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QUALITY ASSESSMENT AND MEASUREMENT OF RESULTS IN MEDICAL REHABILITATION SERVICES – IMPLICATIONS FOR PERSONS WITH DISABILITIES

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Health systems have as main goal the supply of quality medical services, which involves a variety of human, material and financial resources. The insufficiency or lack of some of these resources will result in diminishing the quality of medical care, with consequences on the health of patients.

In the domain of medical rehabilitation, patients have complex pathologies which require long-term treatments, teams of professionals consisting of rehabilitation doctors and other professional categories (kinesiotherapists, occupational therapists, physiotherapists, nurses, speech therapists, psychologists, etc.) and specialized equipment. As one of the important goals of medical rehabilitation is to improve the functional status of patients, reliable and valid methods of performing functional assessment are necessary. Quality assessment and measuring outcomes of rehabilitation services provides insight into how they meet the needs of persons with various disabilities. Quality rehabilitation is a gain, both for the individual (improving functionality, increasing independence and quality of life) and for society.

The presentation of systems for assessment of rehabilitation programs and monitoring results from US health system support the rehabilitation professionals in our country for a better knowledge, understanding and use of them in medical practice, where possible.

Keywords: quality medical services, outcomes, medical rehabilitation, functioning, disability

INTRODUCTION

The quality of medical services is an important concern of health professionals, researchers, and consumers.

One of the definitions of the concept of quality of health care is "the degree to which health services for populations increases the likelihood of desired health outcomes and are consistent with current professional knowledge" [1].

A quality health care requires the standardized implementation of effective treatments with favorable risk/benefit ratios [2].

Quality of medical care involves the following components [3,4]:

1. Choosing an appropriate medical care that optimally addresses the patient's impairments and activity limitations. The role of diagnosis, planning, and clinical evaluation is to match treatments to patient conditions and to balance possible benefits against possible risks.

2. Providing medical services in the better conditions. Health care should be available (access), provided as soon as possible (timeliness), and correctly (technical accuracy), minimizing safety risks. The skills and sustained efforts of the professionals and the coordination of the medical team are also involved.

We talk about **quality** in medical rehabilitation when these services lead to continuous improvement in the functionality, health and quality of life of patients, beyond any improvements that would have occurred with nonprofessional care.

1. Particular of Quality and Results in Medical Rehabilitation

Quality of care in medical rehabilitation

The objectives of medical rehabilitation are comprehensive and cover both physiological dysfunctions, as well as the functional status and quality of life of patients.

For the rehabilitation of patients with complex problems and different personal conditions, the quality of medical care involves a certain degree of adaptation of the rehabilitation plan to individual.

In medical rehabilitation, patient involvement is particularly important because engaging the patients' motivations is essential to the success of activity therapies [2].

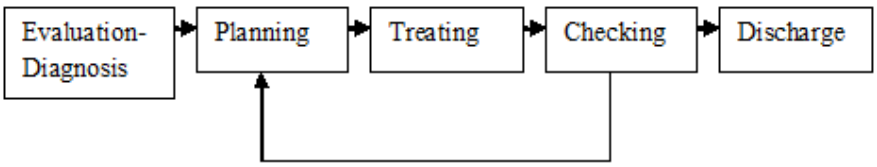
Of great importance are communication, concern, empathy, honesty, sensitivity, and behavior towards patients [5]. Patients want to be informed about their condition and also want to be involved in selecting treatment goals. Systematic quality assurance and quality improvement in medical rehabilitation require the implementation of processes that use scientific method s consisting of developing a plan, collecting data on both system and patient problems, acting to improve processes, checking results, and regular revaluation [2].

Clinical treatment goals

The clinical care process involves evaluation (diagnosis and fact finding), planning (which also includes the decision), treating, checking (measurement of the outcome), followed by a new evaluation in order to modify, continue, or discontinue the treatment leading to another method of treatment or, finally, to patient discharge (figure 1). Clinical practice involves all of these steps, including checking the success of any previous diagnostic-planning-treatment sequence. In this sense, the measurement of clinical outcomes is intrinsic and essential to clinical practice. The relevant clinical measures may be indicators of response to short-term treatment, such as a serum level, an oral response from the patient, a slight increase in muscle strength, or normalization of gait [2]. Efforts to improve the quality and outcomes of rehabilitation services address all elements of this core cycle.

