

The growing need for the field of Physical and Rehabilitation Medicine in South Africa: A mixed methods analysis

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Abstract

Objectives: South Africa, unlike most nations with advanced medical education systems, currently does not recognize the field of Physical and Rehabilitation medicine (PRM). International medical education institutions such as the International Rehabilitation Forum (IRF) have developed PRM fellowship training programs across Africa. In this study, we aimed to demonstrate the significant need and desire for rehabilitation medicine in South Africa, describe how the IRF could assist with recognition of PRM by creating training opportunities, and report on current experiences of South African physicians taking part in the IRF fellowship program including how this program advanced their abilities to provide and advocate for rehabilitative medical care.

Materials and methods: This mixed-methods study was conducted in collaboration with the IRF between August 2024 and September 2024 to describe the current landscape of PRM in South Africa and the utilization of international training programs, such as IRE, to augment training in this field. The first part of this mixed-methods study involved qualitative interviews from physicians involved in PRM, who are considered experts (n = 2) in the South African healthcare system, to help support the quantitative survey study data discussed next. The second part of the study was a cross-sectional survey study of current IRF fellows (two-year program) from South Africa, including both quantitative and qualitative responses. The quantitative survey data and open-ended, qualitative questions were collected via anonymous Google surveys sent to fellows currently enrolled in the IRF two-year fellowship program and practicing medicine in South Africa (n = 16).

Results: A total of 63% of fellows enrolled to train future generations in South Africa. The majority of fellows (75%) reported that the program enabled them to take on leadership roles within rehabilitation medicine in South Africa. All fellows agreed that the fellowship motivated them to advocate for rehabilitation treatments. Qualitatively, fellows reported functional limitations within their home country including resources and capacity. Rehabilitation medicine experts in South Africa emphasized the numerous sociopolitical hurdles limiting government recognition of rehabilitation medicine and preventing the allocation of much needed resources to the field.

Conclusion: There is a substantial unmet need for rehabilitation medicine in South Africa. Formal recognition of the field could facilitate the allocation of essential resources, ultimately improving access to and optimizing the delivery of medical care for the South African population. International training programs, such as the IRF fellowship, appear to provide effective preparation for rehabilitation physicians in South Africa, equipping them with the clinical skills necessary for patient care as well as the knowledge and competencies required for advocacy at the national level.

Keywords: Africa, disability, education, fellowship, rehabilitation.

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The World Health Organization (WHO) estimates that about 50% of individuals with disabling conditions are unable to receive the rehabilitation they require.^[1] Most nations with advanced medical education systems have recognized and developed programs for Physical and Rehabilitation Medicine (PRM). Various groups have been created to help improve the recognition of PRM and opportunities in rehabilitation medicine around the world such as the International Society of Physical and Rehabilitation Medicine (ISPRM).^[2] However, improving recognition and awareness at the international level continues to be an issue. Among countries with high-level specialized medical education, South Africa is one of the few where such a system has yet to be fully established.

The ISPRM has been working together with the WHO for “Rehabilitation 2030, a call for action” to help reach the estimated 2.4 billion people across the world who could have noticeable benefit from having access to rehabilitation medicine.^[3-5] This major 21st century health initiative of the WHO is focused on enhancing multidisciplinary approaches and providing assessment frameworks to aid low-or-middle income countries (LMICs) which are often burdened by increased levels of disease, substantial needs for rehabilitation, but scarce resources.^[6]

South Africa, in particular, poses its own unique challenges including (1) reduced understanding of social determinants of health, (2) high burden of non-communicable diseases, (3) burden of chronic communicable diseases such as human immunodeficiency virus (HIV), (4) high rate of trauma related to motor vehicle accidents and workplace labor accidents, and (5) historically persistent inequalities in health and educational resources. These areas of medicine have classically drawn more attention from government resources than rehabilitation medicine. Additionally, there remains a huge divide between the private and public healthcare sectors. The public sector receives only 50% of the national healthcare funding despite representing over 80% of the population, further emphasizing that medically vulnerable populations still are not receiving sufficient resources to meet their

growing needs including the lack of a sustainable public rehabilitation network.^[7-14]

South Africa has a sophisticated healthcare and medical education system, with over 60 government-recognized specialties and subspecialties (Table 1).^[15] However, the specialty of PRM is represented nowhere in the national schema. Instead, rehabilitation centers are staffed by physicians who learn on the job. Outpatient PRM is essentially non-existent. Across the country, there are no academic PRM specialty training programs, PRM faculty positions to teach medical students, research centers for PRM, and until recently, no professional PRM society in the country. Therefore, there are no formalized PRM training programs in South Africa. Without these necessary training programs and resources to develop rehabilitation medicine clinicians, access to care for these underserved populations will remain severely limited.

