

## THE IMPORTANCE OF INDIVIDUAL' MENTAL STATUS FOR THE TRUE VALUE OF FUNCTIONAL SELF-REPORTED QUESTIONNAIRES USED IN MEDICAL REHABILITATION

Nada Tomasović Mrčela<sup>1</sup>, Josip Anđelo Borovac<sup>2</sup>, Tonko Vlask<sup>3</sup>,  
Davorka Vrdoljak<sup>4</sup> & Marina Polić Vižintin<sup>5</sup>

<sup>1</sup>Andrija Stampar Teaching Institute of Public Health, Reference Center of the Ministry of Health of the Republic of Croatia for health care of the elderly, Zagreb, Croatia

<sup>2</sup>University of Split School of Medicine, Split, Croatia

<sup>3</sup>University of Split, University Clinical Hospital Centre & School of Medicine, Department of Rehabilitation Medicine and Rheumatology, Split, Croatia

<sup>4</sup>University of Split School of Medicine, Department of Family Medicine, Split, Croatia

<sup>5</sup>Andrija Stampar Teaching Institute of Public Health, Department of Public Health, Zagreb, Croatia

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### SUMMARY

*The physical and mental health are inseparable and integral components of one's health and as such should always be addressed during the process of medical rehabilitation. It should be an obvious fact that the state of individual' mental health can influence and even more, modify, the outcomes of medical rehabilitation. Furthermore, the state of mental status has an effect in determining the reliability of functional self-reported questionnaires that are frequently used in medical rehabilitation. In conclusion, the evaluation and assessment of the individual's mental health status need to be incorporated as a regular part of the comprehensive and holistic approach to medical rehabilitation.*

**Key words:** mental health - medical rehabilitation - functional self-reported questionnaires

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### Introduction

The physical and mental health are inseparable and integral components of one's health and as such should always be addressed during the medical rehabilitation. Mental health is not just a mere lack of mental disorder, it is a broad spectrum that includes subjective well-being, self-efficacy, intergenerational dependence, autonomy, competence and self-actualization of one's intellectual and emotional potential (WHO 2001). It has been well established that various factors significantly affect the prevalence, onset and the course of mental behavior disorders. Such factors are psychosocial environment of an individual, age, gender, conflicts and disasters as well as the presence of major physical comorbidities and illnesses that exert a profound effect on the treatment plan. Therefore, it is should be obvious that state of mental health influences the outcomes of medical rehabilitation and can greatly improve the reliability of functional self-reported questionnaires that are frequently used in medical rehabilitation.

In 2011, the World Health Organization (WHO 2011) defined rehabilitation as a „set of measures that assist individuals, who experience or are likely to experience disability, to achieve and maintain optimum functioning in interaction with their environment“. Optimal functioning, on the other hand, presumes that individual maintains maximal independence and complete physical, mental, social and vocational ability. In order to achieve this goal, it is essential that before

undergoing medical rehabilitation patient is approached from multiple angles and assessed by an interdisciplinary team of medical experts with a purpose of tailoring an individualized treatment program. In a broad perspective, rehabilitation services can include medical care, physical therapy – with the aim to restore and maximize movement and function, nursing care, occupational therapy, speech-language therapy, therapeutic recreation, vocational rehabilitation, or mental counseling (NRH 2016).

Some authors suggest that the mental health professionals (psychiatrists, clinical psychologists or psychotherapists) should be included in the interdisciplinary rehabilitation teams with an important task to help patients understand and adjust to disability as well as to create a realistic expectation about treatment dynamics and outcomes (Cushman & Scherer 1995). These findings, among others, suggest that there is a valid argument for the introduction of psychological, psychiatric and mental health support in the domain of physical rehabilitation since this approach may yield superior outcomes for some patient groups. It should be obvious that personal and environmental contextual factors and health conditions are in a dynamic interaction that certainly impacts individual's functionality and disability status. A mental status of an individual should be routinely screened which implies the establishment of protocols and guidelines, especially before and after medical rehabilitation process.