The objectives of the outcome of rehabilitation services are defined at a broader, less specific, but still significant, such as the level of improvement of activities carried out by a person or of community participation and of quality of life [6,7,8,9]. Objectives are measured after finalization of rehabilitation care, when the patient's

Figure 1. The cycle of the clinical care process



Source: [2]

functionality has stabilized to some extent. Improving the rehabilitation process requires addressing long-term outcome goals as well as short-term treatment goals [6,7,10].

The classical outcomes-oriented method involves the routine assessment of diagnostic and therapeutic results; process variables are evaluated if the results do not meet the accepted standards. In process-oriented approaches, the short-term clinical outcomes of interventions are assessed.

The term "outcome" is usually expressed in different ways: "life outcome", in the general sense of restoring the role and quality of life; "health-related quality of life", and "outcomes of care", or "rehabilitation outcomes" [2]. Although medical rehabilitation improves aspects of patients' quality of life, it cannot be said that it can usually produce very big improvements in the patient's life.

The term results in rehabilitation also involve a connection to rehabilitation treatment. Therefore, an outcome of rehabilitation is an aspect of function or life due to rehabilitation treatments. These outcomes are not directly measured, but are estimated after adjusting for case severity and factors influencing the likely responsiveness [2].

Health and physical functioning – there are terms whose definition contains several levels which need to be understood due to the important role in the systematic improvement of the performance of rehabilitation services. In medical rehabilitation, the term functionality of an individual usually refers to his ability to perform daily activities, professional activities, leisure activities, social interactions, and other behaviors [11].

The conceptual bases of the functional assessment were provided by the disability models proposed by Nagi and Wood [12] for the World Health Organization (WHO) [13] and the National Center for Medical Rehabilitation Research (NCMRR) [14]. The role of the NCMRR model is to facilitate research efforts to investigate how persons with disabilities could interact with the rehabilitation program in order to achieve the best possible adaptation in the environment. According to the WHO since 1980 [13], social norms are defined by six key roles: orientation, physical independence, mobility, profession, social integration, and economic independence. To fulfil these social roles, the person uses a variety of functional skills that lead to complex behaviors and tasks.

Overall functional assessment is an essential component of clinical management. Information obtained from assessment tools can be used for descriptive, evaluative, or predictive purposes. The functional assessment used for descriptive purposes is a common screening method for rehabilitation and chronic diseases, providing data on the type and severity of disabilities at a given time. Assessment tools are used to set therapeutic goals and to monitor the progression of the disease, while measuring the clinical changes that may occur. The predictive use of assessment tools provides objective criteria for treatment planning and evaluate of set goals. Regardless of the instrument chosen, it must be practical, easy to administer, and provide significant results that can direct the rehabilitation process [11].

The term functional limitation refers to very specific limitations or activity restriction of the person, measured in a clinical environment [15,16], in contrast to the more general indicators of daily activities. If a deficiency is used as an outcome measure, there should be evidence that the deficiency is significantly associated with functional outcomes or quality of life. In many rehabilitation situations, a pathology or deficiency can be treated and diminished without changing the patient's primary condition or functional status [2].

For example, Range of Motion (ROM) and even spasticity reduction is poorly correlated with functional outcomes [17], probably because they are not perceived as obstacles to improving functionality in patients with these deficiencies.

Activities and deficiencies are determined not only by physical deficiencies but also by the degree of compensation for functional strengths. Disability and activity may have a connection to community participation or life satisfaction [18,19].

2. Evaluation of the rehabilitation program and outcomes monitoring measures - model used in American rehabilitation services [2]

2.1. Design of evaluation systems for the rehabilitation program

The evaluation systems have been designed to provide an overview of program outcomes.

