

The Contribution of Turkish Neurosurgeons to Spine Surgery Literature

Türk Nöroşirürjiyenlerin Spinal Cerrahi Literatürüne Katkıları

ABSTRACT

OBJECTIVE: To determine the number of articles originating in Turkey and published in international spine-related journals, to compare the number of spine-related publications of different disciplines, and to compare Turkey's spine-related publications with those of other countries.

MATERIAL AND METHODS: A five-year review of PubMed from 2000 to 2004 was performed. The reviewed journals were Journal of Neurosurgery: Spine, Spinal Cord, European Spine Journal, Spine, Journal of Spinal Disorders and Techniques, and The Spine Journal.

RESULTS: 182 papers had been published by Turkish authors in main spine-related journals during the study period. Turkish authors were among the most productive authors in Spine, Journal of Neurosurgery: Spine, and Spinal Cord. With respect to the published papers in Journal of Neurosurgery: Spine, articles originating from Turkey were second, sixth, fourth, third, and fourth in number in 2000, 2001, 2002, 2003, and 2004 respectively.

There was a dominance of papers written by neurosurgeons in Journal of Neurosurgery: Spine, and Spinal Cord while papers written by orthopaedic surgeons dominated in Spine.

COMMENT: There are an increasing number of papers from Turkey in western spine-related and neurosurgical journals. We expect further contributions from our country to the medical literature in the future.

KEY WORDS: Spine, publication, Turkey

ÖZ

AMAÇ: Uluslararası yayınlanan nöroşirürji ve spinal cerrahi dergilerinde Türkiye kökenli makalelerin sayısını belirlemek, farklı uzmanlık dallarının katkısını ortaya koymak ve bu durumu diğer ülkelerin durumu ile karşılaştırmak.

ARAÇ VE GEREÇ: Bu çalışmada 2000, 2001, 2002, 2003 ve 2004 yıllarını içeren 5 yıllık dönemde publication medicine (Pub Med) veri tabanında omurga-omurilik ile ilgili dergiler incelenmiştir. Çalışmada Journal of Neurosurgery: Spine, Spinal Cord, European Spine Journal, Spine, Journal of Spinal Disorders and Techniques ve The Spine Journal gibi spinal cerrahiye ilgilendiren dergiler incelenmiştir.

BULGULAR: Bu çalışmada son beş yılda 182 Türkiye kaynaklı makale belirlenmiştir. Türk yazarlar en çok Spine, Journal of Neurosurgery: Spine, ve Spinal Cord dergilerinde yayın yapmışlardır. Journal of Neurosurgery: Spine dergisinde yayınlanan makalelere bakıldığında, yayınlanan yazı açısından 2000, 2001, 2002, 2003 ve 2004 yıllarında Türkiye sırası ile ikinci, altıncı, dördüncü, üçüncü, ve dördüncü sırayı almıştır. Journal of Neurosurgery: Spine ve Spinal Cord dergilerinde nöroşirürjiyenlerin dominansı göze çarparken, Spine dergisinde ortopedik cerrahlar daha çok yayın yapmışlardır.

Journal of Neurosurgery Spine ve Spinal Cord dergilerinde Nöroşirürjiyenler tarafından yazılmış yazılar fazla iken, Spine dergisinde ortopedistlerin yazdığı yazılar fazla görülmektedir.

YORUM: Batıda yayınlanan spinal cerrahi ve nöroşirürji ile ilgili dergilerde Türkiye'den artan sayıda makale yayınlanmaktadır. Ülkemiz adına yayınlanacak makale sayısının daha da artması dünya literatürüne katkıda bulunacaktır.

ANAHTAR SÖZCÜKLER: Omurga, yayın, Türkiye

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INTRODUCTION

Technological advances have resulted in advances in spinal surgery, and in turn, an increase in the number of spine-related studies. These studies are published in older and relatively new spine-related journals, including Journal of Neurosurgery: Spine, Spinal Cord, European Spine Journal, Spine, Journal of Spinal Disorders and Techniques, and The Spine Journal. Apart from these journals, many neurosurgery, orthopaedic surgery and physical therapy journals publish such studies. The contribution of Turkish spine specialists, however, is not known. The aim of this study was to determine the number of spine-related publications written by Turkish spine specialists in main spine-related journals, to determine the contribution of specialists of different disciplines to the literature, and to compare the contribution of Turkey and other countries to the spine-related medical literature.

