



Knowledge, Attitude, and Practice of General Practitioners Toward the Rehabilitation Field and Team Experts in Shiraz, Iran, in 2018

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Abstract

Background: General practitioners (GP) are the keystones in the process of referring patients in Iran. To refer patients to rehabilitation experts effectively and accurately, GPs need to be equipped with knowledge and understanding of physical medicine and rehabilitation (PMR) and its roles and have a positive attitude toward collaborating with rehabilitation teams.

Objectives: The current study aimed at evaluating the knowledge, attitude, and practice (KAP) of GPs in Shiraz, Iran, toward the rehabilitation field and teamwork.

Methods: The current cross sectional study assessed the KAP of GPs working in public and private health sectors in Shiraz, Iran, in 2018 via a researcher-made questionnaire. Participants were recruited using the stratified random sampling method.

Results: A total of 200 GPs completed the study. The mean score of knowledge was 13.54 ± 2.68 (ranging from 0 to 24), and the mean score of attitude 10.84 ± 2.47 (ranging from 0 to 20). Regarding practice, none of the participants (0%) had a monthly average of more than five referrals to a physiatrist. Thirty-eight (19%) respondents were interested in choosing PMR as a specialty.

Conclusions: According to the current study findings, GPs in Shiraz, Iran, are not equipped with adequate knowledge of rehabilitation and have a moderate attitude toward collaborating with a rehabilitation team. GPs rarely use PMR consultations for their patients' complications. Policymakers should advocate for a higher level of collaboration between GPs and rehabilitation teams and find ways to better familiarize healthcare providers with PMR.

Keywords: Health Knowledge, Attitudes, Practice, Physical and Rehabilitation Medicine, General Practitioners, Iran, Rehabilitation

1. Background

General practitioners (GP) play a key role in primary healthcare in Iran (1). They act as gatekeepers who identify the needs of their patients and decide on the health services required for the better management of their complications (2). A great majority of patients visited by GPs require referral to a rehabilitation team. The rehabilitation team consists of physiotherapists, occupational therapists, speech therapists, social workers, psychologists, prosthetists, orthotists, and physical medicine and rehabilitation (PMR) physicians, also known as physiatrists (3). Physiatrists act as the team leaders and coordinators. They utilize interventions such as speech-language therapy, respiratory physical therapy, and cardiac rehabilitation (4) to

improve the physical, mental, and occupational function and quality of life (QoL) of their patients and their caregivers (5, 6).

To refer patients to rehabilitation experts effectively and accurately, GPs need to be equipped with knowledge and understanding of PMR and its services. The Iranian Board of PM&R was established in 1982 (7), and the first-ever PMR residency program was also offered in the same year; hence, PMR is considered a novel specialty in Iran. Unfortunately, many medical universities do not include a PMR rotation in their educational curricula (8), and medical students, as future physicians, are not adequately exposed to the realm of alternative medicine, including PMR (9).

Therefore, the current study aimed at assessing the knowledge, attitude, and practice (KAP) of GPs working in

a populous city in Southern Iran toward the rehabilitation field and teamwork.

2. Objectives

The current study results can help the authorities identify the pitfalls of medical school and continuing medical education (CME) curriculum regarding PMR.

3. Methods

3.1. Participants and Settings

The current cross sectional study assessed the KAP of GPs working in public and private health sectors in Shiraz, Iran, in 2018.

A list of all medical facilities was obtained from the Deputy of Health, Shiraz University of Medical Sciences. The study population was divided into public and private based on the work sector. Random samples were taken from each stratum using the random numbers table. By employing the rule of thumb and assigning a minimum of five participants to each variable, a minimum sample size of 180 was decided to be adequate. A trained researcher personally distributed the questionnaires among the participants and explained the objectives of the study. Lack of consent and incomplete forms were determined as the exclusion criteria.

3.2. Designing the Questionnaire

After a thorough literature review, a researcher-made questionnaire was developed. To determine the validity of the questionnaire, four attending psychiatrists, with more than 10 years of work experience, were invited to participate in the face and content validity survey. The validity of each item was rated based on a four-point Likert scale. For content validity, the survey contained the following four inquiries: relevance, clarity, simplicity, and ambiguity of each item in the questionnaire. For face validity, the survey inquired about the clarity of the wording, the likelihood that the target audience would be able to answer the questions, and the layout and style of the questionnaire. The test-retest reliability was conducted on 15 GPs taking the questionnaire twice with a two-week interval.

