective Health = BETS + HL + HA + HL x HA

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RESULTS

Table 1. Demographic and description of the sample

	Hearing Aids (HA): NO		Hearing aids (HA): YES	
N	N = 15		N = 18	
Age	\bar{x} = 54.15 ± 8.03		\bar{x} = 48.59 ± 9.66	
Gender	Male = 13	Female = 2	Male = 17	Female = 1
EOD	EOD = 5	Non-EOD = 10	EOD = 10	Non-EOD = 7
Diagnosis of Hearing Loss [Y/ N]	Yes = 9	No = 6	Yes = 15	No = 3
Diagnosis of Tinnitus [Y/ N]	Yes = 8	No = 7	Yes = 9	No = 9
Blast Exposure Threshold Survey	\bar{x} = 26,156,773 ± 42082232		\bar{x} = 256,770,968 ± 741989369	
BETS cut off (> 600,000 GBEV)	High = 14	Low = 1	High = 13	Low = 5

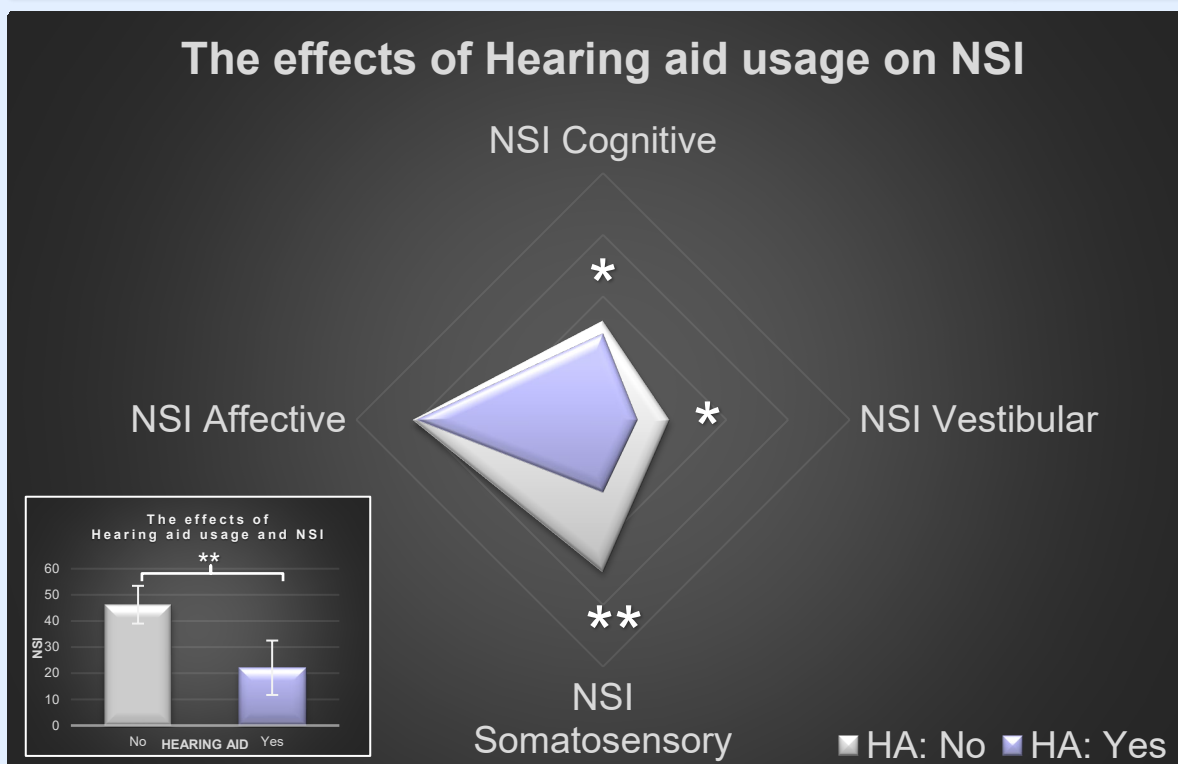


Figure 1. Veterans with hearing aid prescription exhibited lower symptom scores in the NSI [$F(1, 38) = -31.56, p = 0.012$] and NSI subdomains for cognitive [$F(1, 38) = -7.77, p = 0.018$], vestibular [$F(1, 38) = -5.96, p = 0.011$], and somatosensory [$F(1, 38) = -9.44, p = 0.009$]

