

**IMPACT OF THE INTERNATIONAL PARKINSON AND MOVEMENT DISORDER
SOCIETY SCHOOLS IN YOUNG NEUROLOGISTS CAREERS: RESULTS FROM A
WEB-BASED SURVEY**

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ABSTRACT

Background: The International Parkinson and Movement Disorder Society (MDS) Schools for Young Neurologists have been held since 2008 for young clinicians with a special interest in the field of movement disorders (MD).

Objective: To evaluate the participants' perception of the impact of these courses on their careers.

Methods: A web-based survey was performed. All participants from previous MDS Schools for Young Neurologists (2008-2014) were invited to participate in a webbased questionnaire.

Results: A total of 283 out of 650 (43.5%) participants completed the survey.

Almost 80% considered that the course had a direct impact on their involvement in the MD field. Of the 75 participants who had completed residency at the time of the survey, the number of those who are working as MD specialists increased from 34 (43.3%) at the time of the school to 72 (96%) at the moment of the survey. Accordingly, the proportion with at least 25% of their weekly time spent practicing MD increased from 48.7% to 70% and MD was the main area of interest for 77.2%. Involvement in academic and teaching activities in MD increased from 48.6% up to 92.7%. Finally, 39.6% of participants were members of the MDS at the time of the course and that number increased to 87.4% at the time of the survey.

Conclusions: Clinicians with a special interest in MD reported a significant impact of attending a MDS School for Young Neurologists. Following completion of the schools, they have continued to be involved in the field by joining MDS, becoming MD specialists and engaging in specialized academic and teaching activities.

INTRODUCTION

Rapid worldwide changes in the present century have brought about new challenges in education, especially with the advances in technology, the incorporation of telemedicine, and the greater availability of sources of information to students and teachers[1]. Experts in health care consider learning skills in the 21st century as a collection of abilities, such as critical thinking, effective communication, creativity and risk taking, interpersonal skills, being comfortable with information technology, personal, social and civil responsibilities, high efficacy, prioritizing goals, planning and managing, flexibility, compatibility and self-confidence [1]. Traditional teaching and learning methods, where learners have a passive role and merely listen to information being presented, have been criticized by many experts [2]. It has been argued that such methods fail to meet present and future educational needs, and restrict learners' creative and critical thinking [2-4]. Based on those premises, the International Parkinson and Movement Disorder Society (MDS) School for Young Neurologists was created as an interactive teaching course for theoretical and practical education, with access to patients covering a wide variety of movement disorders (MD). The target audience are young neurologists (less than 40 years of age) interested in MD and either still in training or within five years of completing their general neurology training. In order to maintain a highly interactive and personal experience, the number of attendees is restricted to 48. The course includes complementary educational methods, such as plenary lectures on main topics in MD, questions and answers sessions, smaller interactive parallel sessions, hands-on examination of patients and video case presentations with discussions chaired by the expert faculty members. The first course was held in Germany in 2008 and since then MDS has held two to four annual courses in Europe and the Americas. Top faculty experts from the MDS coordinate and teach the course. The course program usually consists of three 10-hour long days of activities. The first day is devoted to hypokinetic movement disorders. The second day is dedicated to hyperkinetic movement disorders followed by complex issues in MD on the final day. This last section features sessions on the use of botulinum toxin, psychogenic MD, sleep disorders, gait evaluation, functional neurosurgery, neuroimaging, and rehabilitation approaches. Additionally, the attendees have the opportunity to present their cases in the "Bring your own case" session. The faculty selects a small group of student video cases for presentation to all students, and the attendees then select the best presentation with that attendee receiving complimentary registration to the next scheduled International MDS Congress. After the MDS School for Young Neurologists course, attendees are expected to be able to present a straightforward MD case history including patient examination, differential diagnosis, and final diagnosis. In the case of more complex MD, participants are expected to provide a

differential diagnosis, even if they cannot reach a final diagnosis. It is also expected that the attendee be able to design, review and modify a patient treatment plan. Considering the fact that learners are at the heart of this process, we aimed at studying the attendees' perceptions of the innovative teaching methodology presented at the schools, and the impact on their careers.

