



Physical Medicine and Rehabilitation in Iran: The Strength, Weakness, Opportunity, and Threat Matrix Analysis

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Keywords

Strengths, weaknesses, opportunities, and threats (SWOT) analysis; Physical medicine and rehabilitation; Iran

Abstract

Background: Improving the quality of rehabilitation services is one of the priorities of the health care system. The aim of this study was to identify the strengths, weaknesses, opportunities, and threats (SWOT) of physical medicine and rehabilitation (PM&R) field in Iran using the SWOT analysis.

Methods: This descriptive-analytical study was conducted in 2017 and 2018. The final list of SWOT was arranged using the Delphi technique, combining similar responses and removing marginal responses by an 8-member committee consisting of members of the Iranian Society of PM&R. Internal and external environmental factors were evaluated and measured by participants. Participants were selected from faculty members, executive planners, and residents; 18, 9, and 6 persons respectively. Finally, the strategies and strategic position were determined considering SWOT scores and using a four-cell SWOT matrix.

Results: The total score of internal environmental factors (strengths and weaknesses) in evaluation matrix was 245, indicating that there were more weaknesses than strengths. The total score of external environmental factors (opportunities and threats) in evaluation matrix was 264, which indicated that there were more opportunities than threats.

Conclusion: SWOT analysis promoted awareness among service providers regarding the current functioning of a rehabilitation program. According to the SWOT model results in this study, five development strategies were determined using opportunities and strengths. It can be assumed that the strengths may be used to benefit from opportunities as much as possible. Determining the strategies based on strategic position analysis appears to be the first priority to solve the problems of PM&R.

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Introduction

Considering the development of communities and increased life expectancy in different countries, rehabilitation services are provided for disabled patients and their families.^{1,2} Given that these services are not fully covered by insurance organizations, their provision is challenging, especially in developing countries.^{3,4} These challenges include a shortage of rehabilitation hospital beds and less or lack of access to these services across the countries.⁵

The first residency course in physical and rehabilitation medicine in Iran was launched in 1982 at Shiraz University of Medical Sciences, Shiraz, and in 1992, the second residency course was commenced at the AJA University of Medical Sciences, Tehran. Eventually, Tabriz University of Medical Sciences, Tabriz (in 1994) and Shahid Beheshti University of Medical Sciences, Tehran (in 1996) also accepted residency course. In the recent years, Isfahan University of Medical Sciences, Isfahan, Baqiyatallah University of Medical Sciences, Tehran, Iran University of Medical Sciences, Tehran, Tehran University of Medical Sciences, Tehran, Shahid Sadoughi University of Medical Sciences, Yazd, and Hamadan University of Medical Sciences, Hamadan, have been added (Table 1). There are 580 specialists/physicians in the field of physical medicine and rehabilitation (PM&R).

Improving the quality of rehabilitation services is one of the priorities of the health care system. For this purpose, researchers and policy makers have designed and developed

processes to assess the views and vision of the current system to introduce new models.^{6,7} New tools and strategies have been used to evaluate the current situation, identify strengths and weaknesses, and change or revise system to meet the needs. Meanwhile, several models and procedures have been proposed for the planning and evaluation, including scenario analysis, strength, weakness, opportunity, and threat (SWOT) system, Apollo model, and others.⁶⁻⁸

Though the SWOT matrix is one of the most useful techniques for planning and analysis of strategy today, it is used by strategy designers and evaluators as a new tool to analyze the strengths and weaknesses.^{9,10} Strategic management evaluates the interaction between internal and external environment, through formulation of appropriate strategies. The SWOT matrix investigates the external environment to discover opportunities and threats and the internal environment to understand strengths and weaknesses. The strategic analysis includes the measures and plans which aim to maximize opportunities and strengths and minimize the weaknesses and threats.^{11,12} Hence, this is one of the most important tools for compiling an organization's SWOT. This model provides a systematic analysis to identify factors and select some appropriate strategies. The opportunities and threats are compared with weaknesses and strengths to identify an internal and external consistency model; this model may be one of the following cases: (1) internal strengths (S), (2) internal weaknesses (W), (3) external opportunities (O), (4) external threats (T).^{11,13}

