



Health literacy and cardiac surgery: a new perspective to better help patients

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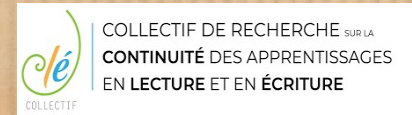
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Context

- Notions related to cardiac surgery are complex for patients to understand (Falagas et al., 2015)
- Cardiac surgery is a stressful experience in relation to the medical act, but also in terms of understanding this act before, during and after the operation
- Data related to the patient's degree of health literacy are scarce (Nutbeam, 2000), particularly in cardiac surgery

What is health literacy exactly?

- Several researchers have tried to define this constantly evolving concept (Baker, 2006; De Oliveira, McCarthy, Wolf et Holl, 2015). Here are two definitions that complement each other:
- “The term “health literacy” refers to a set of skills that people need to function effectively in the health care environment. These skills include the ability to read and understand text and to locate and interpret information in documents (print literacy); use quantitative information for tasks, such as interpreting food labels, measuring blood glucose levels, and adhering to medication regimens (numeracy); and speak and listen effectively (oral literacy)” (Berkman et al., 2011, p. 97).
- Health literacy is « the capacity of individuals to access, understand and use health information to make informed and appropriate health-related decisions » (Ishikawa et al., 2009, p. 518).

Our own definition of health literacy

- Literacy is the development “of the ability to **read**, to **write**, to **speak** and to **listen**. In addition, these “literacy” practices can be used in everyday life, at home, at work, in school, or in the community, depending on the goals of each individual, in interaction with their own values and their own culture” (Beauregard, Carignan & Létourneau, 2011, p. 8).
- This definition can be adapted to the medical field, especially in health literacy.

**Reading
proficiency**
understand/
interpret

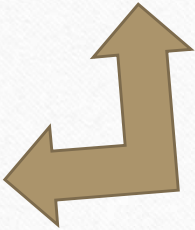


**Writing
proficiency**
personal
notes/
annotation

**HEALTH
LITERACY**



**Oral
proficiency**
speak/listen



Contextualization of the environment

- In Canada, there are two official languages: English and French
- Canadians should have health services in the language of their choice
- In the province of Ontario, the majority of the population is English speaking
 - 4.5% is French speaking in Ontario overall
 - 27.6 % is French Speaking in Sudbury, the city where the study took place (Statistics Canada, 2010)

Contextualization of the environment

- English is dominant in all spheres of society and obtaining health services in French is always a challenge (Bouchard et al., 2015)
- Francophones in Ontario often have a poor conception of themselves and think they will better understand documents in English because of:
 - Linguistic insecurity
 - Complex translation of documents (English to French)

Objectives of the research

- Describe the degree of health literacy of patients (English and French language speaking)
- Identify the factors that could influence the level of health literacy for these patients

Methods

Type of research and participants

- Descriptive and exploratory research with mixed methods
 - Convenience sample
- 33 participants waiting for a cardiac surgery have been selected
 - 6 females (18.2 %)
 - 27 males (81.8 %)
 - 65.91 years old on average (between 36 and 79 years old)
- Mother tongue
 - English n=19 (57.6 %)
 - French n=14 (42.4 %)

Level of Education

Level of Education	N =	Percentage
Elementary school	1	3 %
Grade 8	1	3 %
Grade 9	3	9.1 %
Grade 10	5	15.2 %
Grade 11	4	12.1 %
Grade 12	7	21.2 %
College degree	6	18.2 %
Bachelor degree	5	15.2 %
PhD degree	1	3 %
Total	33	

Methodological tools

- 3 methodological tools has been used:
 - A pre-surgery questionnaire
 - A follow-up over the phone few days before the operation
 - A post-surgery questionnaire
 - Hard copy documents (« blue book » and *Your Heart Your Surgery*)
 - Degree of readability of documents for patients was analyzed (Flesh-kincaid and Gunning)

Data Analysis

- Various statistical methods have been used to analyze data, including ANOVA and correlations.
- Content analysis was used for open questions

Results

Choice of language for the questionnaire: French-speaking participants

- **Pre-surgery questionnaire (n=33)**
 - 14 participants out of 33 have French as a primary language = 42 %
 - 5 francophone participants out of 14 chose French language for the questionnaire = 36 %
- **Phone follow-up (n=30)**
 - 6 francophone participants out of 14 chose French language for the follow-up = 43 %
- **Post-surgery questionnaire (n=28)**
 - 8 francophone participants out of 14 chose French language for the questionnaire: 57 %
- The choice of language is directly related to linguistic insecurity