To counter disparities in rehabilitation care between different countries, global outreach and the development of international curricula in rehabilitation is imperative.^[16] The International Rehabilitation Forum (IRF) is an international medical institution which has focused on education initiatives and has developed PRM fellowship training programs across Africa. With programs such as this, there can be increased exposure of South African physicians to the field of PRM via a more standardized and sustainable PRM training approach.^[17] The IRF is a non-profit organization founded by American and international rehabilitation advocates with the mission of *“building relevant rehabilitation medicine practices ... in low-resource and*

Table 1. Medical specialties and subspecialties in South Africa

Specialty	Subspecialties
Internal Medicine	16
Pediatrics	16
Pathology	9
Psychiatry	7
Surgery	6
Family medicine	6
Emergency Medicine	3
Physical Medicine and Rehabilitation	0

isolated regions, aiming at maximizing the independence and leadership of all persons with physical limitations".^[17,18] This started at the grass roots level by creating innovative change and challenging the status quo in these low-resource environments by hosting worldwide congresses to foster cross-cultural exchange and partnerships to cultivate sustainable PRM programs and global rehabilitation curriculum via medical schools and training institutions. Although many national health ministries acknowledged a need for such programs, a lack of resources continued to plague such endeavors.^[17] To face this challenge, the IRF created an international rehabilitation fellowship program incorporating resources from more developed countries including teaching faculty and learning materials.^[18]

Their two-year fellowship program is designed to deliver multidisciplinary PRM exposure and a lifelong mentorship to African-trained local physicians. Through it, they can establish a lasting footprint in *"stimulating worldwide actions for providing rehabilitation medicine to some of the world's most vulnerable patients."*^[18] The program accomplishes this by incorporating weekly didactics covering general rehabilitation medicine and the numerous subspecialties of PRM based on Accreditation Council for Graduate Medical Education (ACGME) and the ISPRM's core curriculum and competencies. The IRF fellowship also connects fellows with both international and domestic rehabilitation mentors via networking opportunities. Additionally, fellows are given funding to: (1) travel to one international rehabilitation medicine conference and (2) train at a fully established rehabilitation medical center for two months. Fellows are also required to develop and complete a research study applicable to rehabilitation medicine in their home nation. Finally, fellows must reach various thresholds for certain types of patient examinations, procedures, and various treatment modalities to ensure they are exposed to the entire breadth of PRM. International PRM experts and local mentors frequently meet with fellows to do hands-on training sessions for unique components such as electromyogram and to observe overall progression of the fellows learning. There are also pre- and post-tests

for sections in the curriculum to ensure fellow retention.

For many years, the standard has been "medical mission trips" which are notoriously plagued by physicians providing short-term access to medical care for underserved communities and, then, leaving with no long-term plan in place. However, organizations such as the IRF are working to create a blueprint for constructing a long-term, sustainable rehabilitation medicine program. By developing an education platform via a rehabilitation fellowship program, there will be a trickle-down effect from the trainees. With the common mission trips, only patients with direct access to the short-term international physicians are affected. However with IRF, current fellows will have the capability to train other physicians and medical providers in their communities and publish their own national rehabilitation medicine research, reaching a much broader and expanding population base. This, in turn, will allow knowledge to propagate through future generations of rehabilitation medicine specialists. In turn, this will allow for medically vulnerable South Africans to have access to rehabilitation medicine care. To best support potential trainees long-term, recognition of the specialty and further resources could help dramatically.

Internationally, the standard for PRM education is four to five years of post-graduate training. This two-year virtual fellowship allows the fellow graduates in South Africa to complete the program with at least two years of focused PRM practice, on top of their 3+ years of residency training in their country. This creates a platform of expertise with this population of specialists who can advocate for more local, academic, and extensive South African training programs. With increased training programs and rehabilitation medicine specialists across the country, this will further highlight the effectiveness and value that PRM can bring to a society.

In the present study, we aimed to (1) demonstrate the significant need and desire for rehabilitation medicine in South Africa, (2) describe how the IRF could assist with recognition of PRM by creating training opportunities, and (3) report on current

experiences of South African physicians taking part in the IRF fellowship program including how this program advanced their abilities to provide and advocate for rehabilitative medical care.

MATERIALS AND METHODS

This mixed-methods study was conducted in collaboration with the IRF between August 2024 and September 2024 to describe the current landscape of PRM in South Africa and the utilization of international training programs, such as IRE, to augment training in this field. The first part of this mixed-methods study involved qualitative interviews from physicians involved in PRM, who are considered experts in the South African healthcare system, to help support the quantitative survey study data discussed next.^[19] The second part of the study was a cross-sectional survey study of current IRF fellows (two-year program) from South Africa, including both quantitative and qualitative responses.

Permission to conduct this research study was obtained in writing from the Institutional Review Board (IRB) at Mass General Brigham (MGB) where an IRB exemption was granted for Non-Human Subject Research. For our expert physicians in South Africa, they were provided information about the study and verbally consented prior to participation. The study was conducted in accordance with the principles of the Declaration of Helsinki.

