Centre de recherche sur le vieillissement
Research Centre on Aging

Health and Social Services-University Institute of Geriatrics of Sherbrooke

Encr âge

VOLUME 15, ISSUE 1, SUMMER 2012

In this edition:

While Encrâge *is primarily intended for people who have taken part in research conducted by the Research Center on Aging and for the regional community, anyone interested may subscribe to it.*

Our contact information is on page 4.

Technology to the Rescue of Memory

Investigators at DOMUS (laboratory for research into smart homes and informatics want to use new information technologies to support people with memory impairments in their homes.

At a glance, it looks like a real apartment with its entrance hall, living room, kitchen... But that's if you don't take into account the hundreds of sensors and infrared systems peppering the ceilings, walls, armchairs, range, and taps in the University of Sherbrooke's DOMUS (laboratory for research into smart homes and informatics). A number of researchers use this laboratory founded in 2002 as a nearly natural environment for studying how informatics and mobile communication devices (smartphones) can support individuals with memory impairments resulting from accident or disease (Alzheimer's disease, schizophrenia, etc.).

Technology could help such people living at home while facilitating the follow-up of family caregivers. The idea is to support people in organizing the daily lives, according to their needs, while leaving room for any degree of independence that they still have. "Feeling at home means feeling like yourself, "pointed out Professor Hélène Pigot, one of the DOMUS members who has become an active researcher at the Research Centre on Aging, like her colleagues professors Bessam Abdulrazak and Sylvain Giroux. All three teach in the computer-science department in the University of Sherbrooke's faculty of science.

Pr Bessam Abdulrazak

Pre Hélène Pigot

Pr Sylvain Giroux

The DOMUS team wants to compensate for two major problems: the loss of memory and executive functions (remembering the steps in the task, such as a cooking recipe. As Giroux pointed out, "the principle at the core of our research is that individuals must remain masters of their actions. The technology must support their efforts while leaving them all the control they might have."

Photo credit : Université de Sherbrooke

Mobile Aids

Pigot's work focuses on human–machine interfaces, which includes systems such as smartphones. In particular, she works with neuropsychologist Hélène Imbeault (CSSS-IUGS) on the Ap@LZ mobile personal organizer to give people with Alzheimer's disease a tool that facilitates their daily organization. The device allows patients to enter their own appointments in a simplified manner. The device also contains photos of individuals they are in contact with, checklists, and several pre-recorded telephone numbers to get

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Changing Perceptions of Elder Abuse

A quiz and a book to increase public awareness about elder abuse

By Marie Beaulieu and Johannie Bergeron-Patenaude

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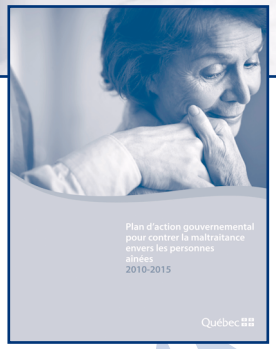

Suggested reading: Marie Beaulieu and Johannie Bergeron-Patenaude, *La maltraitance envers les aînés. Changer le regard…*, Presses de l'Université Laval, April 2012.

There are topics that we think we know about, but, in reality, they are surrounded by misconceptions and misperceptions. Elder abuse is one such topic. Indeed, common misbeliefs are that elderly women are more vulnerable than men to abuse, that all forms of abuse are provided for in the criminal code, and, as a result, that they can be easily prosecuted in the courts. Others include that physical abuse (striking, injuries, etc.) is the most widespread form and that violence in elderly couples always stems from long-standing patterns.

To help dispel these myths and really test the public's knowledge, our research team developed a quiz based on 18 statements calling for true or false responses.

Knowledge Leading to Action

Work on combating ageism has long shown that changes in attitudes and behaviors must be based on access to sound knowledge. Too often, a lack of knowledge about a situation leads to a cascade of inappropriate answers. In light of this work, we decided not to fight all forms of ageism but rather to specifically target changing the perception of a widespread but poorly understood phenomenon, perhaps because it is still taboo: elder abuse.