## **Assessment of the activities of daily living (ADL) in medical rehabilitation**

In Croatia, medical rehabilitation within a public healthcare setting is organized through outpatient service or on a stationary basis in clinics and special hospitals for rheumatic diseases and/or rehabilitation (Jelic et al. 2006, Tomasovic Mrcela et al. 2010, Dzidic et al. 2006). This system had the total capacity of 3944 beds and 763 042 hospital days that were recorded with annual bed utilization rate 53.3% in 2014 (Poljičanin & Benjak 2015). The criteria by which Croatian Health Insurance Fund (CHIF) evaluates medical records of patients and decides whether to cover the costs of inpatient medical rehabilitation are determined by the nature and the current state of illness, consequences of suffered injuries and the patient's functional status which is measured by the Modified Barthel Index (MBI) (Shah S et al. 1989). Afterward, medical rehabilitation teams of experts devise a rehabilitation plan that is based on the realistic goals. The priorities of treatment are established within a reasonable timeframe, by using standardized instruments that provide information about the effects of rehabilitation, e.g. assessment of the activities of daily living (ADL) (Cohen & Marino 2000, Katz 2003, Stucki & Sigl 2003, Skinner & Turner-Stokes 2006).

The optimal approach in determining the functional status by clinical assessment or self-assessment is still debated in the area of rehabilitation medicine (Elam et al. 1991, Owens et al. 2002). Self-assessment that evaluates (in)ability to perform ADL is an inexpensive, simple and practical method, but it does not necessarily correspond with the actual and objective degree of disability (Myers et al. 1993). The evaluation based exclusively on the performance of ADL (objective measures of functional status) is for some researchers more clinically relevant for the determination of the true effects of the treatment (Myers et al. 1993, Owens et al. 2002).

## **Do we pay enough attention to mental health in medical rehabilitation?**

The evaluation and the monitoring of individual's mental health status are not a part of a routine process in stationary medical rehabilitation in Croatia. There are no specific instruments available (e.g. questionnaires, mental health expert assessments, etc.) that regularly take this dimension into account when approaching rehabilitation process and treatment outcomes. It should be evident that patients that are, for example, severely depressed will tend to underestimate the effects of treatment while the patients that suffer from some form of cognitive impairment may also provide an unreliable assessment of rehabilitation outcomes. This is a real problem and one of the pitfalls frequently encountered among currently available self-reported questionnaires used in medical rehabilitation.

Therefore, this answers our initial question – at this moment, we do not pay enough attention to the mental health status of an individual that enters medical rehabilitation. We find that it is of a cardinal importance to address the mental care for the patient within the existing rehabilitation programs. This should not be carried out in a sporadic, disorganized way, but it should be based on guidelines and protocols that will precisely define conditions and modality of these services. These potential guidelines should be tailored in a way that they take a whole-person perspective – individual's age, sex, psychosocial status, functional ability, pattern of health behavior, multimorbidity, and comorbidities. An adequate example for this is provided by the psychiatric rehabilitation. In such rehabilitation scheme, personal and environmental factors are especially recognized in two intervention strategies that are often combined together in a conceptual framework of specialized psychiatric rehabilitation for mental disorders. The aim of the first strategy is to develop patient's skills that will make him/her capable of dealing with a stressful environment while the second strategy helps them to steer away from the potential stressors in the environment (Rössler 2006). Individual-oriented plan and program of medical rehabilitation needs to correspond to patient's needs and personality (Stucki et al. 2002).

One of the goals of successful rehabilitation process should certainly be the development of emotional and social skills of patients that will facilitate their daily living and fluid integration within a community (Rössler 2006). Consequently, general quality of life scales that measure set of concerns and capabilities as well as pain or emotional state are also used in rehabilitation (Granger 2015).

