

Conceptual approaches in quality of life assessment for the elderly

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Abstract—Ambient Assisted Living (AAL) deals with technological solutions that help older adults to maintain their independence (or perceived self-esteem, life quality expectations in terms of social inclusion, depression or simply frailty) for longer periods of time than expected under no-support assumptions. Although such a definition is clear, we witness today a wide ways of interpretation of what Quality of Life is all about. Thus, here we examine conceptual developments in Quality of Life (QoL), in order to determine the factors of a good life. To our surprise, as of today quite a wide variety of theoretical models were presented describing and organizing Quality of Life components with relevance in the care of older adults. Our analysis show that the QoL aspects that influence the health status, from a functional, physical and emotional point of view, are focused on the functional status of the individual or the way a person can perform his social tasks without restrictions on physical or mental health. With these, we present our approach to measuring the quality of life that allows reconciliation between the existing measuring currents of QoL dimensions, using both the objective and the subjective circumstances assessment.

Keywords—Quality of life, QoL measures, Elderly life style, QoL Model, QoL instruments.

I. INTRODUCTION

In the last century, a spectacular increase in the population's life expectancy was noted globally, and this trend is expected to be maintained for the 21st century [1]. According to various studies, the number of people aged 60 or over is estimated to increase from 900 million in 2015, from 1.4 billion by 2030 and over 2 billion by 2050.

The aging process of the population, mainly characterized by the high probability of age-related pathologies leading to a decline in functional capacity, generates negative effects on the long-term sustainability of the current social system and older people's well-being implicitly. Factors such as increased life expectancy associated with morbidity, technological advances, and financial constraints on social and medical care, have led to an increase in the interest in alternative ways to improve the Quality of Life (QoL) as perceived by older adults, which is now seen as an important indicator of social, political and economic development of a country [2].

At present, there is an extensive variety of theoretical models describing and organizing the QoL components, with relevance in the old age care. However, there is no consensus on the terms and the way to measure QoL in older age. Definitions and indicators vary from socio-economic status, satisfaction of needs and functional capacity, to meaning in life, life satisfaction, wellbeing and happiness [3].

According to the World Health Organization (WHO) definition [4], Quality of Life represents the individual's

perception of their position in life in the context of their culture and values systems and their goals, expectations, standards and concerns. It comprises a broad range of parameters reflecting from the person's physical health, psychological state, personal beliefs, social relationships, to his relationships and to main features of surrounding environment. Other authors suggest that QoL assessment for older people should include physical functioning and symptoms, emotional, behavioural cognitive and intellectual functioning, social functioning and the existence of social support, life satisfaction, health perceptions, economic status, ability to pursue interests and recreation, sexual function, energy and vitality [5]. For Lawton [6-8], the 'good life' of older people, which later changed to 'quality of life', is a multidimensional concept that can be measured from a multiple perspective (objective and subjective) encompasses four general components: psychological well-being (positive and negative emotions), behavioural competence (e.g. measured by indicators of health, cognition, time use and health) social behaviour, objective environment, and perceived quality of life (e.g. subjective evaluation of each domain of life). Starting from this model, Kane et al. [9] have identified the following domains of long-term quality of life: emotional health, physical status, comfort and security, social function, and self-worth. Other authors only consider the subjective dimension in QoL assessment, considering the other aspects (e.g. environment, individual function, and behaviour) as simple determinants of this dimension [10].

We have seen so far different approaches to define, measure and affect QoL for older adults (we refer here to physical, functional, emotional and social factors). Background diseases, poor economic, educational, cultural, healthcare conditions or inadequate social interaction can cause medical, social, and psychological problems that may affect physical functions and QoL for older adults [11-12]. This paper examines conceptual developments in QoL's research on old age, in order to determine the factors of a good life. A QoL model tailored for older adult without severe impairments will also be presented.

