PERSPECTIVE

Iranian Joint Registry
(Iranian National Hip and Knee Arthroplasty Registry)

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Abstract

Periodic evaluation and monitoring the health and economic outcome of joint replacement surgery is a common and popular process under the territory of joint registries in many countries. In this article we introduce the methodology used for the foundation of the National Iranian Joint Registry (IJR) with a joint collaboration of the Social Security Organization (SSO) and academic research departments considering the requirements of the Iran's Ministry of Health and Education.

Keywords: Arthroplasty, Hip, Iran, Knee, Registry national

Introduction

Total joint arthroplasty is a common procedure and its safety and effectiveness has been proved in many papers (1-4). Between 1990 and 2002 the rate of total hip arthroplasty increased by 50% and the rate of primary total knee arthroplasty almost tripled (5, 6). Exponential rise in primary arthroplasties is expected to double the rate of revision surgeries in the next two decades (6). Anticipated rise in arthroplasty requires a reliable and valid method of evaluation and monitoring the safety and effectiveness in the region (7-9).

Registries for hip and knee replacements are becoming popular worldwide with growing importance. Many of the preeminent registries – such as those in Sweden, Finland, Norway, Australia, Denmark, and New Zealand – have more than 10 years of experience and are currently collecting nationwide data on more than 90 percent of procedures (7, 10-13).

Identifying the epidemiology of the joint arthroplasty, evaluating the outcome of the surgery and collecting timely information of the risk factors associated with poor outcome are the main goals of the registries (14). Moreover, registries had an important role in improving our knowledge (9, 14). It has been shown a reduction in the number of revision hip replacement surgeries in Australia from 13 percent in 2003 to 11.2 percent in 2010 (15). In the U.S., revision rate was 16.9 for patients underwent primary total hip replacement from 1992 to 2002 although they lack an integrated registry (5).

Reducing the rate of revision is not only a sign of better clinical outcome but also dramatically influences the economic burden of the disease on patients and health care systems. Each percentage point reduction in revision surgeries saves an estimate of $42.5 million to $112.6 million annually (According to the national estimates of the United States) (5).

We were not able to find any report about the rate of arthroplasty in Iran. National Social Security organization (SSO) as one of the most important with extensive health insurance coverage in Iran decided to jointly develop a national joint arthroplasty registry. Reduction in complications while improving the outcomes after joint arthroplasties, in addition to reducing the economic burden of this procedure are the

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main goals of this registry. In this study, we introduce our methodology in the development of the National Iranian Joint Registry (IJR) with a joint collaboration of the Social Security Organization (SSO), considering the requirements of this organization as well as the Iran's Ministry of Health and Education.

Material and Methods

Knee and Sports Medicine Research Center (KSMRC) began to develop a national joint arthroplasty registry in June 2014 according to the mission requested by the SSO. Moreover, this center is responsible for the establishment and implementation of this system in a population under the coverage of SSO insurance, which then will be extended to the whole nation.

We used four sources of information for the design and development of seven stages of the Iranian Joint Registry (IJR) [Figure 1].

1. Interview with the policy makers of the SSO, other insurance providers, and the ministry of health providers: We met with six member of the Supreme Council of the SSO. All conversations were recorded and documented.
2. Review of the reports from international registries: We included eight registries in our review including registries of Sweden, Finland, Norway, England, Italy, France, Germany, and Hungary.
3. Site visit: Visiting the Swedish Hip Arthroplasty Registry site
4. Experts meetings: Six experienced orthopedic surgeons, official members of the IOA (Iranian Orthopedic association), determined the scientific and indigenous issues in regards to the IJR over ten meetings with a focused group discussion method.

Data and information from these resources was used to develop the IJR process through seven stages:

1. Developing the Minimal Data Set
2. Development of the process for data collection
3. Development of the process for collecting the registered data and timely feed back
4. Development of the leadership, management and funding procedure.
5. Legislation and Protocols
6. Development of strategies for evaluation and validation of the IJR
7. Development of strategies for expanding the registry to a national level

Figure 1. Iranian Joint Registry (IJR).

Result

IJR was developed in seven stages

1. Minimal Data set

Patients, surgeon providers, patients' insurance status, anesthesia, indications, preoperative deformities, core surgical date, thromboprophylaxis regimens, implant data, application of the bone graft, and intra operative events are the essential primary data, which are included in the IJR forms. We developed six forms, three for the knee and three for the hip joint [Figure 2]. There is one form for primary replacement surgeries (K1 and H1), there are two forms for the second stage or the revision surgeries (stage 1, 2), and one form for one stage revision surgeries.

1. Data collection Procedure

Data entry is electronic. Patients' information will be entered according to the hospital information system (HIS) by the operation room assistant (step 2). Other details of surgery and treatment will be entered by the surgeon provider [Figure 3]. The software is designed to transfer the data to the operation note at the completion of data entry.