## **The connection between mental status and the rehabilitation outcomes**

If we accept the premise that the current state of mental health of an individual can influence and modify rehabilitation outcomes it becomes evident that these factors need to be taken into account when we approach medical rehabilitation. It is essential to stress the importance of the mental status of an individual and how this, especially cognitive status among elderly patients, can modify and distort the true value of functional self-reported questionnaires such as the Activities of Daily Living (ADL) questionnaire. A study conducted among elderly patients with Parkinson's disease found that these patients overestimated their function on four out of five tasks, in comparison to clinician' rating (Shulman et al. 2006). Similarly, a recent study demonstrated that ADL self-assessment is associated with older adult cognitive status and is less reliable when compared to caregiver reports (Miller et al. 2013).

Moreover, it is necessary to develop self-assessment tools of functionality that will take into account the current level of cognitive impairment for each

individual (e.g., score that is achieved on mini-mental state examination – MMSE). These tools should be adjusted for the population of patients that suffer from mental and behavioral disorders such as anxiety or mood disorders. In this regard, standard ADL questionnaires might be modified for these vulnerable patient strata or, alternatively, novel self-assessment tools should be pursued. For example, a study conducted among severely mentally ill patients demonstrated that self-reported tools that were specifically tailored for this targeted group showed a high degree of correlation with the severity of negative symptoms and the level of cognitive impairment (Patterson et al. 2001). Some of the identified predictors for the occurrence of functional disability are comorbidity, cognitive factors, and depression (Guccione et al. 1994; Beland & Zunzunegui 1999). Finally, the use of self-administered questionnaires to diagnose mental disorders has an important role - such tools have a diagnostic validity comparable to the original assessment made by the clinician (Spitzer et al. 1999). Some voices in geriatric medicine advocate that there is an equal appropriateness in both self-assessment methods of ADL and professional clinical assessment in cognitively healthy elderly people (Schmitter-Edgecombe et al. 2011). A recent study by Iwarsson et al. performed among elders between 75 and 89 years of age in 5 European countries suggested that combined approach to data collection should be utilized since it provides a diversified, information-rich picture (Iwarsson et al. 2009).

### **Comorbidity of mental disorder and somatic diseases**

Comorbidities are most certainly the rule rather than the exception in modern medical rehabilitation. Likewise, comorbidity is one of the greatest research and clinical challenges to contemporary psychiatry and psychosomatic medicine (Jakovljevic et al. 2010).

Some authors argue that co-existing diseases are not frequently evaluated and their importance is underestimated, underdiagnosed and undertreated in rehabilitation and general medical practice (Jakovljevic & Ostojic 2013). In fact, mental disorder can contribute to the etiology and progression of somatic illness, and equally mental disorders could arise as a result of somatic illness (Jakovljevic et al. 2010). Furthermore, comorbidities show a significant negative correlation with functional autonomy and rehabilitation outcomes (Giaquinto 2001). Similar findings were confirmed in a study by Denti et al. that demonstrated that rehabilitation outcomes among first-time stroke patients were more driven by functional and cognitive status at admission and social status than the age alone (Denti et al. 2008). A study by Patrick et al. showed that significant predictor of rehabilitation efficiency in geriatric patients were medical comorbidities. Medical comorbidity negatively related to rehabilitation efficiency in rehabilitation inpatient setting (Patrick et al. 2001).

It is known that impact of mental disorder in comorbidity may e.g. amplified subjective reactions of patient to somatic symptoms, demoralized with lesser motivation for cure somatic illness, cause maladaptive effects on bodily symptoms, limited cognitive capacity and energy to cope with somatic disease (Jakovljevic et al. 2010). All of this implicates that comorbidities (not only limited to mental health comorbidities) should be evaluated at admission to the rehabilitation center and perhaps used as one of the prognostic factors for the level of improvement at the discharge. This especially holds true for the stratum of patients that suffer from brain injury/dysfunction or stroke where it is of fundamental importance to measure cognitive and motor impairment during the medical rehabilitation (Granger 2015).