To identify experts in South African rehabilitation medicine, we took referrals from other experts in the international PRM community. We, then, individually reached out to these South African physicians for the qualitative interviews. A virtual group interview was, then, conducted via Zoom where a series of questions were posed to the individuals and each was given an opportunity to speak freely. Additionally, there was a period at the end for participants to discuss any points regarding South African healthcare that they felt were pertinent that were not addressed.

The quantitative survey data and open-ended, qualitative questions were collected via anonymous Google surveys sent to fellows currently enrolled in the IRF two-year fellowship program and practicing medicine in South Africa.

Fellows from the graduating class of 2025, and prior years, were emailed in 2024 and informed that the survey was optional, anonymous and that it would not affect their academic standing in any way. Being that was an optional survey, the fellows were not required to answer every question of the survey and could defer questions as desired.

Statistical analysis

Statistical analysis was performed using the Microsoft Excel (Office 2024). Continuous variables were presented in mean $\pm$ standard deviation (SD) or median (min-max), while categorical variables were presented in number and frequency.

RESULTS

At the time of this study, the two Rehabilitation Medicine experts included in the study were 57 and 71 years of age, respectively. Both are informally trained in rehabilitation medicine and practice in the private sector in South Africa. Together, they have practiced medicine for an average of 39.5 years. These physicians practice near Johannesburg and Pretoria, South Africa. One has completed an orthopedic surgery residency and the other has a diploma in Child Health. Currently their practices encompass spinal cord injury (SCI), spine surgery, stroke, traumatic brain injury (TBI), polytrauma, burns, amputation, post-prolonged intensive care rehabilitation, spasticity (Botox and pumps), and nerve transfers. One of the experts is currently a chair of a national PRM society.

There were 16 IRF fellows who completed the previously described survey. The participants reported being from predominantly Pretoria (5) and Johannesburg (4) (Figure 1). Demographics and information about the home medical

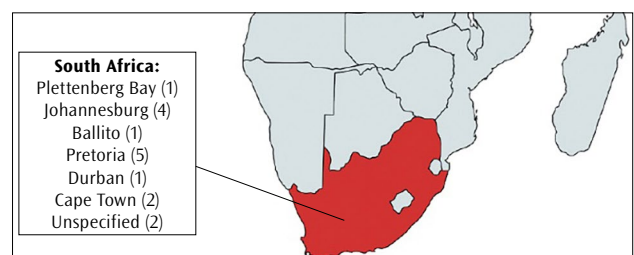


Figure 1. International rehabilitation forum fellow locations.

Table 2. International rehabilitation forum fellow demographics (n = 16)

	n	%
Age (year)		
35-44	6	37.5
45-54	8	50.0
55-64	2	12.5
Sex		
Female	12	75.0
Male	4	25.0
Hospital setting		
Inpatient Rehabilitation Unit	9	56.3
Acute Care Hospital	5	31.3
Private Practice	4	25.0
Outpatient Clinic	2	12.5
Combined Inpatient/Outpatient	1	6.3

settings of the fellows that responded are noted in Table 2. Figure 2 shows the scope of practice for the fellows in their home clinics with SCI and TBI being the most common.

With respect to enrolling in the IRF program, the fellows were encouraged to list their top three reasons; the most popular reason was “to enhance their clinical skills and knowledge in [PRM]” (81%), as seen in Figure 3. Fellows also reported on their satisfaction with various aspects of the program (4= very satisfied, 3= somewhat satisfied,

2= somewhat unsatisfied, 1= very unsatisfied). The fellows endorsed the highest satisfaction with “faculty expertise” (3.6). The lowest rated categories included “learning materials” (2.2) (Figure 4).

Of the fellows, 75% reported that they “somewhat agreed” that the program enabled them to take on leadership roles in PRM and 6% reported they “strongly agreed.” In this survey, 44% of fellows “somewhat agreed” that their opportunities to expand their career trajectory increased significantly due to their participation in the PRM fellowship, while 50% “somewhat disagreed”. In the survey, the fellows also reported that 50% were “very likely” to recommend the fellowship to their peers and 50% were “somewhat likely” to recommend it. Similarly, 43% of those surveyed felt that the fellowship program contributes “very much” to PRM services for patient care in Africa, 36% felt it contributes “quite a bit”, and 21% felt it contributed “a little”. When asked how often they used the knowledge, skills, or experience from the fellowship in their current practice, 13% of the fellows reported “almost every day,” 31% “several times a week,” and 56% a “few times a month.”