METHODS

This was a web-based survey study. All participants from previous MDS Schools for Young Neurologists (2008-2014) were invited to participate through electronic mails. An online questionnaire-based survey created by the MDS Young Members Group with the help of the Educational Committee chairs was conducted in December of 2014 and consisted of 42 questions in 5 sections including demographic data, MDS School course information, involvement in MDS, activities and position, and program impact. The questionnaire contained multiple-choice questions and one open question for suggestions and comments (**Appendix-1**). Descriptive statistics of demographic and questionnaire data were provided for continuous [mean and standard deviation (SD)] and categorical (count and percentage) variables.

RESULTS

A total of 650 attendees were invited to complete the survey. Eighty-one email invitations (12.46%) were returned due to wrong email addresses. Out of 569 successful invitations, 283 attendees completed the survey, yielding a participation rate of 49.7%. Distribution per course of survey participants are detailed in **Table 1**. Survey participants were more frequently female (54.1%) and the mean age of participants was 34.2 + 5.5. Most of the survey participants were from Western Europe (91 [32.1%], mostly represented by Italy, Germany, Portugal and Spain) and South America (62 [21.9%], mostly represented by Brazil, Argentina and Chile). Participants received information about the courses mostly via the MDS website (143 [50.9%]), followed by invitation from a colleague (98 [34.9%]), a faculty member (48 [17.1%]) or past participants (32 [11.4%]). Regarding their motivations to participate, most of the participants felt a need to be trained in MD (52.9%), followed by the fact that they were already working in a MD unit (44.3%). Some of them (23.2%) took the course because they expected to work in a MD unit in the near future. Two hundred fifty-three (90.4%) participants would take the course again. **Table 2** details the survey participant main activities, practice in MD and the involvement in research/academic activities before and after the

school. Most of the participants (55.2%) were neurology residents at the time of the course and only 34 (12.6%) were already MD specialists. Of the 75 participants who had completed residency at the time of the survey, the number of those who are working as MD specialists increased from 34 (43.3%) at the time of the school to 72 (96%) at the moment of the survey. At the time of the survey, 74 (28.2%) participants were still enrolled in residency, 72 (27.5%) participants were specialists in the field (14% more if compared to the time of the course) and 72 (27.5%) became general neurologists. At the time of the course, 194 (71.9%) had a main interest in MD, followed by 21 (7.8%) with a main interest in stroke. After the course, there was an increase of 13 (5.3%), reaching 207 (77.2%) in the number of participants reporting MD as their main area of interest. After the course, the weekly-practice in MD clearly increased, but there was not a great change in the specific MD activities, as most of the participants were working in an outpatient unit and continued do to so after the course. Both the involvement in research and academic activities in the MD field clearly increased after the course (respectively from 144 [71%] to 180 [89.5%] and 121 [69.1%] to 149 [85.1%]).

At the time of the course, 107 (39.6%) of participants were MDS members. At the time of survey, that number had increased to 234 (87.6%). Subsequently, they had more access to the MDS website content, including the MDS journals. Before the course, 140 (51.8%) participants were visiting the MDS website/journal 1-5 times a month, while 67 (24.8%) were not accessing. After the course, 100 (37.0%) were visiting 5-10 times each month the MDS website/journal, followed by 32.2% with 1-5 monthly visits. Only 6 (2.2%) continued to not access the website content. Among the reasons to become members of the MDS were: the need for continuing education, the growing interest in the field and engaging in society educational opportunities, the Associate Member program (first year of membership free of charge), the large amount of information and materials on the website, and the influence of the MDS faculty and staff during the course.

Notably, 227 (84.7%) participants felt that having attended the course influenced their career path, 212 (79.4%) stated that enrollment in the course directly impacted their involvement in the MD field and 138 (52.0%) participants agreed that involvement in MDS courses helped them increase their status in their institution.

DISCUSSION

Our survey clearly showed that the MDS School for Young Neurologists had a positive impact on attendees' career, their involvement in the MD field and their engagement with the MDS.

