




## Neurology Training Program for the Education of Psychiatry Residents: Experiences Reported from Curitiba, Brazil

### Programa de Treinamento em Neurologia para a Educação de Residentes em Psiquiatria: Relato de Experiência em Curitiba, Brasil

Carlos Arteaga Rodriguez<sup>I,III</sup> 

Marcel Wilkins Pereira Souza<sup>II</sup> 

Nadhyne Somacal Remonti<sup>III</sup> 

Otto J. Hernandez-Fustes<sup>IV</sup> 

#### ABSTRACT

**Introduction:** There has been a greater demand for the psychiatry specialty, possibly associated with the paradigm change in asylum care for outpatients and communities; consequently, there is now a greater number of institutions for Medical Training in Psychiatric Residency. As such, we seek to elaborate upon the Neurology Program for Medical Residency in Psychiatry (NPMRP) and present the experience of its application. **Methods:** We present an observational and descriptive study of the NPMRP experience in Curitiba/Paraná/Brazil. To prepare the NPMRP, reflective theoretical research was carried out via data from the websites of the Brazilian Psychiatric Association, Brazilian Psychiatric Residencies, PubMed and SciELO. The keywords used included: program of psychiatry residency; neurology and psychiatry residency; neurology in psychiatry. **Results:** It is thought that the resident develops clinical skills through the neurology-psychiatry interface, via an in-service training of general neurology (1<sup>st</sup> year resident) and epilepsy and neurocognitive disorders (3<sup>rd</sup> year resident), which takes place once a week. Residents receive training in conducting interviews and brief neurological examinations, concerning the types of neurological diagnosis, request for additional tests and interpretation of the reports. The outpatient clinical sessions last 4-5 hours, resulting in one patient/hour per resident who, in turn, prepares the medical record. The cases are reviewed and discussed with the neurologist instructor, promoting patient/family participation in shared decision-making. At the end of the outpatient clinic session, an activity is carried out with the whole team to socialize the visits and review theoretical contents. Assessments are daily, quarterly and annual, covering both quantitative and qualitative aspects. **Conclusion:** The NPMRP has excellent results in improving resident training and patient care. There is an excellent opinion regarding learning by the residents and a good level of satisfaction of patients/family members. The neurologist instructor becomes part of the residency and the NPMRP integrates academic and assistance training. The authors propose the development of a national, standardized and reproducible NPMRP.

#### KEYWORDS

- Medical Education.
- Professional Training.
- Neurology.
- Psychiatry.
- Experience Report.

<sup>I</sup>Universidade Positivo, Curitiba, Paraná, Brazil.

<sup>II</sup>Núcleo de Saúde Mental, Curitiba, Paraná, Brazil.

<sup>III</sup>Secretaria Municipal de Saúde de Curitiba, Curitiba, Paraná, Brazil.

<sup>IV</sup>Complexo Hospital de Clínicas da Universidade Federal do Paraná, Curitiba, Paraná, Brazil.

## RESUMO

## PALAVRAS-CHAVE

- Educação Médica.
- Residência em Psiquiatria.
- Neurologia.
- Psiquiatria.
- Relato de Experiência.

