

# Functional Ability of the Elderly in Institutional and Non-Institutional Care in Croatia

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## ABSTRACT

*Gerontology-public health indicators of functional ability of the elderly in institutional and non-institutional health care in Croatia were determined by use of expert methodology developed at Department of Gerontology, Dr. Andrija Štampar Institute of Public Health in Zagreb, with the aim to upgrade the Program of Health Care Measures and Procedures in Health Care of the Elderly. Comparison of functional ability between the users of selected Old People's Homes (institutional care; N=5030) and Gerontology Centers (non-institutional care; N=2112) yielded highest between-group difference in the proportion of »fully movable« and »fully independent« categories in favor of the latter, thus steering the program of health care for the elderly accordingly. In addition, study results showed greater difference in the proportion of categories describing mental status of institutional and non-institutional care users as compared with the categories describing their physical status, suggesting that mental status plays a more important role than physical status in the geriatric user's stay in non-institutional care versus institutional care. This issue requires additional studies. The results obtained by this indicator analysis pointed to the preventive and geroprophylactic measures to ensure efficient health care for the elderly and to develop the program of mental health promotion and preservation. According to 2007 estimate, there were 759,318 (16.9%) persons aged ≥65 in Croatia. Data collected at gerontology database kept at Department of Gerontology, Dr. Andrija Štampar Institute of Public Health (September 2008) showed 2% of the elderly (N=14807) to be accommodated at Old People's Homes, which is below the European average of 4%.*

**Key words:** gerontology-public health indicators, functional ability of the elderly, mental health

## Introduction

Aging indicators point to accelerated aging of the Croatian population, which influences the strategy and development of health care management for the elderly and planning of rational and efficient health care tailored to health care needs of the elderly<sup>1</sup>. The 2001 census revealed the proportion of elderly persons in the Croatian population to be 15.62%, with a marked age and sex differentiation within the ≥65 age group (male 12.41% vs. female 18.61%), whereas estimates for 2007 indicated this proportion to have risen to 16.9%<sup>2</sup>. According to the United Nations classification, Croatia has been classified in the group of European countries with very old population, which has major impact not only on the health care and social systems but also on the legal, economic and ed-

ucational systems, science, tourism, health tourism, ecology, construction, agriculture, traffic, etc.<sup>1</sup>. In this context, health care of the elderly and implementation of gerontology-public health activities have become priorities to enable adjustment of the many resources to identify and offer proper solutions for the actual gerontologic problems<sup>3,4</sup>.

In the present study, individual gerontologic approach was used to determine functional ability of the elderly in institutional and non-institutional health care in Croatia, in order to develop appropriate Program of Health Care Measures and Procedures in Health Care for the Elderly<sup>2</sup>.

## Subjects and Methods

Expert methodology developed at Department of Gerontology, Dr. Andrija Štampar Institute of Public Health in Zagreb (Department of Gerontology), was used. The methodology is based on defined characteristics for determination, recording, monitoring, studying and evaluation of health care needs of individual geriatric patients through Registry of Healthcare Needs Monitoring in the Elderly Lists 1 and 4 (Official Gazette 82/02, 105/03, 28/05, 85/06, 117/06 and 126/06, 150/08, 71/10), requiring regular quarterly reporting and final reporting at the end of the current year<sup>2</sup>.

Data from Registry List 1 on monitoring specific primary health care needs of elderly insurees at Old People's Homes and other social care institutions (N=5030) and from Registry List 4 on monitoring social and health care needs of Gerontology Center users (N=2112) were collected and processed for 2006. Data on 32 Old People's Homes from all over Croatia were processed, i.e. from Beli Manastir, Dubrovnik, Gospić, Vela Luka, Osijek, Vinkovci, Udbina, Varaždin, Korčula, Selnica (Ščavničar), Opatija (Volosko), Sisak, Petrinja, Zagreb (Maksimir, Čorluka, Ksaver, Medveščak, Gornji Grad, Tolić, Trnje, Centar, Sveta Ana, Sveti Josip, Trešnjevka), Ilok, Đakovo, Velika, Knin, Slakovec, Krapina (Sveti Nikola), Lipik (Anđelak) and Velika Gorica (Ljubav). Data were also obtained from five Gerontology Centers from Zagreb (Trešnjevka, Trnje, Sveta Ana, Maksimir and Sveti Josip).