MATERIALS AND METHODS

A five-year PubMed search was performed for the years between 2000-2004 for the six main spine-related journals: Journal of Neurosurgery: Spine, Spinal Cord, European Spine Journal, Spine, Journal of Spinal Disorders and Techniques, and The Spine Journal. After determining the titles of papers originating from Turkey, these journals were analysed in detail with the following aims:

1. Determination of the number of spine-related publications written by Turkish spine specialists in main spine-related journals
2. Determination of the contribution of specialists of different disciplines from Turkey to the literature
3. Comparison the contribution of Turkey and other countries to the spine literature

It is of note that this study did not focus on the type of paper (i.e., letter, original study, experimental and biomechanical studies). Therefore, the quality of the published studies was not reviewed in this study.

RESULTS

1. The number of spine-related publications written by Turkish spine specialists in main spine-related journals:

There were 182 papers from Turkey in main spine-related journals between 2000-2004. The largest numbers of papers were published in Spine (63), and in Journal of Neurosurgery: Spine (40) (Table I).

Table I: The number of published papers in main spine-related journals

Position	JNS: Spine	Spinal Cord	ESJ	Spine	J. Spinal Disord Tech
2000	10	7	3	8	0
2001	5	11	5	11	4
2002	8	6	5	9	4
2003	10	6	5	13	1
2004	7	9	9	22	3
Total	40	39	27	63	12

2. The contribution of specialists of different disciplines from Turkey to the literature

A review of the papers revealed that most had been written by neurosurgeons (98 papers: 53.8%) and orthopaedic surgeons (42 papers: 23%) (Table II). The contribution of other disciplines include physical medicine (25 papers: 13.7%), cardiovascular surgery (2 papers: 1.09%), pathology (1 paper: 0.54%), neurology (1 paper: 0.54%), radiology (6 papers: 3.29%), biomechanics (1 paper: 0.54%), histology / embryology (2 papers: 1.09%), internal medicine (2 papers: 1.09%) and anesthesiology (2 papers: 1.09%).

3. Contribution of different disciplines to the journals

A: Journal of Neurosurgery: Spine:

There were 10, 5, 8, 10 and 7 papers in Journal of Neurosurgery: Spine in the years 2000, 2001, 2002, 2003 and 2004 respectively. All the published papers in Journal of Neurosurgery: Spine in 2000, 2001, 2002

Table II: The relation between the number of papers published in Spinal Cord and the origin of the papers.

Discipline	2000	2001	2002	2003	2004	Total
Neurosurgery	2	5	3	3	5	18
Orthopaedics	1	-	-	-	-	1
Psychiatry	3	4	2	2	4	15
Cardiovascular surgery	-	1	1	-	-	2
Pathology	-	1	-	-	-	1
Neurology	-	-	1	-	-	1
Radiology	1	-	-	-	-	1
Total	7	11	6	6	9	39

and 2003 were written by neurosurgeons. On the other hand, while five out of the seven published papers in 2004 were written by neurosurgeons, one was by orthopaedic surgeons and one by cardiovascular surgeons.

B: Spinal Cord:

129, 116, 113, 116, and 161 papers were published in Spinal Cord in 2000, 2001, 2002, 2003 and 2004 respectively. Neurosurgeons were among the most productive contributors to Spinal Cord with 18 published papers. Psychiatrists were the second most productive contributors to Spinal Cord (Table II).

C: European Spine Journal

105, 104, 119, 115, and 178 papers were published in European Spine Journal in 2000, 2001, 2002, 2003 and 2004 respectively. Neurosurgeons and orthopaedic surgeons were the most productive specialists in this regard (Table III).

D: Spine:

534, 584, 576, 589, and 582 papers were published in Spine in 2000, 2001, 2002, 2003 and 2004 respectively. There were 63 papers from Turkey. The largest number of papers was published in Spine. Orthopaedic surgeons were the most productive discipline in this regard (Table IV).

E: Journal of Spinal Disorders and Techniques:

92, 88, 96, 83, and 95 papers were published in Journal of Spinal Disorders and Techniques in 2000, 2001, 2002, 2003 and 2004 respectively. Most of the papers published in this journal were written by neurosurgeons (Table V).

Table III: The relation between the number of papers published in European Spine Journal and the origin of the papers.

Discipline	2000	2001	2002	2003	2004	Total
Neurosurgery	2	3	3	1	4	13
Orthopaedics	1	1	1	4	3	10
Psychiatry	-	-	1	-	1	2
Cardiovascular surgery	-	-	-	-	-	-
Pathology	-	-	-	-	-	-
Neurology	-	-	-	-	-	-
Radiology	-	1	-	-	-	1
Biomechanics	-	-	-	-	1	1
Total	3	5	5	5	9	27

Table IV: The relation between the number of papers published in spine and the origin of the papers.