Table 1. Accepted residents of physical medicine and rehabilitation (PM&R) in Iran during 2010-2018

| University of Medical Sciences | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 |
|--------------------------------|------|------|------|------|------|------|------|------|------|
| AJA | 3 | 2 | 3 | 3 | 3 | 4 | 3 | 3 | 3 |
| Iran | 2 | -* | -* | 6 | 6 | 9 | 9 | 9 | 9 |
| Baqiyatallah | 2 | 3 | 3 | 2 | 3 | 4 | 1 | 2 | 3 |
| Isfahan | 3 | 4 | 3 | 5 | 5 | 5 | 5 | 5 | 5 |
| Tabriz | 3 | 4 | 3 | 3 | 4 | 5 | 6 | 6 | 6 |
| Tehran | - | 5 | 6 | - | - | - | 3 | 3 | 3 |
| Shahid Beheshti | 3 | 5 | 3 | 5 | 6 | 7 | 7 | 7 | 7 |
| Shiraz | 5 | 5 | 4 | 5 | 5 | 5 | 6 | 7 | 7 |
| Shahid Sadoughi | - | - | - | - | - | - | - | 3 | 3 |
| Hamadan | - | - | - | - | - | - | - | - | 2 |
| Total | 21 | 28 | 25 | 29 | 32 | 39 | 40 | 45 | 48 |

*In 2011 and 2012, Iran University of Medical Sciences was integrated with Tehran University of Medical Sciences.

In Iran, PM&R services have many strengths and further improvement may promote these services. Some of the strengths include admission of PM&R students, the existence of highly-skilled individuals, provision of various services to patients with different types of medical conditions, and a balance of good pay and low stress.¹⁴⁻¹⁶ However, there are some weaknesses which can be modified to improve the quality of the system including the name of this branch of medicine in Iran, which is less known than other disciplines, fewer referrals from other physicians, low level of awareness and knowledge of scholars about this field of study, overlap with other specialties, and lack of a formal strategic plan and localized guidelines for patients.¹⁴ Therefore, considering the policy makers and researchers' concerns to assess and identify threats and opportunities to promote activities and make health care services affordable, the assessment of PM&R has become more important; particularly in Iran. As previously mentioned, the SWOT matrix was chosen because of its valid and reliable characteristics.^{17,18}

As far as we know, using this tool with the aim of analyzing the whole system of PM&R has not yet been considered. The aim of this study was to identify the SWOT of the PM&R field in Iran using the SWOT analysis.

Methods

This descriptive-analytical study was conducted in 2018. The qualitative study and SWOT analysis were used as research methods. The participants included 18 faculty members, 9 executive planners, and 6 residents (Table 2). They were selected due to their relevance to the nature of this study and having scientific and administrative experience with research subjects. Using a

convenience and targeted sampling method, the participants were selected from university professors, residents, experts, and planners of the research field. The experts were informed by experienced and trained interviewers about the aims and objectives of study, while the planners were informed by Iranian Society of PM&R. In addition, multiple meetings were held to inform the participants about the data collection method and to explain the methodology. In this survey, individual discussions were performed with experts and group discussions were conducted with planners. The final list of SWOT was arranged using the Delphi technique, combining similar responses and removing marginal responses by an 8-member committee consisting of members of the Iranian Society of PM&R.

Afterwards, the four scoring tables of internal factors analysis (strengths and weaknesses) and external factors analysis (opportunities and threats) were evaluated and measured by participants as follows:

Importance: the factors were scored in terms of importance from 1 to 10 (1 meaning low importance and 10 meaning high importance); so that, the total score of the internal factors was 100 and the sum of the scores of the external factors was 100.