In developing the quiz on elder abuse, we drew inspiration from the work of Erdman B. Palmore (1998), a pioneer in this field through his *Facts on Aging Quiz*. We adopted a rigorous nine-step research method: selection of 18 themes; recent literature review (within the last 10 years) putting emphasis on work carried out in Quebec and Canada as well as internationally; development of 18 statements; summary development of responses; validation of themes, statements, and summary responses by a committee of eight international experts; validation of the quiz with more than 200 people from various segments of the population; modification of the quiz based on feedback; development of associated materials, such as a textbook containing the quiz, responses, explanations, contexts, and avenues for reflection associated with a presentation for group facilitation; and final validation by the committee of international experts.

The elderly played an important role throughout this long process by sharing their concerns related to elder abuse. They commented on the wording of our statements and responses, and they encouraged the dissemination of our materials. Through their involvement, we observed that the elderly are prepared to use entertaining activities, such as a quiz, to broach a delicate topic that concerns them directly or affects the people around them.

Les deux auteures à l'occasion du lancement du livre

In order to contribute to the wellness of the elderly, we opted to disseminate our materials throughout Quebec. In doing so, we are taking an educational approach in preventing elder abuse, since we are convinced that the people who take the quiz or read our book will be able to recognize situations of abuse and help put an end to them.

From Hospital to Home : The PRISMA Study and Its Benefits for Quebec

By Réjean Hébert

Réjean Hébert, researcher at the Research Centre on Aging and medical consultant with the Institut National de Santé Publique du Québec.

PRISMA

As the population ages, the PRISMA model provides an advantageous solution for better integrating our services for the elderly with chronic diseases.

Population aging requires major changes in how care is organized and in how health and social services are delivered. The hospital currently stands at the center of health-care system with other services organized around it. Population aging carries with it a preponderance of chronic diseases that require continuous and long-term care. The traditional hospital-centered model therefore is inappropriate and must be replaced with a model centered on where users live. Primary health care and home services must be at the heart of the system. Given the multiplicity of organizations and professionals involved, service integration becomes a necessity in this context.

A Model...

The PRISMA group (program of research on the integration of services for the maintenance of autonomy) was implemented to bring about this change and develop the mechanisms and tools needed to integrate services. This group developed a service integration model with six components:

1. Coordination between institutions through the establishment of a joint governing board on which the managers of all the organizations working with the elderly are represented.
2. A single entry point where service requests are centralized in order to make access to the integrated network more comprehensible for the elderly, families, and professionals involved.
3. Case management, which consists in assigning a trained professional—a case manager—to each user so as to assess his or her needs, develop a service plan with the user and family, make provisions for the necessary services, coordinate services, and ensure service relevance and quality.
4. Individualized service plan, developed by the case manager. The targeted objectives, the actions to take, the personnel involved, and a schedule are developed for every problem identified.
5. A single assessment instrument, identical across all the organizations involved, in order to avoid redundancy and share a common vocabulary. This instrument is combined with a classification system to facilitate system management. The instrument retained in Quebec is the Functional Independence Measurement System (SMAF) and its management instrument (Iso-SMAF profiles). SMAF assesses 35 functions, including activities of daily living, mobility, communication, mental functions, instrumental activities of daily living, and social functioning. The billions of possible independence profiles fall into 14 Iso-SMAF profiles that each correspond to a specific offer of services.
6. A continuous computerized information system, including a single, shareable clinical chart for system users.

...Tested in Estrie...

The PRISMA-Estrie study assessed the implementation and impact of a PRISMA-type integrated system in three experimental regions in Estrie with contrasting characteristics (urban, rural with hospital, and rural without hospital). For this study, we also recruited subjects over the age of 75 in three similar zones in the Chaudière-Appalaches region for comparison with those in Estrie. The study followed the degree of implementation of PRISMA mechanisms and instruments in addition to identifying the factors promoting or restricting the model. The objectives of the impact study were to measure the model's effects on the independence model of the elderly, institutionalization, satisfaction with the services delivered, empowerment, caregiver burden and interest in placement, use of health services (public, private, and community), and the cost of these services.

