

*Original Investigation*

# Turkish Board of Neurological Surgery

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**AIM:** To provide information on the process and the results of the Turkish Board of Neurological Surgery and increase the relevant awareness.

**MATERIAL and METHODS:** The number of applications to the written and oral board exams organized by the Turkish Neurosurgical Society Proficiency Board since 2006, the number of successful and unsuccessful participants, and the number of the neurosurgery residents and specialists who applied to the exam were evaluated.

**RESULTS:** A total of 554 candidates took the exam since 2006 when the first TBNS was applied. Two hundred and sixty of the candidates were successful (46.9%), and 294 (53.1%) were unsuccessful. Two hundred and forty six (44.4%) of those who took the test were neurosurgeons, 308 (55.6%) were neurosurgery residents who had completed their 3<sup>rd</sup> year in their training. The highest score in the written exams was 93/100, and the lowest score was 33/100. In verbal exams, a total of 73 candidates participated, and 66 (90.4 %) of them were successful while 7 of them (9.6%) were unsuccessful.

**CONCLUSION:** Board exams are inevitable to provide a certain level of education and standardization in the training of neurosurgery. Our duty as neurosurgeons is to participate in these exams and work to increase participation for continuing education.

**KEYWORDS:** Board, Examination, Neurosurgery, Turkish Neurosurgical Society, Neurosurgery training

**■ INTRODUCTION**

The struggles of human beings “to know and educate”, and for these purposes, “to measure and assess” dates to the times Before Christ (B.C.). In 2000s B.C., it is known that there was a system that might be considered as extremely complex to select the state officials in China. The system was based on an exam (1,2).

In the specialization field, the real purpose of the board exams, which create the opportunity to update the knowledge and skills of doctors, is to ensure that the specialization of the doctor is confirmed by other colleagues. The examination for specialty in medicine was performed for the first time in 1917 by the American Ophthalmology Board (9). In the Neurosurgery field it was also performed in the USA in 1940 (9). After the American Board, a 3-stage (multiple choice, clinical and verbal) exam was applied in England in 1991,

and one year later, the first board exam was performed by the European Association of Neurosurgical Societies (EANS). The reflection of this movement in the USA and Europe to the Turkish Neurosurgical Society (TNS) occurred much later and the first board exam in Turkey was performed in 2006 (6). In 2004, the National Proficiency Board was established by the Coordination Board for Turkish Medical Associations (TMA). Proficiency Boards were formed on the 43 main and side branches mentioned in the Specialty in Medicine Regulation and 26 of them performed board exams (10). In the discipline of general surgery, the first board exam in Turkey was performed by the Turkish Surgical Association (TSA) in 2000 (3).

The Turkish Board of Neurological Surgery has been administered in two steps as written and verbal since 2006. The exam process is run by the Turkish Neurosurgical Society Proficiency Board (TNSPB).

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The purpose of this study is to provide information on the process and the results of the Turkish Board of Neurological Surgery (TBNS) and increase the relevant awareness.

## ■ MATERIAL and METHODS

The number of the applications to the written and oral board exams organized by TNSPB between 2006 and 2017, the number of successful and unsuccessful participants, and the number of neurosurgery residents and the specialists who applied to the exam were evaluated.

### Turkish Board of Neurological Surgery

The TNSPB is a side-establishment of the TNS and was founded by Prof. Ender KORFALI, M.D. in 2005 in Turkey for the purpose of increasing the quality of “Neurosurgery Training” and to ensure the standardization between training institutions. Then, Prof. M Kemal BAYKANER, M.D., Prof. Mehmet ZILELI, M.D., Prof. Deniz BELEN, M.D., Prof. Memduh Kaymaz, M.D., Prof. Cem YILMAZ, M.D. became the presidents of the TNSPB. Prof. Hakan Emmez, M.D. is on active duty as the current president.

The purpose of the establishment is to form the main structure of training in neurosurgery, and to elevate the level of training in neurosurgery as much as possible. The institution aims to attain the desired high standards in neurosurgery by applying several trainings like the Core Training Program and Assistant Report, and by determining the applicable training limits that have to be obeyed.

The mission of the Core Education Program, which is defined by TNSPB, is to make sure neurosurgical training and patient care are perfect. Residents will firstly form the most important bases of major clinical skills, including neurological surgery. During the training process, clinical and academic neurosurgical specialty skills must be acquired. Upon the completion of the neurosurgery residency, each graduate must have further experience in the management of neurosurgical diseases.

The questions of the Board Exam were prepared by the commission of the professors and associate professors under the inspection and control of the Republic of Turkey Measurement, Selection and Placement Center (OSYM) in the early years. Then, a question bank was created by the Training and Exam Commission of the TNSPB Executive Board, and the questions were prepared by this board from then on.