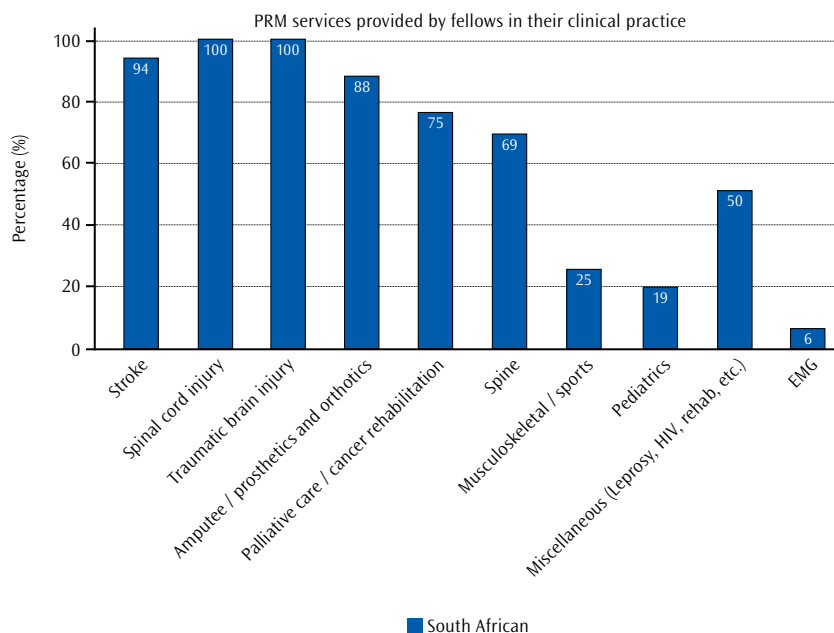


Figure 2. International rehabilitation forum fellow scope of practice at home clinics.
PRM, Physical & Rehabilitation Medicine; HIV, human immunodeficiency virus; EMG, electromyography.

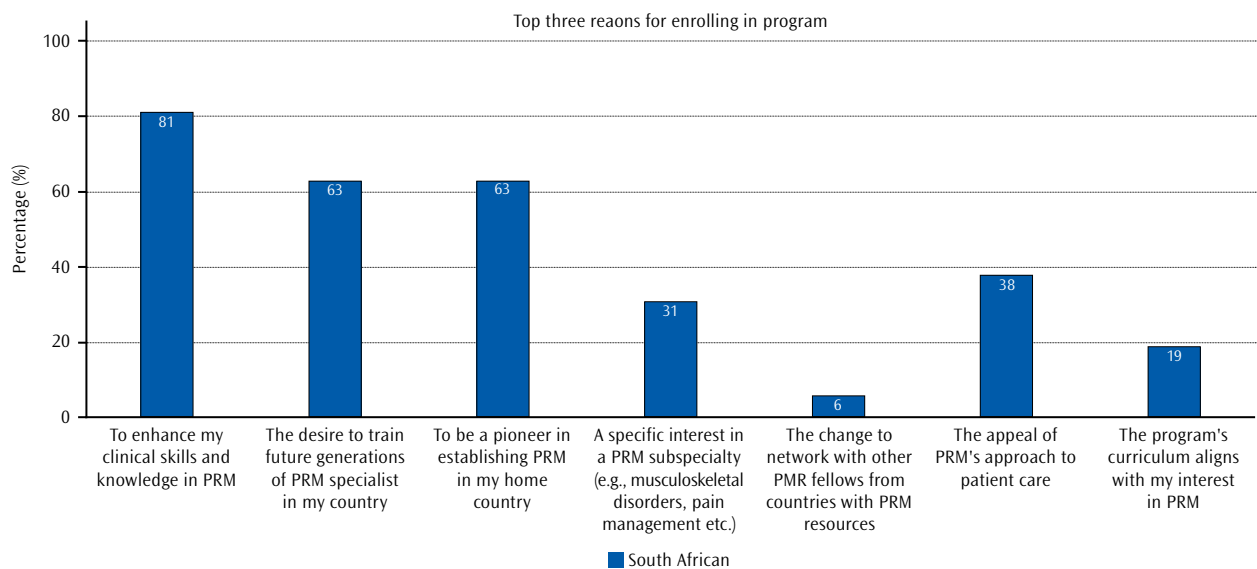


Figure 3. Top reasons for enrolling in the international rehabilitation forum fellowship.

PRM, Physical and Rehabilitation Medicine.

