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Faculty Management and Medical Informatics

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Title

**Designing the policy options to rationalizing demand of total knee Arthroplasty
for Iran**

By

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Abstract

Introduction: Health is one of the most important concerns of human societies. On the other hand, the unlimited and increasing need of health service consumers along with the limited resources of the health system has led to increased health costs and as a result the transfer of government resources from other social services to the health sector. Due to the increasing health costs as well as the progressive increase of the elderly population in many developed countries, it has led to a focus on the health of this age group. With the increase in the elderly population, and the increase in life expectancy, preventive and therapeutic policies should be aimed at maintaining and promoting the health of the elderly population. One of the hospital services that has increased costs and imposed costs on hospitals and is in increasing demand in the elderly population is total knee arthroplasty (TKA). Given the very high costs that this surgery imposes on the Iranian health system, the question arises that what role do different policies play in rationalizing the demand for it in Iran? And what policy options can be designed for this? Therefore, the present study is designed in an attempt to answer the above questions.

Method: The present study is a Mixed Method study, that identifies, modifies, designs, formulates and selects policies by using policy and economic approaches. The framework of the present study is the Bardach framework and the study is divided into eight parts (problem definition, collection of available evidence, design of various policy solutions and options, selection of criteria, prediction of consequences, exchange and compromise, decision making and reporting). In this research, in-depth and semi-structured interview methods, document review, scoping review and quantitative survey have been used to answer the research questions and hypotheses. The four phases of the study include scoping review, epidemiological analysis, quantitative analysis, and policy analysis of knee

replacement surgery. A total of 14,329 patients who referred to the Iran hospitals for total knee arthroplasty during 21 March 2019 until 23 July 2021 was conducted. The made researcher checklist tool was being used to collect quantitative data. For the analysis of qualitative data using the Colaizzi method and for quantitative data from descriptive and analytical analysis including; Spearman, Kruskal-Wallis, Mann-Whitney U and linear regression were performed using Spss software version 24.

Result: Findings reviewing documents, studies and scoping review showed that the need for total knee arthroplasty is a multifactorial phenomenon and osteoarthritis of the knee is the most important factor in total knee arthroplasty. There are several factors that contribute to osteoarthritis of the knee, including; Systemic factors (age over 60 years, female gender, genetics, inactivity and metabolic diseases), mechanical factors (obesity, occupation, trauma, lack of exercise and malignant) and lifestyle (professional sports, Iranian toilet, Smoking, inappropriate shoes, praying position, overuse of stairs, and nutrition and medications including vitamin deficiencies, poor nutrition, and side effects of some medications. Quantitative and epidemiological findings of the study showed that with increasing age, the demand for total knee arthroplasty increases. Knee arthroplasty is an expensive operation and the total cost is significantly related to age, type of hospital, surgeon specialist, length of stay, year of surgery, type of basic insurance, supplementary insurance and residence, and no relationship between total cost and gender but there is a direct relationship between gender and the demand for total knee arthroplasty. The findings of the policy phase showed that no policy was adopted that directly addresses total knee arthroplasty or osteoarthritis. Then, based on the risk map of conditions and diseases leading to total knee arthroplasty, we presented the policy options of knee arthroplasty and their prioritization. Policies related to knee arthroplasty in three areas of prevention include; 4 objectives and 31 policies, treatment included; 2 goals

and 8 policies and in the field of rehabilitation include; 2 goals and 4 policies, and at the end we developed the indication criteria for total knee arthroplasty surgery.

Conclusion: The study findings showed that with increasing age, the demand for total knee arthroplasty increases. In the present study, the average age of people who underwent knee arthroplasty was 65.9 years and knee arthroplasty is more common among women, which indicates that women due to lifestyle, less physical activity, high BMI and hormonal changes are more prone to osteoarthritis and higher demand for knee arthroplasty. Among the factors involved in the demand for knee arthroplasty are basic and supplementary insurance. According to the information, 98% of the people who underwent knee arthroplasty had basic insurance and 31.5% of the people had supplementary insurance coverage. Most surgeries have been performed in private hospitals, and the urban population has quadrupled in demand compared to the rural population. The qualitative findings of the study showed that total knee arthroplasty is a multifaceted phenomenon and several factors such as systemic factors, mechanical factors and lifestyle are effective in the formation of this disease. The policy findings of the study showed that no policy in total knee arthroplasty and the content of total knee arthroplasty policies in the country has various weaknesses, including; Lack of direct policies, lack of guidelines, lack of rules and indications and lack of monitoring system for total knee arthroplasty. Since policy-making is passive, attention to policy-making in this area is significant.

Key word: Policy analysis, Knee joint, Total knee arthroplasty, Osteoarthritis