Discipline	2000	2001	2002	2003	2004	Total
Neurosurgery	4	2	2	3	5	16
Orthopaedics	3	7	4	7	9	30
Psychiatry	-	1	-	1	5	7
Cardiovascular surgery	-	-	-	-	-	-
Pathology	-	-	-	-	-	-
Neurology	-	-	-	-	-	-
Radiology	1	-	-	1	2	4
Histology-Anatomy	-	1	-	-	1	2
Internal Medicine	-	-	2	-	-	2
Anesthesiology	-	-	1	1	-	2
Total	8	11	9	13	22	63

Table V: The relation between the number of papers published in Journal of Spinal Disorder and Techniques and the origin of the papers.

Discipline	2000	2001	2002	2003	2004	Total
Neurosurgery	-	4	4	-	2	10
Orthopaedics	-	-	-	-	1	1
Psychiatry	-	-	-	1	-	1
Cardiovascular surgery	-	-	-	-	-	-
Pathology	-	-	-	-	-	-
Neurology	-	-	-	-	-	-
Radiology	-	-	-	-	-	-
Total	0	4	4	1	3	12

F: The Spine Journal: 95, 80, 94 and 98 papers were published in The Spine Journal in 2001, 2002, 2003 and 2004 respectively. There was only one paper from Turkish neurosurgeons in this journal in 2004.

4. Contribution of different countries to the journals

The most significant contribution of Turkish authors was found in Spine and in Journal of Neurosurgery: Spine.

A: Journal of Neurosurgery: Spine:

115, 133, 166, 126, and 158 papers were published in Journal of Neurosurgery: Spine in 2000, 2001, 2002, 2003 and 2004 respectively. There were 40 papers published in Journal of Neurosurgery: Spine

by Turkish authors. These made up 4 to 8.5% of all published papers in this journal. When compared to other countries with respect to the number of papers published in Journal of Neurosurgery: Spine, Turkey was found to be in second, sixth, fourth, third, and fourth position in 2000, 2001, 2002, 2003, and 2004 respectively (Table VI). It is of note that the articles on the covers of the April 2002 and October 2004 issues of Journal of Neurosurgery: Spine were by Turkish authors (Figure 1).

B: Spinal Cord:

When compared to other countries with respect to the number of papers published in Spinal Cord, Turkey was found to be in fourth, third, fifth, sixth and fifth position in 2000, 2001, 2002, 2003, and 2004 respectively (Table VII).

Figure 1: The covers of the April 2002 and October 2004 issues of Journal of Neurosurgery: Spine

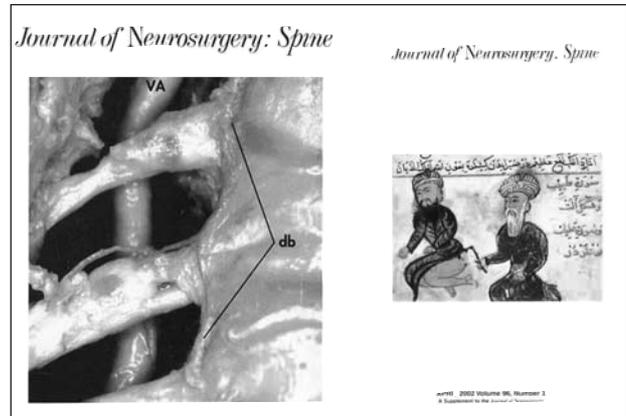


Table VI: The comparison of the position of Turkey and other countries with respect to the number of published papers in The Journal of Neurosurgery: Spine

Level	2000 Country	MN	2001 Country	MN	2002 Country	MN	2003 Country	MN	2004 Country	MN
1	USA	60	USA	44	USA	75	USA	42	USA	84
2	Turkey	10*	Japan	21	Japan	29	Japan	26	Japan	18
3	Japan	7	Germany	10	Germany	10	Turkey	10*	Germany	8
4	Germany	5	France	8	Turkey	8*	Korea	6	Turkey	7*
5	England	5	England	7	England	6	Germany	5	Canada	7
6	Canada	4	Turkey	5*	France	5	Canada	5	China	7
7	India	3	Taiwan	4	Korea	4	Italy	4	Australia	3
8	Italy	2	Italy	3	Italy	4	France	3	India	3
9	Switzerland	2	Netherlands	3	Netherlands	3	England	2	England	2
10	Taiwan	2	Korea	3	Spain	2	Austria	2	France	2

Table VII: The comparison of the position of Turkey and other countries with respect to the number of published papers in Spinal Cord