The standard evaluation model of the rehabilitation program involves the following [2]:

- Program objectives, such as: improving self-care, mobility, and continence; communication; focusing on shorten length of stay; patient satisfaction.
- Appropriate indicators and functional measures (e.g., percentage of improvement in bladder management, measured by the Functional Independence Measure - FIM).
- Specifying the results which are measured. Analyzes of outcomes by specific patient groups are needed, knowing that the nature of relevant outcomes and degree of improvement vary across these groups.
- Specification of how measures are implemented and when they are applied. Most programs measure functionality at the patient's admission and discharge. The evaluation of the function in the period between 1-6 months after discharge provides a more valuable picture of patient outcomes. Monitoring of results has become common and is required by the

standards of the Commission on Accreditation of Rehabilitation Facilities (CARF) [20].

- Establishing the expected level for performance indicators. The classic evaluation program model requires specifying the expected level of performance: minimal, optimal or maximal (which can be achieved under ideal conditions).

The design of the program evaluation is based on an exposition of the problem that describes who the institution serves, what services it offers and what objectives it expects to achieve. The goals should focus on the needs of the persons served and other groups or stakeholders in the success of the program. The institution's programs are described, for example, as a program for stroke, brain injury, spinal injury, pain program, general inpatient rehabilitation, intermediate day center, etc.

Performance monitoring systems in medical rehabilitation must group patients by their primary condition or by groups of deficiencies, and ideally, severity adjustment should be done according to the primary diagnosis (e.g., severity and level of paralysis in spinal cord injury) [18]. Different methods for assessing functional scales may be required for different diagnostic groups. For example, walking is relatively easy for a person with brain injury, but it is almost impossible for a person with complete paraplegia; its significance as an indicator of progress is radically different between the diagnostic groups [2].

A range of reliable and valid operating scales can be used to monitor rehabilitation performance, the best known being the FIM. It is commonly used to measure functional outcomes in rehabilitation. The FIM is an 18-item tool evaluates each item along a scale ranging from 1 (total assist) to 7 (completely independent). This scale has some limitations in the areas of speech, language, and knowledge, but has some advantages in measurement of cognitively problems in daily life [21].

Activities of daily living scales (ADL). Daily activities refer to those basic skills that a person must have for oneself independently. ADL scales usually assess self-care skills (feeding, body washing, personal hygiene, dressing-undressing, etc.), transfers, continence, and in most cases, locomotion. ADL scales are usually hierarchical and may include easier activities, such as eating, but also difficult actions, such as climbing stairs. The usefulness of these tools is that they provide a minimum number of elements to describe the functionality, and can be used to track a clinical course of treatment. Such scales that meet the appropriate standards of validity and reliability are: the Barthel Index, Index of Independence in Activities of Daily Living, Kenny Self-Care Evaluation, and FIM™ Instrument, etc. [11].

Instrumental activities of daily living scales (IADL). These can be used to measure the patient's ability to perform activities related to maintaining independence in the community. These activities may include using a telephone, shopping, preparing meals, and managing money, etc. Improving and restoring these skills are often part of a rehabilitation program, but these are difficult to assess until the patient returns home. IADL scales can be used either by a professional or by an individual, depending on the disability and circumstances. However, this type of scale has some limitations, in the sense that not all activities can be applied to all persons and also does not take safety into account as an aspect of performance. One of the scales used in rehabilitation services is the Functional Health Status [11].

Quality of life scales reflect a wide range of skills, manifestations and psychosocial characteristics that describe the functional capacity and satisfaction with life. The components of quality of life include social roles and interactions, functional performance, intellectual operability, perceptions, and individual health [11].

Subjective well-being is statistically associated with health and physical functioning, community life participation, and a satisfying social life, but the inconsistency of these associations shows that subjective well-being cannot be reduced to health indicators and objective circumstance [19,22]: the person's own expectations or implicit standards of his or her own life are decisive. Several studies have been conducted on subjective well-being and life satisfaction so that they can be used as ultimate rehabilitation outcomes measures [22].

Although there is controversy over measuring quality of life, this is a powerful indicator of rehabilitation success. The importance of these types of scales for people with permanent disability has not yet been established. In medical practice, three quality of life scales are used that meet the criteria of reliability, validity, and sensitivity: MOS 36 -Item Short Form Survey, Sickness Impact Profile/ and the LIFEwaresM System [11].

2.2. Outcome monitoring models for different categories of patients

The most used set of rehabilitation performance indicators can be found in the Inpatient Rehabilitation Facility-Patient Assessment Instrument (IRF-PAI) [2]. This data set contains information on deficiencies group, functional independence at admission and discharge (FIM), demographic aspects, and shortens length of stay. For clinical performance monitoring, the information system must be adapted to diagnostic and functional groups.