**Introdução:** É necessário que a residência de psiquiatria conste com um programa da disciplina de neurologia. No Brasil, como não existe uma padronização dos conteúdos a serem abordados, os residentes realizam estágios em diferentes serviços de neurologia. Neste relato, descreve-se a experiência da aplicação do Programa de Neurologia para Residência Médica de Psiquiatria (PNRMP). **Métodos:** Trata-se de um estudo observacional e descritivo da experiência do PNRMP em Curitiba, no Paraná. Para a elaboração do PNRMP, realizou-se uma pesquisa teórico-reflexiva nos sites da Associação Brasileira de Psiquiatria, Residências Médicas de Psiquiatria Brasileiras, do PubMed e da SciELO. Na pesquisa, utilizaram-se as seguintes palavras-chave: programa de residência em psiquiatria; residência em neurologia e psiquiatria; neurologia em psiquiatria. **Resultados:** Em 2011, iniciou-se a elaboração do PNRMP com o objetivo de oferecer aos residentes os subsídios teórico-práticos da interface psiquiatria e neurologia sob supervisão de um preceptor neurologista. O programa, com nove anos de aplicação e 54 residentes formados, ocorre em dois ambulatórios do Sistema Único de Saúde – um de neurologia geral (para residentes do primeiro ano) e outro de epilepsia ou transtornos neurocognitivos do idoso (para residentes do terceiro ano –, com duração de quatro a cinco horas, uma vez por semana. Os residentes realizam um atendimento/hora, e os casos são revisados em parceria com o preceptor que esclarece as dúvidas da entrevista/do exame físico e define o diagnóstico e a conduta colegiada. Procure-se as competências clínicas em treinamento em serviço, discussões de casos, revisões teóricas e seminários. No final do ambulatório, realiza-se uma reunião da equipe para compartilhar os conhecimentos gerados nos atendimentos e orientar atualizações clínicas/terapêuticas. As avaliações são diárias, trimestrais, anuais e quanti-qualitativa, em que se consideram a aquisição de habilidades, o raciocínio clínico, a qualidade nos atendimentos, o profissionalismo e a comunicação com a equipe, os pacientes e os familiares. **Conclusão:** O PNRMP supera a dicotomia “orgânico versus funcional”. Na integração das atividades teóricas e práticas, busca-se um conhecimento abrangente e resolutivo que permita ao futuro psiquiatra prestar um serviço competente e humano. Recomenda-se a participação dos residentes egressos para que eles possam avaliar o PNRMP. Os autores propõem o desenvolvimento de um PNRMP reprodutivo nacional e padronizado.

Received on 3/19/20

Accepted on 9/7/20

## INTRODUCTION

Established in 1977, Medical Residency (MR) is a modality of postgraduate education for doctors in the form of a specialization course. The course takes place in health institutions under the guidance of highly ethical and professional medical practitioners, being considered the gold standard for medical specialization. Only programs that are accredited by the Brazilian National Medical Residency Commission (CNRM) can use the term MR<sup>1</sup>.

There has been an increase in demand for the specialty of psychiatry and, consequently, a greater number of institutions and vacancies for Medical Training in Psychiatric Residency (MTPR) have been set up. In 2019, in Curitiba, Paraná, there were five institutions with 18 vacancies for MTPR, with an increase in the candidates/vacancy ratio ranging from four candidates/vacancy in 2011 to 15-20 candidates/vacancy in 2019. In the northern region of Brazil, an MR expansion program has led to 56 new vacancies, 23 (41%) of which were allocated to MTPR<sup>2</sup>. These facts justify the creation of programs that provide a guarantee to residents of academic and professional assistance in improving their capacity for future inclusion in the health system, as it has been proposed in other medical residency programs<sup>3-6</sup>.

Psychiatry and neurology have been interconnected specialties since Charcot's work in the 19<sup>th</sup> century. Thus, given the emergence of the “organic versus functional” dichotomy, the basis of segregation between the specialties is evident: on the one hand, the “organic” is emphasized by the neurologist, while, on the other hand, the “functional” is emphasized by the psychiatrist<sup>7,8</sup>.

At the end of the 20<sup>th</sup> and the beginning of the 21<sup>st</sup> century, along with the evolution of neurosciences, the discovery of the genetic bases of some neuropsychiatric diseases (and supported by the advances in neuroimaging), psychiatric and neurological diseases once again became integrated<sup>9-11</sup>. Currently, it is known that diseases that are considered to be functional or psychiatric have a neurobiological basis and share neurological and psychiatric symptoms; on the other hand, however, neurological diseases also have psychiatric manifestations which may precede the observable manifestation of neurological symptoms<sup>12-16</sup>. For this reason, there is an increased importance in including theoretical and practical contents to the neurology specialty through the medical residency program for psychiatry.

In 1997, the idea to elaborate upon a basic psychiatry curriculum model emerged. Proposed and completed in 2002 by the World Psychiatric Association (in collaboration with the World Federation for Medical Education), the curriculum recommends encouraging a practical internship in neurology, with an emphasis on neurological semiology, topographic diagnosis, basic knowledge in functional neuroanatomy, and psychopharmacology<sup>17</sup>.

Coelho et al. have performed a critical analysis of the MTPR in Brazil. These authors argue for the integration of psychiatry with neurology, based upon the premise that the two specialties are centered on the same organ: the brain.<sup>18</sup> The problem arises in the preparation of the Residency Training Program (RTP), due to a lack of publications concerning programs and experiences of institutions with psychiatry residencies.

According to the National Commission of Resident Physicians (NCRP), of the 66 institutions with residencies in psychiatry in 2013, only 8% partially publish the contents of the RTP<sup>19,23</sup>.

