Assessment of the practicability of implementing the EULAR recommendations for the role of nurses in the management of chronic inflammatory arthritis in China

Ling Ma,1 Yan Liang,1 Sheng-nan Yu,1 Ying Wang,1 Susan M Oliver,2 Yan-ling Chen,1 Yi Zhao,1 Yu-qiong Cao,3 Xue-mei Liu,4 Zi-yun Zhang,5 Li-hong Chen6 and Yi Liu1

Abstract
Chronic inflammatory arthritis (CIA) severely impacts quality of life in over 100 million people in China. In 2011, the European League Against Rheumatism (EULAR) developed recommendations for the role of nurses in the management of CIA. However, it remains unknown whether these recommendations could be fully implemented in China. Therefore, we aimed to solve the problem in this study. We conducted a nationwide cross-sectional study among 485 nurses in rheumatology and immunology departments based on an online questionnaire. The agreement of the recommendations by the subjects and the feasibility of the recommendations they believe were assessed by visual analogue scale (VAS). Our results showed that over 80% of the subjects agreed with each recommendation (VAS 5–10), and over 80% of the subjects considered the recommendations feasible (VAS 5–10). This study indicates that the EULAR recommendations can also be well implemented in China.

Keywords
care, EULAR recommendations, inflammatory arthritis, patient education, rheumatology, role of nurse, visual analogue scale

Date received: 18 March 2019; accepted: 26 May 2020

Introduction
The role of nurses is defined as being the independent practitioners educated and trained to provide health promotion and maintenance through diagnosis and treatment of acute and chronic conditions. With the emergence of new treatment regimens and social development, nurses are now playing advanced and extended roles.1 A study performed by the School of Nursing at the Johns Hopkins University showed that the interventions undertaken by nurses could improve the treatment outcomes and reduce the incidence of disease complications.2
In rheumatology, registered nurses often act as the link between the patients and other members of a multidisciplinary team. In 2011, the European League Against Rheumatism (EULAR) developed a set of recommendations for the role of nurses in the management of chronic inflammatory arthritis (CIA) using a combination of evidence-based and expert consensus approaches, aiming to identify appropriate research and educational agendas. According to the EULAR recommendations, rheumatology nurses should undertake self-management support, patient education and counseling, recommendation and prescription of drugs, referral to other health professionals, manning telephone advice lines and monitoring disease modification, and biological treatments for CIA patients. Nevertheless, CIA management in rheumatology is in need of development into an internationally recognized nursing specialty.

CIA represents a leading cause of disability worldwide, which results in unfavorable prognosis, high disability rate, and substantial socioeconomic burden. CIA places severe limits on the daily activity and quality of life for over 100 million people in China. The education provided by health professionals is crucial for health improvement of the patients with chronic diseases such as CIA, since they are incurable. Recently, China has proposed new requirements for chronic disease management, specifically emphasizing patient education and rehabilitation services, foreshadowing a public health storm will send ripples throughout the society.

The aim of this study is to assess the practicability of implementing the EULAR recommendations in China by evaluating its level of agreement and perceived feasibility among nurses. We hope our study will guide future education and help to develop professional training systems for CIA management among nurses and eventually promote implementation of the EULAR recommendations in China.

Methods

A cross-sectional survey was conducted in China. The study population comprised registered Chinese clinical nurses in rheumatology and immunology departments based on convenience sampling (a non-probabilistic sampling method in which respondents are randomly selected by the investigators at a particular time and location in a particular community to fit the research topic), and therefore the calculation and justification of the sample size before the study were not required. The 10 EULAR recommendations were translated from English to Chinese by a professional translator, and the accuracy was confirmed by rheumatologists. Individual distribution method was used to send questionnaire links. Head nurses in each hospital were provided with a link to a questionnaire as well as instructions on completing the questionnaire. Registered nurses were informed of the aim of the survey and were provided with instructions on completing the questionnaire.

Voluntary completion of survey.

Research tools

We evaluated the following parameters: age, highest education level, professional ranks and titles, years of work experience as nurses in the field of rheumatology, professional training experiences, and the level and location of hospitals. The EULAR recommendations for the role of nurses in the management of CIA are listed in Table 1.

The level of agreement and the perceived feasibility of the recommendations were assessed by a visual analogue scale (VAS 0 = total disagreement/completely infeasible to VAS 10 = complete agreement/completely feasible). The subjects were required to select the reasons why they disagree or consider the recommendations infeasible.

Statistical analysis

Statistical analysis was performed using the SPSS software (version 22.0). All data were presented as mean ± standard deviation (SD) for the measurement data or as percentage for the enumeration variables. Non-parametric tests were used for the ranked data. P values < 0.05 were considered statistically significant for all analysis.

Results

In total, 485 subjects were included, and 438 valid questionnaires were retrieved (valid recovery rate = 90.3%). The subjects were from 48 first-class hospitals (comprehensive hospitals with more than 501 beds, which can provide high-level specialized medical and health services and conduct higher education and scientific research tasks to several regions) nationwide with an average age of 31.65
The average duration of working experience was 6.41 (± 5.438) years. 71% of the subjects had an undergraduate diploma, 2.5% with a master’s degree, and 0.2% with a doctoral degree. 48.6% of the subjects had the professional title of senior nurse.

Table 1. EULAR recommendations for the role of nurses in the management of CIA.

| No. | Recommendations |
|-----|----------------|
| 1   | Patients should have access to a nurse for education to improve knowledge of CIA and its management throughout the course of their disease |
| 2   | Patients should have access to nurse consultations in order to experience improved communication, continuity, and satisfaction with care |
| 3   | Patients should have access to nurse-led telephone services to enhance continuity of care and to provide ongoing support |
| 4   | Nurses should participate in comprehensive disease management to control disease activity, to reduce symptoms, and to improve patient-preferred outcomes |
| 5   | Nurses should identify, assess, and address psycho-social issues to minimize the chance of patients’ anxiety and depression |
| 6   | Nurses should promote self-management skills in order that patients might achieve a greater sense of control, self-efficacy, and empowerment |
| 7   | Nurses should provide care that is based on protocols and guidelines according to national and local contexts |
| 8   | Nurses should have access to and undertake continuous education in order to improve and maintain knowledge and skills |
| 9   | Nurses should be encouraged to undertake extended roles after specialized training and according to national regulations |
| 10  | Nurses should carry out interventions and monitoring as part of comprehensive disease management in order to achieve cost savings |

EULAR: European League Against Rheumatism; CIA: chronic inflammatory arthritis.

Figure 1. Levels of agreement with the EULAR recommendations among rheumatology nurses in China.

(±6.65) years. With regards to the feasibility, more than 80% of the subjects considered the recommendations either fully or partially feasible (VAS 5–10; Figure 2).

Next, we assessed the factors that caused the subjects to disapprove or partially disapprove the recommendations. Our results showed that factors that contributed to total or partial disapproval of the recommendations included busy clinical nursing (39.98%), the lack of professional knowledge and nursing skills (25.7%), and the patients’ non-acceptance of the extended role of nurses (17.35%) (shown in Figure 3).
We also analyzed the factors that led the subjects to consider the recommendations infeasible. The lack of working time (16.33%), the shortage of professional nurses (12.74%), the lack of training and education (10.59%), the lack of professional knowledge (9.22%), the attitude of patients toward nurses (8.28%), and the lack of capital (7.53%) were the factors contributing to the subjects’ perceived infeasibility of the recommendations in China (shown in Figure 4).

**Group comparison**

For more in-depth analysis, we further separated the subjects into two groups according to their age (232 subjects ≤30 years old and 206 subjects >31 years old). We found a greater number of subjects in the older group expressed their approval and considered the recommendations more feasible (Figure 5(a) and Supplemental Figure S1).

We then allocated the subjects into two groups according to their educational background. There were 115 subjects with technical secondary school or junior college educational background and 323 subjects with a bachelor’s, master’s, or doctoral degree. There was no significant difference in the results of approval and feasibility analysis between the two groups (Figure 5(b) and Supplemental Figure S2).

In addition, the subjects were divided into three groups according to the years of work experience as a rheumatology nurse: <3 years (N=166), 3–10 years (N=166) and ≥10 years (N=106). As a result, the subjects’ attitude toward recommendations 2, 3, 4, and 7 was influenced by the years of work experience. Subjects with more working years considered these recommendations more favorable and practical than subjects with less experience (Figure 5(c) and Supplemental Figure S3).
Figure 5. The level of agreement with the EULAR recommendations by different groups of items: (a) age group; (b) educational background; (c) years of work experience; and (d) professional title.

*There is a statistically significant difference when $P < 0.05$. 
Finally, we split the subjects into three groups according to their professional titles: nurse (N=108), nurse practitioner (N=213), and nurse-in-charge or professor of nursing (N=107). More subjects with senior professional titles agreed with recommendations 2, 3, 4, 6, 7, and 10 than subjects in other groups (Figure 5(d) and Supplemental Figure S4).

**Discussion**

The role of nurses in the management of CIA differs greatly among countries and across regions due to factors including educational level, training, and expertise. Our study showed that the EULAR recommendations were widely accepted among Chinese rheumatology nurses. However, certain practicality issues may be restricting the nationwide implementation of the recommendations.

Our study indicated there was a certain degree of misunderstanding toward nurses’ roles among the patients, where the patients did not accept the extended roles of nurses. Moreover, H Jiang et al. revealed a discrepancy between the patient-perceived quality of nursing care and the perspectives of clinical professionals. Therefore, patients should be given access to a wider range of information and knowledge about CIA management from nurses for better communication between the patients and nurses, ultimately improving the effectiveness of CIA management.

The EULAR recommendations propose that nurses should promote self-management skills and participate in comprehensive disease management in order to attain a greater sense of control, self-efficacy, and empowerment for the patients. To achieve this, rheumatology nurses should master the skills and knowledge required for disease management, which are currently scarce among nurses according to our study. A system of our own is required for providing continuous education in order to maintain basic and advanced knowledge and skills, according to the EULAR recommendations.

Nowadays, the role of nurses and the needs from patients have both been expanding rapidly due to the new treatment regimens and changes in medical models. Accordingly, the strengthening of nurses’ professional self-identity should be prioritized over professional knowledge. It is essential to create a well-rounded training system to help nurses clarify their roles and tasks as well as conforms to role norms. However, to set the stage for this approach, a more complex restructuring of services will be required.

Overall, our study illustrated that the roles, tasks, and qualifications of nurses should be clearly described in future frameworks to enable new models of nursing that take into account the value of nurses in the management of CIA in China. A limitation of this study is that the doctors were not surveyed. Future studies should assess the perceived feasibility and level of agreement of the doctors with the EULAR recommendations. Nevertheless, the educational agenda of this study will help to expand the role of nurses based on national policies and will support the development of professional training and educational systems with the aim of providing better care for the patients, thereby bringing added value to the patients at a lower cost.

**Acknowledgements**

The authors are grateful to Peking University People’s Hospital (Li-hong Chen), the First Affiliated Hospital of Harbin Medical University (Xue-mei Liu), Lanzhou University Second Hospital (Jing Yang), Renji Hospital Shanghai Jiaotong University School of Medicine (Li-ping Qian), Xiangya Hospital of Central South University (Jiang-yan Chen), Union Hospital Tongji Medical College Huazhong University of Science and Technology (Zi-yun Zhang), the First Affiliated Hospital of BaoTou Medical College (Li-rong Kang), the First Affiliated Hospital of Wenzhou Medical University (Wei Qin), the People’s Hospital of Xinjiang Autonomous Region (Li Zhang), the First Hospital Affiliated to AMU (Ping Wan), the First People’s Hospital of Foshan City (Qi-wen Ma), Huaiche River Hospital of Henan University (Ang Liu), the People’s Hospital of Sichuan Province (Yu-qiong Cao), the Third Affiliated Hospital of Sun-Yat sen University (Dan-chun Wu), the Fifth Hospital of Chengdu City (Xiaohua Zhang), the Second Affiliated Hospital of Zhangjiang University School of Medicine (Feng-ying Zhang), the First Hospital Affiliated to Henan University of Science and Technology (Gai-shao Shi), the First Affiliated Hospital of Zhengzhou University (Shu-hua Cheng), the First Hospital of China Medical University (Fang Wang), Dazhou Central Hospital (Jun Lei), Sun-Yat sen Memorial Hospital, Sun-Yat sen University (Hai-chang Zhang), the First Affiliated Hospital of Sun-Yat sen University (Yinghua Long), the People’s Hospital of Jiangsu Province (Yu Ding), Jingzhou Central Hospital (Rong Zhang), the Second Xiangya Hospital of Central South University (Su-qing Xu), Mianyang Central Hospital (Hong Liu), the
Ma et al.