Rehabilitation program evaluation systems can be adapted for:

✦general inpatient medical rehabilitation, including stroke [16,23, 24];

✦Spinal cord injuries [16,23,25];

✦traumatic brain injury [6,7,8,21];

✦chronic pain management programs [25];

✦outpatient rehabilitation clinics [26];

✦postacute community reentry [23,26,27] and vocational programs [23,26];

✦other conditions requiring rehabilitation [23,28].

Because inpatient rehabilitation programs must address mixed-diagnosis cases, comorbidities, and rare diagnoses, diagnostic and severity evaluation systems are needed if outcomes should be monitored for all

patients. Functional improvement is the most important way to measure the benefits in mixed-diagnosis groups. Mixed-diagnosis systems which focus on functional and disability-level outcomes are considered relatively good for the later stages of rehabilitation, including return to daily life, community integration, vocational rehabilitation, and long-term nursing home care. Primary outcomes should be measured in terms of actual patient performance, rather than ability or other terms [23,28,29].

2.3. Performance indicators used in medical rehabilitation

Most performance indicators developed to date are short-term clinical indicators for acute medical conditions, rather than measures of long-term outcomes, structure, or processes. According to the Joint Commission on Accreditation of US Healthcare Organizations (JCAHO), three types of performance indicators are accepted: a) clinical indicators, b) health status scales, and c) patients' perceptions of health care and services [2]. Many of these indicators, such as satisfaction with care, infection control, and treatment monitoring, are also specific to medical rehabilitation [30,31].

Currently, FIM is the instrument used in rehabilitation to measure the health and function of patients. Rehabilitation services present the scores obtained, using FIM, as indicators (e.g., change the FIM score at admission and at discharge). The rates of program interruption, acute care hospitals discharges, and discharges to nursing homes could be used as indicators of the evaluation of the rehabilitation program. The monitorization of physical rehabilitation services includes: increase in self-care ADLs; mobility, pain reduction; patient satisfaction with services (e.g., satisfaction with fit and functioning of prosthetic and orthotic services); cognitive and emotional adaptation of the patient and family to disability; improving communication skills; health maintaining; reduction or prevention of avoidable complications, frequently observed in persons with disabilities. Overall, in rehabilitation, achieving the functional goals for the patient usually involves a multidisciplinary team.

Clinical guidelines aim to define standard clinical practice for frequently seen patient problems. hjh

Because guidelines explicitly define standards of care, their development is intrinsic to monitoring and improving performance. The clinical guide describes the nature of the evaluation, the differing interventions required depending on patient's characteristics, and how the patient's responses (clinical outcomes) should be measured and evaluated [2]. In order to achieve levels of treatment and results recommended by the guide, patients should be trained and encouraged. Best-practice guidelines can improve clinical performance and serve as a tool for clinicians and a source of information for patients. Evidence-based guidelines need to be developed in particular to define standards for complex rehabilitation care. Evidence-based guidelines may not be available for all rehabilitation problems, but even when evidence is limited (e.g., stroke rehabilitation), it is possible to develop guidelines based on valid theories and any direct evidence that exists. The development, implementation, and monitoring of practice guidelines are essential for systematic efforts to ensure and improve the quality of rehabilitation care [2].

Strategies for quality improvement

The quality of care is currently perceived to be complex and polyvalent, and each component of the overall care system needs to be considered when quality needs to be improved. Several strategies are needed to ensure and improve the quality and effectiveness of rehabilitation care. Short-term and long-term processes and outcomes must be fully measured, either continuously or through periodic focused studies, to identify opportunities for performance improvement. Professionals and patients need training, improved access to health information and adequate incentives. Involvement and accountability are needed at all levels of the recovery process. The problem that may arise is to identify the quality improvement strategy or tool that is needed for any particular situation [2].

Medical rehabilitation has developed systems to monitor patient gains in basic functional activities, but more research is needed to develop comprehensive performance improvement systems that monitor key aspects of healthcare quality and obviously improve that care and results associated with the patient. Defining the parameters of quality care and outcomes associated with patients is the responsibility of all rehabilitation professionals and is essential for maintaining and improving this area [2].

