

Proposal for the Promotion of Korean Neurosurgery

The author conducted a survey on the current status of neurosurgery around the world in preparation for Presidential Address at the International Society for Pediatric Neurosurgery (ISPN). The addresses and findings from the survey were presented at ISPN in 2006 and Child's Nervous System in 2007. After reviewing the current status of neurosurgery of various countries, the author would like to share this information with members of the Korean Neurosurgical Society, as well as offer a proposal to promote Korean neurosurgery around the world.

KEY WORDS : Neurosurgery · World Federation of Neurological Surgeons · Korean Neurosurgical Society · Neurosurgical Society.

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CURRENT STATUS OF NEUROSURGERY AROUND THE WORLD

WFNS Member Societies

The World Federation of Neurological Surgeons (WFNS) consists of 3 society groupings. Group A has 5 regional associations : North American, Latin American, European, Pan African, and Asian and Australian associations. Group B includes national, regional, multinational neurosurgical societies that include 89 societies participated by 72 countries. Group C has 6 affiliated organizations, which is the smallest group with 5-20 members (Fig. 1).

Population Neurosurgeon Ratio by Country

A survey was performed by sending a questionnaire to WFNS delegates and ISPN members, with a response rate of about 72%. Since presenting these results in my Presidential Address at the 34th Annual meeting of ISPN (Taipei) in September 2006, several participants corrected their data. I wish to apologize if some of these data, which I received privately, are still inaccurate from several countries.

Through the survey, I was able to analyze the Population Neurosurgeon Ratio (PNR) by country which showed big differences. In Canada there are 180 neurosurgeons among a population of 32 million (PNR=180,000). The United States has 2850 neurosurgeons out of a population of 300 million (PNR was about 105,000). In Brazil, there are 3000 neurosurgeons out of a population of 200 million. PNR in Brazil was 6700, which is rather low, thus means that there is an overpopulation of neurosurgeons and high competition. PNR in Argentina was 78,000. Also, there are small members of neurosurgeons in Columbia (PNR=125,000) and Panama (PNR=110,000) (Table 1).

Western European countries also showed different data regarding PNR. In Germany, there are 600 neurosurgeons among 90 million populations (PNR 11,300). France showed high PNR (244,000) but PNR of Italy, Australia, and Switzerland



Fig. 1. List of WFNS Member Societies.

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Table 1. Neurosurgeons/Pediatric Neurosurgeons by Country (1)

Country	Population (million)	Neurosurgeons	PNR
Canada	32	180	180,000
U.S.A.	300	285	105,000
Brazil	200	300	67,000
Argentina	35	450	78,000
Columbia	44	350	125,700
Panama	3.3	30	110,000

PNR : Population Neurosurgeon Ratio

Table 2. Neurosurgeons/Pediatric Neurosurgeons by Country (2)

Country	Population (million)	Neurosurgeons	PNR
Germany	90	800	113,000
France	66	270	244,000
Italy	55	800	69,000
Spain	44	450	100,000
U.K.	60	120	500,000
Austria	8	120	68,000
Switzerland	7	90	78,000
Finland	5	40	125,000

PNR : Population Neurosurgeon Ratio

Table 3. Neurosurgeons/Pediatric Neurosurgeons by Country (3)

Country	Population (million)	Neurosurgeons	PNR
Turkey	70	800	88,000
Greece	11	240	45,000
Hungary	10	150	68,000
Czech	10	90	110,000
Poland	38	340	112,000
Romania	22	200	110,000
Russia	160	780	205,000
Ukraine	49	350	140,000
Israel	7	50	140,000
Saudi Arabia	18	100	180,000

PNR : Population Neurosurgeon Ratio

were relatively low, being 69,000, 68,000, and 78,000. PNR of U.K. was very high (500,000). Spain and Finland showed average PNR as Germany, which were 100,000 and 125,000 each (Table 2).

