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**SPECIFIC FEATURES OF PEDIATRIC REHABILITATION IN  
ROMANIA  
SUMMARY OF THE DOCTORAL THESIS**

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## INTRODUCTION

Medical rehabilitation is one of the youngest medicine fields, it appeared during the last century as a necessity after the two world wars and the poliomyelitis epidemics, while the pediatric rehabilitation is the branch dealing with the youngest patients within this complex medical domain.

In the 21st century, rehabilitation has a steep development rate due to the technological progress, of discoveries regarding the biologic action of the physical agents, due to progress in the field of epigenetic, pharmacology and clinical psychology. All these led to a clearer view on the need for a bio-psycho-social approach of the human being in rehabilitation medicine.

Medical rehabilitation is one of the most interdisciplinary fields of medicine. Across the world, the progresses of modern medicine, especially in neonatology, pediatric orthopedy, neurology and pediatric psychiatry led to thousands of lives of little patients being saved, however, in many cases, with onset and persistence of certain disabilities, this situation leading to an increased focus on improvement of the quality of life, both for the young patients and for their families. The best example is that, during the last years, in Romania and across the world, the progress in neonatology led to increased survival rate of premature newborns with low birth weight and rehabilitation is requested at an early stage, unlike in the past, when it was deemed that rehabilitation of premature children should start after the age of 3. The rehabilitation costs are not to be ignored and include the costs incurred by the health system and also, costs borne by the patients' family – not limited to financial costs. The family life is strongly impacted by the need to provide long-term care for a disabled child, following the involved direct costs (transport, medication, special food, paid care, assistive technologies) and indirect costs (part-time work or even loss of employment for the parent providing care, and also psychological and emotional impact on the entire family, depressions). In addition, the presence of a disability leads to increased physical and psychological vulnerability of the patient, reducing the defensive capacity of the body and its resilience. The number of new health conditions is increased in case of children with pre-existing disabilities. Not even countries with favorable economic circumstances can cope with the high needs of pediatric disability. The presence of child disabilities reduces the chances of normal or, at least, optimal psychological development following the reduction of the time and energy available for learning activities, even in case the cognitive functions are not affected by the pathology

causing the disability. Access to educational processes and participation of children with disabilities are reduced following the convergent action of several factors, such as lack of knowledge regarding their needs and lack of educational staff specializing in education of such children or even the impossibility of physical access in classrooms. School drop-out cases are more frequent than in the case of children without disabilities.

The presence of a disability reduces child's opportunities to experiment, and this impact is all the more severe as the disability occurs at an earlier age. The level of physical activity, reduced, however maintained with a high level of energy consumption, will also impact cognitive functions, by reducing the flow of information and nutrients to the brain. Both the intelligence level and personality will be impacted. The way a child understands and sees himself will influence his developing personality, as well as the level of child's participation in the rehabilitation intervention. On the other hand, the impact of a child's disability on parents' psychological status is devastating.

Finally, the purpose of pediatric rehabilitation is to diminish the degree of disability, so that the patient will have equal opportunities for a life full of satisfactions and a quality of life as good as that of any other child. For this purpose, it is necessary an analysis regarding the existing situation and to find solutions for optimizing the management of pediatric rehabilitation, so that, by efficient management of all resources, to be able to provide children with high quality healthcare services, with real and long-term benefits, by reducing the level of disability, improving functionality, improving capability and performance in activity and optimal patients' integration regarding their social life.

*The hereby presented research includes 3 interconnected studies with the following themes:*

1. Retrospective study of department's cases
2. Developmental disorder – possible early sign of cerebral palsy
3. Parent's involvement as co-therapist for physical therapy continuation at home.

## **WORKING HYPOTHESIS AND GENERAL OBJECTIVES**

Pediatric rehabilitation is a domain yet insufficiently represented in the area of healthcare services in Romania.

The aim of this research is that of evaluating the requirements and needs in regards of medical services of pediatric rehabilitation on Romania's nowadays medical market. We considered as a pilot the Department for Children Neuro-Psycho-Motor Rehabilitation of the Clinical Hospital of Psychiatry in Sibiu.