The rest of the paper is structured as follows. In Section 2 we present a brief review of the literature on definitions and models of QoL in order to identify the appropriate dimensions and approach to the proposed domain. Section 3 presents a new approach to QoL modelling for healthy old age or without severe impairments. Finally, Section 4 concludes.

II. THE QoL CONCEPT RELATED TO OLD AGE

A. Descriptive definitions of QoL in old age

In the literature, the concept of Quality of Life has received many interpretations, without reaching a consensus on its defining character or its evaluation tools. This

amorphous aspect is due to the multidimensional and transdisciplinary construction of QoL. Gerontology is a multidisciplinary construction, hence the diversity of QoL definitions related to old age. Definitions cover a wide range of QoL-relevant aspects (e.g. health, wellbeing, economic status, comfort and security, self-perception, social life and family relations, environmental interaction, expectations, cultural and political factors).

In an attempt to identify common elements and factors that influence QoL for old age, our QoL classification distinguishes between expert (definitions worded by scientists concerning QoL in old age, see Table 1) and subjective definitions of QoL (definitions proposed in the framework of empirical studies conducted over time, see Table 2). We present a series of QoL models and dimensions that will serve as a basis for further defining of a QoL model for older adults not suffering from severe impairments.

TABLE I. SELECTION OF AGE-SPECIFIC QoL-DEFINITIONS WORDED BY SCIENTISTS (CITATIONS QUOTED BY EICHER [13])

Authors	Age-specific QoL-definition
Bowling & Gabriel [14]	Quality of life is a multidimensional collection of objective [income, employment, housing, education, and other measures of living and environmental circumstances] and subjective areas of life [social and emotional wellbeing, happiness and life satisfaction], the parts of which can affect each other as well as the sum. It is also a dynamic concept , reflecting values as they change with life experiences and the process of ageing. (p. 3/4)
Bowling, Banister, Sutton, Evans, & Windsor [15]	Quality of life encompasses the individual's physical health, psychosocial well-being and functioning, independence, control over life, material circumstances and the external environment. It is a concept that is dependent on the perceptions of individuals , and is likely to be mediated by cognitive factors . (p. 355)
Browne et al. [8]	Quality of life [...] is a dynamic interaction between the external conditions of an individual's life and the internal perceptions of those conditions. (p. 235)
Hyde, Wiggins, Higgs, & Blane [16]	Quality of life can be assessed by the degree to which the requirements for all four domains [control, autonomy, self-realisation and pleasure] are satisfied. (p. 188)
Lawton [17]	Quality of life is the multidimensional evaluation , by both intrapersonal and socialnormative criteria, of the person-environment system of an individual in time past, current, and anticipated. (p. 6)
Register & Herman [18]	[...] quality of life is a cumulative process that is generated through an ongoing series of specific connections and disconnections that result from interactions with the forces and processes people encounter in their daily life. (p. 340/341)
Walker [19]	[...] quality of life should be regarded as a dynamic, multifaceted and complex concept which must reflect the interaction of objective, subjective, macro-, micro-, positive and negative influences. (p. 5)

TABLE II. SELECTION OF SUBJECTIVE QoLDEFINITIONS OF HEALTHY OLDER PEOPLE (CITATIONS QUOTED BY EICHER [13])

Authors	Age-specific QoL-definition
Beaumont & Kenealy [20]	The most frequently mentioned factors, and those accorded greatest importance, were related to family, health and home . Also highly rated were emotional wellbeing, independence (freedom of choice) and mobility . To those for whom it was relevant, a partner and companionship were of great importance. (p. 764)
Browne et al. [21]	The emphasis for the elderly [...] centred on family (mentioned by 89% of the sample), social and leisure activities (95%), health (91%), living conditions (80%) and religion (75%). (p. 240)