Rating: the factors were scored in terms of current situation from 1 to 4. The internal factor scores were: 1 = fundamental weakness, 2 = relative weakness, 3 = relative strength, and 4 = fundamental strength. The external factor scores were: 1 = weak reaction, 2 = average reaction, 3 = good reaction, and 4 = excellent reaction.

Finally, the strategies and strategic position were determined considering SWOT scores and using a four-cell SWOT matrix.

Table 2. Demographics of participants

| | Gender | | Experience in PM&R (year) | | | | |
|--------------------|--------|--------|---------------------------|-----|-----|------|------|
| | Male | Female | 0 | 1-4 | 4-8 | 8-12 | > 12 |
| Faculty members | 14 | 4 | - | 3 | 5 | 6 | 4 |
| Executive planners | 7 | 2 | 8 | 1 | - | - | - |
| Residents | 4 | 2 | - | 6 | - | - | - |
| Total | 25 | 8 | 8 | 10 | 5 | 6 | 4 |

PM&R: Physical medicine and rehabilitation

Table 3. Matrix of internal environment factors (strengths)

| Strengths | | Importance | Rating 1 < x < 4 | Score |
|-----------|--|------------|------------------|-------|
| S1 | Presence of residency discipline | 6 | 4 | 24 |
| S2 | High quality experts in field | 6 | 4 | 24 |
| S3 | Providing a variety of clinical services | 8 | 3 | 24 |
| S4 | Well-developed educational planning | 5 | 3 | 15 |
| S5 | Interest and motivation of in-training and active physiatrist | 8 | 3 | 24 |
| S6 | Sufficient income and lack of job stress | 9 | 3 | 27 |
| S7 | Appropriate academic relationships between the universities | 5 | 3 | 15 |
| S8 | Communication with other countries and international organizations | 4 | 3 | 12 |
| S9 | Regular holding of annual scientific congresses | 8 | 3 | 24 |
| Total | | 59 | | 192 |

If the total score of internal factors (strength and weakness) was more than 250, this would mean that the strengths were dominant. In addition, if the final score of external factors (opportunities and threats) was more than 250, it would indicate that there was an appropriate relation between them by using opportunities and confronting threats.⁵⁻⁷

Results

The final scores of examining and identifying environmental factors (including internal environmental factors, i.e. strengths and weaknesses and external environmental factors, i.e. opportunities and threats) are provided in tables 3, 4, 5, and 6. Tables 3 and 4 show strengths and weaknesses.

According to table 3, the highest scores were assigned to providing a variety of clinical services and interest and motivation of

in-training and active physiatrists. Moreover, the highest importance was assigned to sufficient income and lack of job stress.

According to table 4, the highest score and highest importance was assigned to the non-organic title of specialty. Tables 5 and 6 show the opportunities and threats.

According to table 5, the highest score and importance was assigned to increasing interest in the PM&R field and its sub domains (including sports and geriatric medicine and cardiology).

According to table 6, the highest scores were assigned to lack of adequate public awareness about PM&R effectiveness and overlapping of activity domains with other fields. In addition, the highest importance was assigned to overlapping of activity domains with other fields. After determining the scores of internal and external factors, the total score is shown in table 7.

Table 4. Matrix of internal environmental factors (weaknesses)

| Weaknesses | | Importance | Rating 1 < x < 4 | Score |
|------------|--|------------|------------------|-------|
| W1 | Non-organic title of the specialty | 7 | 2 | 14 |
| W2 | Lack of proper coherence of experts' activities in line with the PM&R purposes | 3 | 1 | 3 |
| W3 | Lack of a comprehensive strategic plan | 6 | 2 | 12 |
| W4 | No explanation about guidelines in the field | 5 | 2 | 10 |
| W5 | Extensive overlap with other fields and specialties | 6 | 2 | 12 |
| W6 | Lack of post graduate courses (fellowship) | 4 | 1 | 4 |
| W7 | Short duration of training courses and lack of complete coverage of all aspects of the field | 3 | 1 | 3 |
| W8 | Lack of appropriate publicity or sufficient information for general population | 4 | 1 | 4 |
| W9 | Paucity of adequate and sophisticated medical devices | 3 | 1 | 3 |
| Total | | 41 | | 53 |