The final copy of the questionnaire consisted of two parts. The first part was about demographic features, including age, gender, and professional background of the participant, such as the workplace, access to the Internet at the workplace, years of work experience, and the number of years working as a family physician. The second part consisted of 35 items categorized into three main domains, as follows:

1- Knowledge: Twelve items covered history-taking and physical examination, diagnosis, and management. The items were scored as 2 (Yes), 1 (To some extent), or 0 (No). The knowledge score ranged from 0 to 24.

2- Attitude: Twelve items covered different fields of rehabilitation. For items 1 - 10, the respondents had to indicate whether the statement was true or false. Choosing True yielded a score of 2 and False/I don't know a score of 0. Responses to items 11 and 12 were not scored, since the respondents had to rank the choices based on their preference. Hence, the attitude score ranged from 0 to 20. Responses to items 11 and 12 were analyzed and reported in the results.

3- Practice: Eleven multiple-choice questions mainly focused on the referral of patients to rehabilitation experts. Responses to items of this section were not scored, but they were analyzed and reported in the results.

3.3. Ethical Considerations

The study protocol (study number: 16051) was approved by the Ethics Committee of Shiraz University of Medical Sciences on 01 July 2018 (ethical code: IR.sums.med.rec.1397.161). Anonymity was guaranteed by coding the questionnaires. Written informed consent was obtained from all participants as part of the questionnaire.

3.4. Statistical Analysis

Data were analyzed using SPSS version 25.0 (Armonk, New York: IBM Corp.). Values were expressed descriptively as mean \pm standard deviation (SD) and frequency (%). One-way ANOVA, independent *t*-, Pearson chi-square, and Fisher exact tests were used to analyze data. A two-tailed P-value of < 0.05 was considered statistically significant.

For comparing the current study results objectively and qualitatively with those of other studies, the knowledge and attitude scores were divided into three groups, using tertiles of the scores for each section as the cut-off. The knowledge scores ranged from 0 to 24; therefore, scores ≤ 8 were considered low, > 16 high, and 8 - 16 moderate. The attitude scores ranged from 0 to 20; hence, scores ≤ 6 implied low, ≥ 14 high, and 6 - 14 moderate.

4. Results

4.1. Assessing the Questionnaire

All four attending psychiatrists completed the validity survey, and the results showed that every item of the questionnaire had an item-content validity index (I-CVI) of 1 with a probability of chance (Pc) of 0.0625. Therefore, inter-rater agreement (kappa) and scale-content validity index (S-CVI) were 1. According to I-CVI, S-CVI, Pc, and kappa

statistic, the questionnaire had an excellent face and content validity.

The test-retest reliability was satisfactory based on the first and second attempts of the 15 GPs (the Spearman rank correlation coefficient = 0.89).

4.2. Demographic Features

A total of 200 GPs completed the survey, of whom 105 (52.5%) were female, 40 (20%) aged 30 - 35 years, 112 (56%) worked in an office, 40 (20%) had 1 - 6 years of work experience, and 58 (29%) had only one year of work experience as a family physician.

Results showed that 178 GPs (89%) had passed a PMR course during their internship, and 140 (70%) attended two continuing medical education (CME) courses on rehabilitation during their practice. Knowledge and attitude scores had no significant correlations with age, workplace, years of work experience, years of working as a family physician, and passing a PMR course during the internship (See supplementary file Appendix 1 for comparisons of the mean scores of knowledge and attitude in different subgroups). Table 1 shows the demographic features of the participants.

4.3. Knowledge

The mean knowledge score was 13.54 ± 2.68 (with a minimum of seven and a maximum of 19). Eight respondents (4%) scored low, 163 (81.5%) moderate, and 29 (14.5%) high on the knowledge section of the questionnaire. Hence, most GPs had a moderate knowledge of PMR.

All participants (100%) were aware of the role of heat therapy modalities in chronic musculoskeletal pain management. Table 2 shows the results of the knowledge section.

4.4. Attitude

The mean score of attitude was 10.84 ± 2.47 (with a minimum of two and a maximum of 16). Of the participants, 12 (6%) scored low, 155 (77.5%) moderate, and 33 (16.5%) high on the attitude section of the questionnaire. Hence, most GPs had a moderate attitude toward PMR.

All participants (100%) had a positive attitude toward using speech therapy to treat speech disorders, such as stuttering.

Eighty physicians (40%) chose cancer and 52 (26%) cardiac disease patients as the top priority to receive rehabilitative care. Forty-four physicians (22%) ranked bedsores and 44 (22%) joint contracture as the top complications of immobility, which can be prevented by referral to a rehabilitation expert. Table 3 shows the results of the attitude section.