Results

- **After reading the documents related to the cardiac surgery by the patients...**
- Correlation between reading the documents and feeling reassured ($r = 0.49, p < 0.05$).
- Correlation between the reported degree of comprehension and feeling reassured ($r = 0.53, p < 0.05$)

To the question...	For urgents patients	For elective patients
	Blue book (in the hospital: English only)	Document <i>Your Heart Your Surgery</i>
Have you read the document?	79 %	95 %
Did the document help you better understand your operation?	84,62 %	67 %
Are there parts of the documents that have helped/reassured you?	80 %	89 %
Are there parts of the documents that have stressed you?	46 %	56 %
Are there parts of the documents that you have understood less?	24 %	0 %

Degree of readability depending on the documents

	Words per sentence	Flesch kincaid	Gunning
Questionnaire préchirurgie cardiaque en littératie médicale FRENCH	5,0	5,0	7,4
Questionnaire postchirurgie cardiaque en littératie médicale FRENCH	4,3	5,0	7,2
Cardiac pre-surgery questionnaire in health literacy ENGLISH	4,6	4,3	7,7
Cardiac post-surgery questionnaire in health literacy ENGLISH	4,6	4,3	7,7
<i>Votre cœur, Votre opération</i> document (translation English to French)	14,3	8,7	11,4
<i>Your Heart, Your Surgery</i> document	12,5	7,2	9,9
The Blue Book (urgent patients/hospital)	15,0	9,0	11,6

Degree of comprehension reported by patients

	Pre-surgery Questionnaire	Phone Follow-up	Post-surgery Questionnaire
Mean	8.6/10 (SD: 1.6)	8.9/10 (SD: 1.3)	8.7/10 (SD: 1.3)

- **Pre-surgery Questionnaire:** Women report having a lower level of understanding ($Mean = 7.50, SD = 2.81$) than men ($Mean = 8.89, SD = 1.12$), $F(1.31)=4.07, p = 0.05$.
- **Phone Follow-up:** Women report having a lower level of understanding ($Mean = 7.50, SD = 2.38$) than men ($Mean = 9.12, SD = 0.93$), $F(1.27)=6.49, p < 0.05$.
- **Post-surgery Questionnaire:** Women report having a similar level of understanding ($Mean = 8.75, SD = 1.50$) than men ($Mean = 8.74, SD = 1.29$) $F(1.25)= 0.00, p = 0.99$.

Level of trust in the cardiac surgeon

	Pre-surgery Questionnaire	Post-surgery Questionnaire
Mean	9.3/10	9.5/10
SD	1.2	1.1

Results: level of anxiety

- The younger the patients, the more anxious they are (and vice versa)
 - ($r = -0.45, p < 0.01$)
- The less patients understand, the more anxious they are (and vice versa)
 - ($r = -0.59, p < 0.001$)
- The less patients understand, the less relax they are (and vice versa)
 - ($r = 0.39, p < 0.05$)

Some factors that could influenced the degree of health literacy for patients

- Degree of comprehension of documents
- Degree of comprehension of their own condition
- Being able in a health context:
 - to **read** (comprehension/interpretation)
 - to **write** (take personal notes/take notes on a document)
 - to **speak** (asking specific question/answering properly) and
 - to **listen** (understand/interpret the information properly)

Some factors that could influenced the degree of health literacy for patients

- Level of confidence in the cardiac surgeon
- Level of education
- Experience with the medical system
- Degree of readability of documents
- Level of anxiety
- Choice of language

Conclusion

- The degree of health literacy can play an important role in patient's involvement in their own decision making when undergoing cardiac surgery.
- These results provide insight into the factors that could help improve patient's health literacy proficiency and better assess their level of anxiety preoperatively.
- Future research is needed to unravel further this relationship and assess whether it has an impact on clinical outcomes.

Thank you for your attention!

