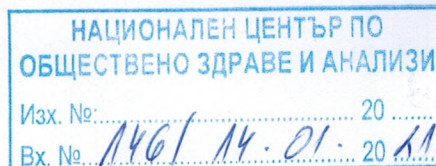


Translation from Bulgarian



REVIEW

of a dissertation on the topic: '**STUDY ON THE QUALITY OF LIFE IN SOME SOCIALLY SIGNIFICANT DISEASES OF THE CENTRAL NERVOUS SYSTEM**' to confer the educational and scientific degree of **Ph.D.** on Dr. Vladimir Pavlov Damyanov, doctorand of individual preparation in professional field 7.1. Medicine – scientific discipline of Social Medicine and Health Management

Supervising professors:

Prof. Valentina Petkova, D.Sc. in Pharmaceutical Sciences
Assoc.Prof. Evgeni Grigorov, Ph.D. in Medicine

Reviewer: Prof. Dr. Ivan Petrov, D.Sc. in Medicine

It is under Order No. PD - 4611/01.12.2020 of the Director of the National Center of Public Health and Analyses (NCPHA) that I was appointed member of the scientific jury for the procedure of defence of Dr. Vladimir Damyanov's dissertation.

Biographic data

Dr. Vladimir Damyanov was born in Sofia in 1957. In 1975 he completed his secondary education at 28th Secondary School, Sofia. In 1983 he completed his higher education in medicine graduating from the Medical Academy, Sofia (Diploma of Master's degree in medicine No. 004101).

From 1983 to 1990 he worked at the Military Medical Academy (MMA) – Neurological Clinic as well as in aviation. In 1988 he acquired a specialty in nervous diseases (Diploma No 33149/03.06.1988). In 1989 he acquired a specialty in aviation medicine. Dr. Damyanov has competence in acupuncture and EEG. In the period 1990-2000 he worked as a neurologist at the Neurological Clinic of the Medical Institute at the Ministry of the Interior. Since 2000 he has been working as a neurologist at the 8th Diagnostics & Consultation Centre (DCC), Sofia. He was Deputy Director of the said DCC for thirteen years. He also worked as a neurologist at 'St. Panteleimon' Hospital.

Dr. Damyanov has numerous participations in congresses and symposiums in Bulgaria and abroad, as well as long postgraduate qualifications in neurology. He has a total of 25 scientific publications and reports in our country and abroad. In connection with the dissertation he has presented 4 publications (2 with IF).

Dr. Damyanov is a member of Bulgarian Medical Association (BMA) and in the

period 2006-2009 he was a member of the Regional College of the BMA. He has competence in English, Greek, Arabic and Russian. He has very good computer skills.

The theme of the dissertation work is extremely topical and socially significant as it explores quality of life (QoL) in patients with severe neurological disorders of the Central Nervous System (CNS) – cerebral stroke (CS), epilepsy, Parkinson's disease (PD) and multiple sclerosis (MS).

The concept of quality of life is a complex and multidirectional concept, which is defined as a concept encompassing a wide range of physical, psychological and social characteristics and constraints that describe an individual's ability to function and to derive satisfaction from what he/she does.

In purely medical terms, improving quality of life is a major goal of palliative medicine, which is aimed at providing care for patients suffering from severe diseases, diminishing the consequences of these diseases and the negative psychological and social effects associated with them. That is exactly what makes the dissertation a topical one – the exploration of the quality of life of people suffering from diseases causing disablement, with a view to their resocialization and social inclusion. The quality of life is examined using different instruments: questionnaires, scales, surveys, etc., which are individually chosen by each author.

The dissertation consists of **175 pages**, which are structured in the well-established manner, including: Title - **1 page**, Table of contents - **1 page**, List of abbreviations - **1 page**, Introduction - **4 pages**, Literature review - **71 pages**, Objective and tasks - **1 page**, Materials and models - **3 pages**, Methodology of conducting the study - **3 pages**, Analysis and discussion of results - **55 pages**, Conclusions - **1 page**, Contributions - **1 page**, Publications and reports - **2 pages**, Bibliography - **12 pages** (including **220** literature sources – **25** in Cyrillic alphabet and **195** in Latin alphabet), most of them dating back to the recent 10 years, Enclosures - **36 pages**. The dissertation is illustrated with **21** tables and **69** figures.