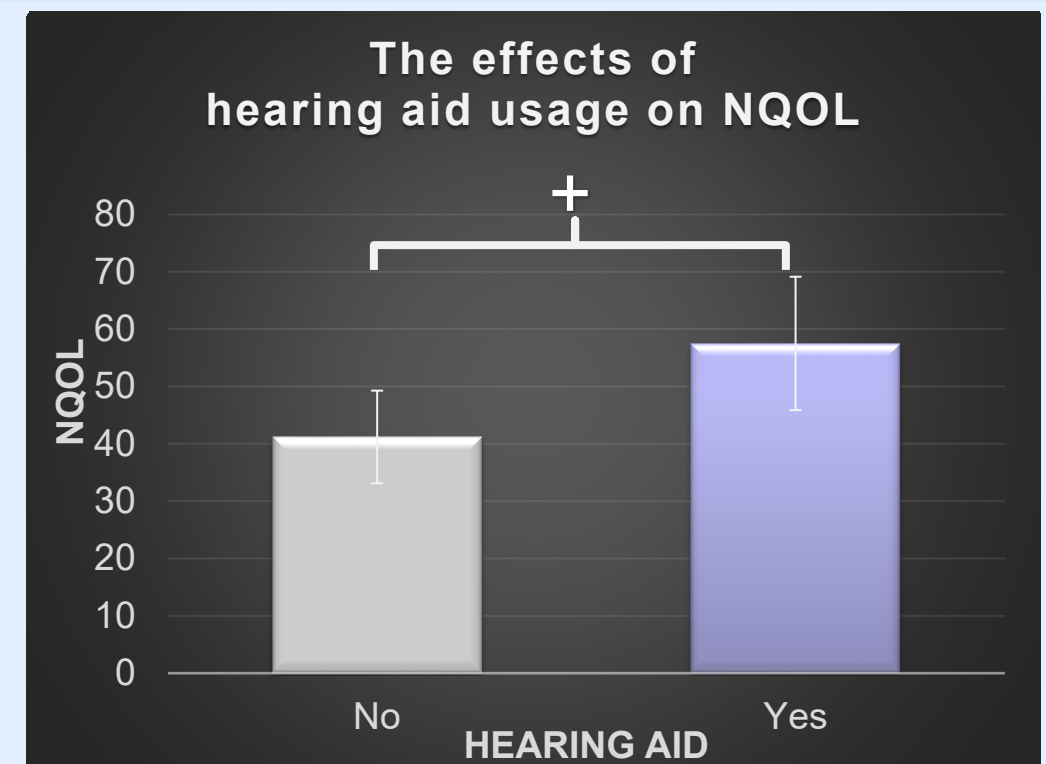


Figure 3. Veterans with hearing aid prescription exhibited greater scores in the Neuro Quality of Life compared to Veterans without hearing aid prescription [$F(1, 38) = 26.44, p = 0.061$]

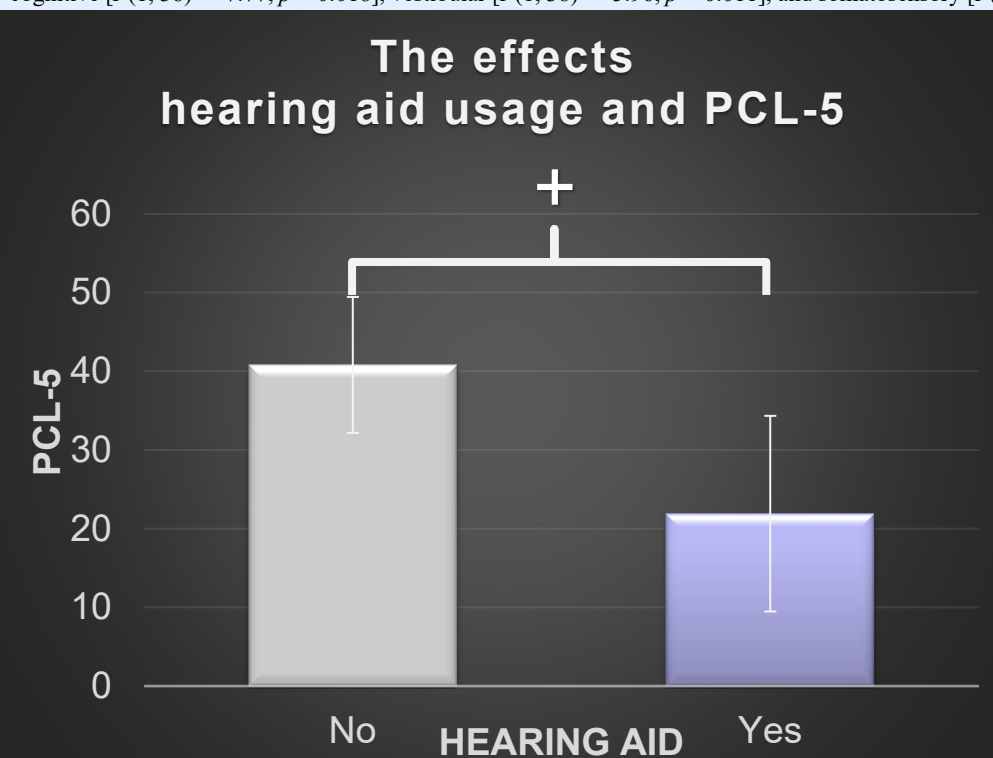


Figure 2. Veterans with hearing aid prescription exhibited lower scores in the PCL-5 compared to Veterans without hearing aid prescription [$F(1, 38) = -28.02, p = 0.057$]

CONCLUSION

1. Veterans who were prescribed hearing aids revealed significant difference of lower symptom scores compared to Veterans who were not prescribed hearing aids
2. Veterans who were prescribed hearing aids revealed a significant difference of greater quality of life scores compared to Veterans who were not prescribed hearing aids
3. Veterans who were prescribed hearing aids revealed a trending difference lower symptom for PTSD compared to Veterans who were not prescribed hearing aids
4. No observations of main effect or interaction effect were observed for HL

Authors report no conflicts of interest. The views expressed are those of the authors and do not reflect the official views of the Department of Veterans Affairs, the Henry M. Jackson Foundation for the Advancement of Military Medicine, Inc, or the U.S. Government.