The general hypothesis was that the patients addressing to the rehabilitation services provided by the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu is an important one, the diagnosis treated here represent medical conditions with high degree of severity in regards of the functional deficits, as well as in regards of the onset and progress of complex and long-term disabilities, because these medical conditions disturb the capacity of performing the non-instrumented and instrumented activities of daily living as well as the capacity of social participation of the individual. Therefore, these conditions require early and complex diagnosis and intervention meaning a long-term intervention program in most cases. The goal is the optimization of functioning, the improvement of the level of activity and participation. In order to achieve this goal, there is need to optimize the activity of the rehabilitation team, to meet the demands with maximal efficiency.

This research began with the following *operational hypotheses*:

- The case history of the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu is complex both in regards of diagnostics and requirements for rehabilitation, as well as in regards of patients' place of origin.
- The number of children with development disorder subsequently diagnosed with cerebral palsy is low compared to the total number of children admitted with development disorder. It is possible to set up a diagnostic algorithm for cerebral palsy if main risk factors are taken into account.
- The factors determining the degree of active involvement of patients' carers in continuing rehabilitation at home, after discharge, can be objectified and the full picture of those factors may provide guidance to the medical rehabilitation team in order to optimize the rehabilitation efforts.

*The objectives of the researches presented in this paper* are the assessment of the needs regarding medical services of pediatric rehabilitation on today's medical Romanian market, based on the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical

Hospital of Psychiatry Dr Gheorghe Preda in Sibiu. In her research, the doctoral candidate focused on:

- To assess of the addressability of the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu;
- To provide an image as comprehensive as possible of the rehabilitation therapeutic interventions carried out within the customized rehabilitation programs in the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu;
- To highlight the importance of the development disorder as possible early picture of cerebral palsy;
- To define the need and the degree of involvement of the parents of patients from the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu in home rehabilitation, after discharge.
- To develop protocols for functional diagnostic and rehabilitation for the patients having the most frequent conditions within the treated cases, with the goal of optimizing the activity in the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu.

## **THESIS SUMMARY**

The **STATE OF THE ART** comprises two chapters in which are shown relevant actual aspect of pediatric rehabilitation in regards of service management and the pathology addressed in the original studies.

The **ORIGINAL CONTRIBUTION** comprises four chapters presenting three original research studies, with outcomes relevant for pediatric rehabilitation.

### **STATE OF THE ART OF KNOWLEDGE**

**First Chapter** is entitled **PEDIATRIC REHABILITATION** and presents relevant information on children rehabilitation medicine, in respects of medical, social, economical and psychological aspects. Rehabilitation is an active process, directed to regain los functions in pathological conditions, to ensure optimal performance in independent activities of daily



living. In pediatric rehabilitation, the concept of regaining lost functions is replaced with the one of maximizing functioning during growth and development, through adaptations of the environment and abilitation interventions. Pediatric rehabilitation doesn't aim to regain lost functions but to help the child to achieve the maximal potential in development. This require frequent reevaluation sessions in order to keep up and promptly meet changes which occur with fast rate in regards of body structures and functions, but also in regards of acquisition of new skills and knowledge, and the personalised pediatric rehabilitation intervention program never ends at discharge.

**Chapter 2** is entitled **PEDIATRIC CONDITIONS GENERATING DISABILITY** and presents key aspects of the pediatric conditions which can benefit of rehabilitation. There are medical conditions with high degree of complexity and impact, some of them difficult to diagnose, all requiring early, intensive and long-term intervention.

## **ORIGINAL CONTRIBUTION**

**Chapter 3** presents the hypothesis, objectives and the general methodology applied within this research, participants, location and time markers of research.

**Chapter 4** presents the **DEPARTMENT CASES RETROSPECTIVE STUDY** for the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu, in regards of medical conditions, therapeutical interventions and addressability.

*Time and place* of research were the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu, between the years 2015 and 2018.

*The participants lot* consisted in children undergoing rehabilitation inpatients of the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu in 2015-2018. Only individuals being hospitalised in the department for the first time were selected, 626 participants.