### **Mental status in comprehensive approach to health and wellbeing in medical rehabilitation**

Quality and outcome measures within rehabilitation programs often include patient's self-reported questionnaires that measure their current and previous functional state (Granger 2015).

The importance and role of the mental health in terms of rehabilitation outcomes can be indirectly inferred from the study that was conducted among 400 patients in three medical rehabilitation hospitals in Croatia (Tomasovic Mrcela et al. 2010). In that study results showed that the patients who objectively improved their level of functionality (as assessed by rehabilitation professionals) after the in-patient rehabilitation, did not rate their health status as improved, which implicates that they might not have perceived their functional status as an important component of their health. These findings show that there is a loose relationship between subjective perception of health and the level of functional independence. A plausible explanation to this is that, although functional independence is closely related to a perception of health, it is just one of the contributing factors, such as age, sex and presence or absence of pain (Tomasovic Mrcela et al. 2010). As the self-assessment of health was evaluated by a single item on the 36-item Short-Form Health Survey (SF-36), it is possible that such crude evaluation of participant health caused the lack of association of functional independence and health. Also, that study only evaluated general health thus neglecting the possible impact of functional independence on mental health. Another potential pitfall in this approach is the lack of consistent tracking of the mental status of the individual – variables such as mood, cognition, vision, and hearing were not considered.

Another aspect that is important and is beyond the scope of this text concerns the current legislative norms in Croatia - severe mental disorders are viewed as a contraindication for having the privilege to receive medical rehabilitation in the hospitals that were

included in aforementioned study – this practically means that patients with severe mental and behavioral disorders were not represented at all (Pravilnik 2014). In a regular clinical application of self-assessment tools for functional independence, it is fairly uncommon to use additional tests that would check for the mental status of a person and this practice should be changed in the future, as previously discussed.

## Conclusions

When using the self-evaluation tools in rehabilitation, we should always be aware of the mental status of an individual and, therefore, utilize adjunctive tests or tools to detect, for example, depression or dementia particularly among elderly stratum. Based on everything presented in this manuscript, we can conclude the following:

- The individual' mental health status has a real value in obtaining plausible results of medical rehabilitation outcomes via self-reported questionnaires and should become an integral part of such instruments.
- The state of mental health of an individual can influence and modify rehabilitation outcomes and it needs to be evaluated and incorporated as a regular part of the comprehensive and holistic approach to medical rehabilitation.
- The evaluation and the monitoring of individual's mental health status have to be routinely screened and assessed according to protocols and guidelines that should be created in the future by the panel of experts.
- Mental disorders can contribute to the etiology and progression of somatic illness while mental disorders can arise as a result of somatic illness.
- Special emphasis should be put on destigmatization of mental illnesses in rehabilitation domain.

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## Contribution of individual authors:

*Wrote the paper:* Nada Tomasović Mrčela, Josip Anđelo Borovac.

*The idea for the study:* Nada Tomasović Mrčela.

*Editing the text:* Nada Tomasović Mrčela, Josip Anđelo Borovac.

*Discussion contribution and conclusion:* Nada Tomasović Mrčela, Josip Anđelo Borovac, Tonko Vlák, Davorka Vrdoljak, Marina Polić Vižintin.

*Selection of literature:* Nada Tomasović Mrčela, Josip Anđelo Borovac, Tonko Vlák, Davorka Vrdoljak, Marina Polić Vižintin.

*Read and revised manuscript content:* Nada Tomasović Mrčela, Josip Anđelo Borovac, Tonko Vlák, Davorka Vrdoljak, Marina Polić Vižintin.