Department of Gerontology has developed an expert methodological assessment of functional ability of the elderly according to their mobility (physical status) and independence (mental status), analyzed in the present survey. Mobility categories were defined as: 1) movable; 2) restricted mobility (occasionally using a stick, crutches, orthopedic walk support ...); 3) permanently restricted mobility (permanent use of wheelchair); and 4) permanently bed-ridden<sup>3</sup>. Independence was defined as: 1) independent; 2) restricted independence (occasional mental problems); 3) permanently dependent (permanent mental problems); 4) cannot be answered<sup>3</sup>.

In addition, the number of Old People's Homes in Croatia and the proportion of their users at ward unit

were analyzed from data collected through the Questionnaire on Gerontology Standards of Old People's Homes/Homes for Adults with Mental Disorders for 2008<sup>4</sup>.

Comparison of relative numbers and test of proportion comparison (MedCalc software, Mariakerke, Belgium) were employed on statistical analysis.

## Results

Comparison of the users of the selected Old People's Homes (N=5030) and the users of Gerontology Centers (N=2112) yielded statistically significant proportion differences in all grades of the evaluated mobility and independence (Tables 1 and 2). Comparison of the users of Old People's Homes and Gerontology Centers according to the level of mobility (physical status) showed highest difference in the proportion of the 'movable' category (Figure 1). Comparison of the users of Old People's Homes and Gerontology Centers according to the level of independence (mental status) also produced highest difference in the proportion of the 'independent' category (Figure 2).

According to the data collected at Department of Gerontology from September 2008, 2% of the elderly aged ≥65 in Croatia (N=759,318 according to 2007 estimate) were accommodated at Old People's Homes (N=14807)

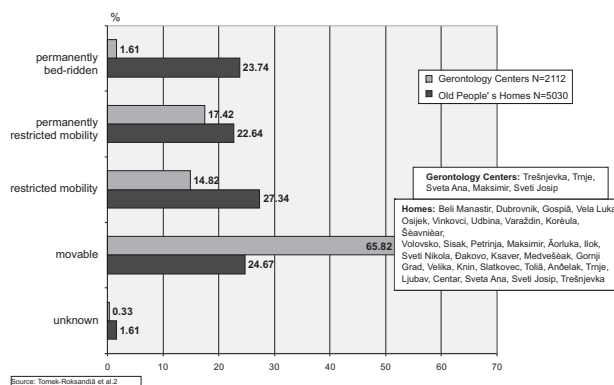


Fig. 1. Comparison of mobility categories between the users of selected old people's homes and gerontology centers in Croatia 2006.

TABLE 1  
PROPORTION COMPARISON OF MOBILITY CATEGORIES BETWEEN THE USERS OF SELECTED OLD PEOPLE'S HOMES (N=5030) AND GERONTOLOGY CENTERS (N=2112)

Level of mobility	Elderly in O.P.H.* (N, %)	Elderly in G.C.† (N, %)	Diff.	95% CI (%)	X <sup>2</sup>	DF	Sig. level
P.B.R. ‡	1194 (23.74%)	34 (1.61 %)	22.13 %	20.81 to 23.40	510.046	1	p<0.0001
PR.M. §	1139 (22.64%)	368 (17.42%)	5.22%	3.19 to 7.17	24.036	1	p<0.0001
R.M.	1375 (27.34%)	313 (14.82 %)	12.61 %	10.61 to 14.52	130.097	1	p<0.0001
¶M.	1241 (24.67%)	1390 (65.82%)	41.15	38.76 to 43.46	1080.728	1	p<0.0001
Unknown	81 (1.61%)	7 (0.33%)	1.28	0.81 to 1.70	18.998	1	p<0.0001

\* O.P.H. – Old People's Home, † G.C. – Gerontology Center, ‡P.B.R. – permanently bed-ridden, §PR.M. – permanently restricted mobility, || R.M. – restricted mobility, ¶M. – moveable

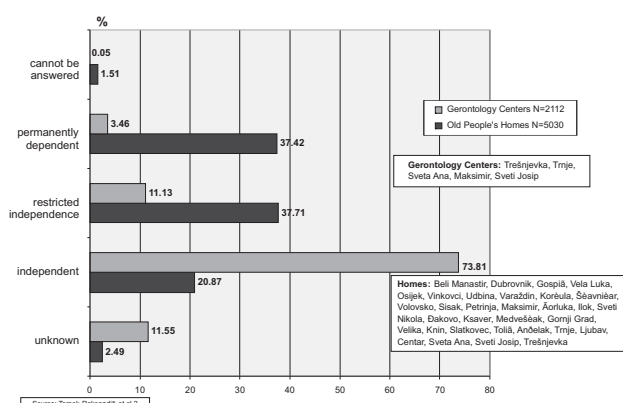


Fig. 2. Comparison of independence categories between the users of selected old people's homes and gerontology centers in Croatia.