PM&R: Physical medicine and rehabilitation

Table 5. Matrix of external environmental factors (opportunities)

| Opportunities | | Importance | Rating $1 < x < 4$ | Score |
|---------------|---|------------|--------------------|-------|
| O1 | Increasing interest in PM&R field and its sub domains | 9 | 4 | 36 |
| O2 | Increased life expectancy in the elderly population | 8 | 4 | 24 |
| O3 | Earning high income in the field | 7 | 3 | 21 |
| O4 | Appropriate communications with Iranian and non-Iranian scholars abroad | 6 | 3 | 18 |
| O5 | Appropriate communications with the scientific communities | 5 | 3 | 15 |
| O6 | Positive attitude to education and research role in country | 6 | 3 | 18 |
| O7 | Special attention of health policy makers to rehabilitation | 7 | 3 | 21 |
| O8 | Special attention to non-surgical and non-pharmacological therapies | 9 | 4 | 36 |
| O9 | Compliance with laws based on the WHO rehabilitation act | 5 | 3 | 15 |
| Total | | 62 | | 204 |

WHO: World Health Organization; PM&R: Physical medicine and rehabilitation

Table 7 shows that the total score of internal environmental factors (strengths and weaknesses) in the evaluation matrix was 245; which indicates that there were more weaknesses than strengths. The total score of external environmental factors (opportunities and threats) in the evaluation matrix was 264, demonstrating that in the current situation, Iranian Society of PM&R should boost opportunities to cope well with threats.

All systems prefer a situation in which they may simultaneously maximize their strengths and opportunities; in such a situation, strengths are used to benefit from opportunities as much as possible. The overall scores of internal and external environment factors are shown in figure 1.

According to figure 1, the overall score of the vertical axis (external factors) is 264 and the overall score of the horizontal axis (internal

factors) is 245. The intersection point of these two scores is in the strength and opportunities area; generally, any system should be located in this area.

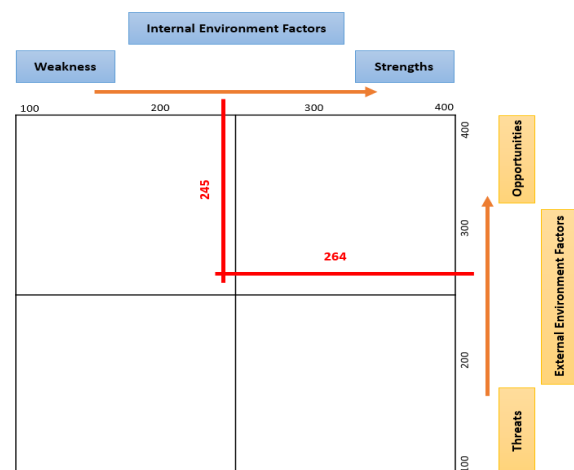


Figure 1. Strengths, weaknesses, opportunities, and threats (SWOT) matrix

Table 6. Matrix of external environmental factors (threats)

| Threats | | Importance | Rating $1 < x < 4$ | Score |
|---------|--|------------|--------------------|-------|
| T1 | Lack of full coverage by insurance organizations | 6 | 2 | 12 |
| T2 | Non-utilization of PM&R specialized competency in national health system | 4 | 1 | 4 |
| T3 | Lack of insurance regulations for service coverage | 3 | 1 | 3 |
| T4 | Lack of good social participation culture in society | 2 | 1 | 2 |
| T5 | Lack of sufficient public awareness about PM&R effectiveness | 6 | 2 | 12 |
| T6 | Overlapping the activity domains with other fields | 5 | 2 | 10 |
| T7 | Lack of adequate knowledge about PM&R in other specialities | 4 | 1 | 4 |
| T8 | Low education and research quota in national income capitation | 3 | 1 | 3 |
| T9 | Parallel activities of rehabilitation field in bachelor's degree of rehabilitation science | 5 | 2 | 10 |
| Total | | 38 | | 60 |