Authors	Age-specific QoL-definition
Brown & Flynn [22]	Despite the variety of methods used, however, the components put forward were remarkably consistent. These were family and other relationships/contact with others, emotional well-being , religion/spirituality, independence/mobility/autonomy, social/leisure activities, finances/standard of living, own health, health of others. (p. 87)
Farquhar [23]	The results also show that, for older people living at home, there is more to quality of life than health. Indeed it appears from these initial questions [z.B. What things give your life quality?] that family relationships, social contacts, and activities are as valued components of a good quality of life as general health and functional status. (p. 1445)
Fliege & Filipp [24]	Content analyses resulted in 28 categories that are united into 5 domains (personal resources, social resources and interaction, activity, material and environmental resources, abstract definitions). (p. 307)
Bond & Corner [25*]	The authors identify 8 key areas relevant to QoL of older people, including both positive and negative aspects of ageing. These areas are: subjective satisfaction (global quality of life as assessed by individual older person), physical environmental factors (standard of housing or institutional living arrangements, control over physical environment, access to facilities such as shops, public transport and leisure providers), social environmental factors (family and social networks and support, levels of recreational activity and contact with statutory and voluntary organizations), socio-economic factors (income and wealth, nutrition and overall standard of living), cultural factors (age, gender, ethnic, religious and class background), health status factors (physical well-being, functional ability and mental health), personality factors (psychological well-being, morale, life satisfaction and happiness), personal autonomy factors (ability to make choices, exercise control and negotiate own environment)

Table 3 presents a selection of conceptual models and general definitions of QoL not age related which emphasizes the multidimensional character of the concept.

TABLE III. SELECTION OF CONCEPTUAL MODELS AND DEFINITIONS OF QoL NOT – AGE - RELATED

Authors	Selected theoretical models and definitions of QoL (not age-related)
Campbell et al. [26]	For authors, QoL is the expression of individual experience and the current life situation that reflects individual welfare. On the basis of these considerations, the authors have proposed a model that integrates objective attributes of the environment that are individually evaluated according to how they perceive them and against which standards he/she valued them (eg, aspiration level, expectation, values, needs, reference groups).
Barcaccia [27]	For the author, QoL reflects a better understanding of individual and society development by addressing positive and negative aspects of life and observing the level of individual satisfaction in various areas such as: physical health, family, education, employment, wealth, safety, security to freedom, religious beliefs, and the environment.
George and Bearon [28]	The authors identify four dimensions, two of which are 'objective' (general health and functional status; socio-economic status) and two of which are 'subjective' (life satisfaction, self-esteem).
Felce și Perry [29]	The authors have identified 5 fundamental areas relevant to quality of life: physical wellbeing, material wellbeing, social wellbeing, emotional wellbeing and development and activity.
Dissart and Deller [30]	The authors consider that the main dimensions of quality of life are personality, social support, personal satisfaction, personal skills , environmental factors, economic factors, health and stressful events.

Schalock [31]	The author presents a hierarchical model with eight dimensions (emotional well-being, personal development, self-determination, interpersonal relationships, rights, material well-being and physical well-being).
R. Veenhoven [32]	Because the differentiation between the subjective and objective elements of the quality of life is sometimes difficult to trace, the author proposes a four-dimensional quality of life model based on the relevant distinction between life itself and good life opportunities, on the one hand, and the difference between external (the environment) and internal (the individual) qualities on the other. The four dimensions are: 1) liveability of the environment (environmental chances / social capital); 2) life - ability of the person (personal capacities / psychological capital); 3) Utility of life (the quality of life depends on the existence of a purpose in life, other than life itself or a high values); 4) Appreciation of life (inner outcomes of life / expectation of life).
Pukelienė et. all [33].	The authors unified in one model the factors of quality of life identities in the literature. The Model for Measurement of QoL groups in external and internal sections four groups of factors . The factors relating to external environment include natural environment (climate conditions, quality of natural environment), political environment (political stability, political rights and civil liberties, corruption), social environment (healthcare system, accessibility of education, social security, social inequality), and economic environment (macroeconomic and fiscal environment). The factors relating to internal environment, which mostly depend on the individual himself are the following: physical well-being (health condition, personal security), individual developmental well-being (education, availability of information technology), social well-being (family, leisure, and community life), and material wellbeing (income, availability of housing).