## References

1. Beland F & Zunzunegui MV: Predictors of functional status in older people living at home. *Age Ageing* 1999; 28:153-9.
2. Cohen ME & Marino RJ: The tools of disability outcomes research functional status measures. *Arch Phys Med Rehabil* 2000; 81:S21-9.
3. Cushman LA & Scherer MJ: Psychological assessment in medical rehabilitation. *American Psychological Association*, 1995.
4. Denti L, Agosti M & Franceschini M: Outcome predictors of rehabilitation for first stroke in the elderly. *Eur J Phys Rehabil Med* 2008; 44:3-11.
5. Dzidic I, Jelic M, Sekelj-Kauzlaric K, Vlák T, Bakran Z & Eldar R: Rehabilitation medicine in Croatia - sources and practice. *J Rehabil Med* 2006; 38:209-11.
6. Elam JT, Graney MJ, Beaver T, el Derwi D, Applegate WB & Miller ST: Comparison of subjective ratings of function with observed functional ability of frail older persons. *Am J Public Health* 1991; 81:1127-30.
7. Feuerstein M, Callan-Harris S, Hickey P, Dyer D, Armbruster W & Carosella AM: Multidisciplinary Rehabilitation of Chronic Work-Related Upper Extremity Disorders: Long-Term Effects. *Journal of Occupational and Environmental Medicine* 1993; 35:396-403.
8. Giaquinto S, Palma E, Maiolo I, Piro MT, Roncacci S, Sciarra A & Vittoria E: Importance and evaluation of comorbidity in rehabilitation. *Disabil Rehabil* 2001; 23:296-99.
9. Granger VC: *Quality and Outcome Measures for Rehabilitation Programs*. Medscape (cited 2016 April 26) Available from: <http://emedicine.medscape.com/article/317865-overview>
10. Guccione AA, Felson DT, Anderson JJ, Anthony JM, Zhang Y, Wilson PW, Kelly-Hayes M, Wolf PA, Kreger BE & Kannel WB: The effects of specific medical conditions on the functional limitations of elders in the Framingham Study. *Am J Public Health* 1994; 84:351-58.
11. Guzmán J, Esmail R, Karjalainen K, Malmivaara A, Irvin E & Bombardier C: Multidisciplinary rehabilitation for chronic low back pain: systematic review. *Bmj* 2001; 322:1511-16.
12. Iwarsson S, Horstmann V & Sonn U: Assessment of dependence in daily activities combined with a self-rating of difficulty. *J Rehabil Med* 2009; 41:150-6.
13. Jakovljevic M & Ostojic Lj: Comorbidity and multimorbidity in medicine today: challenges and opportunities for bringing separated branches of medicine closer to each other. *Psychiatr Danub* 2013; 25(suppl 1):18-28.
14. Jakovljevic M, Reiner Ž, Milicic D & Crncevic Ž: Comorbidity, multimorbidity and personalized psychosomatic medicine: epigenetics rolling on the horizon. *Psychiatr Danub* 2010; 22:184-89.
15. Jelic M, Sekelj-Kauzlaric K, Vlák T, Bakran Z, Dzidic I & Eldar R: The system for medical rehabilitation in Croatia. *Disabil Rehabil* 2006; 28:943-8.
16. Katz PP: Measures of adult general functional status: The Barthel index, Katz index of activities of daily living, Health assessment questionnaire (HAQ), MACTAR patient preference disability questionnaire, and modified health assessment questionnaire (MHAQ). *Arthritis care and research* 2003; 49:S15-S27.