PM&R: Physical medicine and rehabilitation

Table 7. Strengths, weaknesses, opportunities, and threats (SWOT) analysis

| | Internal | External |
|------------------|-----------|---------------|
| Positive | Strengths | Opportunities |
| Importance | 59 | 62 |
| Score | 192 | 204 |
| Negative | Weakness | Threats |
| Importance | 41 | 38 |
| Score | 53 | 60 |
| Total importance | 100 | 100 |
| Total score | 245 | 264 |

Analysis of SWOT matrix and comparing internal and external factors led to discovery of five development strategies using main opportunities and strengths (SO). Likewise, two conservative strategies were determined taking advantage of opportunities and

eliminating weaknesses (WO). Subsequently, two competitive strategies were specified using strengths to prevent external threats (ST), and two defensive strategies (WT) were introduced for the development of PM&R. Based on strategic position analysis, the development strategies were considered as the first priority to solve the problems of PM&R (Table 8).

Discussion

This study was carried out to analyze the SWOT of PM&R in Iran. These SWOT results can guide reorganizing and improvement of PM&R services, recognized as an useful tool for situational analysis, program evaluation, and quality improvement.^{19,20}

Table 8. Using analysis method and comparing the factors

| | Strengths | Weaknesses |
|----------------------|--|---|
| Opportunities | <ol style="list-style-type: none"> 1. Creating standard PM&R departments with high competence in all areas of field to meet the needs of residents who are interested and capable (S6 + O1) 2. Promoting the income and using correct codes of the service in order to earn money (S6 + O3) 3. Detailed description of capabilities in terms of PM&R efforts, particularly in prevention, treatment, and rehabilitation of different social groups including persons with disabilities and disabled elderly people, along with an enhanced quality of life for persons by using qualified services or health policy decision-making (S3 + O7) 4. Effective sustainability communication with world-renowned universities and scholar academies and the ISPRM to share educational and professional experiences and establish assistant exchange programs (S4 + O4) 5. Conducting targeted applied research on different applications of PM&R techniques of health, holding national and international congress and meetings, and participation in execution of national and international projects in collaboration with ISPRM and WHO (S9 + O6 + O9) | <ol style="list-style-type: none"> 1. Running fellowship training program such as SCI and stroke, that is supported by health policy makers as number of involved people has increased (W6 + O2) 2. Necessity for running WHO acts by the government by creating, empowering, and equipping rehabilitation disciplines (W9 + O9) |
| Threats | <ol style="list-style-type: none"> 1. Running a workshop and lecture for general population and care-givers annually and interim congress and meeting on related topics (S9 + T5) 2. Academic professional empowerment in common specialized fields and other discipline practices to gain advantage in referring and getting involved with PM&R disciplines (T6 + S3) | <ol style="list-style-type: none"> 1. Increasing residency course duration from three years to four years and emphasizing on specific areas of field including rehabilitation planning, using physical medicine modalities, precision in conducting electro diagnostic methods, setting up departments and inpatient rehabilitation services to reduce overlap and reinforce interdisciplinary actions (W3 + T2) 2. Active participation in rehabilitation strategy association to determine the role of PM&R specialist in health chain of Iran and also prepare and provide guidelines and regulations related to the position of PM&R specialist (W3 + T2) |

PM&R: Physical medicine and rehabilitation; ISPRM: International society of physical and rehabilitation medicine; WHO: World Health Organization