Table 1. Baseline Features of the Participants

Variable	No. (%)
Gender	
Male	95 (47.5)
Female	105 (52.5)
Age (y)	
30 - 35	40 (20)
35 - 40	38 (19)
40 - 45	28 (14)
45 - 50	38 (19)
50 - 55	31 (15.5)
55 - 60	25 (12.5)
Years of work experience	
1 - 6	40 (20)
7 - 11	39 (19.5)
12 - 17	28 (14)
18 - 23	37 (18.5)
24 - 29	31 (15.5)
≥ 30	25 (12.5)
Years working as a family physician	
1	58 (29)
2	41 (20.5)
3	31 (15.5)
4	47 (23.5)
5	23 (11.5)
Rehabilitation course during internship	
Yes	178 (89)
No	22 (11)
Number of continuing education courses	
One	53 (26.5)
Two	140 (70)
Workplace	
Office	112 (56)
Hospital	30 (15)
Public clinic	34 (17)
Private clinic	24 (12)
Internet access at the workplace	
Yes	200 (100)
No	0 (0)

4.5. Practice

The top priority of 60 GPs (30%) to refer patients for electromyography and nerve conduction velocity (EMG-

Table 2. Results of the Knowledge Section of the Questionnaire

Item & Choices	No. (%)
1. Are you familiar with history-taking and physical examination related to PMR?	
Yes	127 (63.5)
To some extent	0 (0)
No	73 (36.5)
2. Are you familiar with therapeutic injections in specific joints, soft tissue, and peripheral nerves for pain management?	
Yes	135 (67.5)
To some extent	0 (0)
No	65 (32.5)
3. Are you familiar with orthotic and prosthetic prescription and checkout?	
Yes	0
To some extent	40 (20)
No	160 (80)
4. Are you familiar with different types of pathologic gait, such as spastic, myopathic, and antalgic?	
Yes	0 (0)
To some extent	123 (61.5)
No	77 (38.5)
5. Have you ever observed an EMG-NCV^a test being performed?	
Yes	87 (43.5)
To some extent	-
No	113 (56.5)
6. Are you familiar with different axial and peripheral joint manipulation techniques?	
Yes	41 (20.5)
To some extent	24 (12)
No	135 (67.5)
7. Are you familiar with transcutaneous electrical nerve stimulation used to alleviate musculoskeletal and neuropathic pain, according to the gate theory of pain?	
Yes	19 (9.5)
To some extent	36 (18)
No	145 (72.5)
8. Did you know that speech therapy is useful to treat dysphagia?	
Yes	157 (78.5)
To some extent	0 (0)
No	43 (21.5)
9. Did you know that occupational therapy can increase the quality of life in patients with traumatic brain injury?	
Yes	159 (79.5)
To some extent	0 (0)
No	41 (20.5)
10. Did you know that the nerve conduction velocity test is the gold standard for the diagnosis of carpal tunnel syndrome, which is one of the main causes of numbness and tingling in the hands?	
Yes	158 (79)
To some extent	0 (0)
No	42 (21)
11. Did you know that the heat therapy modalities, such as ultrasound, heating pads, and infrared light, reduce chronic musculoskeletal pain?	
Yes	200 (100)
To some extent	0 (0)
No	0 (0)
12. Did you know that the cold therapy modalities reduce pain and edema in the acute phase of sports-related musculoskeletal injuries?	
Yes	158 (79)
To some extent	0 (0)
No	42 (21)

^aElectromyography-nerve conduction velocity

Table 3. Results of the Attitude Section of the Questionnaire

Item & Choice	Priority	No (%)
1. Speech therapy is beneficial in the treatment of aphasia due to stroke or traumatic brain injury.		
True	-	152 (76)
False	-	48 (24)
2. Speech therapy is beneficial in the treatment of speech disorders, such as stuttering.		
True	-	200 (100)
False	-	0
3. Speech therapy improves cognition in patients with stroke or traumatic brain injury.		
True	-	139 (69.5)
False	-	61 (30.5)
4. Biofeedback is beneficial in the treatment of urinary incontinence.		
True	-	46 (23)
False	-	154 (77)
5. Manual chest maneuvers, such as chest vibration and chest percussion, used by physiotherapists, improve respiratory function.		
True	-	49 (24.5)
False	-	151 (75.5)
6. Hydrotherapy reduces musculoskeletal pain.		
True	-	145 (72.5)
False	-	55 (27.5)
7. Occupational therapy plays a pivotal role in teaching disabled patients how to perform daily life activities.		
True	-	133 (66.5)
False	-	67 (33.5)
8. Cardiac rehabilitation programs held by physiatrists improve the quality of life after cardiac surgery.		
True	-	21 (10.5)
False	-	179 (89.5)
9. Ultrasound and fluoroscopy-guided interventions reduce musculoskeletal pain.		
True	-	13 (6.5)
False	-	187 (93.5)
10. Physical therapy modalities and prescription of drugs and botulinum toxin reduce spasticity in upper motor neuron diseases, such as stroke.		
True	-	186 (93)
False	-	14 (7)
11. Which group is preferred for receiving rehabilitative care?(Prioritize choices based on your preference)		
Orthopedic diseases	First	20 (10)
Neurologic diseases	First	7 (3.5)
Burn victims	First	37 (18.5)
Cancer	First	80 (40)
Cardiac diseases	First	52 (26)
12. Which complication can be prevented by referring bedridden patients to rehabilitation experts?(Prioritize choices based on your preference)		
Bedsore	First	44 (22)
Respiratory infections	First	14 (7)
Urinary tract infections	First	24 (12)
Muscular atrophy	First	11 (5.5)
Depression	First	27 (13.5)
Osteoporosis	First	41 (20.5)
Joint contracture	First	44 (22)

NCV) testing was neuromuscular junction disorders. No significant relationship was found between GPs' main exposure to rehabilitation specialists, interest in the PMR specialty and the average monthly number of referring patients to physiatrists and physiotherapists and gender, age, years of work experience, and passing a PMR course during the internship (See supplementary file Appendix 1). [Table 4](#) shows the results of the practice section.

5. Discussion

The current study aimed at evaluating the KAP of GPs in Shiraz, Iran, toward rehabilitation and teamwork. In total, GPs had moderate knowledge and attitude toward rehabilitation.

It was observed that GPs passing a PMR course during their internship or attending CME programs on rehabilitation during their practice did not differ significantly from their counterparts who did not. In contrast, Kirshblum et al., studied the knowledge of PMR among 4th-year medical students before and after the completion of a mandatory two-week clerkship and concluded that, despite marginal knowledge, the program increased the awareness of the practice of physiatry (10). In addition, only a small portion of participants became familiar with the scope of PMR services in medical school, while the majority became familiar through collaborating with rehabilitation experts during their practice. Conversely, a survey of doctors in Central Europe showed that only one-third of the participants mentioned their colleagues as a source of knowledge of rehabilitation (11). Remarkably, the current study observed that the mentioned source of rehabilitation knowledge had no significant correlation with the completion of a PMR course during the internship. These findings indicate that the CME curriculum used in Iranian medical school and CME curriculum used in Iran are inefficient to spark interest and enthusiasm in the participants.

History-taking and physical examinations are crucial to making the right diagnosis (12); however, some GPs in the current study were unsatisfied with their adequacy in history-taking and physical examination related to PMR. Most physicians believed that their knowledge of musculoskeletal disorders is low, particularly in physical examination (13). Medical students also expressed low to moderate confidence in performing a musculoskeletal physical examination (14). Authors believe that policymakers should revise the medical school curriculum to empower physicians with better history-taking and physical examination skills related to PMR.

Khosrawi et al., (15) assessed the knowledge and attitude of medical students in Isfahan, Iran, toward PMR and found a high attitude toward it. In the current study, GPs

had a moderate attitude toward PMR. The higher attitude of medical students, as future physicians, can be beneficial to the future development and growth of PMR in Iran.

A study conducted in Hungary concluded that physicians do not have enough knowledge of rehabilitation to practice medicine adequately (16). The current study observed that GPs in Iran had a moderate knowledge of PMR. It was also revealed that their highest knowledge was of using heat therapy modalities to manage chronic musculoskeletal pain, followed by occupational therapy to improve the QoL of patients with a traumatic injury. However, results of a study on 600 medical residents in Iran showed that rehabilitation of central nervous system disorders, electrodiagnostic studies, and prescription of physical therapy modalities were the best-known areas of PMR (17). The current study noticed that GPs did not understand the limited use of EMG-NCV in conditions such as multiple sclerosis and stroke.

On a monthly average, most GPs did not refer any patients to physiatrists and speech therapists. The current study results were consistent with those of another study on dysphagia management (18). Farpour et al. showed that although almost all of the healthcare providers believed that dysphagia should be managed multidisciplinary, most of them referred their patients to gastroenterologists and otorhinolaryngologists while speech therapists along with physiatrists were mentioned less frequently. The current study concluded that even though a multidisciplinary approach to disease management is agreed upon by healthcare providers, they are not informed enough about the PMR services to refer their patients to the needed specialists. In fact, they tend to refer the patients to orthopedic surgeons or neurosurgeons for routine complaints, such as back pain, while the majority of such patients could benefit from a visit by a physiatrist (19, 20).