Level	2000 Country	MN	2001 Country	MN	2002 Country	MN	2003 Country	MN	2004 Country	MN
1	England	20	USA	22	England	14	England	19	USA	22
2	USA	16	England	20	USA	14	USA	10	England	21
3	Japan	13	Turkey	11*	Japan	9	Switzerland	10	Canada	13
4	Turkey	7*	Japan	7	Canada	7	Germany	10	Switzerland	11
5	Netherlands	7	India	5	Turkey	6*	Japan	7	Turkey	9*
6	France	6	Denmark	4	Israel	6	Turkey	6*	Japan	9
7	Sweden	6	Switzerland	4	France	5	Canada	6	Sweden	8
8	Italy	4	Israel	4	Australia	4	Sweden	5	Italy	8
9	Germany	4	Germany	3	Germany	4	Netherlands	3	Netherlands	6
10	Austria	4	Spain	3	Switzerland	3	Australia	3	Germany	5

C: European Spine Journal:

When compared to other countries with respect to the number of papers published in European Spine Journal, Turkey was found to be in tenth, sixth, seventh, eighth, and sixth in 2000, 2001, 2002, 2003 and 2004 respectively (Table VIII).

D: Spine:

When compared to other countries with respect to the number of papers published in Spine, Turkey was found to be eleventh, eleventh, eleventh, sixth and fifth in 2000, 2001, 2002, 2003 and 2004 respectively (Table IX). The increase in the number of published papers in the last two years is significant.

E: Journal of Spinal Disorders and Techniques:

When compared to other countries with respect to the number of papers published in Journal of

Spinal Disorders and Techniques, Turkey was found to be third, fourth, ninth, and seventh in 2001, 2002, 2003, and 2004 respectively (Table X). There was no paper from Turkey in the 2000 issues of this journal.

F: The Spine Journal:

There was only one paper from Turkey in this journal.

(Table XI) shows the position of Turkey with respect to the number of published papers in different journals. A review of this table shows that there is an increasing contribution of Turkish spine specialists to the world literature. (Table XII) summarizes this study and reveals the relation between the number of publication, the journal, and the year of publication.

Table VIII: The comparison of the position of Turkey and other countries with respect to the number of published papers in the European Spine Journal

Level	2000 Country	MN	2001 Country	MN	2002 Country	MN	2003 Country	MN	2004 Country	MN
1	Germany	15	Germany	19	Germany	16	Germany	15	Germany	30
2	England	12	Sweden	11	Netherlands	14	Sweden	13	USA	19
3	USA	9	USA	9	England	10	Switzerland	10	England	15
4	Canada	9	Switzerland	9	USA	9	USA	9	Netherlands	12
5	Netherlands	9	Canada	6	Switzerland	7	England	9	Switzerland	10
6	France	6	Turkey	5*	Sweden	7	Netherlands	8	Turkey	9*
7	Switzerland	5	France	4	Turkey	5*	Canada	6	Sweden	9
8	Sweden	5	Belgium	4	France	5	Turkey	5*	France	7
9	Japan	4	Japan	3	Belgium	4	Japan	4	Spain	7
10	Turkey	3*	Netherlands	3	Finland	4	Spain	4	Canada	6

Table IX: The comparison of the position of Turkey and other countries with respect to the number of published papers in Spine

Level	2000 Country	MN	2001 Country	MN	2002 Country	MN	2003 Country	MN	2004 Country	MN
1	USA	231	USA	189	USA	217	USA	239	USA	220
2	Japan	56	Japan	87	Japan	69	Japan	78	Japan	51
3	Canada	25	Canada	33	England	28	England	26	Canada	42
4	Sweden	18	Germany	23	Germany	24	Canada	26	England	31
5	England	15	England	23	Netherlands	23	Germany	15	Turkey	22*
6	Germany	15	Netherlands	17	Canada	22	Turkey	13*	Germany	22
7	Netherlands	14	Sweden	14	Australia	13	Korea	12	Australia	21
8	Korea	11	Korea	13	Sweden	12	Finland	12	Netherlands	14
9	France	9	France	13	Finland	12	Australia	10	Finland	11
10	Finland	9	Finland	12	France	10	China	10	France	11