*Methodology:* The observation sheets were analysed, patients being rehospitalised in the time considered were excluded. A follow-file was created to gather the relevant information and the data were statistically analysed. Bibliographic research and clinical reasoning were

used, along with the international guidelines and best practices, to build working protocols for relevant disabling medical conditions.

*Objectives:* To evaluate the case history and to generate a complete picture of the rehabilitation interventions applied in the personalised rehabilitation programs, adapted to diagnosis and age.

The research included a complex analysis of the relevant indicators for rehabilitation activity in the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu, and correlations were checked. The analysis showed the diagnosis category with the most important addressability and the fact that correlations between patients' age and diagnosis can be traced. The addressability from other counties surpasses the one from Sibiu county, which gives to our department the specific of a national rehabilitation center. There are associations between methods and therapies, correlated with the medical conditions treated here and diagnosis and therapeutic protocols could be constructed for the most frequent diagnosis.

The analysis of an organisation providing pediatric rehabilitation services in a large range of medical conditions with complex requirements is difficult. The ability of the rehabilitation team to manage diverse situations with quite restricted resources in terms of specialised staff numbers and equipment, transpires through this analysis, as well as the need of increased awareness from decision makers in regards of the needs related to financial and technical investment and in regards of medical education for pediatric rehabilitation in our country.

Literature emphasizes the relevance of integrated rehabilitation, in terms of clinical efficacy. This approach is based, many times, on modern technologies and interdisciplinarity (like the intensive involvement of clinical psychologists, mentors and occupational therapists, lately).

**Chapter 5** presents the study with the theme **DEVELOPMENTAL DISORDER – POSSIBLE EARLY SIGN OF CEREBRAL PALSY** and provides a range of important indices which, correlated, have special relevance for the etiological diagnosis in cerebral palsy.

The *study group* consisted in 320 children requiring neuro-psycho-motor rehabilitation for the diagnosis of neurodevelopmental disorder, inpatients in the Children Neuro-Psycho-

Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu in 2015 – 2018. During data gathering for the large retrospective study, it became visible that many children came for rehospitalisation with a different diagnosis, in some cases this new diagnosis being that of infantile cerebral palsy.

*Methodology.* The data were extracted from the observation sheets, in an anonymised manner. The following variables were searched: gestational age, Apgar score, neonatal convulsions, presence of cerebral haemorrhage at birth as well as disorders of muscle tone, as clinical aspect.

Objective: To build a prediction algorithm for cerebral palsy in children presenting with neurodevelopmental disorder.

This second study emphasized 3 indicators – two anamnestic and a clinical one, which, when associated, can provide the foundation for a prognostic formula in regards of development of cerebral palsy.

The diagnosis of cerebral palsy is established, generally, at the age of 3-4 years, the developmental disorder being the alarm sign bringing the family to the physician, sometimes long before that age. The differential diagnosis is difficult but can be very important, especially when the neurodevelopmental disorder appears in the context of a cerebral palsy, as well as in the case of metabolic conditions, which can be treated as needed, with great improvements of patient's condition.

The risk factors of cerebral palsy are extremely numerous and include a variety of antenatal conditions (related to mother's health condition) as well as perinatal conditions (preeclampsia, maternal trauma, ante and intrapartum haemorrhage, prolonged labor, neonatal sepsis, respiratory diseases, genetic factors and multiple twin pregnancies). Post-natal causes add to these, along with gestational age at birth and newborn's weight. This picture is difficult to build without a thorough anamnesis, but there are some relevant information which can direct the pediatric rehabilitation physician to the right diagnosis, helping an early diagnosis, even when special investigation means are lacking. Accessing investigation equipment with high resolution and specificity is costly (in terms of budget, but also time requirements and safety), therefore a formula directing the clinician in the differential diagnosis could be helpful.

**Chapter 6** presents the study entitled **PARENT INVOLVEMENT AS CO-THERAPIST FOR PHYSICAL THERAPY CONTINUATION AT HOME.**

*Participants group* included 94 family members caring for the patients hospitalised in 2018-2019.

*Methodology:* A dedicated original questionnaire containing 23 closed items, built by the PhD student, was applied.

*Objective:* To assess the degree of involvement of the parent in the rehabilitation process and to find the optimal communication method to increase the parents compliance and his investment as co-therapist.

