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# Rheumatology workforce issues in South Asia: Challenges and solutions

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South Asia, which includes India, Bangladesh, Bhutan, Pakistan, Afghanistan, Sri Lanka, Maldives and Nepal is the most densely populated region of the world. Although occupying only 3.5% of the world's land surface area, it hosts approximately 25% of the world's population.<sup>1</sup> Among the South Asian countries, India has the largest landmass with 1.37 billion residents. India is also the most diverse nation in respect of religion, culture, languages and education. Over 100 languages are spoken in India and income levels are variable with almost 25% of population below the poverty line. Further, 25.96% of the population has no formal education<sup>2</sup> and 26.16% of the Indian population is below 15 years of age (Table 1).<sup>3</sup> Provision of good health care to such a population is therefore a great challenge.

Over the years, the burden of non-communicable diseases (NCDs) has increased in South Asia. In India itself, during 25 years from 1990 to 2016, the share of NCDs to total disease burden has increased from 37.9% to 61.8%.<sup>4</sup> With the increase in NCDs, the burden of rheumatic diseases has also increased. Musculoskeletal (MSK) diseases are the second most important cause of years lived with disability (YLD) across the world.<sup>5</sup> The proportion of disability-adjusted life years (DALY) due to MSK diseases is variable across South Asia. More affluent countries like the Maldives have high % DALY whereas the less affluent ones like Afghanistan have low % DALY due to MSK diseases<sup>6</sup> (Figure 1).

A survey done in India of 55 000 persons at 12 sites estimated the prevalence of osteoarthritis (OA) as 3.34%, soft tissue rheumatism as 1.39%, rheumatoid arthritis (RA) as 0.34%, spondyloarthritis (SpA) as 0.23% and other rheumatic diseases as 1.22%, suggesting that 7% of the population has one or other rheumatic disease.<sup>7-9</sup> Similar data are available from Pakistan.<sup>10</sup> In another survey of nearly 5000 school children in India, arthritis lasting for more than 1 week was present in 7.6%, back pain in 3.1% and heel pain in 3%.<sup>11</sup>

Delay in diagnosis poses a major challenge in management of rheumatic diseases, with patients presenting with high disease activity as well as significant damage. It is related to both socio-cultural practices like stigma attached to illness, easy availability of drugs

without prescription leading to self-medication and faith in alternative systems of medicine. As rheumatic diseases are more prevalent in women, and the social status of most South Asian women is not equal to men, these patients find it difficult to access health care.

It has been noted that the distance to healthcare facilities, availability of transport and cost of health care are the major individual barriers to healthcare access.<sup>12</sup> Moreover, an absence of a proper referral system results in further delay in diagnosis.<sup>12</sup> In Pakistan, over two-thirds of patients with disabilities are dependent on family members for their care due to lack of social security.<sup>13</sup>

Public-funded healthcare systems that provide good-quality healthcare services are virtually non-existent in most South Asian countries. Although most countries have a network of primary health centers to provide preventive and maternal and child health services, treatment for rheumatic disease is available only in tertiary care hospitals. In South Asia, only about 5% of gross domestic product is spent on health care as compared to over 12% in Organization for Economic Co-operation and Development countries.<sup>14</sup> Although some South Asian countries like Bhutan, Sri Lanka and Maldives have universal health coverage, most of the health care is provided by the private sector. Stand-alone private clinics are the major providers of out-patient care. Out-of-pocket health expenditure in South Asia is nearly 90%, which leads to families being pushed below the poverty line due to illness.<sup>15</sup> In view of this, attempts are being made to strengthen public funding for health in this region. In 2018, India started an ambitious National Health Protection scheme for the poor to bridge the inequalities in accessing health care.<sup>16,17</sup>

Most drugs needed to treat rheumatic diseases, like methotrexate, leflunomide and biologicals are readily available. The generic synthetic DMARDs (disease modifying anti-rheumatic drugs) are cheap and easily affordable in countries like India and Bangladesh.<sup>18</sup> Biologicals, even with a large presence of biosimilars in South Asia, are beyond the reach of most patients. Similarly, lab tests for monitoring therapy add additional burden on patients and to cut cost most physicians have them performed less frequently. Even after diagnosis, there is reluctance to

take drugs as it is believed that 'allopathic' drugs are associated with many side effects and are expensive.<sup>15</sup> This results in poor compliance and inability to achieve therapeutic targets. It has also been observed that many RA patients reduce the dose of methotrexate on their own when they have fair control of the disease.