The **Literature review** is sufficiently comprehensive and analytical. It shows the doctorand's very good knowledge of the literature and his ability to analyze and synthesize literary data, as well as to make generalizations.

At the beginning, the socially significant neurological diseases and their consequences are considered, as well as modern perceptions and different aspects of the term 'Quality of life' (QoL). The risk factors for the development of cerebral stroke, epilepsy, PD and MS are considered in contemporary aspects. A significant part of the literature review is dedicated to measuring the quality of life in patients with cerebral stroke, epilepsy, MS and PD. Attention is given to a new generation of high-tech solutions to improve the quality of life effects in MS patients. The place and effectiveness of new technological solutions are indicated, the latter aiming at the improvement of QoL in patients with cerebral stroke. In epilepsy, quality of life is determined by the number and severity of seizures, cognitive disorders, ability to concentrate, medication therapy. A number of different instruments for measuring QoL in patients with epilepsy are also described. As for PD, description is given of the pathogenesis, the clinical picture of the

disease (motor and non-motor symptoms) and the treatment. Analysis is made of different symptoms of PD that affect the QoL in patients suffering from this disease.

Multiple sclerosis is described as an autoimmune inflammatory disease of the CNS myelin, with a varied course of development and scattered neurological symptoms. Early disablement of patients with a sharp deterioration of QoL is possible. The main physical and mental factors determining the QoL in MS patients are also described.

The literature review does not end with conclusions, but logically leads to the main objective of the dissertation: **To assess the quality of life of patients suffering from cerebral stroke, epilepsy, Parkinson's disease and multiple sclerosis in Bulgaria.**

In order to achieve the main objective, Dr. Damyanov sets himself 4 clearly defined tasks that are precisely accomplished. Two main hypotheses are also formulated.

MATERIALS AND MODELS

Cerebral stroke – The study is conducted in 3 medical institutions for pre-hospital care on the territory of Sofia within a 6-month period (01.06.2018 – 31.12.2018). The study covers 30 patients of full age with a cerebral stroke who meet the criteria set out. The SS-QoL questionnaire – a specific instrument for assessing QoL following a cerebral stroke – is used. The SS-QoL scale consists of 36 questions covering 12 domains (socially significant factors).

Epilepsy – The study is conducted in 3 medical institutions for pre-hospital care on the territory of Sofia within a 6-month period (01.06.2018 – 31.12.2018). The study covers 40 patients of full age with epilepsy who meet the criteria set out. The QOLIE-31 questionnaire – a specific instrument for assessing QoL in epilepsy – is used. The QOLIE-31 scale consists of 31 questions on the basis of which the scores of 7 domains are determined.

Parkinson's disease – The study is conducted in 3 medical institutions for pre-hospital care on the territory of Sofia within a 6-month period (01.06.2018 – 31.12.2018). The study covers 40 patients of full age with Parkinson's disease who meet the criteria set out. The PDQ-39 specific scale for PD assessment is used. It comprises 39 questions on the basis of which the scores of 8 domains are determined.

Multiple sclerosis – The study is conducted in 3 medical institutions for pre-hospital care on the territory of Sofia within a 6-month period (01.06.2018 – 31.12.2018). The study covers 31 patients with MS (incl. newly diagnosed) who meet the criteria set out. The instrument MSQOL-54 (physical and mental health) is used. It comprises 54 questions on the basis of which the scores of 14 domains are determined.

All these instrument have been translated and duly validated.

The specialized statistical package SPSS version 20 for Windows has been used to process the data obtained.