Among east European countries Greece (PNR=4,500), Turkey (PNR=88,000), and Hungary (PNR=68,000) higher number of neurosurgeons per population. Czechoslovakia, Poland, Romania, Ukraine, and Israel showed average PNR, between 110,000-140,000. Russia had a relatively high PNR at 205,000 (Table 3).

Asian and Australian countries revealed big PNR differences. China still has the small numbers of neurosurgeons with a high PNR of 433,000. Japan and Korea showed a surplus of neurosurgeons with a PNR of 17,000 and 27,000 respectively. Taiwan, India, and Singapore showed PNR between 62,000 and 88,000. Australia revealed an average PNR of 100,000 (Table 4).

Thailand had a PNR of 150,000, and Malaysia and

Table 4. Neurosurgeons/Pediatric Neurosurgeons by Country (4)

Country	Population (million)	Neurosurgeons	PNR
China	1300	3000	433,000
Japan	130	7900	17,000
Korea	48	1800	27,000
India	150	1700	88,000
Taiwan	23	375	62,000
Singapore	4	50	80,000
Australia	20	200	100,000

PNR : Population Neurosurgeon Ratio

Table 5. Neurosurgeons/Pediatric Neurosurgeons by Country (5)

Country	Population (million)	Neurosurgeons	PNR
Thailand	60	400	150,000
Malaysia	27	45	600,000
Vietnam	80	100	800,000
Bangladesh	150	40	3,750,000
Indonesia	220	100	2,200,000
Philippine	82	82	1,000,000
Mongolia	0.3	24	125,000
South Africa	45	150	300,000
Egypt	70	220	318,000
Algeria	34	160	213,000
Morocco	3.5	150	23,000

PNR : Population Neurosurgeon Ratio

Vietnam showed a PNR between 600,000 and 800,000. Bangladesh and Indonesia showed very high PNRs. In Bangladesh there are only 40 neurosurgeons among a population of 150 million. Their PNR was 3,750,000 and 2,200,000 respectively. PNR in the Philippines was 1,000,000 and Mongolia has a PNR 125,000. Among African countries, data from only 4 countries were received. South Africa and Egypt have PNR of 213,000 and 318,000 each, having an acceptable range. Morocco has relatively higher number of neurosurgeons, 150 out of a population of 3.5 million population (PNR=23,000) (Table 5).

In reviewing the above data and considering medical practice with socioeconomic state of neurosurgeons in each country, a question arose : “What is a reasonable PNR per country?” A concise number is difficult, but I can suggest the reasonable PNR seems to be between 100,000 and 500,000.

This data is a personal estimation, and is not based on multivariate statistical analysis.

PROPOSAL FOR THE PROMOTION OF KOREAN NEUROSURGERY

After reviewing the current state of neurosurgery around the world, I would like to propose several ways to further promote the benefits of Korean neurosurgery.

First, I believe we have to implement a birth control regimen for neurosurgeons. Following Japan, the Korean



Fig. 2. Korean Neurosurgical Society Founding Ceremony (1961); From left Bo-Sung Sim, Ho-Jin Myung, Young-So Kim, Chu-Gul Lee, Nam-Sik Jung, Chul-Woo Lee and Hwan-Young Chung, From right Won-Mook Kim, Hun-Jae Lee, Jung-Hyun Woo, Jeong-Keun Kim, Tae-Joon Moon, Woong-Sik Kim and Kwang-Seh Rhim.



Fig. 3. Former ISPN Presidents during Presidential Dinner (Liverpool Town Hall, Sep. 8, 2007); From left Joong-Uhn Choi (Korea), E Ventureyra (Canada), C DiRocco (Italy), J Peter (South Africa), Mayor of Liverpool city, M Walker (USA), C Mazza (Italy), H Rekate (USA) and A Hockley (UK).

population to neurosurgeon ratio (PNR) is the second highest in the world. While the Japanese PNR is the highest (17,000), their situation is somewhat different than that of Korea. Many neurosurgeons in Japan are able to solely conduct research without participating in clinical practice. However, most Korean neurosurgeons mainly focus on clinical practice to increase their competitive power clinically. In fact, Korea produces approximately 100 new neurosurgeons annually, which is similar to the number produced in the United States. It is therefore necessary to gradually reduce the number of new neurosurgeons by approximately 40-50 per year.