Improving the quality focused on outcomes

Since there is no optimal model for providing recovery care, it is necessary to monitor functional outcomes, and programs are free to choose how to achieve these outcomes. In general, when a program achieves higher or lower results than expected, this is not necessarily proof of high or low quality or effectiveness of care [32]. The results after rehabilitation are due to several factors, not only the quality control of care. A difference between the expected outcomes and those obtained is used as an indicator of a possible problem or as an opportunity to improve activities. Performance monitoring systems rarely provide unequivocal evidence of quality or results. Rather, the data models confirm some ideas about program quality and effectiveness, and reduce others ideas [2]. There are many common mistakes in interpreting data on clinical outcomes that can be avoided. First is the common tendency to assume greatest effect of treatments. Rehabilitation interventions are designed to reduce complications and improve the patient's healing and adaptation to new conditions, but these benefits may not appear quickly. Another common mistake is the assumption that the improvement is due entirely to rehabilitation. Improvement can be due to both natural healing and family and environmental activities that can occur in the patient's home. On the other hand, if the outcomes have not improved does not mean that it used an inadequate treatment [2].

Patient involvement in the quality improvement process

To improve the quality of rehabilitation programs was proposed to increase patient involvement. Patients have different functional needs, and the evaluation of patient outcomes may differ from those of professionals [2]. People who use rehabilitation services may choose more cognitive and communication skills than physical

skills [33], although them are measured in the same way or even more important is given to physical outcomes.

For the same disability, the significance can vary among patients [4,8,34]. Patients have different lifestyle requirements. Thus, improving the ability to prepare meals or to climb stairs can be critical for one person, but irrelevant to another. In order to involve patients, various methods were used, including: satisfaction surveys, complaint forms, communication courses for professionals, surveys of patient needs, and improving the provision of educational information. A number of studies have been done on physician-patient communication, and analyzes have shown that various indicators of patient-centered communication and care lead to greater patient satisfaction and even to better compliance with prescribed treatment [35]. Though most patients want to receive information about their condition and treatment options, many do not want to make key decisions about essential treatment; in particular, seriously ill patients may not want to take responsibility for managing their disease [36]. Several studies are needed to clarify methods and circumstances of appropriate patient involvement so that satisfaction and outcomes can be improved.

3. Implications for people with disabilities

In the domain of medical rehabilitation, a series of terms are used, common to all countries, in order to compare international data, health outcomes, quality of services, but also the problems of each health system.

In 2001, the World Health Assembly (the decision-making body of WHO) approved a revised system of the International Classification of Functioning, Disability and Health (ICF), which includes the levels of functioning and disability and which are presented below [37]:

LEVEL OF FUNCTIONING	PARALLEL LEVEL OF DISABILITY
Body functions and structures	**Impairments**
Activities	**Activity limitations**
Participation	**Participation restrictions**

where *impairments* are problems in body function and structure such as abnormality or significant loss, *activity limitations* refer to the difficulties a person may have in performing activities, and *participation restrictions* address issues that an individual may experience when involved in certain social events.

Socio-economic implications

People with disabilities have, to a higher or low degree, a limitation of daily activities which translates into an inability to manage personal care, to work and be financially self -supporting, and to integrate into society [38]. Various rehabilitation programs and the prevention of secondary conditions in people with disabilities are needed to restore functional capacity, prevent the deterioration of other aspects of functioning, and maintain or improve the quality of life. Rehabilitation physicians, together with the team of professionals involved in addressing this category of patients, can also try to be actively involved in the development of public policy on disablement. Limitation in person's activities has important medical and behavioural as well as social and economic consequences. If a person cannot participate in his social role as a worker, due to a physical or mental condition, that person is said to have a work disability or a work participation restriction [39,40]. Work participation restriction involves the reduction or loss of productivity of these persons and has significant socioeconomic consequences for society. This is even more important for active young people who have acquired a disability after an illness or injury. It is recommended that the rehabilitation of people with disabilities to be complex and quality and to include special vocational rehabilitation strategies. Vocational rehabilitation is a complex of medical, social, professional and psychological services that aim to restore the body function and the work capacity of person with disabilities. The outcomes measure aims to maximize the physical, mental, social, and economic functions, as well as increasing the independence and productivity of the person. Even for people with severe disabilities, vocational rehabilitation strategies have been successful in facilitating participation in work [37]. According to data from the literature, rehabilitation programs have been effective in preventing job loss for those with disabilities. If the program is started as soon as possible and is sustained, returning to work is facilitated [37].