Therefore, the objectives of this research is to develop a Neurology Program for Medical Residency in Psychiatrist (NPMRP) and to present the experience of its application.

## METHODS

We conducted an observational and descriptive study of the teaching experience in the discipline of neurology at the RTP of the Municipal Health Secretariat (MHS) of São José dos Pinhais (SJP) and the MHS of Curitiba, state of Paraná, Brazil, about the neurology program role in enabling a psychiatry resident. The experience was carried out/observed in the period of 2011-2017 in the RTP of MHS of SJP, and in 2015, until the moment of publication of this experience in the RTH of MHS of Curitiba (both of which are accredited by CNRM).

In the first phase of the project, in the period of 2011-2013, theoretical-reflective research was carried out, which combined the deductive method with the bibliographic research technique, based upon information obtained online from the Brazilian Psychiatry Association (BPA), Brazilian Psychiatric Residencies (BPR), PubMed, SciELO and institutions with residency in psychiatry in Brazil (according to the BPA)<sup>24</sup>. The terms that were used included: “medical residency program”; “psychiatry residency program”; “neurology and psychiatry residency”; and “neurology in psychiatry”. The second phase of the project was the application of NPMRP in the MTPR of MHS in SJP and Curitiba, which is presented as the experience after eight years of its application.

The composition and structure of the proposed NPMRP are based on the review of the scientific literature, as determined by the topic and the data compiled from the RTP, as accredited by the BPA<sup>24</sup>. Furthermore, the recommendations of the minimum requirements for a residency program in psychiatry at the BPA<sup>25</sup> take into account the eight years of experience by the main author as an instructor of neurology, and the experience of the other authors as ex-residents of MTPR.

This research was not submitted to the Research Ethics Committee due to its observational, non-interventionist and descriptive nature concerning the teaching experience.

## EXPERIENCE REPORT

In 2011, at the outset of the MTPR (of the MHS of SJP), the authors, a preceptor of neurology and former resident of psychiatry, proposed to elaborate upon the NPMRP. Theoretical research was carried out in support of the program, producing a Monograph of Work concluding a Medical Residency Course in Psychiatry, as approved in 2014 by the Medical Residency Committee of the MSH of SJP (the results of which have already been published)<sup>26,27</sup>. In the year 2017, a third-year resident of the MHS of Curitiba joined the team. In the MTPR of MHS of SJP, the experience of applying the NPMRP was recorded for the period of 2011-2017 and in the SMS-Curitiba, from 2014 (to the present date), with a total of 54 trained residents.

To facilitate the understanding of the current conception of the organic and functional interface, theoretical and practical subsidies were offered to the psychiatry resident, under the supervision of the neurologist instructor, aiming to improve the residents' knowledge and skills concerning the

interview and physical examination of a patient. In addition, anatomical, physiological, diagnostic and therapeutic support was provided to the patients with the most common neuropsychiatric diseases.

Thus, it is intended that, by the end of the NPMRP, the resident be able to identify the main anatomical regions-brain functions, the neurochemical mechanisms that underlie the mental processes (normal and pathological), perform the brief neurological examination, recognize the differential clinical pictures between psychiatric and neurological diseases, and understand the clinical-therapeutic relationship, which is common between the two specialties. Furthermore, it is important to contribute to the social, scientific, ethical and human training for one's future professional performance and continuous improvement. This would enable the resident to achieve adequate doctor-patient-family relationships, as well relationships with colleagues, thus facilitating their inclusion in the public and private health systems.

## Skills

“Competence” is understood as the ability to mobilize various cognitive resources to face situations, as constructed in training, during in-service education, via reflective practice and teamwork, with increasing autonomy and responsibility. For Silva, “competences are capacities of a cognitive, social, affective and psychomotor nature that are expressed, in an articulate way, in professional actions”<sup>28</sup>. The competencies of this program meet the proposed minimum as outlined in the BPA program<sup>25,29</sup>.

It is intended for the resident to develop: clinical reasoning; the ability to perform and document the medical records of the adult neurological patient; the ability to identify the main symptoms, signs, diagnoses (syndromic, topographic, nosological and etiological) of neurological diseases; and the ability to indicate and interpret complementary clinical laboratory, electrophysiological and neuroimaging tests. Evidence-based therapy will be implemented in the pursuit of excellence, thus avoiding unnecessary polypharmacy – called “irrational polypharmacy”.