When asked if this PRM fellowship motivated them to advocate for the establishment of specific rehabilitation related treatments for their patients, 50% “strongly agreed” and 50% “somewhat agreed;” no fellows “disagreed.” Fellows were, then, asked if they felt confident in their ability to advocate for the establishment of

these specific rehabilitation related treatments for patients as a result of the fellowship program, 31% “strongly agreed” and 69% “somewhat agreed”; none “disagreed.” Of this group, when asked if they were currently advocating for the establishment of a specific rehabilitation related treatments for patients, 31% “strongly agreed,”

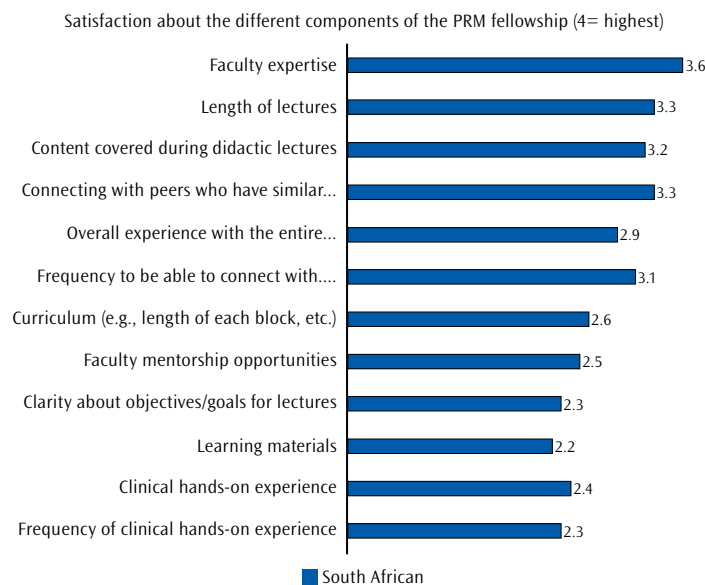


Figure 4. Satisfaction about the different components of the International Rehabilitation Forum Fellowship 4 = very satisfied, 3 = somewhat satisfied, 2 = somewhat unsatisfied, 1 = very unsatisfied.

PRM, Physical and Rehabilitation Medicine.

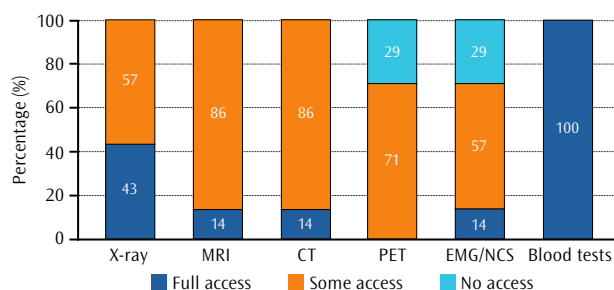


Figure 5. Patient access to diagnostics.

MRI, magnetic resonance imaging; CT, computed tomography; PET, positron emission tomography; EMG, electromyography; NCS, nerve conduction study.

63% “somewhat agreed,” and 6% “somewhat disagreed.” Asked if fellows were motivated to promote team building for sharing knowledge about PRM services for their patients, 38% “strongly agreed,” 56% “somewhat agreed,” and 6% “somewhat agreed.”

With respect to the fellows’ learning environment, 71% endorsed having “clinical supervision when needed,” 57% endorsed “guidance by superiors to perform job” as needed, and 29% had “protected learning time.” For patient diagnostics, most fellows reported lacking consistent access to numerous diagnostic modalities (Figure 5). With regards to personnel, most fellows endorsed having full access to physical therapists (86%), occupational therapists (71%), speech and language pathologist (71%), and nurse practitioners (86%). Many of this same group reported having full access less often for wound care specialists (43%), prosthetists

(43%), durable medical equipment (43%), and lymphedema specialists (0%) (Figure 6). All of the South African fellows (100%) endorsed having a sufficient physical therapy area for their patients and that it was fully equipped.

Qualitative responses-fellows

Qualitative data were taken from open-ended responses from the IRF fellows, with trends highlighted below from the survey. With respect to available learning resources and assignments, most fellows were looking for more texts and clinical studies with one fellow writing, “*there are thousands of textbooks on each rehab topic, so it is confusing what to learn and read*”. Cases are wonderful and helpful. Guidelines in what to learn and read for basic knowledge.” When prompted about the state of PRM in other countries, fellows were looking for “increased duration of observership and exchange programs abroad,” and seeing what experiences residents had in the United States of America.

When questioned about the learning format, most were looking for more interactive experiences including more “direct evaluation,” “more interactions with peers,” increased “fellow participation” in fellow lectures, and “weekly case discussions.” From a practical standpoint, the survey asked the fellows to comment on limitations of clinical resources. One fellow answered, “*we need to start most of the rehab services, but still we could not due to limited capacity. So, strongly we need support.*” Another response was “*clinical*