Financially, the society incurs a number of expenses for medical and personal care, specialized technologies, institutional care, etc. necessary for persons with disabilities. Regarding the integration of workers with disabilities in the field of work, some of them must to refocus professionally, others need to find jobs in areas appropriate to the degree of disability, but with lower earnings, while others are forced to quit permanently at work.

In this regard, all rehabilitation and social services (public and private) aim to reduce disabilities and provide moral and financial support to persons with such problems.

4. The situation of services provided to persons with disabilities in Romania, 2018

The analysis of the data provided by the National Institute for Statistics shows that, at the end of 2018, in our country there were a number of **498** units for adult assistance, of which:

- 121 care and assistance centres,
- 19 integration centres for occupational therapy, and
- **358 recovery and reabilitation centre**

Within these centers, 20021 adults received assistance, the highest number being in recovery and rehabilitation centers – **12479**. The types of deficiencies, for which

specialized assistance is provided, are grouped as follows: physical, somatic, auditive, visual, mental, neuropsyhic, severe disabled (associated), uncommon sickness, social, and other categories.

Compared to the situation in 2008, the number of centers has increased (498 units, in 2018, versus 343 units, in 2008), especially of recovery and rehabilitation centers (358 versus 225 units in 2008). Also, 3791 licensed social services units (public and private property) functioning at the end of the year 2018, of which 410 - residential centers for disabled adults (319 public and 91 private), and 122 - day centers for disabled adults (37 public and 85 private).

Regarding the expenditures of social protection, at the end of 2017, they amounted to 123181 million RON, with a weight of expenditure in Gross Domestic Product of 14.4% [41].

CONCLUSIONS

Assuming that improving the quality of health care is a concern of health systems, professionals, and users (patients), the issues presented related to measuring the quality and outcomes of medical rehabilitation services can guide these stakeholders in their decisions, health insurance options, and provision of medical services for the population.

Some aspects are of interest, such as: the peculiarities of rehabilitation services; the way of evaluating the general functionality of the patient; the evaluation systems of the rehabilitation program used in America; the monitoring models of outcomes for different categories of patients; the performance indicators used; the clinic guidelines; the strategies to improve service performance; and the implications for people with disabilities. Also, the valid functional scales from the American literature, which are currently used in Romanian medical services, are quality measure instruments that can be implemented, and adapted in the national context.

In the field of medical rehabilitation, have been developed systems for monitoring patient gains regarding basic functional activities; however, it is still needed to develop comprehensive performance improvement systems that monitor key aspects of healthcare quality and that demonstrably improve that care and associated outcomes the patient with disabilities. The description of parameters of quality care and associated patient outcomes is the responsibility of all professionals in the field of medical rehabilitation and will be essential for the improvement of this domain. The results of programs evaluation could be used to evaluate alternative treatment modalities in a rehabilitation unit, but will become essential for the evaluation of the outcomes among different types of rehabilitation institutions. Rehabilitation programs may be included in the healthcare programs of persons with disabilities caused by accident or disease.

However, at present, no system of performance monitoring can determine the best rehabilitation practices, but there are global concerns about improving clinical guidelines that provide as many standards of care as possible. Processes and short-term and long-term outcomes need to be measured, either continuously or through focused cross-sectional studies, to identify opportunities to improve services performance. The results of professional rehabilitation interventions, medical care, psychological and social counseling can be described and monitored. Thus, the results of a complex medical rehabilitation are described in terms of improving the physical, mental, social, and economic function of the person with disabilities. Rehabilitation must also include other strategies, such as vocational rehabilitation, which results in increased independence and productivity.

Far from exhausting this topic, I believe that a greater priority for the Romanian health system is to ensure access to and improve the quality and efficiency of healthcare, including rehabilitation, and the models of other countries can be considered global gains that we can use in favour of our context.

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