(Table 3). Of the total number of Old People's Homes users, 49.88% were accommodated at ward unit.

## Discussion

Comparison of functional ability between the users of Old People's Homes and Gerontology Centers yielded highest difference between the institutional and non-institutional care in the proportion of the 'independent' category, directing the program of health care for the elderly towards preservation and promotion of mental health. Study results showed greater proportion differences in the categories describing mental status than in those describing physical status between the groups of geriatric individuals accommodated at Old People's Homes and those using Gerontology Center services. These findings suggest mental status to be more important than physical status of geriatric insurees for their stay within non-institutional care *vs.* switch to institutional care, however, additional studies into the issue are needed. The integral program of health care for the elderly implies complementary activities of non-institutional care represented by Gerontology Centers and institutional care through Old People's Home services.

According to estimates, in Croatia there were 759,318 individuals aged  $\geq 65$  in 2007. Data from the Department of Gerontology database showed 2% of this age group to be accommodated at Old People's Homes in 2008, which is below the European average of 4%<sup>4</sup>, and is attributed to inadequate capacity of institutional care facilities for the elderly.

Assessments by the Croatian family medicine physicians indicate that health indications predominate over social indications for accommodation at Old People's Homes<sup>5</sup>. It should be noted that 49.8% of the total number of Old People's Home users (N=14807) are accommodated at ward unit<sup>4</sup>. The geriatric insurees accommodated at ward require 24-hour monitoring by health care personnel, specific primary health care services and geriatric health nursing. Admission of a geriatric patient to the residential or ward unit of the Old People's Home is dictated by his functional ability, health condition, and unfavorable health behavior identified. The level of geriatric health nursing is determined according to the each individual's characteristics.

Determination of functional ability of geriatric insurees according to physical status (mobility) and mental status (independence) has become the major indicator for determination of the minimal health care staff standards relative to the number of service users. Identification, monitoring, recording, studying and evaluation of gerontology-public health indicators of the needs and functional ability of geriatric insurees in institutional and non-institutional care make the basis for development of the Plan and Program of Gerontology-Public Health Measures.

Department of Gerontology, Dr. Andrija Štampar Institute of Public Health, has ensured expert methodology of monitoring the needs of the elderly.

In line with specialist training in geriatrics and subspecialist training in gerontology within public health residency according to UEMS, intensification of continuous education has been planned through gerontology and geriatrics curricula at undergraduate and postgraduate level for physicians and other healthcare professionals<sup>6</sup>.

TABLE 2  
PROPORTION COMPARISON OF INDEPENDENCE CATEGORIES BETWEEN THE USERS OF SELECTED OLD PEOPLE'S HOMES (N=5030) AND GERONTOLOGY CENTERS (N=2112)

Level of independence	Elderly in O.P.H.* (N, %)	Elderly in G.C.† (N, %)	Diff.	95% CI (%)	X <sup>2</sup>	DF	Sig. level
C.B.A.‡	76 (1.56%)	1 (0.05%)	1.46%	1.09 to 1.84	28.37	1	p<0.0001
P.D.§	1882 (37.42%)	73 (3.46%)	33.96%	32.37 to 35.48	861.09	1	p<0.0001
R.I.	1897 (37.71%)	235 (11.13%)	26.58%	24.64 to 28.43	500.59	1	p<0.0001
I.¶	1050 (20.87%)	1559 (73.81%)	52.94	50.71 to 55.08	1795.83	1	p<0.0001
Unknown	125 (2.49%)	244 (11.55%)	9.06	7.68 to 10.55	247.23	1	p<0.0001

\*N.H. – Old People's Home, † G.C. – Gerontology Center, ‡C.B.A. – cannot be answered, § P.D. – permanent dependence, || R.I. – restricted independence, ¶ I. – independent