B. Health - related quality of life (HQRL)

In the quality of life research, **health** is one of the most important social factor nominated by the population in setting their living standards [34]. Thus, based on this empirical evidence, it was considered justified to include health among the QoL dimensions or among the factors that decisively influence QoL [35].

HRQoL is a concept of quality of life related to health, pathology, illness or health model, including all aspects of QoL that influence functional, physical and emotional health status [20]. The emphasis has been put on the functional status which represents *'the extent to which a person can perform social tasks without restrictions on physical or mental health'* [36]. This approach (functional model) focuses on the ability to perform daily activities grouped into: physical activities (e.g. washing, dressing, toileting, feeding, transferring from chair to bed) and instrumental activities (e.g. shopping, housework, preparing meals, public transport) or social obligations [8].

Unlike the functional model addressing the individual's difficulties in achieving essential activities in society, WHO [37] put HRQoL in a positive, multidimensional perspective (social, psychological physical and well-being) according to the definition of health *„a state of complete physical, mental, and social well-being and not merely the absence of disease or infirmity”*, whereby physical, mental and social well-being is not only a condition associated with the lack of illness or infirmity, but emphasizes the ability of patients to carry out their usual daily tasks [38].

The various HRQoL theoretical approaches do not provide a coherent perspective on this area, many of the

existing models offering different approaches and terminologies for the same concepts.

In their study, Bakas et. all [39] propose a critical analysis of three HRQoL models identified as being most commonly used in the literature: Wilson & Cleary model of HRQoL, Revised Wilson and Cleary Model of HRQoL proposed by Ferrans et al. and the World Health Organization International Classification of the Functional Disability and Health Model (WHO ICF).

The Wilson & Cleary model of HRQoL [40] combines two paradigms, biomedical and social science, and includes five major interrelated domains: biological and physiological variables, symptom status, functional status, general health perception, and overall HRQoL and two related domains, individual and environmental characteristics. According to the authors, these latter domains are associated with outcome, affecting whole HRQoL.

Ferrans et al. [41] propose a model slightly different from the Wilson & Cleary model, with the following components: Biological Function, Symptoms, Functional Status, General Health Perceptions, Characteristics of the Environment, and Overall QoL. There are two differences: "Biological and Physiological Variables" domain change in "Biological Function" because *"alterations in the biological function directly or indirectly affect all components of health, including symptoms, function status, perception of health, and overall quality of life"* (Ferrans et al., 2005, p. 338) and the elimination of the independent "Nonmedical Factors" component because it can be found in individual or environmental characteristics. This conceptual model can be applied to any health care discipline.

The WHO ICF "provides a standard language and framework for the description of health and health-related states" [42]. This model was conceived as a tool for measuring the functioning of an individual in society in the context of his disability. The components in the WHO ICF model include: Body Functions and Structure, Activity, Participation, Environmental and Personal Factors.

Unlike the first two models designed to assess individual health status, the WHO ICF's conceptual framework is very flexible, and can be adapted to a multitude of disciplines, providing a health response at individually, family, society, populations or different cultures level. Another major difference is that the models Wilson & Cleary and Ferrans et al. are specifically adapted to the HRQoL domain, unlike WHO ICF describing health depending on how the individual function in society and his disability.

Because all three models described above have a broad, multidisciplinary approach to health, it is useful to develop a new HRQoL model adapted for elderly patients without severe impairments that integrate both biological (objective) and psychosocial (subjective) factors and allow a better understanding of their effects on QoL.