Participants were mostly residents or general neurologists at the time of the course with interest in improving their knowledge on MD. MDS Schools provided participants with a number of important

advances in their career. They frequently became members of the MDS after the school and had thereby access to educational activities of the website, including the MDS journals. They also increased their enrolment in research and teaching activities in MD. Likewise, participants had more frequently accessed the MDS website or journal after the course, which denotes their growing interest and enthusiasm in the MD field. The MDS School for Young Neurologists is based on a quite new and innovative learning method. Indeed, the active role of the participants is thought to be a key factor contributing to the success of the course. In addition, the direct interaction between participants and faculty and the involvement of patients to teach a practical diagnostic approach contribute to the positive post course evaluation. Our study used a self-administered questionnaire, which is actually one of the most common and simple evaluation instruments in this type of research [5]. Even though it might be subjected to confounding factors, comparative student self-assessment is considered a valid tool to determine teaching effectiveness [6]. A limitation to our study is the lack of a comparison group for other courses formats, either carried out by MDS or other Societies. It cannot also be excluded that the participants of the MDS schools were already motivated to work in the field of MD and we may have a bias of selection favouring the results of the survey. In summary, our results show a positive impact of the MDS School for Young Neurologists on the careers of their participants including strengthening their interest in the MD field.

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APPENDIX 1:

MDS-ALUMNI GROUP: SURVEY

Impact of MDS-School for Young Neurologists courses on their current career

DEMOGRAPHICS:

1. Email address:
2. Given Name:
3. Surname:
4. Date of birth (DD/MM/YYYY):
5. Gender (M/F):
6. Country of birth: (drop down list of all European and North African countries)
7. Country where you were studying/working when the School was attended: (drop down list)
8. Country where you are studying/working now (drop down list):

SUMMER/WINTER SCHOOL INFORMATION

9. Which MDS-ES Summer/Winter School program year did you attend?

- 2008 Marburg
- 2009 Marburg
- 2010 Nijmegen
- 2011 Naples
- 2011 São Paulo
- 2012 Innsbruck
- 2013 Tartu
- 2013 London
- 2013 Chile
- 2014 Belgrade
- 2014 Barcelona
- 2014 Argentina

10. How did you learn of the program?

- Colleague
- Faculty member
- MDS website
- Movement Disorders* Journal
- Past participant
- Other (please specify): _____

11. Why did you apply to participate in the program?

- Working in a movement disorders unit at the time
- Expected to work in a movement disorders unit (when applied)
- Need for training in Movement Disorders
- Need for training in neurology
- Other (please specify): _____

12. Would you participate in another MDS-School for Young Neurologist course?

- Yes
- No

INTERNATIONAL PARKINSON'S DISEASE AND MOVEMENT DISORDERS SOCIETY INVOLVEMENT

MDS Membership:

13. Were you an MDS member at the time you applied for the Summer/Winter School?

Yes

No

14. Did you become a member or continue your membership after attending Summer/Winter School?

Yes

No

15. Before your participation in the program did you subscribe to the *Movement Disorders Journal*?

Yes

No

16. Do you currently subscribe to the *Movement Disorders Journal*?

Yes

No

17. What was your monthly frequency of access to the MDS site or Movement Disorders Journal before you applied for the Summer/Winter School?

None

1 to 5

5 to 10

10 to 20

More than 20

18. What is your current frequency of access to the MDS site or Movement Disorders Journal after you participated in the Summer/Winter School ?

None

1 to 5

5 to 10

10 to 20

More than 20

ACTIVITIES / POSITION

Please indicate your activity/position at your institution:

19. At the time of your participation in Summer/Winter School:

General practitioner

General neurologist

Medical student

Neurologist expert in Movement disorders

Neurologist expert in other neurology field

Neurology resident

Other medical specialty resident

Other (please specify): _____

20. Current position:
- General practitioner
 - General neurologist
 - Medical student
 - Neurologist expert in Movement disorders
 - Neurologist expert in other neurology field
 - Neurology resident
 - Other medical specialty resident
 - Other (please specify): _____

Main neurological area of interest:

21. When applied to the summer school

(mark two maximum):