17. Miller LS, Brown CL, Mitchell MB & Williamson GM: Activities of Daily Living Are Associated With Older Adult Cognitive Status: Caregiver Versus Self-Reports. *Journal of Applied Gerontology* 2013; 32:3-30.
18. Myers AM, Holliday PJ, Harvey KA & Hutchinson KS: Functional performance measures: are they superior to self-assessments? *J Gerontol* 1993; 48:M196-206.
19. National Rehabilitation Hospital. Choosing a High-Quality Medical Rehabilitation Program: An NRH Field Guide for People with Disabilities. Boston: National Rehabilitation Hospital Med Star Reserch Institute., Boston University. (cited 2016 April 26) Available from: <http://search.naric.com/public/choosingquality.pdf>
20. Owens PL, Bradley EH, Horwitz SM, Viscoli CM, Kernan WN, Brass LM, Sarrel PM & Horwitz RI: Clinical assessment of function among women with a recent cerebrovascular event: a self-reported versus performance-based measure. *Ann Intern Med* 2002;136:802-11.
21. Patrick L, Knoefel F, Gaskowski P & Rexroth D: Medical comorbidity and rehabilitation efficiency in geriatric inpatients. *J Am Geriatr Soc* 2001; 49:1471-77.
22. Patterson TL, Goldman S, McKibbin CL, Hughs T & Dilip V: UCSD Performance-Based Skills Assessment: Development of a New Measure of Everyday Functioning for Severely Mentally Ill Adults. *Schizophrenia bulletin* 2001; 27:235-45.
23. Poljicanin T & Benjak T: Croatian health service yearbook 2014. Croatian Institute of Public Health, Zagreb, 2015. (cited 2016 April 22) Available from: [http://www.hzjz.hr/wp-content/uploads/2015/05/ljetopis\\_2014.pdf](http://www.hzjz.hr/wp-content/uploads/2015/05/ljetopis_2014.pdf)
24. Pravilnik o uvjetima i načinu ostvarivanja prava iz obveznog zdravstvenog osiguranja za bolničko liječenje medicinskom rehabilitacijom i fizikalnom terapijom u kući. Interni pročišćeni tekst - "Narodne novine" broj 26/96., 79/97., 31/99., 51/99., 73/99.,40/07., 46/07. - pročišćeni tekst, 64/08., 91/09. i 118/09. (cited 2016 April 26) Available from: [http://cdn.hzzo.hr/wp-content/uploads/2014/04/03\\_procisceni.pdf](http://cdn.hzzo.hr/wp-content/uploads/2014/04/03_procisceni.pdf)
25. Rössler W: Psychiatric rehabilitation today: an overview. *World Psychiatry* 2006; 5:151-57.
26. Schmitter-Edgecombe M, Parsey C & Cook DJ: Cognitive correlates of functional performance in older adults: comparison of self-report, direct observation, and performance-based measures. *J Int Neuropsychol Soc* 2011; 17:853-64.
27. Shulman L M, Pretzer-Aboff I, Anderson KE,Stevenson R, Vaughan CG, Gruber-Baldini AL, Reich SG & Weiner WJ: Subjective report versus objective measurement of activities of daily living in Parkinson's disease. *Mov Disord* 2006; 21:794-9.
28. Skinner A & Turner-Stokes L: The use of standardized outcome measures in rehabilitation centres in the UK. *Clin Rehabil* 2006; 20:609-15.
29. Spitzer RL, Kroenke K & Williams JW: Validation and utility of a self-report version of PRIME-MD: the PHQ primary care study. Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. *JAMA* 1999; 282:1737-44.
30. Stucki G & Sigl T: Assessment of the impact of disease on the individual. *Best Pract Res Clin Rheumatol* 2003; 17:451-73.
31. Tomasovic Mrcela N, Massari D & Vlak T: Functional independence, diagnostic groups, hospital stay, and modality of payment in three Croatian seaside inpatient rehabilitation centers. *Croat Med J* 2010; 51:534-42.
32. World Health Organization: The World Health Report 2001: Mental health: new understanding, new hope. World Health Organization, 2001. (cited 2016 April 22) Available from: [http://apps.who.int/iris/bitstream/10665/42390/1/WHR\\_2001.pdf](http://apps.who.int/iris/bitstream/10665/42390/1/WHR_2001.pdf)
33. World Health Organization: Concept paper. WHO Guidelines on Health-Related Rehabilitation, 2011. World Health Organization, 2011. (cited 2016 April 26) Available from: [http://who.int/disabilities/care/rehabilitation\\_guidelines\\_concept.pdf](http://who.int/disabilities/care/rehabilitation_guidelines_concept.pdf)

Correspondence:

Josip Anđelo Borovac, B.Sc., MD candidate  
University of Split School of Medicine  
Šoltanska 2, 21000 Split, Croatia  
E-mail: jborovac@mefst.hr