III. NEW APPROACH TO MODELING QoL FOR OLDER ADULTS WITHOUT SEVERE IMPAIRMENTS

Up-until-now we showed a global trend towards an increase in life expectancy associated with the compression of morbidity. Thus, a QoL model destined for older adults becomes necessary in order to support the future generations live longer, with the assistive technology support designed

not only for the older adult, but together with the older adult. Such a model should target older adults with and without Mild Cognitive Impairments¹ (differentiation in the type of care received will be based on criteria DSM5, the standard classification of mental disorders used by mental health professionals, and ICD-11, the global standard for diagnostic health information [43]). Old age without severe categories of deficiencies can be associated with a healthy senior age, which in most cases refers to physical circumstances (e.g. having good cognitive skills, living independently, having a good vision) which implies the existence of resources that need to be maintained rather than improved [13].

Despite the wide range of definitions for QoL in the literature, we will encounter only a few concepts that provide practical support for the operationalization and measurement of QoL-specific issues for older adults without severe impairments. In the literature there are two approaches described to determine QoL in old age. The first approach refers to the subjective measurement of QoL, or how each individual evaluates their own life (as a whole or by specific QoL domains), while the second approach objectively describes the individual life circumstances. The major disadvantage of the first approach is the difficulty in obtaining values for the subjective measures used, varying from person to person, while the second approach, although much more precise, does not consider the differences caused by individual particularities in the functioning of an individual in relation to available resources and goal.

Thus, for a better QoL assessment of older adults with a normal state of health or without severe impairments, it makes sense that the subjective representation of resources to take into accounts the existence of objective or missing resources. Thus, a new measurement approach is needed to reconcile current trends for a comprehensive measurement of QoL dimensions, both by assessing objective and subjective circumstances.

The model proposed by Eicher [13] allows a subjective assessment from a functional QoL perspective of healthy older people. This approach establishes a conceptual link between the subjective representation of resources (cognitive, physical or social), the functional objective and the achieved action, obtaining an improvement of functional QoL. The Functional QoL Model (fQoL) considers that functional QoL is high when available resources are functional (useful from a subjective perspective) and perform activities that accomplish the goal of the represented QoL domains. The fQoL model contains seven areas relevant to the quality of life for elderly without severe impairments, which include both positive and negative aspects of ageing: Physical and mental health or functioning, Social interaction, Activities, Environment, Finance, Existential-spiritual aspects, Perception of one's overall situation.

A. Overview of the model

The model proposed in this paper incorporates objective indicators as well as subjective evaluations and will allow assessment of the impact of physical, functional, psychological and social factors affecting QoL of an older

adult without major health problems from a multiple (objective and subjective) perspective.

B. Methods

In this model, the identification of QoL measures has been done on the basis of systematic searches in the scientific databases, eight instruments being identified to measure QoL for older adults without severe impairments, according to the following criteria: a) The instruments were specially designed primarily for QoL measurement; b) Instruments have been classified as generic instruments; c) Instruments address old age or can be used in this context; d) Instruments allow self-reporting; e) Instruments have good psychometric properties.

C. Instruments

The instruments identified are: EQ-SD-3L (European Quality of Life), Fact-HEP, SF-36 (Short Form Health Survey), WHOQOL-BREF, OPQOL-35 (Older People's Quality of Life Questionnaire), WHOQOL-100, WHOQOL-OLD, IPAQ (International Physical Activity Questionnaire).

Table 4 presents a selection of the appropriate tools for measuring QoL for older adults without severe impairments.

TABLE IV. SELECTION OF QOL MEASURE INSTRUMENTS – AGE - RELATED

Measure	Domains
EQ-SA-3L	5 dimensions: mobility, self-care, usual activities, pain/discomfort and anxiety/depression
Fact-HEP	Physical well-being, social/family well-being, emotional well-being, functional well-being, additional concerns
SF-36	Physical function, role function, bodily pain, general health, vitality, social functioning, emotional wellbeing, mental health
WHOQOL-BREF	Physical, psychological, social, environment
OPQOL-35	Life overall; health; social relationships and participation; independence, control over life, freedom; area: home and neighborhood; psychological and emotional well-being; financial circumstances; religion/culture
WHOQOL-100	Physical; psychological; level of independence; social relations; environment; spirituality/religion/ personal beliefs
WHOQOL-OLD	Sensory abilities; autonomy; past, present and future activities; social participation; death and dying; intimacy
IPAQ	Job; transportation; housework, house maintenance, and caring for family; recreation, sport, and leisure; time spent sitting.

