

Kitchen furniture for elderly people

Jasna Hrovatin¹, Jože Vižintin²

¹ *A associated member of University of Primorska, Academy of design Ljubljana, Slovenija.*

² *Faculty of Mechanical Engineering, University of Ljubljana, Slovenija.*

Abstract: The percentage of elderly people grows enormously from one year to another. The share of people who have poor eyesight, hearing, memory; impaired motor abilities and who perceive information with difficulty due to their old age is increasing. The question is how to facilitate the use of living spaces for the elderly. It is intriguing that nowadays the majority of products are designed for healthy, young, active and agile people. According to research, such products form up to 90% of the market. Many elderly and disabled people no longer have the ability to fully use them; therefore, domestic chores cause more stress and consequently malaise.

The goal of our research was to determine whether people are generally content with the functionality of their kitchens and whether the degree of dissatisfaction increases with the age of the users. The study aims to pinpoint any major problems facing elderly people whilst working in their kitchens and to establish criteria for kitchen furniture design that could be tailored for senior users, particularly with safety in mind. This research was carried out via individual surveys at the respondents' homes. The results show that elderly people will perform daily tasks, with more appropriate kitchen equipment, faster, safer, and with less effort. Therefore, we designed several items of equipment that are adapted to the specific requirements of the elderly.

Key words: kitchen; elderly; senior; furniture; design; ergonomics

1 Introduction

Higher standard, nutrition and well regulated health care enables a high increase of the share of the elderly each year. According to statistical prognoses, 36% of world population will be older than 60 years by the year 2030 (Hilderbrand H. 2002). During 2004 and 2050 the expected life span of men will increase by 6 years, the life span of women by 5 years. The share of people older than 80 years will increase to 11.4% by 2050. The highest increase is expected for the period from 2015 and 2035, when the age group of people older than 60 years will increase by 2 million (Demographic challenge and solidarity between generations, 2010). The decrease of the birth rate and the mortality rate are also changing the age structure of Slovenians. The share of people who suffer weaker sight, hearing, memory, weaker motor skills and who comprehend information with more difficulty due to old age, is increasing. This sets completely new demands for residential and public facilities. The question remains, how the use of residential buildings can be simplified for the elderly, or people on wheel chairs or visually impaired people, and how the culture of living could be improved. It is interesting that 90% products today are designed for healthy, young, active people with normal physical abilities. Many elderly and disabled people do not have the skills to use such products to their full extent, therefore, house chores present greater strain and discomfort for them. Due to inappropriately designed living space, this causes additional health problems like back pain and injuries that emerge at accidents.

M. Colombo and associates analysed apartments, where people over 55 years of age live. Considering the analysis results, they identified the most frequent problems that these people face. He established that in 33% of apartments the elderly have problems with safety at working in the kitchen, 25% of them have inappropriate lighting to ensure comfortable living and safe work. The research has shown that by adjusting living space to the needs of the elderly, the disabled and visually impaired, we can reduce the possibility for injuries or accidents in apartments by 30 to 50%. A few studies focused on the connection between ergonomics and the design of kitchen furniture. (Trajkovič et al, 2002; Pissareva et al 2009) and on the analysis of the needs of older people (Hrovatin 2002; Klos. et al. 2012). Kirvesoja et al. (2000) and Pheasant (2006) found that the elderly over 65 years of age have problems in adjusting to work and storage area that is set higher up to 1350 mm. Pennathur et al (2003) in their article on functional limitations of the elderly found that 26.67% of all tested women reach objects in hanging cabinets in their own kitchen, 56.67% of them need some help, 16.67% of the tested women do not reach objects in hanging cabinets. 12.9% of women have no problems accessing lower cabinets, 51.61% of them require some assistance, 35.48% of them cannot in any way reach objects in such cabinets.

The EU strategic implementation plan, adopted by the steering group in November 2011 refers to measures within three pillars, one of which is the pillar that focuses on active ageing and independent life. Priority measures within the “Active Ageing and Independent Living” pillar anticipate: the prolongation of active and independent life with customised solutions. These encourage innovations in the field of elderly friendly buildings, cities and residential environment, as well as the “Design for All” (Mandate 473). The Article 77 of EU Official Journal with regards to Demographic Challenges and Intergenerational Solidarity states that opening new economic markets for the elderly presents a great opportunity for improving competitiveness and innovation as well as increasing growth and employment.

According to our analysis Slovenia does not have manufacturers of standard furniture for the elderly people. Orders for individual clients carry a small carpenters workshops. Slovenian company Gorenje is still developing products for the elderly and visually impaired, namely, within the scope of its competence centre, it develops home appliance elements. On the other hand, the University Rehabilitation Institute of the Republic of Slovenia exhibits a kitchen appropriate for the disabled, however, it only assures the minimum standards.

In this paper we present some results of our analysis. Based of the analysis results we will show some proposals how to improve the kitchen furniture for the elderly people.

2 Material and methods

The research was carried out via individual surveys. The survey only includes people over the age of 55. More than 210 questionnaires were filled in, of which 204 were valid. The respondents were aged between 55 and 91. Most respondents, 76%, were aged between 55 and 74. The survey pool consisted of 75% women and 25% men. The questionnaire included open and semi-open questions. Collected data have been coded and subjected to comprehensive statistical analysis.

3 Results and discussion

3.1 Functionality

Figure 1 shows the analysis results considering the functionality of the standard furniture of the kitchen. Most answers pointed out the following dissatisfactions: inadequate lighting over the kitchen work surfaces and inside the cupboards, inappropriate height of shelves, oven, refrigerator, troublesome cleaning set-up (e.g. contact between wall and work surface, contact between work surface and kitchen appliances), damaged furniture fittings (particularly in older kitchens), inadequate handle design (e.g. too small, slippery, fall off, in the way), hard-to-reach places in the corners or shelves under the cupboards.

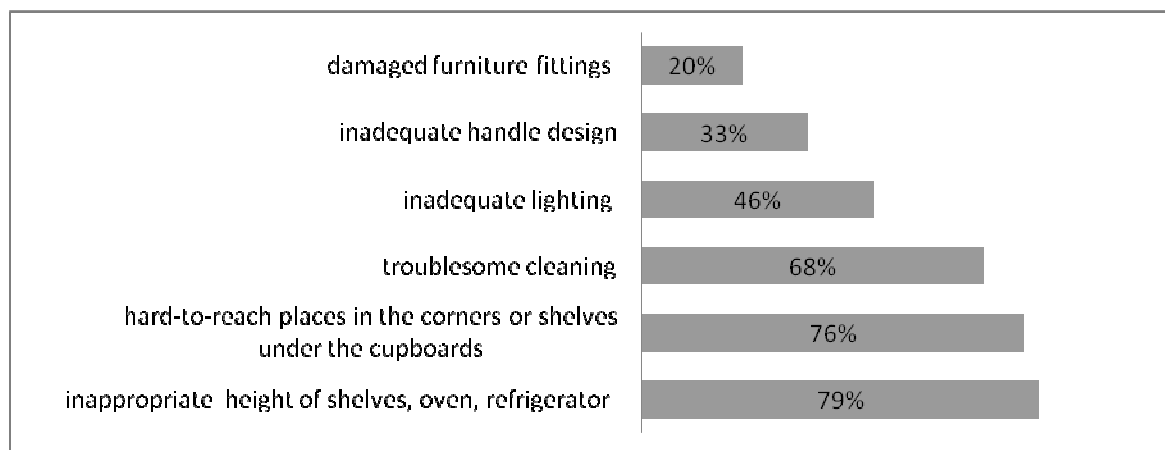


Figure 1. Dissatisfaction with functionality in kitchens

We were interested to learn how many people have light sources installed high up so that they have to climb up on something to change bulbs. The results show that all but one respondent have such inappropriate light sources.

One of the main problems of the elderly people is how to keep the kitchen clean. Almost all have impaired sight and physical abilities. On our question what problems they encounter while cleaning the kitchen we recorded the following answers, Figure 2.

