

# 19<sup>e</sup> Symposium scientifique sur l'incapacité visuelle et la réadaptation



Université   
de Montréal

## Comparative study on actual lighting assessment practices and the use of a standardised tool ( LuxIQ™)

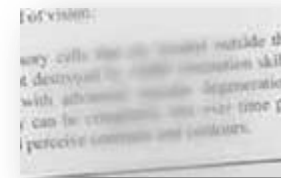
**Rebecca Henry – SRDV**

Under the supervision of  
**Walter Wittich**, Ph.D., F.A.A.O., C.L.V.T  
Marie-Chantal Wanet-Defalque, Ph.D

Symposium organisé par l'Institut Nazareth et Louis-Braille du CISSS de la Montérégie-Centre et par l'École d'optométrie de l'Université de Montréal, Montréal, 13 février 2018.

Centre intégré  
de santé et de  
services sociaux de  
la Montérégie-Centre  
**Québec**   
Institut Nazareth et Louis-Braille

# Introduction



- **Increasing number of seniors diagnosed with a visual impairment:**
  - **Growing population**
  - **Majority of the clients receive rehabilitation services**
  - **Frequently encountered pathologies: ARMD & Glaucoma**
  
- **Clinical experience:**
  - **#1 reason why seniors consult rehabilitation services: Reading difficulties**

OMS (2014), The National Coalition for Vision Health (2007), UdeM (2010), Duffy (2002), Borden et al. (2014), Brabyn et al (2001), Wolffsohn et al. (2012), Moore et al. (1997), Holzschuch et al. (2002) et Rubin (2013).



# Introduction

- **Role of rehabilitation centres:**
  - ▶ **Assessment and teaching of numerous tools in order to help with reading difficulties (magnifiers, CCTV)**
  - ▶ **One method increasing in popularity : lighting**



# Litterature Review

- Impacts on reading when lighting is adjusted to client's needs:
  - ▶ Increase of reading speed
  - ▶ Decrease of smallest print size
  - ▶ Decrease in magnification
    - The magnifier was sometimes not necessary anymore



Wolffsohn et al., (2012), Eldred, K. (1992), Bowers et al. (2001), Evans et al. (2012), Farrall, H. (1991), Legge et Rubin (1986), Haymes & Lee (2006), Fosse et Valberg, (2004), LaGrow (1986).

# Objective

---

**Does a standardised method (LuxIQ) assess more appropriately client's lighting needs while reading than the standard method used at the INLB?**

## **Variables:**

- ▶ **Reading speed**
- ▶ **Print size**
- ▶ **Implementation of the recommendations**
- ▶ **Ocular fatigue**
- ▶ **Client's satisfaction of their length of time read**

# LuxIQ™

# Standard method



**V S**



# Hypothesis

**Statistically significant effect in favor of the LuxIQ on:**

- 1) Increase of reading speed and decrease of print size**
- 2) Implementation of the recommendations**
- 3) Decrease of ocular fatigue**
- 4) Improved satisfaction of client's length of time read**



# Methodology

- 3 clinicians (SRDV): home assessments
- Equal amounts of LuxIQ (17) and standard method assessments (17)
- Pre and Post evaluation
- Research assistant : follow-up call 3-4 weeks after
- Tools used:
  - ▶ Protocol for the standard method used at the INLB
  - ▶ Protocol for the LuxIQ (Perlmutter, 2015)
  - ▶ Standard method material (light bulbs)
  - ▶ LuxIQ
  - ▶ MN READ
  - ▶ HELA (Perlmutter et al. 2013)





# Participants (n=34)

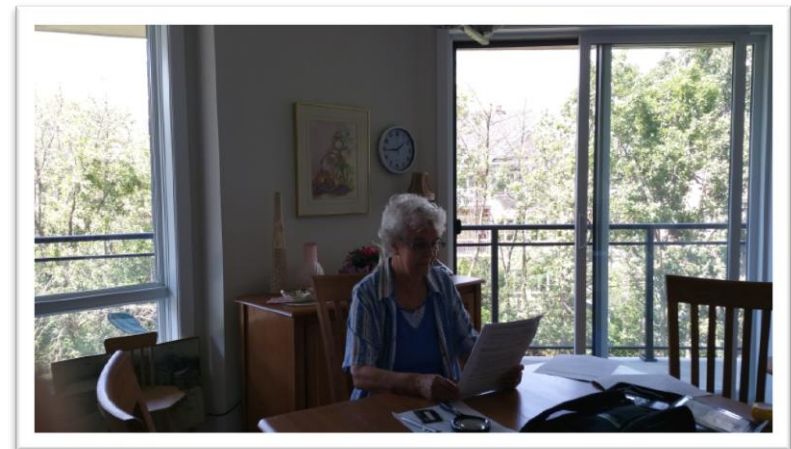
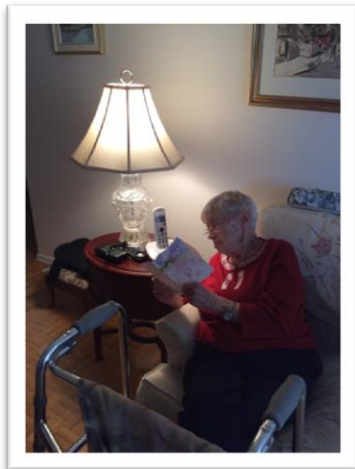
Age: 19-100 yrs