¹ In clinical literature, there is a distinction for supportive actions designed for older adults having or not having such Mild Cognitive Impairment conditions (measures to support QoL are different based on this separation).

D. QoL model for elderly without severe impairments

QoL model for older adults without severe impairments is presented in Table 5.

Table V. QoL proposed model

Domain	EQ-SA-3L	Fact-HEP	SF-36	WHOQOL-BREF	OPQOL-35	WHOQOL-100	WHOQOL-OLD	IPAQ
Physical health								
Mobility	x			x				
Functional status				x				x
Sensory ability							x	
Self-care	x							
Sleep and rest		x		x		x		
Overall health			x		x			
Physical functioning								
Physical energy					x			
Psychological health								
Positive feeling				x				
Self-esteem				x		x		
Bodily appearance						x		
Self-perception								
Depression and anxiety			x					
Happiness			x		x			
Social interaction								
Social relations				x		x		
Social participation							x	
Family relations								
Sexual life						x		
Intimacy							x	
Environmental interaction								
Home and neighbourhood					x			
Recreation, sport, and leisure								x
Financial circumstances					x	x		
Transportation						x		
Physical environment						x		
Spiritual beliefs								
Spirituality / religion / Personal belief				x		x	x	

Death and dying								x	
Wellbeing									
Life satisfaction								x	
Autonomy									
independence, control over life, freedom							x		
live overall							x		

IV. CONCLUSIONS

Quality of life provides a broad and flexible framework to identify common elements and factors that influence QoL for old age. Despite the wide variety of theoretical models, there is no consensus on the terms and the way of measuring the quality of life. The systematization of the scientific literature made it possible to identify the main conceptual approaches in this field but also the problems arising from their application. There is, however, a broad consensus on the following aspects of QoL: 1) QoL is multidimensional, there is no limit or convention on its specific domains; 2) It is a dynamic concept in which each dimension can be evaluated differently from one person to another, depending on the context, hence the measurement challenges. 3) Values attached to each dimension may change over time, due to changes in the current life and life experience.

Factors such as increased life expectancy associated with morbidity, technological advances and financial constraints on social and medical care have led to an increase in the interest of the elderly and the improvement of their quality of life, which is now seen as an important indicator of social, political and economic development of a country.

For a better QoL assessment of older adults with a normal state of health or without severe impairments, a new approach of quality of life is needed for a comprehensive measurement of QoL dimensions, both by assessing objective and subjective circumstances. The models presented in this paper will serve to provide a new QoL model what will be used in empirical studies on a sample of older people, in order to develop a user profile which to be used in thematic AAL research projects.

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V. REFERENCES

- [1] United Nations, 2015. World Population Prospects: the 2015 Revision, http://www.un.org/en/development/desa/population/publications/pdf/ageing/WPA2015_Report.pdf
- [2] [Smith, A. 2000. Researching quality of life of older people: concepts, measures and findings. Centre for Social Gerontology, Working Paper No 7