The QoL study in CS patients covers 10 (33.3 %) women and 20 (66.7%) men at the average age of 67.13. The lowest values are measured in the domain of upper limbs disorders. The highest values are demonstrated in the domain of social activities, which shows that, depending on the impairment, the patients tend to continue their activity. As for epilepsy patients, 17 are men (42.5%) and 23 are women (57.5%). The patients' average age is 53.05, the standard deviation is 15.24 years. The QoL study shows that the largest share of patients are concerned to a certain degree about the occurrence of the next seizure. Half of the patients report concerns over getting hurt during a seizure. The results of the study on the overall quality of life are also presented – the occurrence of various emotions and moods, energy or fatigue, brain work, treatment consequences on everyday activities. The QoL study in PD patients concerns mobility, everyday activities, emotional well-being, stigma, social support, cognitive impairments and bodily discomfort. The assessment of domain scores shows that mobility is most highly affected, and social support is least affected, which means that patients do not lack support. Out of all the 31 MS patients, 8 are men (25.8%) and 23 are women (74.2%). The average age is 74.74 and the standard deviation is 9.7 years. The QoL study shows that patients feel most constrained when doing sports and least constrained when carrying out everyday activities. A review is made of the constraints ensuing from physical problems, emotional problems, pain, emotional well-being, perception of one's own health, cognitive functions.

The analysis of the results obtained enables the doctorand to draw the following important conclusions:

1. Translation and validation is made of the questionnaire instruments for assessment of the QoL in specific groups of patients suffering from cerebral stroke, epilepsy, PD and MS.
2. Statistical demographic analyses are made of the results of the application of questionnaire instruments for assessing the QoL of the said patients, which showed great dependence between age and the separate components. As people advance in age, a decline is identified in the QoL in all 4 diseases.
3. The correlation analysis of the degree of interdependence of the separate factors influencing the QoL in patients suffering from CS, epilepsy, PD and MS has confirmed this relationship.
4. The QoL monitoring in its dynamics is crucial both for the patients and their possible resocialization, and for reducing the involvement of relatives, social workers and society.
5. The study on QoL in CS patients also includes an analysis – based on literature data – of the high-tech potential of artificial intelligence both in timely diagnostics and in monitoring the QoL of patients and their rehabilitation.
6. The speedy and complete recovery accompanied by improved quality of life is particularly important in view of the demographic collapse in our region and the

opportunity of having part of the sick people brought back to the labour market.

I accept the author's self-assessment of the dissertation contributions. They are genuine ones, scientific & applied and affirmative in nature. The most important of them are:

1. This is the first time that an exhaustive study has been conducted in Bulgaria on QoL in patients with four socially significant diseases of the CNS - CS, epilepsy, PD and MS.

2. The interrelation of these diseases with the clinical and medicosocial consequences is elucidated. The main terms and methods are adapted for being applied in the medical and pharmaceutical practice in Bulgaria.

3. An attempt is made at clarifying the role of medical, economic and psychological factors in the proper conduct of drug therapy in these neurological diseases.

4. The importance of using standard questionnaires is proven in the assessment of QoL in the diseases under study and the characterisation of different risk domains.

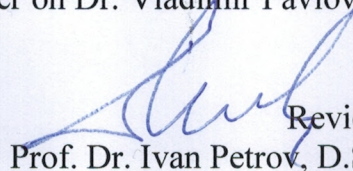
5. Analyses are made of specific approaches and optimisation schemes for the assessment of QoL in real practice, which would contribute to assessing the patients' mental state more easily and quickly.

I have some inconsiderable critical remarks, which are of a technical nature and do not diminish the merits of the dissertation.

Conclusion:

The dissertation submitted for conferment of the educational and scientific degree of Ph.D. is of a definitely genuine nature and scientific & applied significance. It fulfils the criteria and indicators set out in the Law on Academic Staff Development in the Republic of Bulgaria as well as the NCPHA Rules on its application. In view of the topicality and great social importance of the scientific work, the genuine scientific contributions and the scientific publications, I give a positive assessment and suggest to the honourable scientific jury that it should confer on Dr. Vladimir Pavlov Damyanov the educational and scientific degree of Ph.D.

8 January 2021

 Reviewer: Signature
Prof. Dr. Ivan Petrov, D.Sc. in Medicine