INTERNATIONAL JOURNAL OF
PHYSICAL THERAPY RESEARCH & PRACTICE
AN OFFICIAL JOURNAL OF SAUDI PHYSICAL THERAPY ASSOCIATION

Original Article

Assessing the Awareness and Practices of Physical Therapists in Managing Modifiable Risk Factors for Stroke in Saudi Arabia

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Article Info

Received : 17th January 2024
Accepted : 5th February 2024
Published : 12th February 2024

To Cite:. Bader Ali AlHenaki; Abdul Rahim Shaik. Assessing the Awareness and Practices of Physical Therapists in Managing Modifiable Risk Factors for Stroke in Saudi Arabia. International Journal of Physical Therapy Research & Practice 2024;3(2):151-160

Abstract

Aims & Objective: The current research on physical therapists' understanding of managing modifiable risk factors for stroke in Saudi Arabia is limited. This study aims to evaluate physical therapists' knowledge in Saudi Arabia on managing modifiable stroke risk factors and their prioritization of stroke prevention. It also seeks to understand the connection between therapists' awareness, experience, perceptions, and information access with their readiness to apply stroke prevention measures. **Methodology:** A cross-sectional online questionnaire survey was administered to registered Physical therapists in the Riyadh region between February and July of 2022. An online questionnaire was developed with 18 questions to evaluate the knowledge and perception of the Physical therapist about the risk factors and management of stroke. Socio-demographic information, participant's knowledge and perception of stroke risk factors, and participant's stroke risk factor sources of information. **Results:** The results of this survey suggest that while most physical therapists in Saudi Arabia have a good understanding of stroke risk factors, there are still some knowledge gaps that need to be addressed. The fact that a significant percentage of respondents were unsure about the relationship between some risk factors and stroke highlights the need for ongoing education and training for physical therapists in this area. **Conclusions:** The findings underscore the importance of education, training, work experience, and sources of knowledge in shaping physical therapists' beliefs and practice behaviors.

Key Words: Stroke Rehabilitation, Modifiable Risk Factor, Physical therapy Management, Stroke, Physical Therapy

Introduction

Stroke is defined by the World Health Organization as an acute, focal, or scattered form of brain dysfunction that originates from vessels and lasts more than a day (World Health Organization, n.d.). A stroke occurs when some brain cells die suddenly

because of lack of oxygen, causing the flow of blood to the brain to be cut off by a blockage or rupture of an artery leading to the brain (Johnson et al., 2019). Stroke is one of the primary causes of morbidity and mortality, it has a significant negative impact on communities (Feigin, Lawes, Bennett, & Anderson, 2003). The number of people affected is increasing all over the world; for example, in the United States, there are 800,000 new strokes each year. Stroke affects 1,000,000 people in Europe each year, with one-third dying and one-third suffering from permanent disability symptoms (Roger et al., 2012).

In Arab countries, stroke is a significant cause of death, particularly in developing nations. A review of stroke data from 1983 to 2008 in these regions revealed an incidence ranging from 27.5 to 63 cases per 100,000 people and a prevalence of 42 to 68 cases per 100,000 people (Benamer & Grosset, 2009). Ischemic stroke was the most common type, with non-lacunar infarctions being more frequent. While stroke types and risk factors were similar, some areas showed a higher rate of lacunar infarctions, warranting further investigation. Saudi Arabia, with a population of over 28 million, is experiencing a growing issue with stroke (Robert & Zamzami, 2014).

Socio-demographic, lifestyle, and behavioral factors significantly contribute to the rising incidence of health disorders like hypertension, diabetes mellitus, hyperlipidemia, and heart disease, which in turn elevate the risk of stroke in developing countries, including Saudi Arabia (Alharbi et al., 2019; Alqahtani et al., 2020). Early intervention, rehabilitation, and sustained lifestyle modifications play a crucial role in enhancing the recovery prospects of stroke survivors (Jensen & Thomalla, 2020; Shaik et al., 2021). Identifying the causative factors of a stroke is paramount in its treatment, where both modifiable and non-modifiable risk factors are associated. Modifiable risk factors such as hypertension, dyslipidemia, diabetes, cardiovascular issues, sickle cell anemia, high-fat diets, sleep apnea, obesity, smoking, chronic pain, migraines, substance abuse, oral contraceptive use, and a sedentary lifestyle significantly influence the likelihood of stroke occurrence and are areas where intervention can substantially reduce risk (Cui & Naikoo, 2019; O'Donnell et al., 2016).

Physical therapists are important in post-stroke rehabilitation, particularly in managing the secondary complications and comorbidities (Sutton et. al., 2021; Alabdulwahab, Ahmad & Singh, 2015). Even though these comorbidities can have a significant negative impact on functional outcomes and increase the risk of both hospital readmission and overall mortality, Physical therapy has a lot of potential as a non-pharmaceutical lifestyle and activity intervention regimen treatment for improving health and lowering the chances of having another stroke (Pomeroy & Tallis, 2000). Since Physical therapy is generally agreed upon as an integral part of stroke rehabilitation, with a primary focus on enhancing patients' functional abilities and mobility, there has been extensive study into the various types of knowledge physiotherapists draw upon when making decisions in clinical practice (Natarajan et. al., 2008).

Research has shown that when deciding which modalities or treatment programs to incorporate into their practice, physiotherapists rely on their initial training, the treatment techniques they learned during their initial training, their personal experience, prior trials with the effects of a treatment, continuing education concerned with practice that guides practice discussions and expert opinions, and the advice of colleagues (Alatawi, 2021). A recent survey of Saudi physiotherapists' preferred approaches to stroke rehabilitation revealed a need for increased education, experience, and understanding among the practitioners (Alanazi & Alrwaily, 2022).

Another study revealed that recently graduated physical therapists in Saudi Arabia lacked the knowledge about the strokes and the factors that increase a person's risk of having one, and the best ways to treat those who had already suffered one (Al-Senani et al., 2019). Despite the country's high standards, new data shows that Saudi Arabia lags other developed countries in stroke care (Al Khathaami et. al., 2011). Managing the risk factors that can lead to a stroke requires knowledge, attitudes, and the actual adoption and maintenance of healthy lifestyle practices. Furthermore, their knowledge of a variety of other issues, such as high blood pressure, smoking, and obesity, falls short of what is considered optimal.

The current research on physical therapists' understanding of managing modifiable risk factors for stroke in Saudi Arabia is limited. This study primarily aims to assess the knowledge of physical therapists in Saudi Arabia regarding the management of these modifiable risk factors. Additionally, it seeks to determine the extent to which physical therapists prioritize stroke prevention within the country. By evaluating their knowledge, experience, perceptions, and access to pertinent information, this research intends to explore the relationship between these factors and physiotherapists' awareness and willingness to implement stroke prevention strategies.

Methodology

A cross-sectional online questionnaire survey was administered to registered Physical therapists in the Riyadh region between February and July of 2022. We began by recruiting individuals using the sample method of convenience, and then moved on to the snowball sampling methodology. All physical therapists who agreed to participate in the survey received an email with a link to the online questionnaire and were informed that they needed to complete the online questionnaire.

The inclusion criteria for this study were, physical therapists working in Saudi Arabia who are involved in the rehabilitation of stroke patients, with at least a year of professional experience and are willing to participate. Other healthcare professionals and physical therapy students and interns were excluded from the study.

This quantitative cross-sectional study design investigated the association between two distinct parameters looking at the relationships between stroke knowledge, stroke prevention attitudes, and stroke prevention practices. A quantitative method was used to investigate the extent to which a lack of information about stroke risk factors contributes to the rising incidence of stroke. This study's cross-sectional method provides benefits in terms of cost efficiency, timeliness, and the capacity to produce a profile of the research population (Frankfort & Nachmias, 2008). Furthermore, the cross-sectional design allows for the gathering of data on a wide number of variables, employs a high sample size, and does not need any follow-up (Crosby, Salazar, & DiClemente, 2015).

An online questionnaire was developed with 18 questions to evaluate the knowledge and perception of the Physical therapist about the risk factors and management of stroke. Socio-demographic information, participant's knowledge and perception of stroke risk factors, and participant's stroke risk factor sources of information. To achieve face (content) validation expert in the field of neurorehabilitation were contacted to rate every aspect of the survey according to clarity, structure, and relevance. The minimum selection rate was 80% to be included in the survey.

