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This review examined the published evidence regarding the impact of an eye-tracking communication device on quality of life in Amyotrophic Lateral Sclerosis (ALS). A literature search using computerized databases was completed resulting in five articles meeting the inclusion criteria. Study designs include: Mixed Randomized Clinical Trails, Mixed Non-Randomized Clinical Trials, and Within Groups (Repeated Measures) designs. The articles were evaluated using a critical appraisal template and examined level of evidence, validity, and importance of the information included in the article. Overall, the research is suggestive that eye-tracking communication devices have a significant and positive impact on quality of life in ALS patients, however further research is suggested. Recommendations for future research are provided.

### ***Introduction***

Amyotrophic Lateral Sclerosis (ALS) is a devastating neurodegenerative disease that the World Health Organization recognizes as one of the most important and challenging human diseases of the twenty-first century. It typically progresses into quadriplegia and results in respiratory failure 3-5 years after diagnosis (Hwang, Wong, Wang, Tsai & Chang, 2014). Without the ability to move, many patients experience obstacles to both oral and limb-based modes of communication, which can lead to emotional distress and mental illness when needs cannot be expressed. “Communication has been rated by ALS patients as a key domain for their independence” (Londral, 2015).

Fortunately, many ALS patients that present with

Data Collection

Results of this literature search yielded five articles



day in each of the studies. In the study by Hwang, et al. (2014), device usage ranged from 1-3 hours for 40% of the patients to 5-8 hours for 20% of the patients.

d) Each of the studies used a short experimental period (ranging from 7 days in the Calvo et al. (2008) study to 10 months in the Londral et al. (2015) study. Due to the nature of the ALS, however, this is a limitation that is difficult to avoid.

*Future research considerations:*

In order to improve the level of evidence provided by the existing literature, it is recommended that future research take the following into consideration:

a) For generalization to other devices, a wider range of commercially available eye-tracking communication devices should be used in a single study.

b) The researchers should clearly quantify the number of hours per day that the device should be used since it is difficult to control how participants use the device outside of the clinic/research environment.

c) Although difficult due to the rapid progression of ALS, research studies should aim to incorporate larger sample sizes and longer experimental periods to increase the confidence of clinical implementation.

d) Researchers should aim to recruit patients with similar disease progression to avoid significant differences between the groups, as in the Korner et al. (2013) study.

e) Future research should employ study designs that offer a stronger level of evidence, such as mixed randomized clinical trials.

***Clinical Implications***

Although limitations exist within each of the studies, the evidence is suggestive that eye-tracking communication

devices positively impact quality of life in patients with ALS. The critical review provided important findings for which to direct future research.

Speech-language pathologists should continue to