Parents' presence near the child along the whole rehabilitation process is generally continuous. Child's clinical evaluation, therapeutical decisions and therapy sessions take place in parents' presence (at least in our department). Due to the fact that the rehabilitation process doesn't end at discharge and to the fact that the physical therapy program has to be continued at home while the offer of rehabilitation services at home and in ambulatory regimen is limited (the access to private services for children with disabilities is extremely costful, too), our department initiates the parents in rehabilitation interventions, as part of the rehabilitation services we provide to our patients.

*The interdisciplinary character of of the research* is more prominently highlighted in the cas of the second and the third study. The second study result has applicability in rehabilitation but also in pediatric neurology, helping cerebral palsy diagnosis process, as well as in neonatology, by emphasizing the importnace of an early diagnosis and intervention, especially for the premature newborns. This apsect can be covered by the presence of a physical therapist in the neonatology department and through the implementation of national programs tracking the newborns presenting risks of neurodevelopmental disorder. The medical teamsinvolved should include pediatric rehabilitation physicians and physical therapists. The third study, focused on the child - parent couple as well as on the therapist – parent couple, emphasizes the relevance of the need of improvement of social assistance and the importance of the psychological support for the families caring for a child with disability, during hospitalisation but also during their daily life.

## **CONCLUSIONS AND PERSONAL CONTRIBUTIONS**

The goal of the research presented in this thesis was the assessment of the needs regarding medical services of pediatric rehabilitation on today's Romanian medical market, based on the analysis of Department for Children Neuro-Psycho-Motor Rehabilitation of the Clinical Hospital of Psychiatry in Sibiu.

### **GENERAL CONCLUSIONS**

The general conclusions resulting from the research carried out by the doctoral candidate are the following:

- The predominating pathology in the pediatric rehabilitation is the neurological one: cerebral palsy, brachial plexus palsy, Charcot-Marie-Tooth. Together with the development disorder, these conditions represent almost 82% of the cases admitted to the unit. These conditions require early therapy interventions and long-term rehabilitation programs.
- Even if the rehabilitation therapy is initiated upon the first functional diagnostic of development disorder, it is necessary to have an as early as possible etiological diagnostic based on certain variables included in a standardized assessment protocol, in order to initiate/continue a customized intensive program aiming to stimulate normal development of the child and/or recovering the functional deficits and avoiding functional decline and progression of the sequels.
- Sometimes, the involvement of the parent as co-therapist does not take place on the long run, in terms of continuing the physiotherapy program at home, even if the expressed level of satisfaction regarding the services provided by the physiotherapist is high. Most parents understand the necessity of the physical therapy and, if they do not involve directly in this, they call for professional help.
- The optimization of communication between the rehabilitation team and the parent and ensuring the latter as long-term co-therapist requires the development of an additional strategy, involving structured information, individual and group training, active monitoring of home rehabilitation, strengthening the rehabilitation team with personnel dedicated to these activities.

- There is a trend of increasing the addressability of the pediatric rehabilitation services, while the units providing such services are few and mostly based in the large cities in Romania.
- The requirements in regards of specialized personnel and equipment are determined by the patients' age and the complexity of the customized rehabilitation intervention program. From this perspective, it results that the specialized personnel (physical therapist, psychologist, occupational therapist) should represent a priority, before modern (robotic) equipment that can be used for older children.

### **ORIGINAL CONTRIBUTIONS OF THE DOCTORAL CANDIDATE TO THE FIELD OF RESEARCH**

**Research Performed.** The doctoral candidate carried out 3 studies that are original in regards of methodology, objectives and target population, being the first of this kind in Romania. The results of these studies are relevant for the specialists in the field of pediatric rehabilitation in Romania and for the decision makers in charge of medical services in this field.

**Publications.** The results of the research were presented during the national congresses of Physical and Rehabilitation Medicine organized by the Romanian Society of Rehabilitation Medicine and they were partly published in *the two papers* included as Appendixes 1 and 2 of the doctoral thesis (see the List of Published Papers):

- “Parent Involvement as Co-Therapist In The Follow-Up Program Of Home Physiotherapy”.
- “Developmental disorder – an early sign of cerebral palsy”.