First Affiliated Hospital of Nanchang University (Jin Yu), Peking University Shenzhen Hospital (Nan Gao), Xijing Hospital (Xiao-hui Ni), the First Affiliated Hospital of Xi’an Jiaotong University (Xin Li), General Hospital of Ningxia Medical University (Xue-mei Zhang), the Second Affiliated Hospital of Harbin Medical University (Li Li), the First Hospital of Qiqihar (Hong-bo Qu), Ningbo First Hospital (Hai-bo Chen), Wuhan Pu’ai Hospital (Ling-ling Wu), Wuhan Union Hospital (Hui Hu), the First Affiliated Hospital of Chengdu Medical College (Ying He), Xining No.1 People’s Hospital (Hai-hong Yang), Shanxi Dayi Hospital (Xiao-hui Zhang), Tangdu Hospital (Cui-fen Zhao), Nanjing Drum Tower Hospital of The Affiliated Hospital of Nanjing University Medical School (Ren-ju Xu), the Second Affiliated Hospital of Nanchang University (Yan Gong), the First Affiliated Hospital of Kunming Medical University (Hua-ying Chen), the First Affiliated Hospital of Nanchang University (Ling-li Leng), Shanghai Guanghua Hospital of Integrated Traditional Chinese and Western Medicine (Qi-ting Li), Guangzhou Hospital of Guangzhou University of Chinese Medicine (Dian-feng Chu), the First People’s Hospital of Yunnan Province (Yu-lan Xiao), the First Affiliated Hospital of Zhejiang University (Yan-ling Wen), West China Hospital Sichuan University (Ying Wang), and the National Collaborative Group of Rheumatic and Immunological Disease Management.

Author contributions
L.M., Y.L., S.-n.Y., and S.M.O. were involved in literature search; L.M. and Y.L. were involved in study design; L.M., Y.L., Y.W., Y.-q.C., X.-m.L., Z.-y.Z., L.-h.C., and National Collaborative Group of Rheumatic and Immunological Disease Management were involved in data collection; L.M., Y.L., S.-n.Y., and Y.W. were involved in data analysis; L.M., Y.L., S.-n.Y., Y.W., S.M.O., Y.-l.C., and Y.Z. were involved in data interpretation; L.M., Y.L., S.-n.Y., S.M.O., Y.-l.C., Y.Z., and Y.L. were involved in manuscript preparation.

Declaration of conflicting interests
The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Ethical approval
The data of this study was obtained by the questionnaire survey from the nurses in multi-hospitals. The questionnaires were anonymous. Therefore, the Informed consent and Ethics approval were not applicable. The waiver number for the study is 2013L01517.

Funding
The author(s) received no financial support for the research, authorship, and/or publication of this article.

ORCID iD
Ling Ma https://orcid.org/0000-0003-1138-5877

Supplemental material
Supplemental material for this article is available online.

References
1. Wei Y, Ye Q and Liao H (2010) Investigate on the role cognition to nurses’ roles and own localization in the different level of nursing students. Chinese Journal of Modern Nursing 16: 1827–1829.
2. Bushnell KL and Smith LA (1998) Hypertension clinical outcomes in a nurse practitioner managed care setting. Seminars for Nurse Managers 6(3): 155–160.
3. Van Eijk-Hustings Y, van Tubergen A, Boström C et al. (2012) EULAR recommendations for the role of nurses in the management of chronic inflammatory arthritis. Annals of the Rheumatic Diseases 71: 13–19.
4. Waynes G and Klippel JH (2010) A National Public Health Agenda for Osteoarthritis. Atlanta, GA: Centers for Disease Control and Prevention and the Arthritis, p. 162 (in Chinese).
5. Jiang H, Zou Y, Wu L et al. (2011) Study on perception of nurse’s role among inpatients and their family members. Journal of Nursing Administration 11: 235–326 (in Chinese).
6. Sun Y, Wang Y and Zou X (1998) Elderly inpatients’ needs: A comparison of perceptions between patients and nurses. Chinese Journal of Nursing 33: 195–198.
7. Hall JJ, Katz SJ and Cor MK (2017) Patient satisfaction with pharmacist-led collaborative follow-up care in an ambulatory rheumatology clinic. Musculoskeletal Care 15(3): 186–195.
8. Hill A (2000) The impact of expanding the numbers of clinical nurse specialists in cancer care: A United Kingdom case study. European Journal of Oncology Nursing: The Official Journal of European Oncology Nursing Society; 4(4): 219–226.
9. Zhao A (2002) The hospital infection monitored by nurses in outpatient injection room. Modern Nursing 8: 406.
10. Crossley J and Vivekananda-Schmidt P (2009) The development and evaluation of a Professional Self Identity Questionnaire to measure evolving professional self-identity in health and social care students. Medical Teacher 31(12): e603–e607.