- [3] Sarvimaki, A. (2000). Quality of life in old age described as a sense of well-being, meaning and value. *Journal of Advanced Nursing*, 2000, 32(4), 1025-1033
- [4] WHOQOLQoL Group. The World Health Organisation quality of life assesment (WHOQOLQoL): Development and general psychometric properties. *Soc Sci Med* 1998; 46(12): 1596-85.
- [5] Arnold S. Measurement of quality of life in the frail elderly. In: JE Birren, JE Lubben, JC Rowe (eds). *The concept and measurement of quality of life in the frail elderly*. San Diego CA: Academic Press, 1991.
- [6] Lawton MP. Environment and other determinants of well-being in older people. *Gerontologist*, 1983a; 23: 349-357.
- [7] Lawton MP. The varieties of wellbeing. *Experimental Aging Research*, 1983b; 9: 65-72.
- [8] Brown, J., Bowling, A., Flynn, T. (2004). *Models of Quality of Life: A Taxonomy, Overview and Systematic Review of the Literature*. European Forum on Population Ageing Research. Retrieved from: http://www.ageingresearch.group.shef.ac.uk/pdf/qol_review_complete.pdf
- [9] Kane, R. A., Kling, K. C., Bershadsky, B., Kane, R. L., Giles, K., Degenholtz, H. B., et al. (2003). Quality of life measures for nursing home residents. *Journal of Gerontology: Medical Sciences*, 58A, M240-M248.
- [10] Brod, M., Stewart, A. L., & Sands, L. (2000). Conceptualization of quality of life in dementia. In S. M. Albert & R. G. Logsdon (Eds.), *Assessing quality of life in Alzheimer's disease* (pp. 3-16). New York: Springer Publishing Company.
- [11] Mellor, D., Russo S., McCabe M.P., Davison T.E., George, K. (2008). Depression Training program for caregivers of elderly care recipients: implementation and qualitative evaluation. *J Gerontol Nurs*; 34(9): 8-17.
- [12] Donmez L., Gokkoca, Z., Dedeoglu N. (2005). Disability and its effects on quality of life among older people living in Antalia city center. *Turkey Arch Gerontol Geriatr* 2005; 40 (2): 213-223.
- [13] Eicher, S. (2014) *Quality of life in healthy old age: How it can be defined, measured and stabilized from a within-person perspective*. Thesis (cumulative thesis) presented to the Faculty of Arts and Social Sciences of the University of Zurich for the degree of Doctor of Philosophy
- [14] Bowling, A., & Gabriel, Z. (2004). An integrational model of quality of life in older age. Results from the ESRC/MRC HSRC quality of life survey in Britain. *Social Indicator Research*, 69, 1-26.
- [15] Bowling, A., Banister, D., Sutton, S., Evans O., & Windsor, J. (2002). A multidimensional model of the quality of life in older age. *Aging & Mental Health*, 6(4), 355-371. doi:10.1080/1360786021000006983
- [16] Hyde, M., Wiggins, R. D., Higgs, P., & Blane, D. B. (2003). A measure of quality of life in early old age: The theory, development and properties of a needs satisfaction model (CASP-19). *Aging & Mental Health*, 7(3), 186-194.
- [17] Lawton, M. P. (1991). A multidimensional view of quality of life in frail elders. In J. E. Birren, J. E. Lubben, J. C. Rowe, & D. E. Deutchman (Eds.), *The concept and measurement of quality of life in the frail elderly* (pp. 3-27). San Diego: Academic Press.
- [18] Register, M. E., & Herman, J. (2006). A Middle Range Theory for Generative Quality of Life for the Elderly. *Advances in Nursing Sciences*, 29(4), 340-350.
- [19] Walker, A. (2005). A European perspective on quality of life in old age. *European Journal of Ageing*, 2(1), 2-12. doi:10.1007/s10433-005-0500-0
- [20] Beaumont, J. G., & Kenealy, P. M. (2004). Quality of life perceptions and social comparisons in healthy old age. *Ageing and Society*, 24(5), 755-769. doi:10.1017/S0144686X04002399