- Basic research
- Behavioral neurology
- Dementia
- Epilepsy
- Movement disorders
- Multiple sclerosis
- Headache
- Neuromuscular
- Neuropathology
- Neuropharmacology
- Neurosurgery
- Pediatric neurology
- Sleep
- Stroke
- None
- Other: _____

22. Main neurological area of interest now:

(mark two maximum):

- Basic research
- Behavioral neurology
- Dementia
- Epilepsy
- Movement disorders
- Multiple sclerosis
- Headache
- Neuromuscular
- Neuropathology
- Neuropharmacology
- Neurosurgery
- Pediatric neurology
- Sleep
- Stroke
- None
- Other: _____

What percentage of your practice on a typical week involves working with movement disorder patients?

23. Before Summer/Winter School Participation:

0-25

26-50

51-75

76-100

I was seeing movement disorder patients exclusively

24. Now:

0-25

26-50

51-75

76-100

I see movement disorder patients exclusively

What specific activities related to Movement Disorders were/are you performing (check all that apply):

25. Before Summer/Winter School Participation:

Botulinum toxin clinic

Deep brain stimulation for movement disorders

Movement disorders day hospital

Movement Disorders inpatient care

Movement disorders outpatient clinic

Neurophysiological assessment of movement disorders

Neuropsychological assessment of movement disorders

Other: _____

26. Now:

Botulinum toxin clinic

Deep brain stimulation for movement disorders

Movement disorders day hospital

Movement Disorders inpatient care

Movement disorders outpatient clinic

Neurophysiological assessment of movement disorders

Neuropsychological assessment of movement disorders

Other: _____

Involvement in research activities (general):

27. At the time of Summer/Winter School participation:

Yes, I was involved in research activities

No, I was not involved in research activities

28. Now:

Yes, I am involved in research activities

No, I am not involved in research activities

Involvement in research activities (Movement Disorders-related):

29. At the time of Summer/Winter School participation:

Yes, I was involved in Movement Disorders research

No, I was not involved in Movement Disorders research

30. Now:

Yes, I am involved in Movement Disorders research

No, I am not involved in Movement Disorders research

Involvement in teaching activities (general):

31. At the time of Summer/Winter School participation:

Yes, I was involved in general academic/teaching activities

No, I was not involved in general academic/teaching activities

32. Now:

Yes, I am involved in general academic/teaching activities

No, I am not involved in general academic/teaching activities

Involvement in academic and/or teaching activities (Movement Disorders related):

33. At the time of Summer/Winter School participation:

Yes, I was involved in Movement Disorders related academic/teaching activities

No, I was not involved in Movement Disorders related academic/teaching activities

34. Now:

Yes, I am involved in Movement Disorders related academic/teaching activities

No, I am not involved in Movement Disorders related academic/teaching activities

35. Were there some Movement Disorder-specific activities at your department when you attended the Summer/Winter School program?

Yes: If yes, please check all that apply:

Botulinum toxin training

Deep brain stimulation surgery

Movement disorders inpatient care

Movement disorders outpatient care

Neurophysiological assessment of movement disorders

Neuropsychological assessment of movement disorders

Other: _____

No

36. Are there currently some Movement Disorder-specific activities in your department?

Yes: If yes, please check all that apply:

Botulinum toxin training

Deep brain stimulation surgery

Movement disorders inpatient care

Movement disorders outpatient care

Neurophysiological assessment of movement disorders

Neuropsychological assessment of movement disorders

Other: _____

No

37. Did you receive Movement Disorders training prior to your participation in the School?

Yes:

Courses/workshops

During the neurological residency

Integrated in your own neurological department activities

Movement disorders Fellowship

Other: _____

No

PROGRAM IMPACT

38. Do you feel that having attended this course influenced your career path?

Yes

No

39. Did involvement in the Summer/Winter School program directly impact your involvement with the Movement Disorders field?

Yes

No

40. Did you do a Movement Disorder Fellowship after your Summer/Winter School participation?

Yes

No

41. Did involvement in the Summer/Winter School program help to increase your status at your institution?

Yes

No

42. Feel free to give us feedback on how the MDS-School for Young Neurologists changed your practice:
