Executive Summary

☐ Background

Education programs provided in some hospitals and community health centers in Korea is restrictively implemented by simply delivering information about introduction or treatment of disease. However, evidence-based detailed contents and methods of patient education are not established. To apply education programs to clinical practice, evidence that patient education improves self-management ability as well as functional, psychological and social outcomes should be established.

Previous systematic reviews on various patient education interventions in patients with rheumatoid arthritis documented significant short-term improvements in knowledge, coping behavior, pain, disability and depression, but long-term effects were inconsistent. In addition, each literature and guideline demonstrate varied effects, recommendation and recommendation levels for education intervention methods (group education vs. face to face education) and education contents (drug intervention and weight management) and there is no feasible guideline that reflects the reality of Korea.

Thus, it is necessary to establish the evidence on the efficacy of patient education according to education program subjects, educators, education types, education tools, educators to provide effective patient education. Systematic review regarding the clinical efficacy of patient education according to detailed intervention is needed. In addition, the current situation and demand of rheumatoid arthritis patient education in Korea should be understood.

☐ Purpose

This study aims to assess the effectiveness of patient education interventions on health status in patients with rheumatoid arthritis.

□ Method

Ⅰ. Systematic review

To establish scientific evidence for patient education of rheumatoid arthritis, key question is as follows.
"What are the clinical effects of patient education interventions in patients with rheumatoid arthritis?"

PICO-TS for the above core question is shown in the table below.

Classification	Contents
Patient	Adult patient who are diagnosed with rheumatoid arthritis
Intervention	Patient education 〈Inclusion〉 The main purpose of patient education is for the management of rheumatic diseases. 〈Exclusion〉 The main purpose is the effects of exercise and diet. 　-For examples, the effects of specific diet/exercise or comparative studies of exercise intensity.
Comparison	Usual care or other intervention
Outcomes	- Clinical outcomes: disease activity, pain, functional disability, numbers of swollen joints, number of tender joints, patient general condition and global assessment - Cognitive behavioral and psychosocial outcomes: anxiety, depression, knowledge, coping, psychological symptoms etc.
Time	No limits
Study Types	- International studies: randomized controlled trials (RCTs) - National studies: no limits

There was no limit in the search period and national and international electronic databases were used in addition to manual search. International databases included Ovid-Medline, Ovid-EMBASE, Cochrane Trials, CINAHL and PsycINFO and SIGN filter was used. National databases included KMBASE,

KISS, KoreaMed, KISTI, RISS, National Central Library and National Assembly Library. More than 2 reviewers independently reviewed the literature and the final papers were selected through three stage selection/exclusion process. The exclusion criteria are as follows.

Classification	Contents
Inclusion criteria	- Studies of patients with rheumatoid arthritis - Studies on patient education for the management of rheumatoid arthritis - Studies on the clinical effects of patient education for the management of rheumatoid arthritis - Studies on the effect indicators that are previously defined.
Exclusion criteria	- Papers that are not original (review articles, letters, comments, systemic reviews, meta-analyses) - Grey literature (studies that only published abstracts, thesis etc) - Studies conducted with non-human entity (animal or pre-clinical trials) - Literature published other languages except Korean and English - Overlapping papers - Literature whose original text cannot be obtained

More than 2 reviewers independently assessed risk of bias and made an agreement. Randomized controlled trials were evaluated by risk of bias in Cochrane (Higgins et al., 2011) and observation studies were evaluated by ROBANS ver. 2.0.

Data was extracted according to PICO. Meta-analysis was performed if quantitative analysis is possible. If literature reports the variations of continuous variables, the reported variations were extracted but if only mean values and standard deviations between at the beginning and the follow-up points were reported, a coefficient of correlation was calculated using the equation below and the means and standard deviations of variations were calculated. Furthermore, a meta-analysis was performed using standardized mean difference (SMD) since assessment tools used for end-points in each literature were varied.

II. Demand survey

Demand survey of rheumatoid arthritis patient education was conducted with rheumatoid arthritis patients and rheumatologists. Demand survey with rheumatoid arthritis patient was performed for the patients who were diagnosed with rheumatoid arthritis and were being treated in the hospitals using structured questionnaires face to face. The questionnaires consists of questions for the current situation of rheumatoid arthritis patient and demands (experience of previous patient education, education contents, education duration, education methods, satisfaction with medical consultation, needs and demands etc). A total of 19 hospitals participated in the survey and 746 patients were included in the final analysis except 10 patients who failed to provide their sex and age.