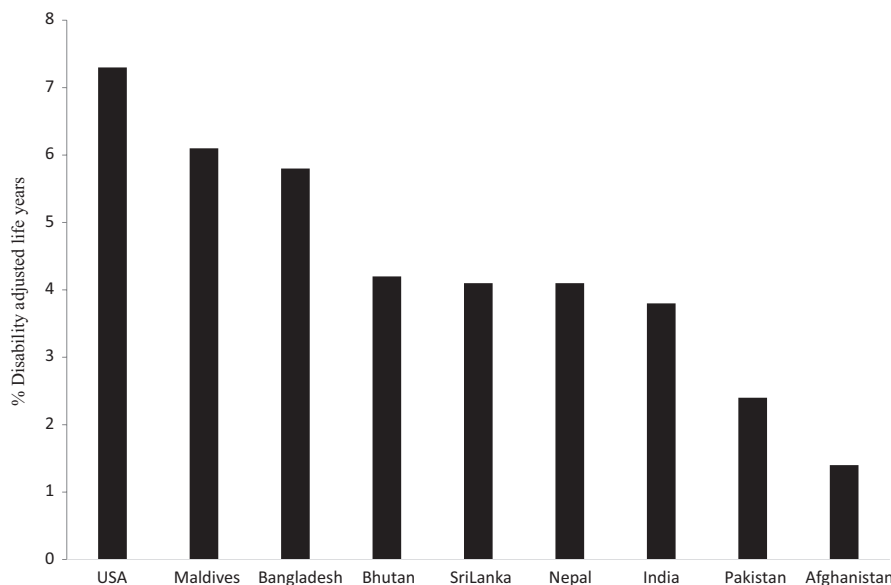
## 1 | WORKFORCE ISSUES

With fewer physicians per capita, South Asia has a limited workforce. The availability of nurses is also much less than the world average (Table 2). Further, no data is available on the number of rheumatologists. In Europe and the USA, there are approximately 1.7 rheumatologists per 100 000 citizens.<sup>19,20</sup> In a survey conducted in the Asia-Pacific League Against Rheumatism (APLAR) region, 20 of the 30 countries responded and they were divided into three clusters according to per capita income: >\$20 000 (n = 7), \$2500-10 000 (n = 9) and <\$2000 (n = 4). The high-income countries had 1 rheumatologist per 72 393, middle income ones had 1 per 1 208 100 and the low-income ones had 1 per 3 618 600 citizens. Most rheumatologists worked in academic

settings and the average number of patients seen by a rheumatologist in an hour ranged from 3-15 depending on the load of patients.<sup>21</sup>

India has approximately 500 rheumatologists. Even if we count internists who do part-time rheumatology, the number of rheumatologists is <1 per million. Among the medical schools, approximately 10 have a chair of rheumatology. Further, there is an unequal distribution of doctors, with rural areas being underserved. For example, Delhi has 60-70 rheumatologists whereas there is no rheumatologist present in a 200 km radius in some parts of the country. Thus the "inverse care law" (those in greatest need of health care also have greatest difficulty in accessing it) is highly applicable for South Asia.<sup>22</sup> In addition, awareness of rheumatology as a specialty is poor among the public. Very commonly, an orthopedic surgeon becomes the first point of contact since s/he is perceived to be a physician dealing with bones and joints.<sup>23</sup> Even internists often do not have enough competence to examine or manage patients with rheumatic diseases.<sup>24</sup>

Optimum care of a patient with rheumatic disease requires a multidisciplinary approach with a team comprising of a rheumatologist, local general practitioner (GP), rheumatology nurse, physiotherapist, occupational therapist, psychologist and patient partner.