While problems can occur regarding working with a smaller number of residents in training hospitals, I nevertheless think it would be possible to restructure the system similar to that of North American and European countries. Such a change would help increase the number of board certified neurosurgeons and nurse practitioners in training hospitals.

Second, we need to change the system of the Korean Neurosurgical Society. When the Society was founded in 1961, it was managed under a single President as its leader (Fig. 2). This system was changed in 1984 due to an increase

in the number of society members and working load. The President has remained as the symbolic representative of Society. However, the Chairman of the Executive Board and Executive Board Committee members have performed most of the practical duties of the society. Due to this dual leader system, there has been some conflicts regarding the performance of society duties in recent years. English terminology for these two positions was also used incorrectly, making it look like the society had two presidents.

I think that the present system needs to return to the former single leader system, and a new Society called the Korean Congress of Neurological Surgeons (KCNS) should be formed. It will give young neurosurgeons more opportunities to serve in leadership positions, and they will also have more chances to participate in various international societies as delegates. I understand that our Society composed a Bylaw Revision Committee for this purpose last year, and expect that it will produce excellent results to upgrade our Society in the near future.

Third, we need to make further strides to host international scientific meetings. Since 1991, several international scientific meetings were held in Korea (e.g. Asian Australasian Neurosurgical Society, International Society for Pediatric Neurosurgery, International Trauma Society, International CVD Workshop, Asian Society for Functional and Stereotactic Surgery, Asian Society of Neuro-Oncology, International Neuromodulation Society, International Gamma Knife Surgery, Asian Australian Advanced Course in Pediatric Neurosurgery, WFNS Education Course, etc.). Nevertheless, we have yet to host a WFNS meeting. In fact, our 1985 WFNS bid in Toronto was not successful. A second bid attempt is under way for the 15th WFNS Meeting (2013), and the bidding committee has worked actively for the past couple of years. All our society members wish for a successful result at the voting, which will be held at the Nagoya WFNS Interim Meeting on Nov. 20, 2007. I am sure that our Society will upgrade its status around the world by winning bids to host such big meetings.

Fourth, I recommend that members of the Korean Neurosurgical Society participate more actively in international scientific meetings of each field. It is very important that we let neurosurgeons of other countries know our standard of clinical activities, exchange experiences and build personal friendships. Such activities give us the chance to participate in important positions such as society officers at various international societies. In any society, personal friendships and some politics play an important role in influencing a society's works.

The International Society for Pediatric Neurosurgery (ISPN), which I have been involved in for over 20 years, has

had two Korean Presidents and several Korean Executive Board Members throughout its history. Also, for the second time, ISPN plans to hold its scientific meeting in Korea (Jeju Island). Such activities serve as a good model for international society activities in Korea (Fig. 3). We should therefore increase our participation in WFNS activities, which will prove to be a good strategy in developing a long-term presence in WFNS.

Finally, I would like to propose the further globalization of Korean neurosurgery. English is essential for this purpose and is particularly challenging for countries such as Korea, Japan and China. Many countries are using English as their official language, and attending meetings or going abroad for fellowships will serve as a good chance for us to practice and improve our English abilities. We should also strive to improve our English by using it during our clinical practice inside

of Korea. We could also develop exchange and fellowship programs between various regional English-speaking countries such as the Philippines, Malaysia, India, Singapore, etc.

I think that we have taken a good first step by publishing our journal in English, as well as conducting English sessions during our annual meetings. These kinds of activities should be expanded in future.

The author is sure that the 5 suggestions outlined above will promote Korean neurosurgery around the world.

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