SWOT was originally introduced for business planning. It has been used, however, in the medical field for program development and strategic planning as well as for documenting service organization to improve the current medical care system.²¹ Five studies were used to analyze the SWOT results of rehabilitation services. Ma et al. applied the results of analysis to develop assistive devices for bathing of patients with hemiplegia. They concluded that SWOT analysis could help define user requirements, assistive device features, and environmental factors required to foster independence.²² Camden et al. evaluated the pediatric rehabilitation program by SWOT analysis in Quebec, Canada. According to their report, favorable organizational climate and interdisciplinary work were considered as strengths of the program, whereas weaknesses included lack of psychosocial support needs of families and long waiting times for children. Furthermore, opportunity and threats included collaboration with community partners and fear of losing professional autonomy with the new service model, respectively. The analysis results helped the committee redefine the program goals and make informed decision to improve service coordination.²

Sharma used SWOT to critically evaluate the literature related to community-based rehabilitation programs. The study showed that many of the evaluations were done in community-based settings and modern data collection techniques were used as strengths. On the other hand, lack of consistency in outcome measures and cost benefit analysis were the weaknesses.²³ According to SWOT analysis of a community-based rehabilitation program in Vietnam, attitudes toward disabled people have changed (strength); in addition, more awareness about rehabilitation workers was needed (weakness). Funding issues were threats and promoting the participation of all people was considered as an opportunity.²⁴ In another study in Australia with the same question in

Vietnam, there were somewhat different results. The analysis showed that high focus on community was identified as the strength, though lack of stronger partnership with government departments was the weakness. Moreover, the knowledge of the involved people was considered as an opportunity and the poor communication systems and procedures were introduced as threat items.²⁵ In all studies, SWOT analysis was 'informative for the service and other stakeholders' and it helped better recognize the services and foster quality improvement in the majority of these studies.

Conclusion

SWOT analysis promoted awareness among service providers regarding the current functioning of a rehabilitation program. According to SWOT model results in this study, five development strategies were determined using opportunities and strengths: 1) creating standard PM&R departments with high competency in all areas of field to meet the needs of residents who are interested and capable, 2) promoting the income and using correct codes of the service in order to earn money, 3) detailed description of capabilities in terms of PM&R efforts, particularly in prevention, treatment, and rehabilitation of different social groups including persons with disabilities and disabled elderly people, along with an enhanced quality of life for persons by using qualified services or health policy decision-making, 4) effective sustainability communication with world-renowned universities and scholar academies and the International Society of Physical and Rehabilitation Medicine (ISPRM) to share educational and professional experiences and establish assistant exchange programs, 5) targeted applied research on different applications of PM&R techniques of health, holding national and international congress and meetings, and participation in execution of national and international projects in collaboration with ISPRM and World Health

Organization (WHO). It can be assumed that the strengths may be used to benefit from opportunities as much as possible and determine strategies based on strategic position analysis to be the first priority to solve the problems of PM&R.

In general, the goals and objectives of the country may be obtained by considering the impact of micro and macro environment factors:

Macro level:

1. Justifying true belief in impact of rehabilitation medicine as a complementary factor in the health chain, in health macro policymakers
2. Empowering scientific and professional relationship between different medical and paramedical internal and external fields
3. Promoting and organizing training programs and informing the public through

press, conferences, social networks, and broadcasting

Micro level:

1. Equipping different departments, units, and centers of PM&R services with modern training and treatment equipment
2. Emphasizing special areas of this discipline in education departments
3. Empowering and enhancing spirit of cooperation and synergy between educational groups and colleagues

Acknowledgments

The study was approved by the Ethical Committee of Shahid Beheshti University of Medical Sciences and conducted in accordance with the ethical guidelines of the Declaration of Helsinki (IR.SBMU.RETECH.REC.1397.233).

Conflict of Interest

Authors have no conflict of interest.

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