1. Collecting the registered data and timely feed back

Online data entry in the IJR helps receive a timely feedback. Knee and Sports Medicine Research Center

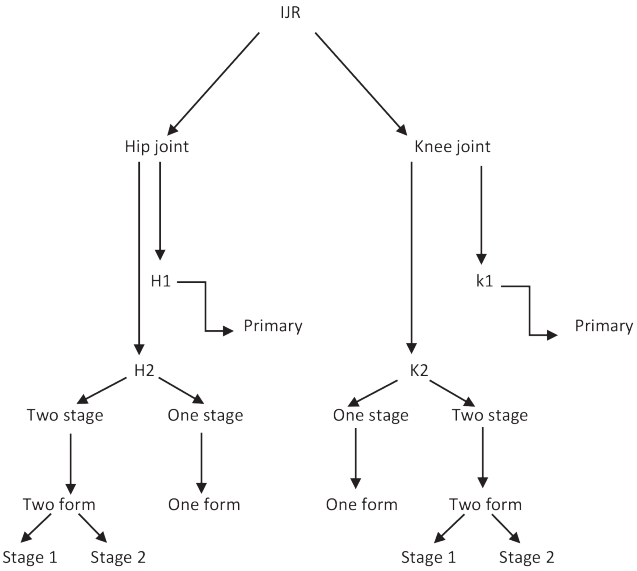

Figure 2. Data entry fom classification in IJR.

(KSMRC) is responsible for the annual analysis and report of the data. Reporting the survival rate of the implants and factors associated with early revision are the primary aims of the IJR.

2. Leadership, Management and Funding procedure

SSO is providing the major funding support to the IJR while KSMRC is responsible for implementation and maintenance of the IJR and collaboration with the other hospital.

3. Legislation and Protocols

Currently completing the IJR forms are arbitrary for surgeons. However, there is a planned legislation, which will obligate surgeons to register the procedure in order to be reimbursed.

4. Evaluation and validation strategy

SSO insurance evaluates and monitors the monetary costs to reimburse the hospitals and providers. IJR forms will be under the evaluation list of the SSO as part of the paperwork required for being reimbursed. KSMRC will analyze the registered data every 3 month. Surgeons will be asked to complete the data entry if discrepancies or missed data are found.

5. Strategies for expanding the registry to a national level

In the first step, Milad Hospital in Tehran - affiliated with the SSO - will launch the IJR as an obligatory assignment for the providers. In parallel, several university hospitals will start registration under voluntary circumstances. In the next step, completing the forms for patients who are under the coverage of the SSO insurance will become mandatory. In other steps, we will collaborate with other university based hospitals and health insurance organizations to expand the coverage of the IJR.

Discussion

Arthroplasty registries are employed in several countries where the growing prevalence of replacement surgeries highlights the importance of registries. Development of the Iranian joint registry helps reduce the morbidity as well as reducing the cost of the procedure for patients. In this article we introduced the design of the arthroplasty registry following seven stages. We hope to reach to a valid and reliable national registry in a timely manner.

The IJRs minimal data set is created according to recommendations from the International Society of Arthroplasty Registries (ISAR) (16). Data submission and data collection differs between registries (7). In Finland, Italy and Norway the data is submitted using paper forms. Australian and Canadian registries use both paper and electronic forms (7,15). The IJR will be based on a single digital platform. The software will transfer the entered data to the operation note automatically. Adding this step will make the data entry less cumbersome for the providers.

Governmental organizations are commonly found to be the initiator of the registries in other countries. However,

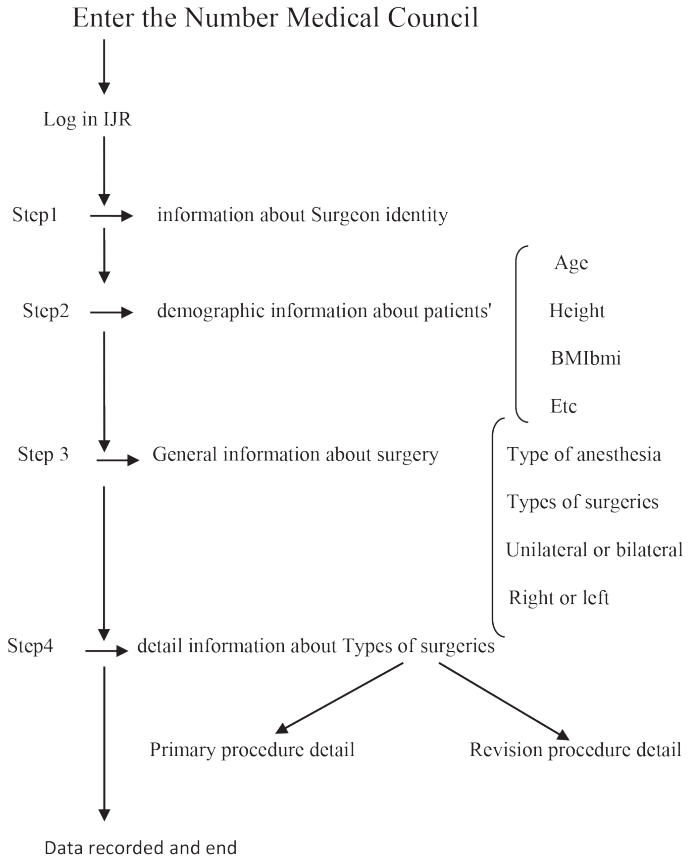

Figure 3. Data entry processes in IJR.

to our best knowledge it is the first time that non-governmental insurance organization has been involved in initiating a national joint replacement registry.

Iranian joint registry is designed, which will be developed to form the major source of outcome assessment after orthopedic surgeries. Joint collaboration of the national organizations is an essential requirement for the advancement of this mission.

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