- [21] Brown, J. P., O'Boyle, C. A., McGee, H. M., Joyce, C. R. B., McDonald, N. J., O'Malley, K., & Hiltbrunner, B. (1994). Individual Quality of Life in the Healthy Elderly. *Quality of Life Research*, 3, 235-244.
- [22] Brown, J., & Flynn, T. (2004). The components of quality of life nominated by older people. A systematic review of the literature. In J. Brown, A. Bowling, & T. Flynn (Eds.), *Models of Quality of Life: A Taxonomy, Overview and Systematic Review of the Literature* (pp. 78-102).
- [23] Farquhar, M. (1995). Elderly People's Definition of Quality of Life. *Social Science & Medicine*, 41(10), 1439-1446.
- [24] Fliege, H., & Filipp, S.-H. (2000). Subjective theories on happiness and quality of life - Results of an explorative interview study with 65- to 74-year-olds. *Zeitschrift für Gerontologie und Geriatrie*, 33, 307-313.
- [25] Bond, J., Corner, L. (2004). *Quality of life and older people*. Open University Press, New York
- [26] Campbell A., Converse P.E. & Rogers W.L. (1976). *The Quality of American Life*. Russell Sage Foundation, New York.
- [27] Barcaccia, B.: (2013). *Quality Of Life: Everyone Wants It, But What Is It?*. Forbes / Education.
- [28] George, L.K., Bearon, L.B. (1980). *Quality of Life in Older Persons: Meaning and Measurement*. Human Science Press, New York
- [29] FELCE, D., PERRY, J. (1995). Quality of Life: Its Definition and Measurement. *Research in Developmental Disabilities*, 16, 51-74.
- [30] DISSART, J.-C., DELLER, S. C. (2000). Quality of Life in the Planning Literature. *Journal of Planning Literature*, 15, 135-161.
- [31] Schalock, R.L. (2000). Three Decades of Quality of Life in Focus on Autism and Other Developmental Disabilities, Vol. 15, No. 2, pp. 116-127
- [32] Veenhoven, R. (2000). The Four Qualities of Life: Ordering concepts and measures of the good life. *Journal of Happiness Studies*, Vol. 1, p. 1-39
- [33] Pukelienė, V., Starkauskienė, V. "Assessment of changes in the quality of life of emerging economies in the context of developed economies of the european union". *Organizations and Markets in Emerging Economies* 2 (12):103-120.
- [34] *Baromètre santé* (2005). *Europeni și calitatea vieții*. Editions INPES, ISBN 978-2-9126-9201-7.
- [35] Bowling A. *Measuring health. A review of quality of life measurement scales*. Buckingham: Open University Press, 2004, 3rd ed.
- [36] McHorney, C. A. (1999). Health status assessment methods for adults: past accomplishments and future challenges. *Annual Review of Public Health*, 20, 309-335.
- [37] WHO (1976). *International Classification of Impairments, Disabilities, and Handicaps. A manual of classification relating to the consequences of disease*. Published in accordance with resolution WHA29. 35 of the Twenty-ninth World Health Assembly, May 1976
- [38] WHO. *Constitution of the World Health Organisation, basic documents*. Geneva: WHO, 1948
- [39] Bakas, T., McLennon, S.M., Carpenter, J.S., Buelow, J.M., Otte, J.L., Hanna, K.M., Ellett, M., Hadler, K., Welch, J. (2012). Systematic review of health-related quality of life models. *Health and Quality of Life Outcomes*, 12: 124
- [40] Wilson IB, Cleary PD: Linking clinical variables with health-related quality of life: A Conceptual model of patient outcomes. *JAMA* 1995;273(1):59-65.
- [41] Ferrans CE, Zerwic JJ, Wilbur JE, Larson JL: Conceptual model of health-related quality of life. *J Nurs Scholarsh* 2005, 37(4):336-342.
- [42] World Health Organization (WHO). (2002). *Towards a Common Language for Functioning, Disability and Health: ICF*. <http://www.who.int/classifications/icf/training/icfbeginnersguide.pdf>
- [43] Bajenaru, O., Tiu, C., Antochi, F., Roceanu, A. 2012. *Neurocognitive disorders in DSM 5 project - Personal comments*, *Journal of the Neurological Sciences*, 322(1-2), 15 Nov. 2012.