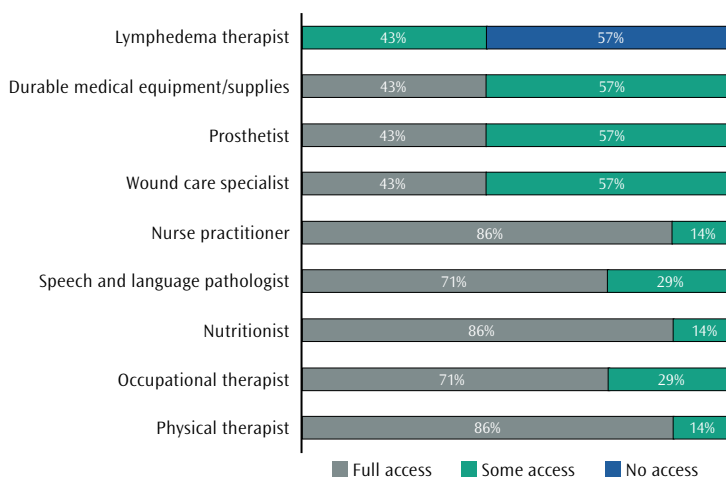


Figure 6. Patient access to rehabilitation staff and supplies.

experience in well-established rehabilitation centers as a form of external rotation is vital to appreciate some of the concepts and also learn about some of the practical rehabilitation processes.” One fellow mentioned more focus on issues they face in South Africa by writing, *“teaching in relation to what we see in South Africa and resources available here”* could be helpful.” Lastly, when asked about faculty and mentorship in the program, it was requested to have *“more mentors available. There is one mentor for every four or five students who can guide them, provide one on one advice and treatment options, assist with research protocols, share protocols with.”*

Qualitative Responses- South African Rehabilitation Experts

Qualitative data were taken from open-ended responses from our two expert opinions in South African rehabilitation medicine. When asked about the utility of a PRM program in South Africa, both experts cited that neither the public or private sectors had such a program, but were indeed using a “makeshift” system where various providers from other fields have identified such needs and adapted their practices to help (i.e., orthopedic surgeons becoming rehabilitation specialists). It was felt that this field of PRM first needed to be altered at the community level via the graduating fellows and working toward a more coordinated national strategy to standardize training and service across the country. However, there was “no unified group” nationally to provide guidance and resources to manage this. Therefore, when resources were needed, national politics shifted these resources to things like “communicable diseases.” However, they did cite that there was a growing number of programs for treating SCI and TBI with increasing unofficial “standardization in PT/OT/SLP” through organizations such as the South African Society of Physical and Rehabilitation Medicine (SASPRM) and South African Spinal Cord Association (SASCA).

With respect to how the IRF could help face these challenges, it was noted that, *“IRF is meant to provide a forum for people to gather and create a more structured environment for those*

to come.” Hopefully, the IRF could work with the recently created South African PRM society (2018) to “get more recognition for this specialty on national level.” However, a major limitation is that a disproportionate number of PRM physicians still work in the private sector, and the “need of the public sector is still not being met.”

When prompted about how South Africa, unlike most other countries with advanced medical education systems, failed to recognize PRM, both mentioned that the public view of rehabilitation medicine was incorrect with many thinking this entails simply “going to the physio” or “drug/alcohol rehab.” It was mentioned that branches of rehabilitation medicine were recognized such as sports medicine through the College of Sports and Exercise Medicine. However, even this was taken many years to accomplish.

Next, our experts were asked about how they perceived the IRF two-year program growing despite lack of recognition from the South African government. Both described the growing need and interest in the field as a driver, but also how IRF *“opened the fellows’ eyes to the diversity of their specialty and promoted learning about all of the opportunities via the structured learning and getting together as a group.”* With respect to career paths in PRM, our experts agreed it was still challenging as *“until about five years ago, the focus was only acute services and now gradually more subacute to post hospital care systems”* were being developed. However, they mentioned that the, *“holy grail is to get the academic system involved, getting more research. This is a spring board for the rest of Africa.”* With that, the goals for IRF remained to teach the fellows so they could teach the future generation. The IRF needed to provide leadership training/mentorship.

When questioned about the future of PRM in South Africa, the experts mentioned that their nation was in flux with the recent National Health Insurance Act which is *“meant to level the medical playing fields... and provide the same insurance to all patients.”* But even with recent changes, medical care is still *“struggling to reach underrepresented communities...but we cannot wait another 20 years.”*

DISCUSSION

This article expands upon the growing literature supporting the need for an official rehabilitation medicine field and subsequent PRM training programs in South Africa. Additionally, the findings in our study provide both quantitative and qualitative data, including the responses from rehabilitation medicine fellows and expert physicians practicing in South Africa. This emphasizes that the IRF can adequately assist in improving recognition of the field at the national level by increasing the PRM footprint via training and mentorship opportunities in the country. As seen in Table 1, there are numerous medical specialties (7) and subspecialties (63) recognized in the South African Medical System. Unfortunately, PRM is still not one of these areas, further limiting the resource allocation and development of rehabilitation services across the nation. Without the necessary funding and recognition, the foundation for PRM in South Africa will be limited, potentially further negatively impacting medically underserved South Africans. This study is a unique combination of perspectives of physicians of varying levels across South Africa that has not been highlighted previously, describing the need and progression of PRM in South Africa.