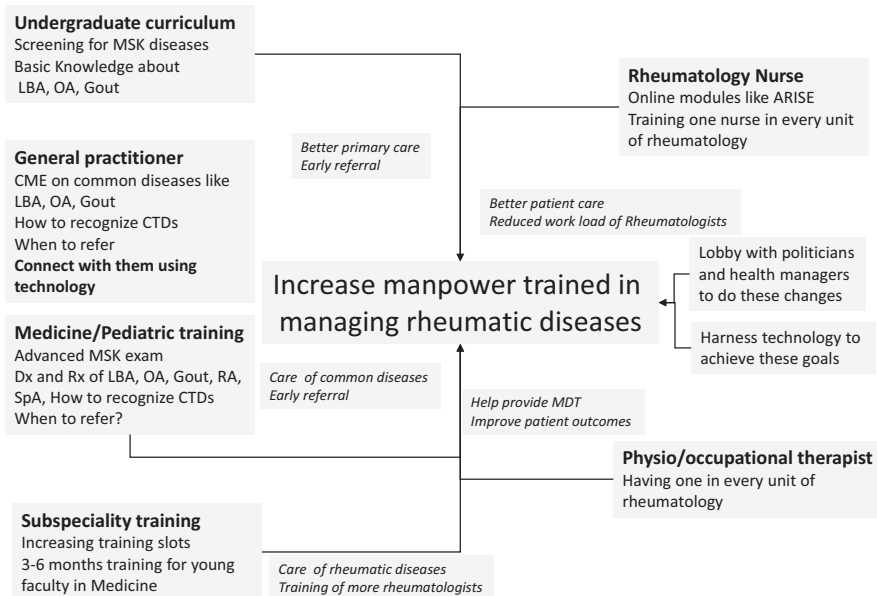


**FIGURE 1** Proportion of disability-adjusted life years (DALY) contributed by musculoskeletal diseases in each country of South Asia region based on global disease burden data of 2017. For comparison US data are also included

**TABLE 1** Demography of the countries in South Asia<sup>1</sup>

Country	Population (2019)	Age group, 0-14 y, % of population	Age group >65 y, % of population	GDP per capita, 2017, in US\$
India	1 366 417 754	26.16	6.57	1987
Pakistan	216 565 318	34.82	4.35	1467
Bangladesh	163 046 161	26.75	5.23	1564
Afghanistan	38 041 754	41.82	2.65	NA
Nepal	28 608 710	28.81	5.83	900
Sri Lanka	21 323 733	23.68	11.23	4135
Bhutan	763 092	24.89	6.20	3391
Maldives	533 458	19.60	3.59	9802

**FIGURE 2** Possible solutions to improving the rheumatology workforce in South Asia. MSK, musculoskeletal; LBA, low backache; OA, osteoarthritis; SpA, spondyloarthritis; CME, continuing medical education; SpA, spondyloarthritis; CTD, connective tissue disease; MDT, multidisciplinary team; ARISE, Asia-Pacific Rheumatology Intensive Scientific Education



**TABLE 2** Availability of doctors and nurses in South Asia<sup>3</sup>

Country	Doctor per 1000 population	Nurse per 1000 population
<b>World</b>	<b>1.50</b>	<b>3.42</b>
India	0.8	2.1
Pakistan	1.0	0.5
Bangladesh	0.5	0.3
Afghanistan	0.3	0.3
Nepal	0.7	2.7
Sri Lanka	1.0	2.1
Bhutan	0.4	1.5
Maldives	1.0	4.0

<sup>a</sup>The bold values are signifies the world figures as reference.

In the UK, according to National Institute for Health and Clinical Excellence guidelines, the multidisciplinary team for RA should consist of a rheumatologist, specialist nurse, physiotherapist, occupational therapist and podiatrist.<sup>25</sup> In north European countries, a psychologist, nutritionist and social worker are also included in the team.<sup>26</sup> In the USA, rheumatologists, nurse practitioners and physician assistants are the active rheumatology service providers.<sup>20</sup> In most of South Asia, support personnel like rheumatology nurses, physiotherapists, occupational therapists and psychologists are almost non-existent in the team for rheumatic care. In the APLAR survey, high-income countries had a team of at least 3 persons while in low-income countries it was either only a rheumatologist or one more person (nurse/physiotherapist).<sup>21</sup> Although there are training opportunities for physiotherapists and occupational therapists in most South Asian countries, the numbers are small and very few are in rheumatology units. Thus, there is a huge shortage of manpower to manage rheumatic diseases in South Asia and the gap between demand and supply will further increase as the large young population ages.

## 2 | SOLUTIONS

There are no easy solutions to improve the current situation. It needs political will to increase funding for health care, better health infrastructure and social awareness. To cater to such a large population a bottom-up approach is needed. At the primary care level, we need ways to improve quality of care available and also develop proper referral pathways to align with hospitals in the vicinity. As the majority of health care in South Asia is provided by the private sector, the private practitioner near the homes of the patients needs to be involved in the care of the patient. Along with this, we need to remove inequalities in healthcare access by having adequate numbers of health workers and allocating enough budget for health so that patients have access to basic drugs.

### 2.1 | Training

An informed physician is more likely to provide better patient care, therefore knowledge about rheumatic diseases needs to be imparted to healthcare professionals from undergraduate training onwards. In medical schools, the present curriculum is deficient in rheumatology training and needs to change.<sup>27,28</sup> A white paper by the “World forum on rheumatic musculoskeletal diseases” has highlighted clinicians’ lack of confidence in diagnosing patients presenting with MSK symptoms. It has also highlighted the progress made since “Bone and Joint decade” in having a core curriculum for undergraduate training encompassing accurate and thorough history-taking and physical examination, emergency and red flag conditions and common problems that any physician might encounter.<sup>29</sup> Inclusion of a module on rheumatology based on these guidelines in undergraduate teaching will go a long way in having informed GPs.