One-time data were obtained for this cross-sectional investigation. A total of 384 completed surveys were obtained by the researcher. All respondents' identities were protected by entering their information into a password-protected database that was only accessible by the study's lead investigator. The questionnaires were checked to make sure no information was lost and that each question was answered accurately. Errors and inconsistencies in the data were checked for, and questionnaires with too many mistakes were discarded. The data was proofread for errors and inconsistencies, and those were fixed as well.

SPSS software (version 19.0, IBM Corp, New York, USA) is used to analyze the data. The demographic data is evaluated with descriptive statistics such as frequency and percentages, and the questions will be analyzed with SPSS. Analysis was conducted to examine the relationship between the outcome measures with a 95 percent confidence interval, and a significance level of 0.05.

Result

The table presents data on the demographics and professional characteristics of 384 physical therapists. Most respondents were aged between 21-30 years (65.1%), with males (52.9%) being slightly more than females (47.1%). The most common qualification was bachelor's degree (72.1%), followed by Masters (22.4%) and Doctorate (5.5%). In terms of years of experience, the highest number of respondents had 1-5 years of experience (44.3%), followed by 6-10 years (26.3%), 11-15 years (19.3%), 16-20 years (6.5%), and more than 20 years (3.6%). The primary work setting was Out-Patient Department (51.0%), followed by In-Patient Department (20.8%),

Rehabilitation in ward (15.9%), and Academia (12.2%).

Table 1: Demographic and professional characteristics of the participating Physical therapists.

Variables	Criteria	No (%)
Age	21-30	250 (65.1)
	31-40	115 (29.9)
	41-50	17 (4.4)
	Above 50	2 (0.5)
Gender	Female	181 (47.1)
	Male	203 (52.9)
	Total	384 (100)
Qualification	Doctorate	21 (5.5)
	Bachelor	277 (72.1)
	Masters	86 (22.4)
Years of experience	1-5 Years	170 (44.3)
	6-10 Years	101 (26.3)
	11-15 Years	74 (19.3)
	16-20 Years	25 (6.5)
	More than 20 years	14 (3.6)
Source of Knowledge	Learned through textbook and as part of professional training	214 (55.7)
	Heard about it at conferences/seminar /peer interaction/ literature search	170 (44.3)
Primary work setting	Academia	47 (12.2)
	In-Patient Department	80 (20.8)
	Out-Patient Department	196 (51)
	Rehabilitation in ward	61 (15.9)

In response to the question about the source of knowledge about the risk factor and management of stroke 44% of the Physical therapist's indicated that they did a searched of literature for an evidence-based practice, 22% replied that they learned it at conferences, seminar and during peers' interaction and 34% of the participants indicated that they have learned it through textbook and as part of professional training.

Belief Regarding Stroke Prevention in Saudi Arabia: In response to the question related to stroke prevention and management most of the respondents (77.3%) believed that stroke is preventable, while a small proportion disagreed (13.5%) or were not sure (9.1%). Regarding the impact of physical activity on the modifiable risk factor of stroke, most respondents (95.6%) believed that physical activity could reduce the risk of stroke, while only a small proportion disagreed (2.2%) or were not sure (1.9%).

Additionally, most respondents (92.3%) believed that regular follow-up with a medical team can help reduce the risk of stroke, while a small proportion disagreed (1.9%) or were not sure (5.5%).

Table 2: Physical therapist's beliefs regarding stroke prevention in Saudi Arabia

Variables	Criteria	No (%)
Do you believe that stroke is preventable?	Yes	297 (77.3)
	No	52 (13.5)
	Not sure	35 (9.1)
Do you believe physical activity has the potential to reduce the modifiable risk factor for stroke?	Yes	365 (95.1)
	No	11 (2.9)
	Not sure	7 (1.8)
Do you believe that regular medical team follow-up can help reduce the risk of stroke?	Yes	353 (91.9)
	No	9 (2.3)
	Not sure	21 (5.5)
Do you believe that leading a healthy lifestyle can reduce the risk of having a stroke?	Yes	368 (95.8)
	No	7 (1.8)
	Not sure	9 (2.3)

In response to the question about whether respondents believed that regular medical team follow-up can help reduce the risk of stroke. Of the 384 respondents, 91.9% answered yes, 2.3% answered no, and 5.5% answered not sure. 95.8% respondents answered yes, 1.8% respondents answered no, and 2.3% respondents answered not sure, in response to the question about, whether respondents believed that leading a healthy lifestyle can reduce the risk of having a stroke.