## Service

In the initial two weeks, first-year residents (R1) receive training on conducting patient and neurological interview, the theoretical-practical foundations of the brief neurological examination, and diagnostic methodology – syndromic, topographic, nosological, etiological diagnosis and requesting additional tests (clinical method applied to neurology). In addition, they participate in consultations together with the R1s who are finishing their internship in general neurology. During this transition, the R1s acquire the skills to use the electronic patient care system, become familiar with patient management, as well as with the preparation of medical records, medical prescriptions and medical certificates. Nonetheless, the R1s are included in the presentations and discussions of patients in the activity entitled “What did I learn today?,” as it will be explained later.

In-service training takes place in a neurology outpatient clinic, and covers general neurology, epilepsy and the other forms of neurocognitive disorders. The in-service training lasts between 4-5 hours, with a one patient / hour ratio per resident. At the general neurology outpatient clinic, the R1s perform interviews and physical examinations of the patients who have been referred to neurology. After preparing the medical record, the resident reports the case to the neurologist instructor in the meeting room, carrying out a preliminary discussion concerning

the patient's subjective and objective data (regarding the diagnosis) and complementary/therapeutic conduct. In order to clarify and confirm the clinical data presented in the medical record, the instructor and the RIs evaluate the patient and interview their family members. After confirming the data, the team returns to the discussion room to complete the diagnosis and the complementary/therapeutic conduct in a collegial manner. This information is passed on by the instructor and the resident to the patient and family, clarifying possible doubts. In this sense, the active participation of the patient and family is sought in the decision-making process.

The epilepsy clinic – with third-year residents (R3) – maintains the same approach as the general neurology clinic does. The importance of this outpatient clinic lies in the fact that epilepsy is considered to be a neurological disease that most allows for the understanding of the neurology-psychiatry interface, particularly for the rational use of antiepileptic drugs (AED) with antidepressants and antipsychotics<sup>16,30,31</sup>.

In the neurocognitive disorders outpatient clinic, the same approach observed in the general neurology and epilepsy outpatient clinics is maintained. By treating patients with cognitive complaints, the resident learns to differentiate between Minor Neurocognitive Disorder or Mild Cognitive Impairment and Major Neurocognitive Disorder or Dementia, along with its possible causes, complementary conducts and treatments.

During the interview, the resident establishes the beginning and evolutionary course of the condition, the mode of progression and the timing of symptom evolution. As a premise to establish the differentiation between mild cognitive impairment and dementia, the resident delineates the previous cognitive state, the existence of changes in comparison to the previous cognitive state, the degree of sphincter control, the degree of dependence for instrumental and basic activities of daily life. After performing the physical examination, the resident, previously trained on duty, conducts a battery of cognitive screening tests, as recommended in Brazil, which includes: Mini Mental State Examination, clock design test, verbal fluency in naming animals, Clinical Dementia Rating, the Geriatric Depression Scale, the Lawton-Brody index and the Katz index<sup>32-34</sup>.

#### Brief neurological examination

It is considered necessary for the psychiatrist to perform a neurological examination as a subsidy to avoid diagnostic errors, and as a means to establish a good doctor-patient relationship. The difficulty has been to choose or quantify the neurological examination that the resident must learn and know how to do it. Thus, we adopted a brief neurological exam based on the American Academy of Neurology Examination Guidelines for medical training<sup>36</sup>. The exam includes: mental status; casual and tandem gait; cranial nerves; muscle strength; pyramidal signs; coordination, sensitivity and reflexes.

In addition to teaching and practicing the brief neurological examination methodology, it is necessary to understand that the “complexity” of the examination does not justify the presence of neurophobia, or the thinking rooted in the medical profession that the neurological examination is exclusive to neurologists. It seeks to promote the motivation through the neurological examination so as to understand its rationale and systematization. In addition, when the practice is acquired, the brief exam takes no more than 10-15 minutes. Therefore, the psychiatrist can define the presence of a neurological disorder (consciousness alterations, cognition, language, vision, hearing, balance,

motor and sensory systems), the need for an imaging exam or the referral to the neurologist. This good practice has allowed residents to identify subtle physical signs not presented as a complaint or at the referral, as in the case of facial asymmetry in a depressed patient who, after the imaging exam, was found to have a brain tumor.

As an extension of the neurological examination, the resident learns to interpret the reports of the Electroencephalogram (EEG), Video Electroencephalogram (VEEG) and neuroimaging exams.