**TABLE 3**  
 OLD PEOPLE' S HOMES IN CROATIA AND NUMBER OF THEIR USERS IN 2008

OLD PEOPLE'S HOME IN CROATIA IN 2008.(N=114)				
COUNTIES / CITY OF ZAGREB	Persons aged ≥65 (estimates for 2007)	Total number of Old People' s Homes	Total number of Old People' s Homes users	Old People' s Homes ward users (N/%)
CITY OF ZAGREB	131033	31	4583	2165/47.24
ZAGREB	48655	5	233	136/58.37
BJELOVAR-BILOGORA	22996	2	297	113/38.05
BROD-POSAVINA	28862	2	307	113/36.81
DUBROVNIK-NERETVA	22358	4	370	253/68.38
ISTRIA	37554	5	783	443/56.58
KARLOVAC	28197	2	271	106/39.11
KOPRIVNICA-KRIŽEVCI	20991	2	319	144/45.14
KRAPINA-ZAGORJE	24010	3	291	105/36.08
LIKA-SENJ	12212	4	328	213/64.94
MEDIMURJE	17440	6	529	250/47.26
OSIJEK-BARANJA	53126	6	1035	430/41.55
POŽEGA-SLAVONIJA	14244	5	448	203/45.31
PRIMORJE-GORSKI KOTAR	55673	9	972	563/57.92
SISAK-MOSLAVINA	33797	5	510	248/48.63
SPLIT-DALMATIA	76942	8	1013	610/60.22
ŠIBENIK-KNIN	24176	3	433	278/64.20
VARAŽDIN	30021	5	1086	549/50.55
VIROVITICA-PODRAVINA	14971	1	30	10/33.33
VUKOVAR-SRIJEM	32302	4	576	324/56.25
ZADAR	29758	2	393	130/33.08
CROATIA	759318	114	14807	7386/49.88

Source: Central Bureau of Statistics of the Republic of Croatia, Center of Gerontology »Dr. A. Štampar« Institute of Public Health

Family medicine physician has a crucial role in performing the Croatian healthcare priority activities such as prevention and reduction of morbidity in the elderly, preservation and promotion of their functional ability, and ensuring active and healthy aging of the population<sup>7,8</sup>. Appropriate and available healthcare implies an active approach to the elderly, in their local community.

Results of this study pointed to the utmost importance of preserving functional ability of geriatric in-surees in terms of mental status, suggesting the need of developing a program for promotion and preservation of mental health. In this context, it is crucial to know how to prevent, diagnose, manage and care for elderly persons with mental problems. Education should be directed towards development of communication skills and modification of erroneous perception of geriatric patients with mental problems<sup>9</sup>.

Health care of functionally disabled elderly users of Old People's Homes is a specific segment of primary health care, therefore additional education on mental health promotion and care for the elderly with mental disturbances should primarily be directed towards the professionals engaged at the level of primary health care<sup>10–22</sup>.

### *The role of mental health preservation in overall care for the elderly*

Dementia syndrome is the main cause of functional dependence in the elderly and has been increasingly recognized as a medical, social and economic problem<sup>23</sup>. Dementia syndrome refers to progressive intellectual deterioration with extensive impairment of the acquired cognitive abilities in patients with organic disease of the central nervous system at preserved consciousness<sup>5</sup>. Dementia is classified according to the causative mechanism involved, predominated by the forms of degenerative dementia (Alzheimer's type) and so-called multi-infarct dementia (the most common type of vascular dementia), which account for 80–85% of cases<sup>5,23</sup>. It is well known that dementia can make an elderly person unable to perform daily activities and to turn fully dependent on the others. Therapeutic options and comprehensive approach to the planned care are certainly influenced by timely diagnosis of dementia and proper diagnosis reporting and recording<sup>24</sup>.

Day-care facilities for the elderly with dementia, organized by Gerontology Centers for the users with identified healthcare needs within the frame of non-institutional care contribute to delay and reduction in the rate



of such patient institutionalization. These day-care facilities offer adjusted occupational therapy programs and socialization to the users, and support and professional counseling to their families/carers<sup>23</sup>. Geriatric patients affected with dementia are stimulated to perform particular physical and mental activities to maintain their residual abilities and to adapt to the new lifestyle<sup>24</sup>.