TNSPB is convened once a year. In addition to the board members, one representative from TNS Training Groups and academicians also attend. Questions are chosen from the question bank prepared beforehand, and the exam is thus finalized.

The exams for TNSPB Certificate are applied in two steps, which are written and verbal. The passing grade in written exams has been determined as 60 (sixty) over 100, i.e. sixty correct answers in the exam. In order to be able to take the written exam, it is necessary to have completed the 3<sup>rd</sup> year as a neurosurgery resident.

The distribution of the number of the questions according to the titles of the subjects in the written exam is provided in Table I.

The oral Exam is performed on 6 different desks in the form of a Constructed Verbal Exam; and the duration is at least 60 minutes. The passing grade is 70 over 100.

The candidates who receive 60 (sixty) and over in written exam, and who have been in their neurosurgery practice for at least 2 years, have the right to take the verbal exam; and in case they succeed in the verbal exam, they receive the TNSPB Certificate. The certificate is valid for 10 years.

Turkey is the only responding country with a recertification plan already in place, although Portugal and the UK have expressed intent (4).

Provided that the knowledge accumulation is preserved and continuous performance is certified (by attending Congresses, clinical practice, scientific reviews, etc.), the validity of the certificate is extended.

The conditions to extend the validity of the certificate are as follows; the candidate must have published at least 2 international scientific research papers within the 10 years after receiving the certificate, or the candidate must have attended 10 national or international neurosurgery meetings. If the candidate does not meet these criteria, he/she must take the written exam again and be successful (11).

## ■ RESULTS

A total of 554 candidates took the exam since 2006 when the first TBNS was applied. Two hundred and sixty of the candidates were successful (46.9%), and two hundred and forty six (53.1%) were unsuccessful. Two hundred and forty six (44.4%) of those who took the test were neurosurgeons, and 308 (55.6%) were neurosurgery residents who had completed their 3<sup>rd</sup> year in their training (Table II).

**Table I:** The Exam Curriculum and Number of Questions in the Written Exam

Neuroanatomy	8
Neurophysiopathology	10
Neurology	7
General Neurosurgical Surgery Skills	5
Head Trauma	5
Brain Tumors	15
Cerebro Vascular Diseases	15
Spine-Spinal and Peripheral Nerve Diseases	17
Neuroradiology	5
Pediatric Neurosurgery and Congenital Diseases	5
Intensive Care and Neuroanesthesia	4
Functional and Stereotaxic Surgery	4

The highest score in the written exams was 93, and the lowest score was 33. The highest participation was in the first exam with 122 candidates. In the following years, the participation was around 40 candidates (Table II).

In verbal exams, a total of 73 candidates participated, and 66 (90.4%) of them were successful while 7 of them (9.6%) were unsuccessful (Table III).

Although there are 1484 neurosurgeon registered in TNS, it is known that there are nearly 1800 Neurosurgeon in Turkey.

The number of the neurosurgeons that have a TNS Board Certificate is 355 (approx. 19,7%). Two hundred and forty of the neurosurgeons (professors and associate professors) have the certificates that are granted without exams (in 2006), 49 of the neurosurgeons have the certificates that are granted for the first time and with a written exam only (in 2006), and 66 of the neurosurgeons have the TNS Board Certificates granted with both written and oral exams.

In order for the TNSPB to achieve its target, which foresees that the standards are raised in Neurosurgery training, one of the important tasks is the accreditation of the clinics.

**Table II:** Number of Candidates Taking the Written Exam by Year

Year	Number of candidates	Resident	Neurosurgeon	Female	Male	Successful	Unsuccessful
2006	109	41	81	5	117	49	60
2007	40	23	17	4	36	22	18
2008	25	15	10	1	24	15	10
2009	58	44	14	3	55	30	28
2010	50	31	19	3	47	11	39
2011	43	28	15	5	38	26	17
2012	27	17	10	4	23	7	20
2013	48	24	24	3	45	22	26
2014	39	28	11	3	36	15	24
2015	38	24	14	7	31	26	12
2016	34	13	21	0	34	19	15
2017	30	20	10	1	29	16	14
Total	541	308	246	39	515	258	283

**Table III:** Number of Successful and Unsuccessful Candidates Taking the Oral Exam by Year

Year	Number of candidates	Number of successful candidates	Number of unsuccessful candidates
2006	No exam	-	-
2007	No exam	-	-
2008	2	2	0
2009	No exam	-	-
2010	11	7	4
2011	5	5	0
2012	5	5	0
2013	9	7	2
2014	8	8	0
2015	9	9	0
2016	12	11	1
2017	12	12	0
Total	73	66	7

## ■ DISCUSSION

Arthur Schopenhauer emphasized the importance of knowledge and mind by saying “There are three types of aristocracy; the first one is age and seniority, the second one is wealth; and the third one is mind and knowledge. The most honorable one is the last one”. The importance of age and seniority is not debated in surgical hierarchy. While the master-apprentice training methodology was dominant in the 20<sup>th</sup> century, today, it is possible for everyone to access knowledge.