#### Medical records

The work team values the importance of a complete, reliable and detailed medical record as a document consisting of the information compiled from the patient, family members and information provided in the referral about the patient's health and the assistance received. Nonetheless, its legal, confidential and scientific character is considered, allowing communication between the members of the team, facilitating the continuity of care. This medical record is based on the resolutions of the Federal Council of Medicine on issues concerning the medical record<sup>36,37</sup>.

#### What did I learn today?

At the end of each clinic day, the team holds a meeting that is called “What did I learn today?” In it, each resident presents a summary of the treated cases in relation to clinical data, diagnosis and therapeutic conduct. The other residents raise questions and contribute their (sometimes divergent) opinions, raising other clinical and therapeutic possibilities that enrich the group's knowledge and optimize patient care. Not infrequently, in these meetings, the tutor asks the residents: “What did you learn today?” and, to the instructor's surprise, the residents are not able to report on their learning. Then, the instructor remembers and reinforces the different clinical topics that were addressed and learned. This is like positive reinforcement via the teaching-learning task.

At the end of the “What did I learn today?” activity, the team reviews and discusses a theoretical topic presented by the tutor or the resident through lectures and seminars. This activity facilitates training in teaching and communication skills, as well as the resident's professional growth. The contents are chosen for their prevalence and interest in psychiatry, as well as the disorders where psychiatric and neurological symptoms are present and can generate management errors. On the other hand, cases with complex diseases generate topics to be studied and discussed.

#### Of the evaluation

Regarding outpatient clinics, residents are evaluated daily regarding the performance of their theoretical and practical activities, in addition to the quarterly and annual, quantitative and qualitative evaluations. The quantitative assessment scores range between 1 and 10 points and includes skills, abilities and professionalism. The capabilities include the ability to: integrate data from the clinical-neurological examination aiming to formulate diagnostic hypotheses; decide the best pharmacological treatment options; correctly prescribe therapeutic strategies; carry out supportive and educational psychotherapeutic approaches; and discuss cases clearly and with an adequate theoretical basis. The types of skills considered include: communication with patients, family and colleagues; teamwork; the ability to solve conflicts; and leadership. Aspects of professionalism entail: a respectful attitude towards patients, tutors and

colleagues; an interest in learning the proposed themes; an interest in patient care; signs of responsibility in their conduct; schedules, deadlines and attendance; posture, attitudes and decisions that respect professional ethics; and integrating reasoning and conduct (particularity of the Health System).

#### Of research

Regarding research, the internship encourages the updating of knowledge and the preparation of a monograph. Stimulating the individual and collective meeting, in particular, enables reviews of complex cases and therapeutic updates in articles based on evidence (most of the time). To date, five monographs have been carried out: “Neurology program for the training of psychiatry residents in Brazil”; “Epilepsy and psychosis: clinical, epidemiological and treatment aspects”; “Epilepsy and psychiatry: a case series report”; “Depressive pseudo-dementia”; and “Mental disorders associated with epilepsy”. Monographs are presented at national and international congresses.

#### Reflection on the experience: of successes and failures

One of the NPMRP successes is that the Neurology instructor has integrated the residency program and it has not resulted in the resident going from service to service, sometimes as an observer, without directly providing assistance in a service not integrated in the residence. The experience is considered satisfactory in the residents’ learning and in the care of patients and family members, with the resident’s acceptance and user satisfaction. It is worth mentioning that the residents who took tests for a public office, or for a psychiatric R4, have expressed the importance of the neurology clerkship in their favorable results, including several first places. Emphasis is placed on the quality and commitment of the resident in the preparation of medical records, the contribution of R3 in the Neurocognitive Disorder clinic in the identification of psychotic conditions and their treatment.

Consultations are time-consuming, but they cover the patient as a whole (socially, biologically and psychologically) and not just the neuropsychiatric condition. The clinical discussions cause delays in the hours of the appointments, which generates complaints by the patients; however, after explaining the reasons for the delay, patients and family understand. On several occasions, the schedule of theoretical activities goes beyond the established time – which does not bother the instructor or resident. The management has expressed approval for the assistance but has requested an increase in the number of consultations, as there have been difficulties in meeting the assistance and academic demands. Another challenge to be overcome is related to requests for complementary exams not provided by the public health system, and the prohibition to ask for exams at the private health network, due to the confusion it generates between users and managers.

