Factors related to the (non-)use of
optical low vision aids, a scoping review.

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{n followed by a number, a \* or any other indicator} point out the presence of a footnote reference in the text and enters the corresponding footnote

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# Factors related to the (non-)use ofoptical low vision aids, a scoping review.

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**No commercial relationship to disclose for any of the authors**

{Logo: École d'optométrie – Université de Montréal}

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{Logo: Mitacs Accelerate}

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## Introduction

In recent decades, several studies have been performed in the field of (non-)use of assistive technologies (ATs) and have found that many variables are likely to be involved in the decision-making process of whether a person with a disability uses or abandons their aids. In low vision rehabilitation, high variability rates and a variety of reasons for non-use of low vision aids has been reported.

An overview of the determinants of non-use of ATs has categorized factors related to. the personal, AT, user’s environment and intervention{n31}. Parallels have been found between the mechanisms influencing non-use of assistive technology and those influencing non-adherence with other medical interventions. It is probable that some of these factors are also associated with the use of optical low vision aids (OLVAs).

The aim of this scoping review was to explore factors related to OLVAs (non-)use, building on an existing framework regarding adherence with medical interventions.

## Methodology

Existing guidelines of the scoping review methodology were used to examine and summarize the extent, range, and nature of research activities and ﬁndings regarding the categories of factors that are associated with OLVA (non-)usage.

Searches were conducted using the following online databases: Embase, MedLine, and ERIC without limitation on publication dates. A combination of key words and MeSH terms was used based upon the identiﬁed core concepts of the research question: (1) Low vision; (2) Assistive technology; and (3) Adherence.

A PRISMA ﬂow chart was used to illustrated the study screening and selection process, which led to the inclusion of 21 studies (fig.1) A combination of descriptive numerical analyses and a thematic analysis of the 21 identiﬁed studies was then performed.

**Figure 1: Flow chart of study selection process**

{Illustration}

Initial search within Embase, Medline, Eric
n = 591

{<}

Articles after first screening
(Title and abstract)
n = 77

* Articles excluded
n = 525
* Duplicated excluded
n = 9

{<}

Articles after second screening
(Full text)
n = 57

* Articles excluded after reading full-text
n = 36
* Articles added after reference lists review
n = 0

{<}

**Selected articles
n = 21**

{/Illustration}

{Charts}

**Figure 2.
Nature of the data**

* Qualitative: 29%
* Quantitative: 38%
* Mixt: 33%

**Figure 3.
Nature of the study**

* Interventional: 24%
* Observational: 86%

**Figure 4.
Type of data collection**

* Longitudinal: 24%
* Cross-sectional: 76%

{/Charts}

**Figure 5.
Optical Low vision Aids use**

{Illustration}

**Personal:**

* Demographic
* Combination of factors
* Physical
* Functional
* Efficacy
* Ease of use
* Appearance / Design
* Frequency / duration of use
* Social-emotional
* Social circle

**Device:**

* Dimensions
* Effectiveness
* Weigh
* Quality
* Ergonomics
* Ease of use
* Appearance / Design
* Frequency / duration of use
* Maintenance
* Follow services
* Professional services

**Environment:**

* Physical barriers
* Society
* Social-emotional
* Social circle

**Intervention:**

* Origin of the provision
* Provision process
* Instruction training
* Therapist awareness
* Interaction client
* Maintenance
* Follow services
* Professional services

{/Illustration}

## Result

The publication dates of the selected studies range from 1974 to 2013, with the majority of studies being published between 1994 and 2013 (M and Mdn = 1998). This scoping included qualitative, quantitative and mixed-method studies, representing 29%, 38% and 33% of the studies respectively (Fig.2). The studies were primarily observational (86%) (Fig. 3), and the type of data collection was mainly represented by cross‑sectional study designs (76%) (Fig. 4).

Studies on the (non-)use of OLVAs reported high variability in the proportions of people possessing devices but not using them (range: 13%-50%, M=24%, SD=10%). The greatest proportion of prescribed OLVAs in these studies were utilized for near vision tasks. Some studies found especially high rejection rates of distance OLVAs as compared with near vision OLVAs.

Across the reviewed studies, "non-use" was defined in a variety of ways: functionally, comprehensively, directly determining the current use of the OLVA by the user, or based on one or a number of indicators (such as date of last use, frequency of use, average duration of use). In only a minority of cases did authors present a clearly refined definition of "non-use" at the outset of the study.
Four categories of variables were identified as being likely to be associated with OLVA (non-)use.

{Box}

The most reported category concerned the personal user factors. Several personal characteristics were identified, including demographic, physical, psychological, social-emotional, functional competence-efficacy, adaptability, self-esteem, motivation, the availability of other material resources, and a combination of some of these cited factors. Some variables, such as age, diagnosis, visual acuity and type of visual field deficit were reported as contradictorily influencing OLVA (non-)usage.

{/Box}

{Box}

Factors related to the device were categorized as 1) subjective aspects, such as frequency and duration of use, design or appearance, and ease of use; or 2) objective aspects, such as the device’s dimensions, weight, ergonomics, quality, effectiveness, maintenance, professional services and follow-up services.

{/Box}

{Box}

Factors related to the user’s environment referred to the social environment (encouragement or stigmatisation), social circle (family, friends, helper) and physical environment (access to public transport, infrastructure of the user’s house).

{/Box}

{Box}

Intervention-related factors were concerned mainly with health care experiences, provisioning and attribution processes, instruction and training, and follow-up service.

{/Box}

Certain complex factors were influenced by several categories of these factors. There is a dynamic interconnection between the four categories of factors influencing the use of OLVAs (Fig.5)

## Discussion – Conclusion

Only 24% of the included studies used a conceptual framework for developing their research. Among them, the theories included were mainly borrowed from the field of health psychology, but were not directly related to prediction of compliance behaviour.

Interestingly, some anticipated factor, such as quality of life measures or the taking into account user opinion during the OLVA selection process were not reported in this scoping. Moreover, one potentially negative factor that did not appear in these studies was the expense related to the device. Unexpectedly, the user’s satisfaction with the device was found not to be predictive of OLVA (non-)use. Few of the studies were longitudinal with follow-up assessments of usage rate, and very little information was available about changes in OLVA (non-)use over time.

This scoping review provides the preliminary evidence that factors related to OLVAs non-use could also be classified into four typical categories, sharing factors belonging to the theory of non-adherence. These results suggest that strategies applied to enhance adherence of a treatment might be useful to reduce non-use for OLVAs. The next step would be to attempt to predict the (non-)use of OLVAs using Health Psychology Theories.