Gender: 20 ♀ vs. 14 ♂

VA: 0.12 to 1.3 LogMar

6/7.5 to 6/120 in best eye

Patho.	(n)
ARMD	21
Glaucoma	2
ARMD & G.	5
Other	6



# Results



The analysis did not show any statistical significance of the method used on:

- Reading speed (Repeated measure ANOVA)
  - Ocular fatigue (Mann-Whitney)
- Application of the recommendations (Chi-square)

# Results – Recommendations

## Chi-square

The method used is not statistically significant and does not influence the implementation of the recommendations.

$$X^2 (1, n=32) = 0.69 \quad p > 0.05$$

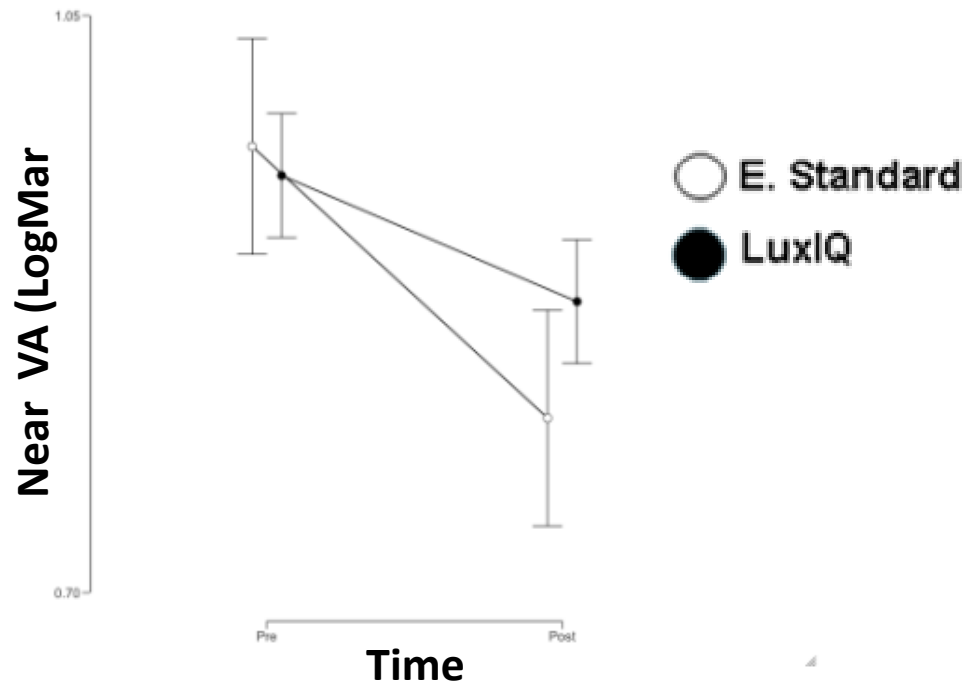
	Implementation		
	Yes	No	
Stan. M.	9	6	<b>12</b>
LuxIQ	9	8	<b>17</b>
<b>Total</b>	<b>18</b>	<b>14</b>	<b>32</b>

# Results – Print size



Lighting assessment is statistically significant on print size.  
The effect is independent of the method used.

$$F(1, 32) = 22.95, p < .001, \omega^2 = .37$$

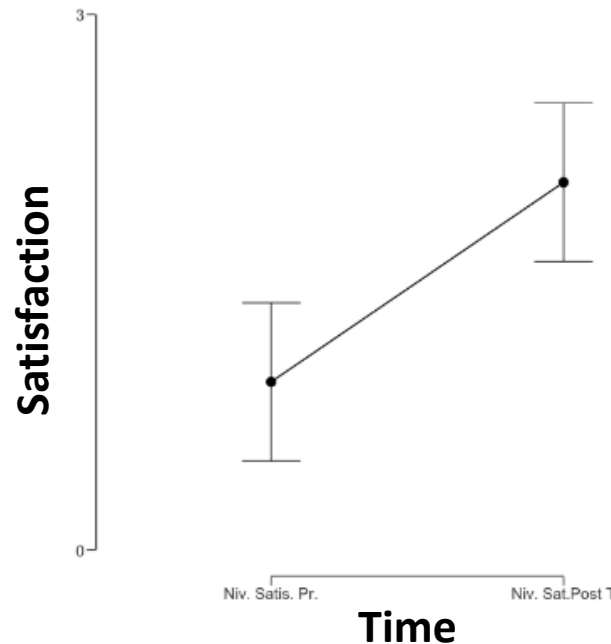


# Results: Satisfaction



Participants who applied the recommendations:  
lighting assessment is statistically significant for their satisfaction  
on length of time read.

Wilcoxon signed rank test:  $p < .006$



# Main outcome: reduction of print size

Assessing lighting has a statistical significant impact on reducing print size independently of the method used



# Discussion

## Limitations

- Sample size
- Age difference
- All data included
- Missing data (post)

## Next step

- Development and implementation of a protocol for the use of the LuxIQ at the INLB

# Acknowledgements

---

- Fondation en vue
- Alexandre Beaulieu
- Francine Baril
- Simon Gervais
- Bianka Lussier-Dalpé
- Kassandre Montisci
- Monica Perlmutter
- Marie-Julie Rivest
- Marie-Josée Sénécal
- Wanseo Kim



**Thank you**

**Questions?**