Current state of the use of musculoskeletal ultrasound (MSUS) and view on the future development of MSUS training and services in Hong Kong: Results of a survey among the members of the Hong Kong Society of Rheumatology

Objective: To document the current state of the use of musculoskeletal US (MSUS) and view on the future development of MSUS training and services among the members of the Hong Kong Society of Rheumatology.

Methods: A three-page anonymous questionnaire, divided into three sections (demographics, current state of the MSUS service, and view on future development of MSUS training and services), was sent (either in electronic format or in hardcopy) to 79 members (70 full members and 9 ordinary members) of the Hong Kong Society of Rheumatology. The aim is to inquire about the use of MSUS by rheumatologists, their views on the future development of MSUS training and service in Hong Kong.

Results: 28 (35%) out of 79 members responded to the questionnaire (including 25 fellows and 3 trainees working in public hospitals and private sector). 25 responders (89.3%; 25/28) were using MSUS in their daily practice for making diagnoses, guiding interventions or follow-up disease. Although 90% (25/28) of the responders’ institutes provided the MSUS service by the Radiology Department, 70% of them got long waiting time, and the Radiology Department did not provide the MSUS service to every joint region. Despite the widespread use of MSUS among rheumatologists, more than 90% of the responders could only do less than 10 scans per week. Lack of time and manpower, lack of expertise, high cost of equipment, and lack of support for training were important obstacles in developing the MSUS service. 18 (64%) responders in our survey tended to agree that MSUS training should be incorporated in the rheumatology training.

Conclusions: In conclusion, this is the first survey demonstrating the current state of the use of MSUS in Hong Kong and a huge growth in demand for the service development and formal training in MSUS. A number of challenges in terms of lack of time and manpower, lack of expertise, high cost of equipment, and lack of support for training is evident.

Keywords: Rheumatology, musculoskeletal, ultrasound, survey

1 Introduction

Musculoskeletal ultrasound (MSUS) is widely used in rheumatology and recognized as a useful tool in patient management in last two decades. The clinical application of MSUS requires expertise, manpower in terms of doctor time, good quality ultrasound machines, and implementation planning. There are limited data on the present impact of MSUS on rheumatology in Asian countries. The Hong Kong Society of Rheumatology conducted a survey on MSUS in public hospitals and private sector from March to May, 2015. The purpose of this survey was to establish the current state of the use of MSUS and the members’ view on the future development
of MSUS training and services in Hong Kong.

2 Methods

2.1 Study design

A three-page English language anonymous questionnaire was sent either in electronic format or hardcopy to 79 members (70 full members and 9 ordinary members) of the Hong Kong Society of Rheumatology. The survey ran from March until May 2015. The aim is to inquire about the use of MSUS by rheumatologists and their views on the future development of MSUS training and service in Hong Kong. After 4 and 8 weeks, e-mail reminders were sent to all members.

2.2 Questionnaire design and content

The questionnaire was divided into three sections: demographics, current state of the MSUS service in responder’s hospital/clinic, and their view on the future development of MSUS training and services in Hong Kong.

2.3 Analysis

Simple descriptive and summary statistics were calculated from the responses.

3 Results

3.1 Demographics

There are currently around 75 rheumatologists and 9 rheumatology trainees in Hong Kong, and among them, around 20% of the fellows work in private practice. Our survey elicited replies from 28 members, including 25 fellows (33% of all fellows in Hong Kong) and 3 trainees working in 12 (out of 15) public hospitals that provide rheumatology service in Hong Kong. Over 90% questionnaire returns come from public hospitals and two responders are private practitioners.

