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Original article

Toward the Turkish National Registry System: A Prevalence Study of Total Knee Arthroplasty in Turkey

Erman Ceyhan, MD ^a, Safa Gursoy, MD ^b, Mustafa Akkaya, MD ^b, Mahmut Ugurlu, MD ^c, Ismet Koksall, MD ^a, Murat Bozkurt, MD ^{c,*}^a Republic of Turkey Social Security Institution, General Directorate of General Health Insurance, Ankara, Turkey^b Department of Orthopedics and Traumatology, Yenimahalle Training and Research Hospital, Yildirim Beyazit University, Ankara, Turkey^c Department of Orthopedics and Traumatology, Ataturk Training and Research Hospital, Yildirim Beyazit University, Ankara, Turkey

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ABSTRACT

Background: The aim of this pilot study was to analyze the data obtained from a retrospective examination of the records of the existing reimbursement system and through the identification of gaps in the data to create a foundation for a reliable, descriptive national registry system for our country.**Methods:** The Social Security Institution Medical Messenger (MEDULA) records were scanned for the years 2010–2014, and the numbers of total knee arthroplasty applied for a diagnosis of gonarthrosis and the numbers of revision knee arthroplasty were recorded for the country in general. The patients were classified according to age, gender, and bilateral or unilateral surgery. The institution where the surgery was applied, the geographic region and the province were also recorded.**Results:** A total of 283,400 primary and 9900 revision knee arthroplasty operations were applied in Turkey between 2010 and 2014. Numbers were recorded for each year, and there was found to be an increase between years. For primary knee arthroplasty, the female:male ratio was 67 of 33, and surgery was applied most often between the ages of 60–69 years. Both types of surgery were determined to have been applied most often in second-stage state hospitals. Geographically, both types of surgery were applied most in the Marmara region, with the highest frequency of primary knee arthroplasty in Istanbul and the highest frequency of revision surgery in Ankara.**Conclusions:** The data obtained from this study will contribute to the creation of the basis for a National Registry System and thereby define more scientific treatment approaches.

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Arthrosis of the knee joint is an extremely widespread pathology, seen in approximately 10% of the population aged older than 55 years [1]. Advanced stage arthrosis causes severe pain in the knee and severe restrictions in joint functions [2]. There has been research into the development of several methods which could resolve this situation [3]. Despite all these studies, joint arthroplasty in the treatment of advanced stage arthrosis is still the definitive solution to eradicate pain and regain function [4–7].

Throughout the world, knee arthroplasty is a method applied extremely frequently and the numbers are increasing [8–10]. Furthermore, the rates of revision surgery, which is a highly significant problem for both patients and health care managers, are also increasing in parallel. Previous studies have reported revision rates of 17.5% in the United States and 14% in Germany [11].

With this increase in case numbers and for the appropriate use of newly developed technologies, there is a need for reliable, objective data. Existing studies and previous experience are of great importance in the making of revision strategies and the scientific planning of primary operations. Although a meta-analysis has examined studies evaluating an extensive case series, case numbers were limited and the general population was not included [12–15]. A National Registry System, with which clinicians would be able to evaluate treatment results, can present extensive surgical records. The information presented by these

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* Reprint requests: Murat Bozkurt, MD, Department of Orthopedics and Traumatology, Ankara Atatürk Training and Research Hospital, 06800 Ankara, Turkey

record systems would be much more extensive and meaningful than that of small clinical studies and long-term research [12,14–17].

After the implementation of the first arthroplasty registry system in Sweden, several countries throughout the world have applied their own National Registry Systems to combat these problems in accordance with the previously mentioned realizations.

However, the development of a functional registry system, which provides valuable results is a gradual process that requires time, prestudies, and an accumulation of results [18–22].

The aim of this pilot study was to analyze the data obtained from a retrospective examination of the records of the existing reimbursement system and through the identification of gaps in the data to create a foundation for a reliable, descriptive national registry system for our country. On the other hand, this is the first study to present the number of the global primary and revision knee arthroplasty with their regional distribution including the types of health facilities in our country on yearly basis.

Search Strategy and Criteria

The Medical Messenger (MEDULA) Hospital application, which supports a general and simple communication protocol through Internet servers, is an integrated system, which was created to make the payments for services based on electronic information. This information was examined and checked from the records of health care providers with insurance agreements covered by the General Health Insurance of the Social Security Institution. The electronic data collection was applied without intervening in the internal processes of the health care institutions.

