ABSTRACT

This poster reviews three studies related to the use of multifocal lenses and accidental falls. Most importantly, the implications of this research are discussed and their relevance to current research and design included. Three implications for future research and design include: 1) training in the use of multifocal lenses, 2) awareness of negative outcomes; and 3) future design progress in multifocal lenses, meaning they were worn for all activities of daily living (ADL), including walking outside of the home. Of these subjects, 148 were available for follow-up. Regular multifocal glasses were associated with an increased risk of falls. The results are highlighted below in Table 1.

LITERATURE REVIEW

Several studies have been conducted to determine the use of bifocal glasses. The study by Lord et al. [3] examined 156 community-dwelling people aged 63-90, of which 87 were regular wearers of multifocal lenses, meaning they were worn for all activities of daily living (ADL), including walking outside of the home. Of these subjects, 148 were available for follow-up. Regular multifocal glasses were associated with an increased risk of falls. The results are highlighted below in Table 1.

LITERATURE REVIEW Contd.

Joerger [4] investigated gait speed, using the Get-Up-and-Go Test (GUGT), and quality, using the Timed-Up-and-Go Test (TUGUT) under the conditions of wearing bifocals and multifocal lenses. The total mean average score on the GUGT was 1.29 when not using bifocals, with an increase of 0.34 with the use of bifocal lenses, this change yielded a statistically significant difference with a t-value of 5.20 with p < 0.05. See Table 1. These findings suggest that the use of bifocal glasses affects the quality of gait.

A third study, focusing on the behavioral factors contributing to falls and misjudgments, was conducted by Hill [5]. The study examined gait behavior to be a behavioral theme contributing to falls. Eyesight behaviors are defined as the ability to work with visual information or to misjudge, or fail to notice details in their environment due to impaired depth perception and edge contrast sensitivity at critical distances for detecting objects in the environment when walking. Therefore, multifocal glasses appear to increase the risk of falling in both older adults and younger adults with a greater sensitivity to overcome these obstacles in the environment. To further validate these findings, the subject’s in this study who chose not to wear their multifocals while walking outside, did not have an elevated risk of falls.

Regular multifocal glasses wearers are significantly more likely to fall because of a trip, a trip outside the home, or when walking up or down stairs. This study indicates that blurring the lower visual field impacts depth perception and edge contrast sensitivity at critical distances for detecting objects in the environment when walking. Therefore, multifocal glasses appear to increase the risk of falling in both older adults and younger adults with a greater sensitivity to these obstacles in the environment. They also help to overcome these obstacles in the environment. To further validate these findings, the subject’s in this study who chose not to wear their multifocals while walking outside, did not have an elevated risk of falls.

LITERATURE ANALYSIS

Based on the limited research on the use of multifocal glasses and falling, it appears that a potential enormous health problem may be resulting from a very common technology. Several studies report that a large amount of research has been reported on visual impairments and risk of falling, the link between eyeglasses and falling has only begun to be addressed.

The current lack of empirical evidence, however, does not need to keep professionals from beginning to develop and design alternatives to the current usage of multifocal lenses.

IMPLICATIONS

There are three main implications for assistive technology providers and rehabilitation specialists.

1. Patients need to be trained in the proper use of multifocal lenses.

For example, multifocal glasses can be purchased at a drugstore without any accompanying information on use or possible risks. Multifocal lenses were designed for the purpose of convenience, and are not intended to be worn when walking, yet many consumers of multifocal lenses are not provided with this information.

2. More research needs to be performed in the field of negative outcomes of AT.

Not only do we need to be aware of the possible negative outcomes of AT, we also need to understand the capacity for AT to have these negative effects. If assistive technology truly results in harm, injury or decreased performance, we need to be aware of this and be creating preventative solutions.

REFERENCES


2. National Center for Injury Prevention and Control. 2002-2003, United States, ending death and disability from fall injury, Atlanta, GA.


ADDITIONAL INFORMATION

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