Of course, having a board certificate does not mean that the holder of the certificate will be a good physician or a good neurosurgeon.

It is observed that the participation in the board exams, which are conducted by various associations in our country, is generally lower than the expected level. One of the main reasons for this might be the consideration that a failure in the exam will cause loss of prestige. In addition, when the candidates that have board certificate are considered, it is seen that the vast majority of them are academicians or the neurosurgeons who want to be academicians. When we examine the archives of the TNS, the fact that there are only 66 neurosurgeons who took the written and verbal exam, and received a board certificate, makes us consider that the participation is extremely low. In the light of these reasons, the present situation makes us think that the Board Exam should be conducted for the purpose of improving the knowledge and skills that are required in professional daily lives of the neurosurgeons, which will increase the participation in these exams.

Specialist – resident ratios for exam takers are 45% and 55%, respectively. It should be encouraged, if possible, to enter the board exam before completion of neurosurgery training in clinics. It is inevitable that the participation will increase even more.

The state of neurosurgery certification in Europe has improved considerably during the past three decades, with eight European countries and societies organizing and implementing national written examinations in neurosurgery after 1990 (the UK, EANS, Switzerland, Sweden, Slovenia, Czech Republic, Turkey and Poland) (4).

### EANS Board Examination

The Board Examination consists of two parts: Part I (written multiple choice questions) and Part II (oral examination).

Oral assessments following completion of the EANS training course was first introduced in 1983, Ljubljana. The concern for a more formal approach to an examination led in 1992 to the creation of the Joint EANS/UEMS Examination Committee and introduction of the European Examination in Neurosurgery. Candidates who successfully pass both parts I and II of this examination receive the European Diploma in Neurosurgery.

Yucel KANPOLAT, M.D. and Ali SAVAS, M.D. were members of the EANS examination committee. Melih BOZKURT, M.D. is on active duty as the member of this committee.

In October 2015, during the meeting in Madrid, the EANS and UEMS Section of Neurosurgery decided to form the European Board of Neurological Surgery (EBNS) and transform the existing exam into the European Board Examination in Neurological Surgery to further increase its importance and general recognition. The successful candidates of both parts I and II will be appointed as Fellow of the European Board of Neurological Surgery (FEBNS).

### The United Kingdom Board Examinations in Neurosurgery

The UK Intercollegiate Specialty Board examination in Surgical Neurology was established in 1991 based on the experience of the original Royal College of Surgeons of Edinburgh Assessment in Surgical Neurology, an exit examination that was originally opposed both by surgery in general and by the younger neurosurgical community. Candidates must have completed satisfactorily their 4<sup>th</sup> year of a 6-year training programme, have personal experience with the more straightforward benign tumours, aneurysms and posterior fossa explorations, and be able to safely manage a conventional neurosurgical practice.

The examination consists of a multiple choice question paper, clinical examination and oral examination. No detailed curriculum has ever been published.

Examinations are held twice per annum, and rotate between the four colleges. There are strict guidelines for the examiners. The pass rate is about 70%.

All aspects of the examination continue to evolve and are carefully audited (8).

### The UK Board Examination Scope and Format

Candidates are expected to be fully conversant with all aspects of neurological surgery.

Candidates require a sound knowledge of clinical practice, investigation, diagnosis, management and the standard operative procedures in surgical neurology.

Candidates require a detailed knowledge of the basic sciences as applied to surgical neurology.

The format of the examination is:

1. A multiple choice question in basic sciences applicable to surgical neurology.
2. A one-hour clinical examination conducted in a clinical setting.
3. Three half-hour orals in each of the following:
  - a) Operative surgery and surgical anatomy
  - b) Investigation of the neurosurgical patient including neuroradiology
  - c) The non-operative practice of surgical neurology which includes intensive care and the clinically applied basic sciences.

### LOG BOOKS

Log Books are brought by the candidate to the Oral Examinations (8).

### The American Board of Neurological Surgery (ABNS)

The ABNS primary examination was developed in the late 1960s and turned over to the National Board of Medical Specialties in 1972. Board examinations were, however, conducted as early as the 1940s. The current primary examination (written component) is open to residents and neurosurgeons from accredited neurosurgical training programs. Any US resident starting at the NS-1 level can take the examination for self-assessment if approved by the program director.