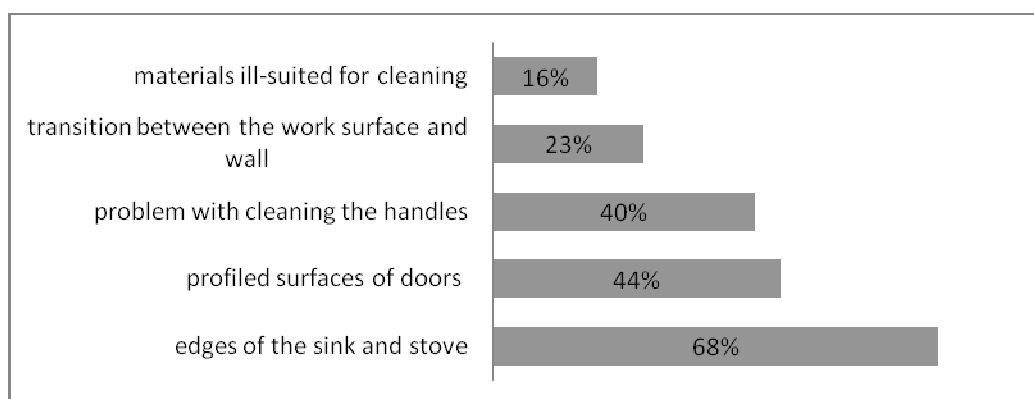


Figure 2. What causes them the most problems when cleaning

3.1.2 The impact of bad memory on work in the kitchen

Many senior citizens suffer from bad memory. We asked the respondents whether or not they face problems connected with bad memory whilst performing kitchen tasks, and if yes, in what specific ways (Fig.3).

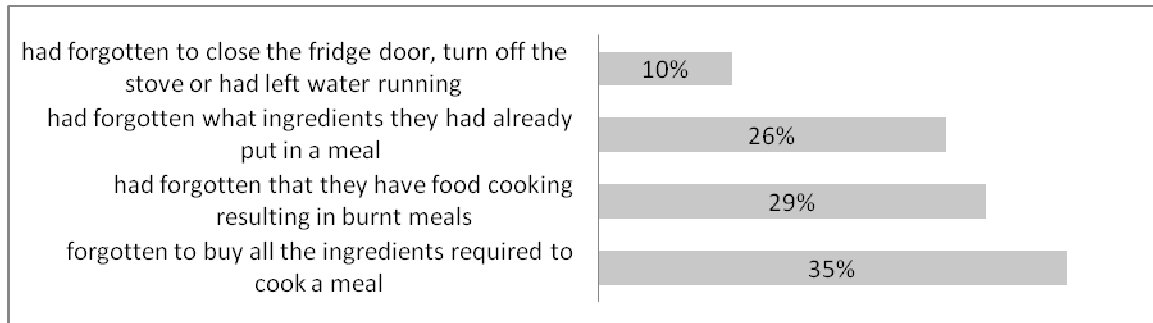


Figure 3. Problems connected with bad memory whilst performing kitchen tasks

3.1.3 The use of modern technology

In the analysis we wonder how many senior users are prepared to use modern technology and computers. Of the 15 who stated they use a computer, 14 were younger than 65. A somewhat higher percentage (21%) would be comfortable with using kitchen robots (Tab.1).

Table 1. Percentage of respondents who use a computer and those who would be willing to use a kitchen robot

		YES	NO
Do you use a computer at home?	Number of answers	27	177
	Percentage (%)	13	87
Would you be prepared to use kitchen robots?	Number of answer	43	161
	Percentage (%)	21	79

3.2. Same proposals for improving design

Considering the results of analysis we have designed some kitchen furniture elements for people which are older than 65 years. In the interdisciplinary design group designers, architects, mechanical engineers, electric engineers, wood engineers and ergonomics experts have taken active part. As a result of the work different kitchen elements for the elderly were designed with personal security and the ability to perform kitchen tasks faster and more easily in mind.

Figure 4 shows the solutions how to solve the problem with the kitchen dishes which are located higher than 150 cm or lower than 65 cm.