In Turkey, from the first presentation by an individual at a health care provider, various details are entered into the MEDULA system, including the services provided to the patient (examination information and results, diagnosis [10th revision of the International Statistical Classification of Diseases and Related Health Problems (ICD-10)], tests and treatment procedures, surgical information, hospitalization, materials and medications used) and the doctor providing the services (www.sgk.gov.tr Guidelines for the Use of MEDULA).

In a general sense, through the integration of their own Hospital Data Management Systems, electronic data provided by 3 basic Internet servers obtained from health care providers are added to the Social Security Institution data processing records. The General Health Insurance (Genel Sağlık Sigortası [GSS]) MEDULA System is prepared with Java Technologies and is presented on the IBM WebSphere Application Server. On August 14, 2006, MEDULA was announced by the Ministry of Health as the communication standard between Ministry of Health hospitals and the GSS General Management. On September 1, 2006, MEDULA became operational and 570 Ministry of Health hospitals were connected online. A new version, MEDULA V3 became operational from April 1, 2009 (Social Security Institution Healthcare Application Notification).

Using SPSS models and the Toad program, patient data were obtained from the MEDULA system with SQL questions. The patients were those with the operation codes of 612420 for primary total knee arthroplasty and 612440 for revision knee arthroplasty on the procedures list between 2010 and 2014, based on a diagnosis in the Healthcare Application Notification with the protocol made between the Social Security Institution General Management and the Turkish Society of Orthopaedic and Traumatology. The MEDULA system was started in 2006 as a sample work in

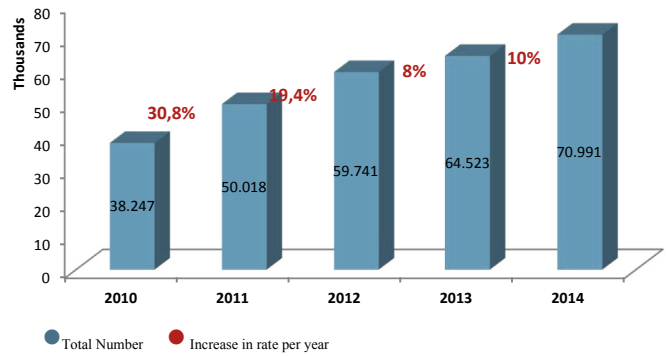


Fig. 1. Distribution of total knee arthroplasty according to year.

limited number of hospitals and then it covers all the hospitals in our country in 2009. Therefore, this study includes the year 2010 and later. The SPSS Models program was applied for manipulation and analysis of the data. Finally in the investigation, examination was made of additional data obtained from the system related to the numbers of total knee arthroplasty applied for a diagnosis of gonarthrosis in the country in general and the numbers of revision knee arthroplasty cases in the same years.

Results

Data were obtained of the total number of primary and revision knee arthroplasty cases in our country between 2010 and 2014. The numbers were examined according to the years, and the increase in rates of primary knee arthroplasty was found to be 30.8% for 2010–2011, 19.4% for 2011–2012, 8% for 2012–2013, and 10% for 2013–2014 (Fig. 1). These increased rates were calculated to be similar for revision surgery (Fig. 2). In the data analysis to search the causes of the gonarthrosis, 3132 different ICD-10 diagnoses codes for totally 250,968 total knee prosthesis between 2010 and first 6 months of 2014 were searched and 221,753 of them were seen that they were M.17 gonarthrosis. By using the same method to search the reasons of revisions of the revision surgeries in the same period, it was found that there were 923 different ICD-10 codes. It was seen that only 9.6% of knee arthroplasty cases entered the infection related ICD-10 codes. However, when the cases in which the antibiotic spacer surgery were applied before the revision, this rate was assessed as 18.11%. Within 2014, the ratio of female:male in primary knee arthroplasty was 67:33, and the surgery was most often applied in the age range of 60–69 years

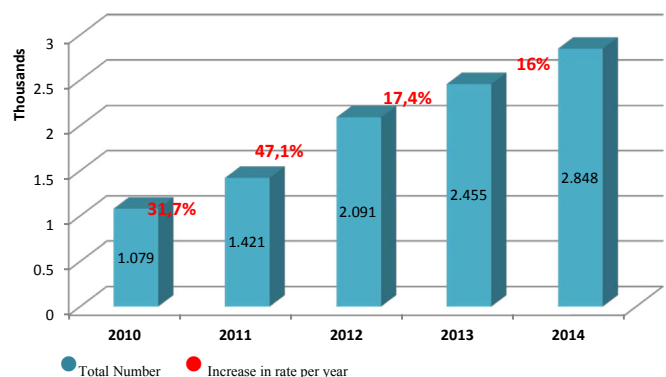


Fig. 2. Distribution of revision knee arthroplasty according to year.

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