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References

- Alpaslan, A., & Korkut, U. I. (2017). Readability and comprehensibility in translation using reading ease and grade indices. *International Journal of Comparative Literature and Translation Studies*, 5, 47-53.
- Angus, J., Evans, S., Lapum, J., Rukholm, E., St. Onge, R., Nolan, R., & Michel, I. (2005). Sneaky disease: The body and health knowledge for people at risk for coronary heart disease in Ontario, Canada. *Social Science & Medicine*, 60, 2117-2128.
- Baker, D. W. (2006). The meaning and the measure of health literacy. *Journal of General Internal Medicine*, 21, 878-883.
- Berkman, N. D., Sheridan, S. L., Donahue, K. E., Halpern, D. J., & Crotty, K. (2011). Low health literacy and health outcomes: An updated systematic review. *Annals of Internal Medicine*, 155, 97-107.
- Crook, B., Stephens, K. K., Pastorek, A. E., Mackert, M., & Donovan, E. E. (2016). Sharing health information and influencing behavioral interventions: The role of health literacy, information overload, and the internet in the diffusion of healthy heart information. *Health Communication*, 31, 60-71.
- De Oliveira, G. S., Jr., McCarthy, R. J., Wolf, M. S., & Holl, J. (2015). The impact of health literacy in the care of surgical patients: A qualitative systematic review. *BMC Surgery*, 15. Retrieved from <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4504415/>
- DeWalt, D. A., Berkman, N. D., Sheridan, S., Lohr, K. N., & Pignone, M. P. (2004). Literacy and health outcomes: A systematic review of the literature. *Journal of General Internal Medicine*, 19, 1228-1239.
- Falagas, M. E., Korbila, I. P, Giannopoulou, K. P., Kondilis, B. K., & Peppas, G. (2009). Informed consent: How much and what do patients understand? *The American Journal of Surgery*, 198, 420-435.
- Gauthier, J., & Bouchard, S. (1993). Adaptation canadienne-française de la forme révisée du State-Trait Anxiety Inventory de Spielberger. *Revue canadienne des sciences du comportement*, 25, 559-578.
- Hien, A., & Lafontant, J. (2013). Iniquités de santé en milieu minoritaire : Diagnostic de la situation chez les immigrants francophones de Sudbury. *Revue canadienne de santé publique*, 104, S75-S78.

References

- Ishikawa H., Yano E., Fujimori S., Kinoshita M., Yamanouchi T., Yoshikawa M., ..., & Teramoto, T. (2009). Patient health literacy and patient–physician information exchange during a visit. *Family Practice*, 26, 517–523.
- Lukoschek, P., Fazzari, M., & Marantz, P. (2003). Patient and physician factors predict patients’ comprehension of health information. *Patient Education and Counseling*, 50, 201-210.
- Ruel, J., Allaire, C., Moreau, A. C., Ndengeyingoma, A. (2016). Concevoir une information en santé pour mieux informer les personnes ayant des compétences réduites en littératie. *Repères-Dorif*, 16. Retrieved from <https://medlineplus.gov/etr.html#organize>
- Moreau, A. C., Savriama, S., & Major, F. A. (2013). Littératie en santé : Conduites et gestion de soins chez les personnes ayant des compétences réduites en littératie. *Globe*, 16, 91-105.
- Nutbeam, D. (2000). Health literacy as a public health goal: A challenge for contemporary health education and communication strategies into the 21st century. *Health Promotion International*, 15, 259-267.
- Richard, C. & Lussier, M.-T. (2009). La littératie en santé, une compétence en mal de traitement. *Pédagogie médicale*, 10(2), 123-130.
- Safeer, R. S., & Keenan, J. K. (2005). Health literacy: The gap between physicians and patients. *American Family Physician*, 72, 463-468.
- Spielberger, C. D. (1983). *Manual for the State-Trait Anxiety Inventory (STAI)*. Palo Alto, CA: Consulting Psychologists Press.
- Vecchiato, S., & Gerolimich, S. (2013). La langue médicale est-elle trop complexe? *Nouvelles perspectives en sciences sociales*, 9, 81-122.
- Waldron, C.-A., van der Weijden, T., Ludt, S., Gallacher, J., & Elwyn, G. (2011). What are effective strategies to communicate cardiovascular risk information to patients? A systematic review. *Patient Education and Counseling*, 82, 169-181.
- Wolf, M. S., Davis, T. C., & Parker, R. S. (2007). Editorial: The emerging field of health literacy research. *American Journal of Health Behavior*, 31, S3-S5.
- Wu, J.-R., Reilly, C. M., Holland, J., Higgins, M., Clark, P. C., & Dunbar, S. B. (2017). Relationship of health literacy of heart failure patients and their family members on health failure knowledge and self-care. *Journal of Family Nursing*, 23, 116-137.
- Yehle, K. S. (2015). A picture is worth a thousand words: Does health literacy level matter in patients with heart failure? *Journal of Cardiac Failure*, 21, 619-620.