#### CONCLUSIONS

Neurology and psychiatry have the brain as the source of the clinical manifestations of their patients; considering this, it is understood that there is a need for a neurology program to be included in the training of psychiatric residents. Historically, both specialties have been segregated by the “functional *versus* organic” dichotomy; however, these concerns are increasingly intertwined, providing all the more reason for the psychiatrist to have a comprehension of neurological diseases. As it is a

medical specialization, it is considered that the relevant training is carried out in-service, as the NPMRP has shown here.

In the view of the work team (resident preceptors), the general neurology outpatient clinics for the R1 and the elderly neurocognitive disorders outpatients and epilepsy for the R3 are compatible with the teaching objectives and assistance. The brief neurological physical examination remains a point to be overcome, as residents are little motivated to repeat it as a learning path. The addressed theoretical and practical contents of the diseases arouse greater interest from residents.

The efforts of the residents regarding the quality of the medical records and the care provided to patients and family members, under the supervision of the neurologist preceptor who is part of the residency, stand out. The activity named “What did I learn today” is considered important and prestigious by the team, as it is an active, participatory and group meeting, which allows clarifying doubts, sharing the knowledge generated in the consultations and motivating the search for clinical updates and therapeutics.

#### Recommendations

It is recommended that training programs for residents in psychiatry in Brazil publish their experiences and the BPA recommend a national NPMRP as a guide for the preparation of programs among different Brazilian institutions. It is also recommended that the BPA conduct a survey with the resident physicians at the SMS of SJP and Curitiba, aiming to subsequently validate and improve the program .

#### REFERENCES

1. Ministério de Educação e Cultura (MEC). Residência Médica. Boletim Informativo. Comissão Nacional de Residência Médica (CNRM). [access in 3 feb 2018]. Available from: <http://portal.mec.gov.br/residencias-em-saude/residencia-medica>.
2. Ministério de Educação e Cultura (MEC). Residência Médica. Novas vagas beneficiam estados de regiões com maior carência. Comissão Nacional de Residência Médica (CNRM). [access in 3 feb 2018]. Available from: <http://portal.mec.gov.br/busca-geral/222-noticias/537011943/14878-vagas-para-residencia-medica-priorizam-norte-nordeste-e-centro-oeste>.
3. Rodríguez CA, Cassias AL, Kolling MG. Proposta de um Programa para a Formação do Residente em Medicina de Família e Comunidade. *Rev Bras Educ Med*. 2008;32(1):40-8.
4. Sissoni MC. Implantação de Programas e Redefinição de Práticas Profissionais. *Rev Bras Educ Med*. 2009;33(suppl. 1):92-103.
5. Universidade Estadual de Campinas (UNICAMP). Catálogos dos Programas: Residência Médica. [access in 3 feb 2018]. Available from: <https://www.fcm.unicamp.br/fcm/sites/default/files/2015/page/resmed2016.pdf>.
6. Velho MTAC, Haeffner LB, Santos FG, da Silva LC, Weinmann ARM. Residência Médica em um Hospital Universitário: a Visão dos Residentes. *Rev Bras Educ Med*. 2012;36(3):351-357.
7. Teive HAG. O Papel de Charcot na Doença de Parkinson. *Arq Neuropsiquiatr*. 1998;56(1):141-5.
8. Martin JB. The integration of neurology, psychiatry, and neuroscience in the 21st century. *Am J Psychiatry*. 2002;159(5):695-704.
9. Bastos O. Psiquiatria: conceito, objetivos, panorama atual e