One reason PRM has such a draw around the world is its focus on enhancing and restoring functional ability and the quality of life of people with various impairments or disabilities. It typically encompasses a multidisciplinary team of rehabilitation clinicians including occupational, physical, speech and language therapists, orthotists and prosthetists, as well as rehabilitation nurses with a PRM physician.^[17] Its focus on maximizing patients' independence in activities of daily living and improving quality of life is essential for optimizing their functional capacity and returning patients to their communities and families.^[20,21] Therefore, rehabilitation medicine may be even more integral than medical management in facilitating the reintegration of persons with disabilities into society and equipping them with the skills and resources necessary to participate meaningfully in their communities.^[20]

The PRM has grown with representation on all continents except Antarctica. Africa, the second most populous continent, has struggled to expand rehabilitation medicine beyond Morocco, Algeria, Tunisia, and the rest of North Africa.^[17,22] Only 15% of African nations have PRM training programs. This is dwarfed by Latin America where 78% of countries have rehabilitation facilities, 62% of countries having legislation supporting rehabilitation medicine. In Asia, 15/37 (41%) countries offer some form of certification in rehabilitation medicine.^[20] However, a lack of PRM trained physicians persists in Africa particularly, most notably in Sub-Saharan Africa.^[23]

As highlighted by the South African physicians interviewed in our study, there are a multitude of socioeconomic concerns that continue to hinder the development and national recognition of PRM. The lack of PRM training programs, the discrepancies between resources and funding for the public sector versus the private sector, as well as funding being more specifically allocated for initial treatments and diagnostics for various communicable diseases and trauma related injuries have factored into this lack of development.^[24] However, many afflicted peoples with functional deficits that are not able to obtain the standard multidisciplinary rehabilitation medicine care become stigmatized in their communities due to their disability and are not able to be reintegrated back into society.

In the post-Apartheid era, the healthcare system in South Africa has undergone many changes. However, PRM has not been included in these changes.^[25-27] The PRM policy in South Africa falls under the National Department of Health, but the implementation falls to the provincial governments with varying socioeconomic, urbanization, and resource restraints.^[12,26] In 2000, the government passed the National Rehabilitation Policy to improve overall rehabilitation resources and access. However, little progress has been made with this program.^[28,24] The rehabilitation policy was further expanded with the creation of a Framework and Strategy for Rehabilitation and Disability in 2016. Unfortunately, this has still not sparked the desired long-term system changes.

In 2024, South Africa created the National Health Insurance (NHI) program which was designed to be a safety-net health program for the most susceptible individuals in the country. However, little focus of this program pertains to the state of rehabilitating South Africans back into their communities.^[6] South Africa has a significant potential in rehabilitation medicine given that 1 of 5 South Africans over the age of 15 endorse poor self-reported health, many of which likely have a component of their health that could be further optimized through PRM.^[29] However, South African medical leaders do not view this area as an essential healthcare service for its people.^[24]

Another aspect limiting the progression of rehabilitation medicine in South Africa is the notoriously low referral rates for PRM. Classically a standard referral in many countries, PRM has significantly lower referral rates in South Africa as there is reduced access via primary care facilities, specialized rehabilitation hospitals, and tertiary hospitals which are hindered by limited bed capacity and early discharges.^[24,30] Much of the access for the public sector is through tertiary educational hospitals. Improving access to PRM training programs and physicians across the country would foster societal awareness of the benefits of rehabilitation medicine and potentially improve access for patients. Given the socioeconomic disparities of South Africa, those that need access to rehabilitation most are limited by increased costs such as transportation and time away from work as they attend such services at these tertiary hospitals.

With the growing need to develop rehabilitation medicine in the global medical community, many in PRM are looking to establish more effective ways to support these civilians. This starts at the grass roots level. It has been shown that medical trainees that are exposed to underserved communities in their training are more likely to treat these populations upon completion of their training.^[31] In this context, several studies have demonstrated that PRM residents across America are looking to be involved with global rehabilitation medicine in their residency training programs.^[32] This interest must be cultivated via collaborations with training organizations

such as IRF to develop lasting PRM footprints internationally, which over time will contribute to recognition of the field at the national level in these countries.