Similarly, during internal medicine and pediatric residency, exposure to rheumatology needs to increase with introduction of a 24-hour module having both clinical exposure to common rheumatic diseases and lectures on rheumatic diseases. This will not only improve care for patients but may also stimulate an interest in rheumatology and may lead to more physicians choosing rheumatology as a career option. To achieve this, each medical school needs to have at least 1 faculty position in rheumatology. For this, fellowship positions in rheumatology also need to increase. This can be done by engaging with all stakeholders, that is patients, public, medical councils and the government. In this endeavor, the national rheumatology societies can also play a major role.

The shortage of allied health professionals in rheumatology also needs to be addressed. National societies need to engage with allied health professionals by letting them join their associations, holding combined meetings and doing continuing medical education programs for them. Similar to the increase in residency programs, programs for training of nurses and social workers in rheumatology are needed. A recent review on nurse-led care revealed that patients find it acceptable and accessible and it is also effective. However, the data on it being cost effective are still scant. In some studies, nurse-led care resulted in more cross-referrals which may increase the cost.<sup>30</sup> One option could be to use nurse-led care only for patients with low disease activity so that treatment changes are expected to be minimal.

Since training manpower by the usual way will take a long time, along with many sub-specialties vying for limited resources for training, we need to think of novel and cheaper ways. In this respect, the use of technology can be a game changer. Fortunately in South Asia the penetration of phone and internet is reasonably good. Using telemedicine to educate and provide health care can make it available in remote areas. Telemedicine can also be used to educate GPs and internists.<sup>31</sup> Using massive open online courses (MOOC), we can design curricula for rheumatology which can be delivered to medical schools which do not have a rheumatologist. APLAR has recently started an APLAR – European League Against Rheumatism school of rheumatology to support online training in rheumatology, the costs for which are partly offset by APLAR.<sup>32</sup> In addition, the Asia-Pacific Rheumatology Intensive Scientific Education (ARISE) program is geared toward increasing skills of nurses in rheumatology.<sup>33</sup>

## 2.2 | Improving primary care using technology

Availability of good primary care can help in early diagnosis and appropriate follow-up leading to good outcomes for patients with rheumatic diseases. Many novel ideas using technology are being tried to achieve this goal.

A recent study<sup>34</sup> done in Canada used the rapid Access to Consultative Expertise program where the primary care provider had a hotline to consult a specialist. It was found that 60% of these calls prevented a specialist visit and 32% of calls prevented a visit to

the emergency department. This led to reduction in cost, better patient care, capacity building as well as better patient experience. This can be easily adopted in South Asia where patients have to travel long distances and there is shortage of specialists.

Extension for community health care outcomes (ECHO) program connects local GPs with specialists at a medical school over weekly teleclinics, grand rounds and so on. Later these GPs can consult the specialist team if they have any complicated problem. It has been successfully run for treatment of rheumatic diseases in under-resourced areas in Mexico and can be tailored for South Asia.<sup>35</sup>

Village resource centers (VRC) developed by the Indian space research organization of the Government of India in rural areas have facilities for tele-education, telemedicine and online decision support.<sup>36</sup> These can be harnessed to teach community health workers on how to recognize symptoms of rheumatic diseases and how to follow patients with osteoarthritis and gout, the two common problems in community besides soft tissue rheumatism. In a review of telemedicine facilities in Bangladesh it was found that it reduced time as well as cost by about 20-fold to the patient. In addition, two-thirds of persons using telemedicine facilities were satisfied, suggesting that harnessing telemedicine can go a long way in reducing disparities in healthcare access.<sup>37</sup>

A systematic review on tele-rheumatology published in 2017 concluded that it is very good for the follow-up of patients diagnosed with RA.<sup>38</sup> Comparison of teleconferencing with a remote center with in-person consultation led to similar control of disease activity. However, it was felt that patient preference should be taken into account when offering these services as there was a significant dropout in both arms.<sup>39</sup>

Mobile apps are also being utilized by healthcare professionals to connect with patients. These apps can help a patient report his/her disease-related outcomes, receive health education, behavioral feedback and support. In RA, it has the potential to improve adherence to therapy leading to better control of disease activity and fewer hospital visits. However, areas which lack rheumatologists such as rural and underserved areas also have logistic challenges like stable internet connection, familiarity with apps due to lower educational standards, and so on.<sup>40</sup>

To conclude, improving training at all levels of health care would go a long way in improving outcomes of rheumatic diseases in South Asia (Figure 2). The use of out-of-the-box ideas using technology can reduce the time required for having optimum health care. Finally, we need to get all stakeholders on board for improving the current gap in the workforce for rheumatology and in this the national societies and APLAR can play a big role.

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