Demand survey with rheumatologists was conducted with those who are the members of Korean College of Rheumatology to understand the current operation and the priority of patient education. A structured questionnaire was emailed. The questionnaire consists of questions for the current operation of patient education in their hospitals, education contents, education duration, education methods and demand etc. A total of 165 rheumatologists responded to the survey.

□ Results

- A short-term evaluation within 3 months after conduction of patient education showed that pain, the numbers of swollen joints, the numbers of tender joints and depression were reduced, and resilience and knowledge increased in the patients who had education compared to those who had usual care, with a statistical significance.
- The demand survey shows that both rheumatologists and patients are recognizing the needs for patient education in current health care system but the reality is that education duration is too short and insufficient.

I. Systematic review

A total of 55 papers (49 international papers and 6 national papers) were

selected for systemic review to compare the clinical effects of the patient education group and the control group in rheumatoid arthritis. A short-term evaluation within 3 months after conduction of patient education showed that pain, the numbers of swollen joints, the numbers of tender joints and depression were reduced, and resilience and knowledge increased in the patients who had education compared to those who had usual care, with a statistical significance.

Measurement from 3 months after the patient education to the final follow-up point was defined as long-term outcomes. Long-term results showed that the disability, the numbers of swollen joints, the numbers of tender joints, disease activity and depression were reduced in the patient education group compared to the control group, with a statistical significance.

Sub-group analyses according to detailed contents and methods of patient education were insignificant due to the lacking numbers of literature corresponding to end points but significance was differed according to some patient education methods such as education frequency and education duration etc. Functional disability was reduced in cognitive behavioral therapies, group educations, educations longer than 60 minutes, educations provided in tertiary hospitals and educations with shorter cycles (within 1 month).

Evaluation of quality of literature showed that bias was lower in the randomized allocation sequence, blinding of outcome assessment, result report and it was relatively higher in allocation concealment and uncertainty of bias of private sector research funding.

II. Demand survey

Demand survey of rheumatoid arthritis patient education was conducted with rheumatoid arthritis patients and rheumatologists to understand the current situation and demand for patient education of rheumatoid arthritis. Demand survey with rheumatoid arthritis patient was performed for the patients who were diagnosed with rheumatoid arthritis using structured questionnaires face to face and demand survey with rheumatologists was conducted with those who are the members of The Korean Rheumatoid Association through e-mail.

Survey results of 746 rheumatoid arthritis patients are as follows. The proportion of patients who previously had rheumatoid arthritis patient

education was 29.4% (male 24.5% and female 30.2%), and of them, patients who participated systemic education program conducted longer than 4 weeks were 7.4%. The majority of the patients (86.4%) replied that patient education is 'needed' or 'much- needed' and 80.4% of patients responded that they would participate in patient education if it is available. The most preferred duration of each education was 'from 30 minutes to 1 hour' (50.2%), and group education (38.4%) and mass education (42.3%) were preferred to one to one education (28.3%).

The current status and priorities of patient education are asked to 165 rheumatologists who are the members of Korean College of Rheumatology. The survey results showed that 40 rheumatologists (24.2%) said that Rheumatoid arthritis patient education is currently conducted 'at least 5 minutes' and 22 of them (13.3%) admitted they do not deliver patient education program at all. The reasons for not being able to provide patient education were asked to 105 rheumatologists who education patients within 5 minutes. Fifty eight of them (46.4%) replied ' a lack of time', 29 of them (23.2%) replied 'a lack of manpower' and two of them replied 'they do not feel that patient education is not needed'. The majority of them (92.7%) responded that patient education is 'much-needed' and the most important priority in terms of the education contents was 'disease information' followed by education about medication, exercise, injection and procedure, evaluation of disease activity and nutrition.

□ Conclusion and implications for policy

Rheumatoid arthritis is a chronic autoimmune disease which is characterized by joint destruction due to articular inflammation and pain and bone erosion. Without active effective treatment at the early stage, joint disorders is induced and premature death may occur since it is often accompanied with respiratory disorders, osteoporosis, hypertension or hyperlipidemia, diabetes mellitus and cardiovascular diseases.

The demand survey shows that both rheumatologists and patients are recognizing the needs for patient education in current health care system but there is a lack of opportunity. Moreover, systemic review revealed that patient education improves articular function and disease activity by improving self-management of pain, reducing anxiety, depression and psychological

symptoms and providing emotional support. Adequate health insurance policy is necessary for this effective patient education to reflect on the current health care delivery system. Furthermore, standardized training programs for professional workforce who can provide consistent patient education and systemic management for patients until they are able to manage themselves are required and further researches on applicable education methods and its efficacy for Korean population will be needed.