It is estimated that a high number of monthly referrals to physiotherapists might be the result of an inability to distinguish the definition of PMR from physiotherapy (21, 22).

5.1. Study Limitations

The current study had several limitations. It was conducted on 200 physicians working in a city in Southern Iran. Further studies with larger sample sizes selected in multiple cities are required for accurately representing the population of GPs in Iran. Given the lack of a standardized questionnaire, there was no choice but to develop a questionnaire. Although the researcher-made questionnaire had satisfactory validity and reliability, a standardized questionnaire, designed for this purpose, can better evaluate the study population.

5.2. Conclusions

According to the findings of the study, GPs in Shiraz, Iran, lacked adequate knowledge of rehabilitation. The effectiveness of the medical school and CME programs in PMR is questionable since they did not impact GPs knowledge and attitude scores. GPs had a moderate attitude toward collaborating with a rehabilitation team, and they rarely used PMR consultation for patients complications. Policymakers should advocate for a higher level of collaboration between GPs and rehabilitation teams and find ways for better familiarization of healthcare providers with PMR.

Supplementary Material

Supplementary material(s) is available [here](#) [To read supplementary materials, please refer to the journal website and open PDF/HTML].

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Footnotes

Authors' Contribution: Study concept and design: HR. F.; Acquisition of data: M. M.; Analysis and interpretation of data: KS. D. and M. M.; Drafting of the manuscript: HR. F., KS. D., and M. M.; Critical revision of the manuscript for important intellectual content: S. F., HR. F., KS. D., and M. K.; Statistical analysis: M. K., KS. D., and M. M.; Administrative, technical, and material support: HR. F.; Study supervision: S. F., HR. F. and M. K.

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Informed Consent: Written informed consent was obtained from all the participants as part of the questionnaire. Anonymity was guaranteed by coding the questionnaires. Lack of consent was considered the exclusion criterion.

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Table 4. Results of the Practice Section of the Questionnaire

Item & Choice	Priority	No. (%)
1. When was your main exposure to rehabilitation specialists?		
Medical school curriculum	-	23 (11.5)
During practice	-	177 (88.5)
2. Are you interested in choosing physical and rehabilitation medicine as your specialty?		
Yes	-	38 (19)
No	-	162 (81)
3. Referral of patients to a rehabilitation expert can treat and improve the quality of life in which conditions?(Prioritize choices based on your preference)		
Stroke	First	0 (0)
Cerebral palsy	First	20 (10)
Poliomyelitis	First	11 (5.5)
Peripheral neuropathy	First	16 (8)
Osteoporosis	First	14 (7)
Limb amputation	First	12 (6)
Cardiac disease	First	22 (11)
Respiratory disease	First	17 (8.5)
Spinal cord lesion	First	9 (4.5)
Burns	First	13 (6.5)
Multiple sclerosis	First	14 (7)
Cancer	First	22 (11)
Dermatologic disease	First	12 (6)
Diabetes	First	15 (7.5)
4. For diagnosis of which disease/condition do you refer patients to rehabilitation specialists for electromyography-nerve conduction velocity testing?(Prioritize choices based on your preference)		
Multiple sclerosis	First	49 (24.5)
Stroke	First	30 (15)
Motor neuron diseases	First	12 (6)
Peripheral neuropathy	First	10 (5)
Myopathies	First	48 (24)
Neuromuscular junction diseases	First	60 (30)
5. On average, how many patients do you refer to physiatrists in a month?		
0	-	177 (88.5)
1-5	-	23 (11.5)
> 5	-	0 (0)
6. On average, how many patients do you refer to speech therapists in a month?		
0	-	181 (90.5)
1-5	-	19 (9.5)
> 5	-	0 (0)
7. On average, how many patients do you refer to occupational therapists in a month?		
0	-	180 (90)

1-5	-	20 (10)
> 5	-	0 (0)
8. On average, how many patients do you refer to physiotherapists in a month?		
0	-	0 (0)
1-5	-	17 (8.5)
> 5	-	183 (91.5)
9. On average, how many patients do you refer to technical orthopedists in a month?		
0	-	191 (95.5)
1-5	-	9 (4.5)
> 5	-	0 (0)
10. What is your goal to refer patients for orthoses to rehabilitation specialists?		
Preventing or treating deformities	-	150 (75)
Increasing limb function	-	50 (25)
Hindering limb weight-bearing	-	0 (0)
Pain reduction	-	0 (0)
Controlling involuntary movements	-	0 (0)
11. After reading and filling out the questionnaire, would you refer patients to rehabilitation experts?		
Yes	-	200 (100)
No	-	0 (0)