Table 3: Physical therapist's beliefs regarding stroke risk factors in Saudi Arabia

Variables	Criteria	No (%)
Do you believe that people with hypertension are more likely to have a stroke?	Yes	355 (92.4)
	No	12 (3.1)
	Not sure	17 (4.4)
Do you believe that people with diabetes are more likely to have a stroke?	Yes	277 (72.1)
	No	36 (9.4)
	Not sure	70 (18.2)
Do you believe that an obese person is more likely to have a stroke?	Yes	335 (87.2)
	No	13 (3.4)
	Not sure	35 (9.1)
Do you believe that smoking increases the risk of having a stroke?	Yes	342 (89.1)
	No	11 (2.9)
	Not sure	27 (7)
Do you believe that women have a higher risk of stroke than men?	Yes	185 (48.2)
	No	93 (24.2)
	Not sure	105 (27.3)
Do you believe it is essential for people to be aware of all stroke risk factors?	Yes	293 (76.3)
	No	59 (15.4)
	Not sure	31 (8.1)

Most of respondents believed that stroke is preventable and that physical activity and regular follow-up with a medical team can reduce the risk of stroke. Additionally, most respondents recognized that stroke is one of the leading causes of death worldwide and that obesity can impact the risk of stroke. However, there were some respondents who were not sure about these questions, indicating a need for further education and awareness on stroke prevention and management.

Knowledge of Physical Therapists About the Stroke Risk Factors: In response to the question on whether respondents believed that people with hypertension (high blood pressure) are more likely to have a stroke, 92.4% answered yes, 3.1% answered no, and 4.4% answered not sure.

In response to the question on whether respondents believed that people with diabetes are more likely to have a stroke, 72.1% answered yes, 9.4% answered no, and 18.2% answered not sure. Similarly, in response to the question on whether respondents believed that an obese person is more likely to have a stroke, 87.2% answered yes, 3.4% answered no, and 9.1% answered not sure.

Of the 384 respondents, 89.1% answered yes, 2.9% answered no, and 7.0% answered not sure in response to the question about the respondents believed that smoking increases the risk of having a stroke. In response to the question about respondents believed that women have a higher risk of stroke than men 48.2% answered yes, 24.2% answered no, and 27.3% were not sure about it. Similarly, the question about the respondent's belief about the awareness of all stroke risk factors being essential for its prevention, 76.3% agreed, 15.4% disagreed, and 8.1% weren't sure about it.

Overall, the results suggest that most respondents have a good understanding of the stroke risk factors associated with hypertension, diabetes, obesity, and smoking. However, there is less certainty around the risk factors associated with gender. Most respondents believe that it is essential for people to be aware of all stroke risk factors.

Physical Therapy Practice Preference for Managing Stroke Risk Factors

In response to the question about evaluating a patient's health to adjust the rehabilitation program to minimize stroke risk factors. Most respondents (91.4%) answered yes, indicating that they evaluate the patient's health to adjust the rehabilitation program with the purpose of minimizing stroke risk

factors, while only a small percentage answered no (3.6%) or not sure (3.9%).

Table 4: Physical therapy practice preference for managing stroke risk factors

Variables	Criteria	No (%)
Do you evaluate the patient's health to adjust the rehabilitation program with the purpose of minimizing stroke risk factors?	Yes	351 (91.4)
	No	14 (3.6)
	Not sure	15 (3.9)
Do you believe a physiotherapist's primary responsibility is to encourage patients to maintain a healthy blood pressure via physical activity?	Yes	296 (77.1)
	No	44 (11.5)
	Not sure	43 (11.2)
Do you believe physiotherapists help people lower their blood sugar levels by having them do therapeutic exercises?	Yes	284 (73.9)
	No	39 (10.2)
	Not sure	60 (15.6)
Do you believe that physical therapist intervention lowers the risk of stroke?	Yes	297 (77.3)
	No	31 (8.1)
	Not sure	55 (14.3)
Do you believe that physiotherapists should provide preventive education about stroke risk factors?	Yes	348 (90.6)
	No	9 (2.3)
	Not sure	24 (6.3)

In response to the question about the primary responsibility of a physiotherapist, with regards to encouraging patients to maintain a healthy blood pressure via physical activity. About three-quarters (77.1%) of physiotherapists believe that their primary responsibility is to encourage patients to maintain a healthy blood pressure via physical activity, while 11.5% answered no, and 11.2% were not sure.