3.2 Current status of the use of MSUS in Hong Kong

More than 80% of the responders (89.3%; 25/28) are using MSUS in their daily practice for making diagnoses and guiding interventions or following-up disease activities. Only 8 of them (32%) are using MSUS for research purpose (Table 1). Most of them (90%) will provide the MSUS service to both in-patients and out-patients. 20 responders (71%) have one MSUS machine in their institutes, 7 (25%) have two MSUS machines, while one got three MSUS machines in their institute. The number of rheumatologists that will provide routine MSUS service in their corresponding centre is shown in Fig. 1. Nearly 90% (25/28) of the Radiology Department of the responders’ institute will provide the MSUS service, but 70% of them got long waiting time (Fig. 2a), and the Radiology Department does not provide the MSUS service to every joint region (Fig. 2b). Despite the widespread use of MSUS among rheumatologists, more than 90% of the responders (Fig. 3a) can only do less than 10 scans per week, while they expect they could have 12 fixed sessions performing MSK US per week (Fig. 3b) and 26 responders (90%) agreed that all hospital with rheumatology service should have at least one MSUS machine that is accessible to rheumatologists.

<table>
<thead>
<tr>
<th>Table 1. Current use of MSUS by survey responders</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Full members</strong> (fellows)</td>
</tr>
<tr>
<td>(N = 25)</td>
</tr>
<tr>
<td>Percent using US machines</td>
</tr>
<tr>
<td>Percent among the 25 members using MSUS for the following</td>
</tr>
<tr>
<td>Diagnosis</td>
</tr>
<tr>
<td>Guided interventions</td>
</tr>
<tr>
<td>Follow-up</td>
</tr>
<tr>
<td>Research</td>
</tr>
</tbody>
</table>

![Figure 1: The number of rheumatologists in their corresponding institutes that will provide a routine MSUS service.](image-url)
Figure 2: Overall waiting time and the scope of the MSUS service provided by the Radiology Department in the responders’ hospitals/clinic.

Figure 3a: Time (for the entire week) our members would spend on doing MSUS and Fig 3b: Time they expect to spend in doing MSUS.
3.3 View on the future development of MSUS training and services in Hong Kong

26 responders (93%) have attended different levels of ultrasound workshops organized locally or by the European League Against Rheumatism (EULAR), 14 (53.8%), 5 (19.2%), 4 (15.4%), and 3 (11.5%) attended basic, intermediate, advance and trainer level, respectively. Only 8 (28.6%) responders received formal overseas attachment training on MSUS. 16 (60%) would grade their MSUS skills as poor/fair, while 11 (40%) would grade their skills as good to very good. 18 (64%) responders in our survey tend to agree that MSUS training should be incorporated in rheumatology training. Lack of time and manpower is graded as the most important obstacle in developing the MSUS service. Other obstacles included, in descending order: lack of expertise, high cost of equipment, and lack of support for training. If future training is to be provided by the Hong Kong Society of Rheumatology, most of the participants will be interested in acquiring skills in sonoanatomy, MSUS-guided interventions, and use of MSUS in musculoskeletal pain management.

4 Discussion

This survey presents the first picture of the use of MSUS in the rheumatology society in Hong Kong. 12 out of 15 public hospitals that provide rheumatology service replied to have MSUS machines and 90% of the responders will provide the MSUS service to both in-patients and out-patients. Rheumatology units that have routine MSUS service usually develop as a complementary service to bridge the service gap of the radiologists. Radiologists tend to focus more on the orthopedic conditions that may require surgical intervention, such as rotator cuff tears or sports injuries, while rheumatologists have more interest in synovitis, bony erosions, and enthesitis. Knowing that the focus of MSUS performed by the rheumatologists may be different from that performed by the radiologists and the long waiting time for a radiology appointment, there seems to have a pressing need in the development of the MSUS service among the rheumatologists, so that early diagnosis of rheumatic diseases is made possible and US-guided injections can be provided promptly with better clinical accuracy.