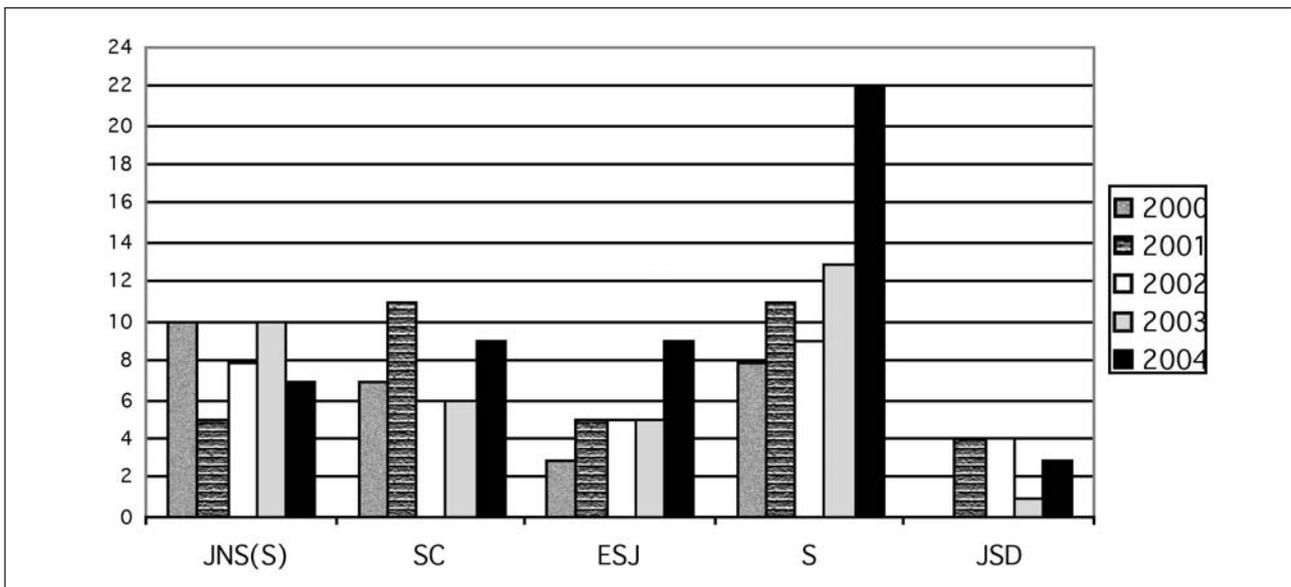
Table X: The comparison of the position of Turkey and other countries with respect to number of published papers in The Journal of Spinal Disorders and Techniques

Level	2000 Country	MN	2001 Country	MN	2002 Country	MN	2003 Country	MN	2004 Country	MN
1	USA	49	USA	36	USA	44	USA	37	USA	31
2	Japan	12	Japan	22	Japan	18	Japan	14	Japan	20
3	Italy	4	Turkey	4*	Canada	5	England	4	Canada	6
4	Canada	3	Hong-Kong	4	Turkey	4*	France	3	England	4
5	Greece	3	France	3	France	4	Canada	2	Switzerland	4
6	England	2	England	2	Italy	2	Israel	2	Singapore	4
7	Israel	2	Canada	2	Germany	2	Korea	2	Turkey	3*
8	Switzerland	2	Germany	2	Greece	2	Belgium	2	Korea	3
9	Germany	2	Switzerland	2	Switzerland	1	Turkey	1*	Netherlands	3
10	Netherlands	1	Greece	2	Denmark	1	Germany	1	Switzerland	2

Table XI: The position of Turkey with respect to number of published papers in different journals. JNS: Spine: Journal of Neurosurgery-Spine, ESJ: European Spine Journal, J.SDT: Journal of Spinal Disorders and Techniques

Level	JNS: Spine	Spinal Cord	ESJ	Spine	J. SDT
2000	2	4	10	11	
2001	6	3	6	11	3
2002	4	5	7	11	4
2003	3	6	8	6	9
2004	4	5	6	5	7

Table XII: The relation between the numbers of published papers of each reviewed journal for the last five years.



DISCUSSION

There is an increasing interest in spinal surgery both worldwide and in Turkey. This interest has resulted in an increase in the number of such studies, and in turn, an increase in the number of publications. This process has required publication of new spine-related journals in the last decade. Currently there are six main spine-related journals. All these journals accept papers from all surgical and non-surgical disciplines. On the other hand, general neurosurgery and orthopaedic journals accept such papers too.

The main aim of this study was to reveal the current state of scientific publication in Turkey in the field of spine surgery. This study found that more than 180 papers of Turkish origin were published in spine-related journals in the last five years. Spine, Journal of Neurosurgery: Spine, and Spinal Cord

were the most important journals in this regard and there were increasing numbers of publications in these journals. Turkey was the second most productive country in Journal of Neurosurgery: Spine in 2000.

Neurosurgeons were the most productive authors in Journal of Neurosurgery: Spine, and Spinal Cord. Orthopaedic surgeons, however, were more productive in Spine.

All these findings prove the high potential of spine surgery in Turkey. The scientific productivity of Turkish spine specialists, and their increasing contribution to the body of literature places them a respected position in the international scientific arena.

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