**Oral presentations** with abstracts published in the abstract volumes of scientific events (see the List of Published Papers):

- “Development Disorder - Debut Form of Infantile Cerebral Palsy”.
- “The co-therapist parent, between desiderata and reality”.
- “Eye-Tracker- in Infantile Cerebral Palsy: Impact on Disability and Life Quality - Case Study”.

## **PRACTICAL IMPLICATIONS**

Following the analysis of the situation on addressability regarding the conditions with significant weight and of therapy interventions included in customized programs for pediatric rehabilitation within the Children Neuro-Psycho-Motor Rehabilitation Department of the Clinical Hospital of Psychiatry in Sibiu, the doctoral candidate proposed, coordinated and actively participated in the development of *Diagnosis and treatment protocols* for the main conditions treated within the above unit, namely for Development Disorder, Cerebral Palsy, Scoliosis, Down Syndrome, Brachial Plexus Palsy (Chapter 4, page 125). The developed protocols were approved by the hospital management and have been applied in the clinical practice within the Department for Children Neuro-Psycho-Motor Rehabilitation of the Clinical Hospital of Psychiatry in Sibiu since March 2020. The protocols are attached to the doctoral thesis. (Appendixes No. 3 - 7).

The doctoral candidate proposed the development of a *prediction model for early diagnosis of cerebral palsy*. This model takes into account the most important risk factors for cerebral palsy. The model, presented at the end of Study 2, takes into account the results of the quantitative assessment of these risk factors and of the correlations identified among them by studying the population of children with development disorder hospitalized in the above Unit where some of them returned diagnosed with cerebral palsy (Chapter 5, page 143).

## **SUGGESTIONS AND IDEAS FOR OPTIMIZING THE CLINICAL ACTIVITY**

Based on the performed research and on her expertise in coordinating the activity in a pediatric rehabilitation unit, the doctoral candidate came with the following suggestions for optimizing the Pediatric Rehabilitation in Romania:

- The amendment of the framework contract regulating the terms of granting medical care, medication and medical devices within the health insurance system, by increasing the number of rehabilitation courses for young children. New types of interventions, which proved to be useful, should also be included in the package offered by the healthcare system.
- Changing the personnel structure at pediatric rehabilitation unit level: increasing the number of physical therapists, hiring an occupational therapist, a speech therapist, a clinical psychologist, a psychologist specializing in ABA, a social worker, cultural

workers, etc. The optimization of staff rationing will allow team members improved case management and a quantified assessment of the impact of customized intervention programs on the functionality, activity level and participation of the patients. In addition, the occupational therapists would also be able to perform the assessment of the requirements of patients' homes adaptations, in order to ensure accessibility of indoor and outdoor environment, to improve safety and ergonomics within the dwelling area and to assess the need for assistive equipment.

- The development of a pilot project in cooperation with the University Lucian Blaga in Sibiu, in order to ascertain the emotional needs of mothers and families of the children with disabilities admitted to our unit.
- Changing the cooperation model for the members of the therapy team within the unit, based on a joint medical visits or weekly meetings for discussing the cases, in order to improve communication within the team and to optimize the flow of information relevant for the proper organization of the activity within the unit and for a good case management of the hospitalized patients.
- Implementation of a support group for mothers, with meetings between mothers and specialists (doctors, psychologists, physical therapists, occupational therapist, social worker). The goal is an educational one, for the improvement of the degree of awareness regarding the needs for active long-term rehabilitation intervention in order to obtain maximal functional gains, for ensuring optimal capability of the patient to achieve independence in the activities of daily living and for participation in the social life.
- The implementation of a tele-medicine program allowing the parent to communicate directly from home with the therapist and the handling physician, periodically, according to a pre-established program, in order to adapt the therapy program to child's progress.
- Securing funding in order to endow the unit with state-of-the-art rehabilitation technology for robotic rehabilitation, rehabilitation using virtual reality, rehabilitation by multi-modal sensory stimulation, occupational therapy with real environment simulators and also in order to ensure long-term sustainability of this approach (ensuring training for dedicated personnel, ensuring equipment maintenance and maintenance of the dedicated premises).
- Ensuring access to modern diagnosis and assessment equipment. An early and precise diagnostic helps the pediatric rehabilitation specialist in selecting the optimum program of



rehabilitation interventions covering all aspects: medication, content and intensity of physical therapy interventions, occupational therapy, clinical psychology, application of physical agents.