Since 1999, there was a notable increase in the number of countries in Europe in which MSUS is routinely performed by the rheumatologists, and consequently, a rapidly increasing need for training. There are only very few published data on the use of MSUS by the rheumatologists in East Asia, but the respondents of these studies do considered MSUS to be a useful tool and even MSUS non-users are eager to participate in a MSUS workshop provided by the local rheumatology society. In view of the unmet need of ultrasound training program, the Hong Kong Society of Rheumatology has provided annual ultrasound training workshop for local members since 2009. Such need in Asia is also well-reflected by the over-enthusiastic application to the first EULAR-endorsed MSUS course held in Hong Kong in May 2015. In the meantime, there is still lack of rheumatologists or rheumatology bodies that are able to provide MSUS training in Asia. A significant number of rheumatologists in Hong Kong still rely on self-training in their MSUS skills by attending local or overseas training courses. The rising number of rheumatologists performing MSUS in Hong Kong translates into future educational and training implications. Questions like whether training should be introduced during or after rheumatology fellowship training and in which format should training be delivered (standardized written or hand-on competency assessment), are still areas for discussion. EULAR has developed a system of accreditation for sonographers in rheumatology since 2015. In the absence of formal MSUS training in curriculum, the annual ultrasound courses provided by EULAR and local mentoring courses still act as main educational tools for MSUS training in Hong Kong.

Factors identified as obstacles in developing the MSUS service in this survey included, in descending order, lack of time and manpower, lack of expertise, high cost of equipment, and lack of support for training, which are similar to the other parts of the world. Despite the widespread use of MSUS among rheumatologists in public hospitals in Hong Kong, nearly 60% of the responders can only do less than five scans per week, while they expect they could have 12 fixed sessions performing MSUS per week (Fig. 3a). Like rheumatologists in Korea, time constraint is considered to be the biggest obstacle to the use of MSUS in clinical practice. Since most rheumatologists in Hong Kong need to take care of general medical patients and rheumatology patients, a genuine obstacle exists regarding the development of MSUS service on top of current heavy clinical workload. High initial cost of the equipment is regarded as the third most important obstacle in developing the MSUS service in this survey. Despite high initial cost of purchasing machine, MSUS offers several inherent advantages over other imaging modalities (e.g., XR, computer tomography, and magnetic resonance imaging). It is non-invasive with no radiation, rendering it well-accepted by most patients. It can be performed readily both in in-patient and out-patient settings, and it is a rapid
method of obtaining images of multiple joints at the same appointment. Real-time dynamic examination has made it possible to serve for a quick diagnostics purpose. MSUS performed by the physician also provides an excellent opportunity for patient education and to explain the rationale for treatments. A study has also shown that the substitution of MSUS for magnetic resonance imaging of musculoskeletal disorders, when appropriate, would lead to large cost-savings for medicare. Such advantages make MSUS best economically to provide the information needed, which in turn allows the formulation of an appropriate management or intervention plan within one session. Knowing such advantages, more resources and time should be invested to develop such skill among the rheumatologists.

We acknowledge a number of limitations for this survey. The response rate in this survey is lower than the average physician response rate reported for similar MSUS surveys of 49.1–69.5%. However, it does fall within the range of physician response rates in previous published studies. The response rate is better than recent MSUS surveys done in Austria and United States. Another limitation of this survey is bias towards those already using MSUS in their routine clinical practices who are more likely to participate than those who are unfamiliar with the technique. Despite these limitations, this survey is valuable as the first to document current practice of MSUS among the rheumatologists in Hong Kong.

## 5 Conclusion

This survey demonstrates the current state of the use of MSUS in Hong Kong and a huge growth in demand for service development and formal training in MSUS. With this first documented survey, we hope that the data will provide a valuable baseline for future planning for the development of MSUS services and educational programs in Hong Kong. With the finding that nearly all rheumatology departments already have access to ultrasound machines in Hong Kong, rheumatologists can further develop a complementary MSUS service to bridge the service gap of the radiologists by establishing regular MSUS sessions held by themselves. By developing more standardized local training programs and formal competency assessment scheme, we hope that all rheumatologists can use their own ‘stethoscope’ to provide more holistic and timely care for rheumatic diseases in the near future.

**Acknowledgements:** We would like to thank the members of the Imaging Subcommittee for their support and help in preparing the manuscript.

**References**