The certification process consists of a written examination (Part I) and an oral examination (Part II). Part I consists of 375 multiple choice questions. These require a single best answer to individual or extended matching items. The duration is 5.5 hours divided into two parts, the first with 188 questions and the second with 187 questions. The current format includes a total of eight categories, namely, neuroanatomy, neurobiology, neuroimaging, neurology, neuropathology, neurosurgery, critical care—fundamental clinical skills, and the recently introduced core competencies (2009).

The mean passing rate of all examinees considering all existing categories between 2000 and 2007 was 69.75%.

Candidates must be scheduled for the oral examination within 5 years of completing training; otherwise, they must reenter the certification process. In addition, for Part II, each applicant submits a list of all operative and nonoperative inpatients for whom he or she was the responsible physician or surgeon during a period of 12 consecutive months, with at least 3 months of follow-up. One hundred of those cases need to be operative, with the oldest case not more than 2 years old at the time of review. Therefore, practice data and outcome evaluation are requirements to become certified. Letters of recommendation (three or more), state license(s), active hospital privileges, and endorsement from the program director are necessary to be eligible. Two chances are given to pass the oral examination, which consists of a 3-hour practice-oriented and scenario-based exam that covers all fields of the specialty. Should an applicant fail two consecutive attempts, he or she must reenter the certification process, including the primary examination (Part I) (5).

### The Meaning of Board Certification in the United States

Certification by the ABNS has become a measure of quality, certifying successful completion of a curriculum of study including medical school, residency training in an accredited program, and successful performance on written and oral examinations.

In reality, Board certification marks the successful completion of a well-defined curriculum designed to train safe and competent clinical neurosurgeons.

Whether Board certification assures the quality of the trainee from that moment onwards can be debated.

Certification in the United States, unlike that in other countries, is not mandatory. Hospitals, third-party payors, and the public in general, however, like/require their specialists to be certified. In addition, the United States Medical Licensing examinations

(Parts I through III) are mandatory for licensure and practice in all states (5,7).

It is compulsory to have the expertise certificate from the health ministry to work as a specialist in neurosurgery in Turkey. Although it is not compulsory to have a board certificate, it is considered to be an advantage for an academic position.

Another duty of the TNSPB is to increase the training level of the neurosurgery residency programs in our country in a constant manner. For this purpose, it encourages the application and continuous development of the specialist training program approved by the general board by all training units. It has therefore established an *accreditation mechanism* that is based on voluntary service of the units that provide the training and that is run based on the visit programs main principles.

As for the present situation, Gazi University, Uludag University, Ankara University, Ankara Numune Education and Research Hospital and Adana Numune Education and Research Hospital have accreditation certificates in our country.

Without doubt, there are many clinics with the qualifications to become accredited. Our desire is that these clinics apply for accreditation to the TNSPB as soon as possible.

For the accreditation process for clinics, more effort will be spent in future periods, and activities will be organized to encourage clinics to be accredited for the purpose of training and raising more informed and skillful specialists.

There are nearly 113 neurosurgery training clinics in our country. Five of these (4.4%) have accreditation certificates. In other branches, there are 63 training clinics of the Turkish Plastic Reconstructive and Esthetic Surgery Association (TPRESA), 5 (7.93%) of these have received accreditation certificates between the years 2008 and 2012. In the Turkish Surgery Association, which has 43 training clinics, 15 (34.88%) clinics have accreditation certificates (data received from the secretariat of the TSA and TPRESA). There are 16 training clinics that have the accreditation of the European Association of Neurosurgical Societies (EANS), to which 38 countries are members, and 2 of these are located in our country (Uludag and Gazi Universities) (Data received from the secretariat of the EANS).

The TNS Education and Training Board organizes free-of-charge 4-year Basic Neurosurgery Courses for the purpose of increasing the training level and accumulation of knowledge of the neurosurgeons who are in the first 5 years of their specialist period and the neurosurgery residents who have 2 years of experience. In addition, again in the association, the English International Basic Neurosurgery Course (IBNC) Course is also organized for international residents and young neurosurgeons. At the end of these courses, an examination is not organized, and therefore, a certificate is not issued. With the amendments made in the regulation of the TNSPB in 2016, the opportunity was given to those who were not Turkish citizens to take the Board Exam. In further years, it is planned that international participants who complete the IBNC organized in our country are encouraged to take these exams, and the exams will be organized both in Turkish and English languages in a simultaneous manner.

## ■ CONCLUSION

The Board Exam applied by TNSPB enables the educators and the educated-trained subjects to assess themselves, contributes to occupational development, and also enables standardization in Neurosurgery training.

## ■ ACKNOWLEDGEMENT

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