- perspectivas. In: Brasil MAA, Botega NJ, editores. PEC Programa de educação continuada da Associação Brasileira de Psiquiatria. Rio de Janeiro: Guanabara Koogan; 2004; p. 2-6.
10. Sanches M, Soares JC. Psiquiatria e neurociência: estado atual e perspectivas futuras. In: Miguel EC, Gentil V, Gattaz WF, editores. Clínica psiquiátrica. Barueri: Manole; 2011; p. 49-54.
  11. White PD, Rickards H, Zeman AZJ. Hora de acabar com a distinção entre doenças mentais e neurológicas. *BMJ*. 2012;5(49):418-20.
  12. Rauch SL. Neuroimaging and neurocircuitry models pertaining to the neurosurgical treatment of psychiatric disorders. *Neurosurg Clin N Am*. 2003;14(2):213-23.
  13. Cordioli AV. Diagnóstico do TOC: diagnóstico diferencial e comorbidades. In: Cordioli AV, editor. TOC: manual de terapia cognitivo-comportamental para o transtorno obsessivo-compulsivo. Porto Alegre: Artmed; 2014; p. 33-54.
  14. Swanson JM, Kinsbourne M, Nigg J, Lanphear B, Stefanatos GA, Volkow N, et al. Etiologic subtypes of attention-deficit/hyperactivity disorder: brain imaging, molecular genetic and environmental factors and the dopamine hypothesis. *Neuropsychol Rev*. 2007;17(1):39-59.
  15. Fazzito MM, Jordy SS, Tilbery CP. Psychiatric disorders in multiple sclerosis patients. *Arq Neuropsiquiatr*. 2009;67(3):664-7.
  16. Bello AF, Rodríguez CA, Rodriguez DL, Forbeci MJ, Motter V. Epilepsia e psiquiatria: Relato de uma série de casos. XXXIII Congresso Brasileiro de Psiquiatria; ABP. 2015;4-7.
  17. World Psychiatric Association. Institutional Program on the Core Postgraduate Training Curriculum for Psychiatry. Virginia: World Psychiatric Association; 2002.
  18. Coêlho BM, Zanetti MV, Neto Lotufo F. Residência em psiquiatria no Brasil: análise crítica. *Rev Psiquiatr RS*. 2005;27(1):13-22.
  19. Comissão Nacional dos Médicos Residentes (CNMR). Instituições e programas: número de residentes e número de vagas [access in 27 apr 2016]. Available from: <http://www.abp.org.br/residencia/residencias.pdf>.
  20. Universidade Estadual de Campinas (UNICAMP). Faculdade de Ciências Médicas. Departamento de Psicologia Médica e Psiquiatria. Programa de Residência Médica em Psiquiatria. Campinas 2017. [access in 10 dec 2018]. Available from: [https://www.fcm.unicamp.br/fcm/sites/default/files/2017/page/programa\\_de\\_residencia-2017.pdf](https://www.fcm.unicamp.br/fcm/sites/default/files/2017/page/programa_de_residencia-2017.pdf).
  21. Faculdade de Medicina do ABC (FMABC). Residência Médica [access in 15 sep 2015]. Available from: <http://www.fmabc.br/residencia-medica>.
  22. Secretaria de Estado da Saúde de Santa Catarina (SES/SC). Instituto de Psiquiatria de Santa Catarina (IPq/SC). Residência Médica em Psiquiatria. Programa da Residência. [access in 15 sep 2015]. Available from: <https://sites.google.com/site/residenciapsiquiatriasc/programadaresid%C3%Aancia>.
  23. Hospital de Saúde Mental de Messejana (HSMM) - Professor Frota Pinto. Governo do Estado do Ceará. Secretaria de Saúde do Estado. Residência médica. [access in 15 sep 2015]. Available from: <http://www.hsmm.ce.gov.br/index.php/ensino-e-pesquisa/residencia-medica>.
  24. Programa de Residência Médica Acreditados pela Associação Brasileira de Psiquiatria. [access in 09 dec 2018]. Available from: [https://abpbrasil.websiteseuro.com/portal/wp-content/uploads/2018/05/Programas-de-residencias-medicas-acreditados-pela-ABP\\_Mai18.pdf](https://abpbrasil.websiteseuro.com/portal/wp-content/uploads/2018/05/Programas-de-residencias-medicas-acreditados-pela-ABP_Mai18.pdf).
  25. Associação Brasileira de Psiquiatria. Programa mínimo para residência médica em Psiquiatria [access in 08 dec 2018]. Available from: [http://www.abpbrasil.org.br/residencia/programa\\_residencia.pdf](http://www.abpbrasil.org.br/residencia/programa_residencia.pdf).
  26. Souza MWP. Proposta de Programa para a Formação do Residente em Psiquiatria. Trabalho de Culminação de Curso de Residência Médica em Psiquiatria [Monografia]. Programa de Residência Médica em Psiquiatria da Secretaria Municipal de Saúde do Município de São José dos Pinhais, Paraná. São José dos Pinhais; 2014.