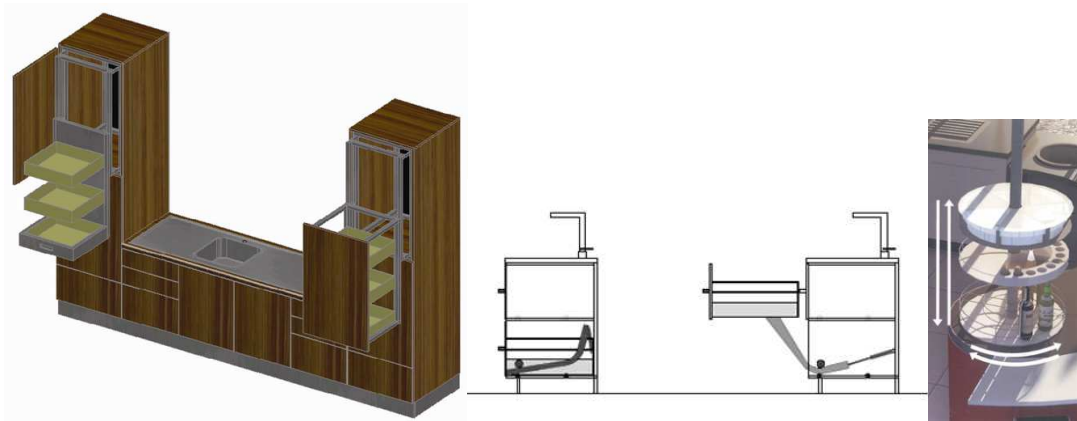


Figure 4. New proposal for kitchen elements design

The possibility of maintaining hygiene in a kitchen is of great importance for senior users, who are more susceptible to infection. The analysis results shows that the elderly people have trouble cleaning handles, profiled surfaces and unsuitable transitions between work-surfaces, walls and appliances. Therefore, we recommend that for doors of the elements and all flat surfaces in the kitchen the materials which are easy to clean have to be used. A good solution for senior users are handle-free doors of cupboards which we can open simply by pressing on the cupboard door. The surface of the kitchen elements should be made in one piece and have a seamless passage between work-surface and wall. The sink and stove have to be mounted in to avoid gaps or thresholds that make cleaning harder, Figure 5.

Cupboards which are placed under work-surfaces and have a base reaching to the floor facilitate cleaning, since senior users find it difficult to bend and sweep underneath cupboards. Similar problems occur on the top sides of tall and wall-mounted cupboards.

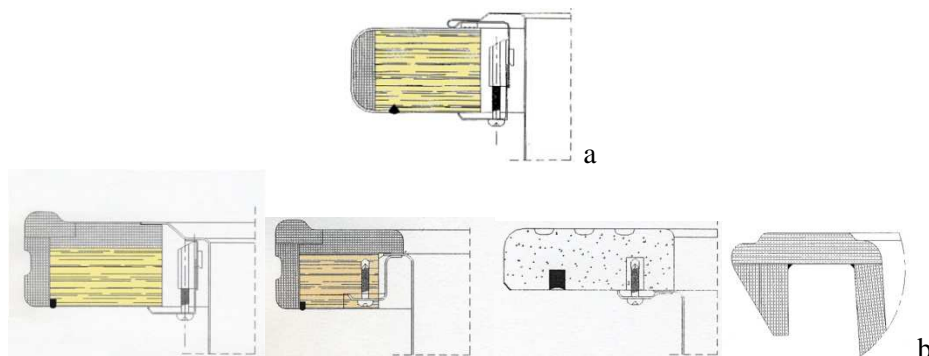


Figure 5. Sink mounted to avoid gaps or thresholds that make cleaning harder
a - bad solution, b - good solutions

4 Conclusions

Most elderly who would like to renovate their kitchen in order for it being used for the rest of their lives, do not have enough information and experience to consider ergonomic adaptations for specific needs of old age. Manufacturers should design kitchen furniture systems that would allow for implementation adapted for special needs and should inform

buyers more about the significance of an adequately furnished kitchen, heeding the needs of advanced age.

Before we start to design the kitchen for the elderly people should take into consideration the following rules:

- appropriate materials considering the configuration, security, cleaning and manipulation of the furniture,
- incorporate the intelligent technology as much as possible,
- the organisation of kitchen elements in space has to be adapted with the requirements of the senior users in mind.
- future kitchen design has to include robots, computer regulation, advanced mechanisms and modern nano films on surfaces to simplify everyday chores and ensure better hygiene standards.

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Corresponding author:

Jasna Hrovatin

Academy of design, associate member of University of Primorska, Vojkova 63

1000, Ljubljana, Slovenia

e-mail: jasna.hrovatin@vsd.si