A total of 1 501 people over age 75 years identified at risk of loss of independence were recruited in the three experimental zones in Estrie and the comparison zones in Chaudière-Appalaches. Measurement was carried out prior to implementation and then annually for the next four years. The results show that, after four years, PRISMA implementation started off slowly but was 80% complete by the end of the study. We observed a 6% reduction in loss of independence, a 14% reduction in the incidence of new losses of independence, and an improvement in satisfaction and empowerment of the patients followed in the study. These positive effects can be directly attributed to the PRISMA model. A positive impact was also observed in the number of emergency-room visits in the experimental group. Moreover, no significant difference was observed in the cost of public, private, or community services in the experimental and comparison zones, even when the implementation and operating costs of the PRISMA model in the experimental zone were taken into account. Cost for cost, positive results were achieved in the experimental zones, which demonstrates the effectiveness of the PRISMA model.

Given its effectiveness, the PRISMA model has been deployed across Quebec and its implementation rate is now over 50%. This model has also been tested abroad, in particular, in France, where it has been implemented in a number of instances.

...TECHNOLOGY TO THE RESCUE OF MEMORY

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in touch with family or caregivers. The challenge facing research teams is keeping tool configuration simple in a world of technology that is constantly changing. One of the difficulties is ensuring that the individual with the disease can make the connection between the alarm heard and the fact that it represents a reminder from the organizer.

Pigot also works with Nathalie Bier, a professor of occupational therapy at the University of Montréal on the SemAssist, system, which is a rehabilitation tool for individuals with semantic-memory disorders. SemAssist associates words and images on a simplified touch screen to remind the user of what must be done, for example, with the kitchen utensils in making a recipe. The Archipel project, another instrument on which Hélène Pigot works, extends this idea to the completion of an entire task, such as preparing a dish step-by-step. A series of sensors placed in the environment make it possible to determine if the person has carried out the task properly. For example, did she open the refrigerator and get the milk out? If she has trouble, a signal light indicates where the item she is looking for is located.

Intelligent Apartments

Investigator Sylvain Giroux is working on implementing intelligent systems in actual sites. This is the case of the La conquête alternative dwelling, inaugurated in 2011 in Sherbrooke, which houses individuals who have had head trauma. "We are looking at how cognitive-assistance tools, telemonitoring, and medical management can work in real environments," explained Giroux. The home project requires the collaboration of a multitude of professionals from different disciplines, such as psychologists, occupational therapists, designers, and engineering and administration specialists. His colleague Bessam Abdulrazak, a specialist in sensor networks, specializes in safety concerns related to smart homes, whether in terms of fire risks or even wandering off from the home. For example, it's necessary to determine a person's movements within the home with a high degree of accuracy and ensure that these movements are consistent with using the range, the various taps, and the wastewater system.

Sensor example.

The kitchen.

Pasta preparation water.

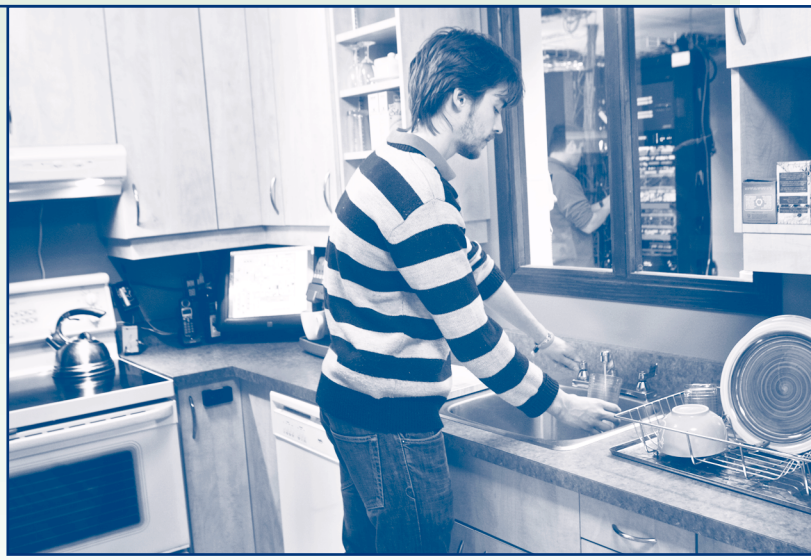

Photo credit : Université de Sherbrooke

The investigators are researching how individuals react when the messages they receive don't make sense or when they experience cognitive overload (have too many things to think about at the same time, like preparing a meal, answering the telephone, starting the dishwasher). Artificial-intelligence systems are not infallible: the important concern is ensuring that these systems actually adjust to the needs of the individual... and not the other way around.

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