The IRF helped to achieve recognition of PRM through the Ghana College of Physicians and Surgeons (GCPS) and its Family Medicine faculty, and the IRF Fellowship is recognized as a specialty training program in Ethiopia. These were accomplished by involving local physicians and national ministers of health in the discussions. Clinical meetings were also held with other specialties such as orthopedics, pediatrics and internal medicine, and family medicine, allowing for various rehabilitation medicine talks to be incorporated into their practices. This fostered the training of physicians in these countries and provided them with mentorship. These physicians, then, continued to advocate further within their medical societies and national governments for rehabilitation medicine and the benefits it could bring citizens of their nation.^[17]

Intending to replicate this phenomenon in South Africa, the IRF has adequately demonstrated that a predominantly virtual two-year program can be successfully implemented to prepare future international rehabilitation medicine specialists and not only fill the need of their communities, but also advocate for PRM in their country. Via the survey, fellows endorsed using knowledge from the program quite frequently in their practice, as well as now having the ability to advocate for such resources for their patients in their home country. However, it is important to recognize the strengths and weaknesses of the program to date with respect to those being trained in South Africa who are attempting to fill this need in rehabilitation care. Additionally, the majority of current fellows reported that having this training encouraged them to bring new rehabilitation treatments to their current establishments as well as advocate/share ideas for new rehabilitation methodologies, what we envision will be a foundation for a long-term sustainable rehabilitation medicine platform in South Africa.

The virtual nature of the program certainly allows the training to meet a far-reaching

trainee base in many countries and many time zones. This was especially helpful during the novel coronavirus disease 2019 (COVID-19) pandemic where in-person access was limited. It also fosters a unique culture of collaboration in the international medicine community. The diversity of the program is imperative, as it allows trainees from around the world to bring their knowledge and experiences together. Furthermore, the diversity in educators from across the rehabilitation world is a significant asset to the program to be sure that the curriculum is not biased by one particular training institution. This network of instructors allows the IRF to incorporate leaders in all the subdivisions of rehabilitation medicine from TBI and SCI, to medically complex and sports medicine.

While the diverse nature of the program allows for many trainees to have access to learning, it can be difficult to “individualize” the program to meet specific needs and trends in one’s given country which can have its own unique medical and political challenges. As we mentioned previously, South Africa has its own specific sociopolitical challenges, and it can be difficult to address these in a program of this magnitude. Moreover, increased hands-on support from the South African physician mentors of IRF and at a government level is still needed. One fellow wrote in their survey, *“we need to start most of the rehab services but still we couldn’t because of limited capacity. So, strongly we need support.”* Additionally, in a fellowship that is predominantly virtual, it can be difficult to incorporate hands on training opportunities to the degree that trainees would like with one fellow writing “basic practical exposure is lacking.” Increasing individual faculty mentorship relationships and learning materials (i.e., textbooks, case studies, etc.) are further areas of improvement for the program. Feedback from fellows included the need for *“textbook and written info or articles, guidelines etc. before the start of the fellowship. It is a broad field and can’t all be learned in two years.”*

Given the uniqueness of this study, several limitations should be acknowledged, beginning with the small sample size of both the rehabilitation medicine experts and the fellowship cohort within a nation as large and

diverse as South Africa. This can make our data susceptible to sampling bias. However, the diversity of opinions from physicians of different training levels and from different regions of South Africa is imperative. As the survey was optional, there were fellows that did not respond to all the questions which, thus, may give us a limited viewpoint of the state of rehabilitation medicine across South Africa. In the future, we attempt to collect more data from future IRF fellowship classes to have a larger sample size and eventually be able to demonstrate trends between classes.

In conclusion, South Africa remains one of the few developed nations that has yet to recognize the field of rehabilitation medicine and develop training programs in the field. However, the need for this area of medicine still remains great. Organizations such as the IRF have developed a successful blueprint to not only train current South African physicians in rehabilitation medicine, but also to develop a foundation for training future generations of African rehabilitation specialists. Increasing the footprint of rehabilitation medicine on the national level will help demonstrate to government officials the potential benefit of PRM in successfully returning medically vulnerable populations back to active society after injury. On the other hand, government recognition of the field and support of training programs is needed to take the necessary steps forward to meet rehabilitation standards in the international medical community.

Declaration of Conflicting Interests

The authors declare that there are no conflicts of interest with respect to the research, authorship, and/or publication of this article.

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Author Contributions

G.R.M., A.H., M.C., H.M.: Designed research (project conception, development of overall research plan, and study oversight); G.R.M., M.C., A.H., V.W., F.T.: Conducted research (hands-on conduct of the experiments and data collection); NA.: Provided essential reagents or provided essential materials (applies to authors who contributed by

providing animals, constructs, databases, etc., necessary for the research); G.S.: Analyzed data or performed statistical analysis; G.R.M.: Wrote paper (only authors who made a major contribution); G.R.M., A.H.: Had primary responsibility for final content. All authors have read and approved the final manuscript.

Data Availability

The datasets generated and/or analyzed during the current study are available from the corresponding author on reasonable request.

AI Disclosure

The authors declare that artificial intelligence (AI) tools were not used, or were used solely for language editing, and had no role in data analysis, interpretation, or the formulation of conclusions. All scientific content, data interpretation, and conclusions are the sole responsibility of the authors. The authors further confirm that AI tools were not used to generate, fabricate, or 'hallucinate' references, and that all references have been carefully verified for accuracy.

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