- As a result of the large work volume, one prefers to resort to time for therapy interventions, rather than resorting to the application of assessment tools that might quantify functional progress pre-post the rehabilitation program. The introduction of intelligent robotic technologies, that might provide quantitative assessment of the functional parameters during the performance of the therapeutical activities would provide benefits in this regard, with direct application in the assessment of the efficiency of rehabilitation programs and of the entire activity within the unit, as well as for the subsequent research activity of local or general interest.
- Creating opportunities for specialization of medical staff in the field of pediatric rehabilitation and also for abilities regarding the use of modern technologies in the clinical activities and in scientific research of pediatric rehabilitation.

## LIST OF SCIENTIFIC PUBLICATIONS

### BĂLAN-BRIAN (LUCA) SILVIA

#### Fulltext Papers:

- **Silvia Luca**, Mihai Berteanu. „Parent Involvement As Co-Therapist In The Follow-Up Programme Of Home Physiotherapy”. *Acta Medica Transilvanica*. Mar2022, Vol. 27 Issue 1, p65-69. 5p. ISSN 2285-7079, ISSN-L 1453-1968 (CNCSIS B+, indexat în bazele de date internaționale EBSCOhost, Index Copernicus, ULRICH'S, OPEN J-GATE, Directory Of Research Journal Indexing (DRJI), Directory Of Open Access Journals (DOAJ), GENAMICS).

[http://www.amtsibiu.ro/index.php?option=com\\_content&view=article&id=3513:parent-involvement-as-co-therapist-in-the-follow-up-programme-of-home-physiotherapy&catid=74:nr-1-2022](http://www.amtsibiu.ro/index.php?option=com_content&view=article&id=3513:parent-involvement-as-co-therapist-in-the-follow-up-programme-of-home-physiotherapy&catid=74:nr-1-2022)

- **Silvia Luca**, Ileana Ciobanu, Mihai Berteanu. „Developmental disorder – an early sign of cerebral palsy”. *Health, Sports & Rehabilitation Medicine*, Vol. 23, no. 2, April-June 2022, 87–93. pISSN 2668-2303, eISSN 2668-5132, ISSN-L 2668-2303 (CNCSIS B+, indexat în bazele de date internaționale EBSCOhost, Index Copernicus, CrossRefs, Directory of Open Access Journals (DOAJ), Scientific Information Publication Online (Scipio). <https://jhsrm.org/>

#### Oral Presentations with published abstracts în abstract volumes of scientific events:

- **Silvia Luca**, Mihai Berteanu. “Development Disorder - Early Sign of Infantile Cerebral Palsy”. *Volum De Rezumate – Al 43-Lea Congres Național Anual De Reabilitare Medicală, 1-3 Octombrie 2020, CONGRES VIRTUAL*, ISSN 2457-9785, ISSN-L 2457-978, Pag 29. <https://www.srrm.ro/index.php?page=401>

- **Silvia Luca.** “The co-therapist parent, between desiderate and reality”. *Al 42-Lea Congres Național Anual De Reabilitare Medicală Cu Participare Internațională, 2 - 5 octombrie 2019, Grand Hotel Napoca, Cluj-Napoca, Volum rezumate*, pag. 44. ISSN 2457-9785, ISSN-L 2457-978. <https://www.srrm.ro/index.php?page=301>
- **Silvia Luca, Andreea Condrea.** “Eye-Tracker- in Infantile Cerebral Palsy: Impact on Disability and Life Quality - Case Study”. *Al 42-Lea Congres Național Anual De Reabilitare Medicală Cu Participare Internațională, 2 - 5 octombrie 2019, Grand Hotel Napoca, Cluj-Napoca, Volum rezumate*, pag. 44. ISSN 2457-9785, ISSN-L 2457-978. <https://www.srrm.ro/index.php?page=301>