In order to upgrade the quality of health care for independent elderly, it is necessary to develop systematic care for psycho-geriatric patients through interdisciplinary and individualized approach. Gerontologic guidelines support a model of healthcare organized so as to enable the elderly to stay at home as long as possible, with referral to an appropriate institution only when really necessary<sup>5</sup>.

Family medicine physician plays a major role in healthcare of geriatric patients and their families. Family medicine physician approaches mental health on a holistic basis, i.e. offers education for mental health promotion, identifies healthcare needs, provides interventions and therapeutic assistance, and is involved in rehabilitation aimed at reducing the level of disablement<sup>7,25</sup>.

According to the World Health Organization definition, mental health is not just absence of mental disorder or disturbance, but it also implies optimal social adjustment<sup>25</sup>. Such an approach opens wide possibilities for promotion and preservation of mental health in the elderly.

Comparison of functional ability assessed in the elderly (Tables 1 and 2, Figures 1 and 2) in terms of independence and level of mobility yielded greater differences between the groups of Old People's Home and Gerontology Center users in the categories describing mental status than in those describing physical status. So, the rate of movable individuals was 24.67% in institutional care and 65.82% in non-institutional care, while

the respective rate of independent individuals was 20.87% and 73.81% (Figures 1 and 2). These proportion differences point to the great importance of mental status (independence) for non-institutional care of the elderly. Thus, the program of measures for prevention and preservation of mental health in the elderly and for additional education of professionals in the interdisciplinary approach to the elderly should be directed as a support to non-institutional care, which ensures the elderly prolonged stay at home and in their local communities<sup>6,26–33</sup>.

## Conclusion

The structure of healthcare management of the elderly allows for implementation, planning and development of gerontology-public health measures.

Analysis of the gerontology-public health indicators of functional ability of the elderly in institutional and non-institutional care pointed to mental status to be more relevant than physical status of geriatric insureds for their stay in non-institutional care *vs.* switch to institutional care; these findings call for additional studies. This information will have an impact on the development of the Plan and Program of Gerontology-Public Health Measures and Program for Promotion and Preservation of Mental Health of the Elderly, and for additional education of professionals in the interdisciplinary approach to the care of geriatric insureds.

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## FUNKCIONALNA SPOSOBNOST STARIJH OSOBA U INSTITUCIJSKOJ I IZVANINSTITUCIJSKOJ SKRBI U HRVATSKOJ

### SAŽETAK

U ovom istraživanju, koristeći stručnu metodologiju Centra za gerontologiju ZZJZ Dr. A. Štampar, Zagreb, utvrđuju se gerontološko-javnozdravstveni pokazatelji o funkcionalnoj sposobnosti starijih osoba u institucijskoj i izvaninstitucijskoj zdravstvenoj skrbi u Hrvatskoj u svrhe unaprjeđivanja Programa zdravstvenih mjera i postupaka u zaštiti zdravlja starijih osoba. Uspoređivanje procjenjene funkcionalne sposobnosti korisnika (N=5030) odabranih Domova za starije i nemoćne (institucijske skrbi) i korisnika (N=2112) Gerontoloških centara (izvaninstitucijske skrbi) pokazuje najvišu razliku među dvjema skupinama u zastupljenosti korisnika unutar kategorija »sasvim pokretni« i »sasvim samostalni« u korist korisnika izvaninstitucijske skrbi, što usmjerava program zdravstvene skrbi za starije osobe. Dobiveni rezultati također pokazuju da je izraženija razlika u proporcijama zastupljenosti između kategorija koje opisuju psihički status skupina korisnika institucijske i izvaninstitucijske skrbi, nego onih koje opisuju njihov fizički status. To upućuje da je psihički status od većeg značaja nego fizički status gerijatrijskog osiguranika za ostanak u izvaninstitucijskoj skrbi, odnosno smještaj u institucijsku skrb, što implicira potrebu dodatnih istraživanja. Rezultati analitike usmjeravaju mjere primarne prevencije i geroprofilakse u cilju zaštite zdravlja starijih osoba te izradu programa za unaprjeđenje i očuvanje mentalnog zdravlja. Prema procjenama koje se odnose na 2007. godinu u Hrvatskoj je 759 318 (16,9%) osoba u dobi od 65 i više godina. Gerontološka datoteka ZZJZ Dr. A. Štampar (rujan 2008. god.) ukazuje da je u Domovima za starije i nemoćne osobe smješteno 2% starijih osoba (N=14807) što je ispod europskog prosjeka (4%).