  27. Souza MWP, Rodríguez CA. Programa de neurologia para a formação do residente em psiquiatria no Brasil. *Rev Fac Ciênc Méd Sorocaba*. 2017;19(2):86-91.
  28. Silva WC. Miséria da biblioteca escolar. 2. Ed. São Paulo: Cortez; 1999; p. 60.
  29. Perrenoud P. Introdução: Novas competências para ensinar. In: Perrenoud P. Dez novas competências para ensinar. Porto Alegre: ARTEMED; 2000; p. 11-91.
  30. Ministério da Saúde, Secretaria de Atenção à Saúde, Secretaria de Ciência, Tecnologia e Insumos Estratégicos. Protocolo Clínico e Diretrizes Terapêuticas da Epilepsia. Portaria conjunta nº 17, de 21 de junho de 2018. [access in 22 nov 2019]. Available from: <https://portal.arquivos2.saude.gov.br/images/pdf/2018/junho/28/Portaria-Conjunta.pdf>.
  31. Baftiu A, Feet AS, Larsson PG, Burns ML, Henning O, Sætre E, et al. Utilisation and polypharmacy aspects of antiepileptic drugs in elderly versus younger patients with epilepsy: A pharmacoepidemiological study of CNS active drugs in Norway, 2004-2015. *Epilepsy Res*. 2018;139:35-42.
  32. Almeida OP, Almeida SA. Confiabilidade da versão brasileira da Escala de Depressão em Geriatria (GDS) versão reduzida. *Arq Neuropsiquiatr*. 1999;57(2B):421-426.
  33. Nitrini R, Caramelli P, Bottino CMC, Damasceno BP, Brucki SMD, Anghinah R. Diagnóstico de doença de Alzheimer no Brasil: avaliação cognitiva e funcional. Recomendações do Departamento Científico de Neurologia Cognitiva e do Envelhecimento da Academia Brasileira de Neurologia. *Arq Neuropsiquiatr*. 2005;63(3a):720-7.
  34. Chaves MLF, Godinho CC, Porto CS, Mansur L, Cathery-Goulart MT, Yassuda MS, et al. Doença de Alzheimer: Avaliação cognitiva, comportamental e funcional. *Dement Neuropsychol*. 2011;5(Suppl 1):21-33.
  35. Gelb DJ, Gunderson CH, Henry KA, Kirshner HS, Jozefowicz RF, Consortium of Neurology Clerkship Directors and the Undergraduate Education Subcommittee of the American Academy of Neurology. The neurology clerkship core curriculum. *Neurology*. 2002;58(6):849-52.
  36. Conselho Federal de Medicina (CFM). Resolução do CFM No 1.638/2002. Publicada no D.O.U. de 9 de agosto de 2002, Seção I, p.184-5. Define prontuário médico e torna obrigatória a criação da Comissão de Revisão de Prontuários nas instituições de saúde. [access in 23 nov. 2019]. Available from: [http://www.portalmedico.org.br/resolucoes/cfm/2002/1638\\_2002.htm](http://www.portalmedico.org.br/resolucoes/cfm/2002/1638_2002.htm).
  37. Conselho Federal de Medicina (CFM). Resolução do CFM No 1.821/2007. Publicada no D.O.U. de 23 nov. 2007, Seção I, pg. 252. Aprova as normas técnicas concernentes à digitalização e uso dos sistemas informatizados para a guarda e manuseio dos documentos dos prontuários dos pacientes, autorizando a eliminação do papel e a troca de informação identificada em saúde. [access in 23 nov 2019]. Available from: [http://www.portalmedico.org.br/resolucoes/cfm/2007/1821\\_2007.pdf](http://www.portalmedico.org.br/resolucoes/cfm/2007/1821_2007.pdf).

#### AUTHORS CONTRIBUTION

Carlos Arteaga Rodriguez participated in the conception and execution of the project and in writing the first draft of the manuscript. Marcel Wilkins Pereira Souza participated in the conception and organization of the project and in writing the first draft of the manuscript. Nadyne Somacal Remonti participated in the execution of the project and in writing the first draft of the manuscript. Otto J. Hernandez-Fustes participated in the organization of the project, in writing the first draft of the article and in the critical review of the manuscript.

#### CONFLICTS OF INTEREST

There is no conflict of interest to declare.

#### ADDRESS FOR CORRESPONDENCE

Otto J. Hernandez Fustes. Complexo Hospital de Clínicas da Universidade Federal do Paraná, Rua General Carneiro, 181, Curitiba, PR, Brasil. CEP: 80060-900.

E-mail: [otto.fustes@hc.ufpr.br](mailto:otto.fustes@hc.ufpr.br)



This is an Open Access article distributed under the terms of the Creative Commons Attribution License, which permits unrestricted use, distribution, and reproduction in any medium, provided the original work is properly cited.