In response to the question about whether physiotherapists help people lower their blood sugar levels through therapeutic exercises. Most of them (74.0%) believe that they help people lower their blood sugar levels by having them do therapeutic exercises, while 10.2% answered no, and 15.6% were not sure.

In response to the question about whether physical therapist intervention lowers the risk of stroke. Most physiotherapists (77.3%) believe that physical therapist intervention lowers the risk of stroke, while 8.1% answered no, and 14.3% were not sure.

The final question is about whether physiotherapists should provide preventive education about stroke risk factors. Most physiotherapists (90.6%) believe that they should provide preventive education about stroke risk factors, while 2.3% answered no, and 6.3% were not sure.

Overall, most of the respondents demonstrated good knowledge about stroke prevention and management, as evidenced by their beliefs in the preventability of stroke, the impact of obesity on stroke risk, and the importance of physical activity and regular follow-up with a medical team in reducing the risk of stroke. Additionally, the results suggest that physical therapists are aware of their role in stroke risk management and believe that they can contribute to stroke prevention through their interventions and education.

Discussion

The results of this survey suggest that while most physical therapists in Saudi Arabia have a good understanding of stroke risk factors, there are still some knowledge gaps that need to be addressed. The fact that a significant percentage of respondents were unsure about the relationship between some risk factors and stroke highlights the need for ongoing education and training for physical therapists in this area.

These findings are consistent with previous studies on healthcare professionals' knowledge of stroke risk factors, which have also found a lack of knowledge in some areas (Ookeditse et al., 2021).

Most respondents correctly identified that hypertension, high cholesterol, obesity, smoking, and diabetes are all risk factors for stroke. These findings are consistent with previous research on stroke risk factors in the general population (Gorelick et al., 2011; O'Donnell et al., 2010), and with studies that reported a similar level of knowledge among healthcare professionals in different countries (Vincent & Moses, 2016).

However, a significant proportion of respondents were unsure about the relationship between some risk factors and stroke. For example, half of the respondents were unsure about the link between high cholesterol levels and stroke, and almost a third were unsure about whether women have a higher risk of stroke than men. Though the findings are consistent with previous research that has shown that healthcare providers, including physical therapists, may not have a comprehensive understanding of stroke risk factors and prevention strategies (Alomar et al., 2016), it suggest that there is room for improvement in the knowledge and highlight the need for continued education and training on stroke risk factors among physical therapists in Saudi Arabia, which may have implications for stroke prevention and management.

The respondents' belief that physical therapists have a role to play in stroke risk management and their reported adjustment of rehabilitation programs to minimize stroke risk factors are positive signs for stroke prevention and management. It's consistent with previous studies that reported a positive attitude towards the role of physical therapists in stroke management and have also shown that physical therapists can play an important role in stroke rehabilitation and prevention (Hasani et al., 2020; Bernhardt et al.,2017)

The respondents' belief that physical therapist intervention lowers the risk of stroke, and they should encourage patients to maintain a healthy blood pressure through physical activity and help people lower their blood sugar levels by having them do therapeutic exercises is in line with current guidelines for stroke prevention and management (Sacco et al., 2013) However, the finding that a significant proportion of respondents were not sure if physiotherapists can help people lower their blood sugar levels by having them do therapeutic exercises suggests a need for further education and training in this area.

The belief that physical therapist should provide preventive education about stroke risk factors is consistent with current recommendations for stroke prevention and management (Hasani et al., 2020). These findings suggest that physical therapists in Saudi Arabia have a good understanding of their potential role in stroke prevention and management.

Overall, the results of this survey highlight the importance of continuing education and training on stroke risk factors and prevention among physical therapists in Saudi Arabia. This is particularly important given the high burden of stroke in the region (Alqahtani et al., 2020). By improving the knowledge and skills of physical therapists, it may be possible to reduce the incidence and impact of stroke in Saudi Arabia and other countries in the region.

The study sheds light on the understanding of stroke risk factors among physical therapists in Saudi Arabia, revealing that while they possess a solid grasp of these factors and their role in stroke prevention and management, gaps in knowledge about specific interventions remain. It underscores the therapists' positive approach towards managing stroke risks but also points out the necessity for further training and education to bolster their expertise in this domain. The research suggests the development of continuing education programs and professional development initiatives aimed at enhancing physical therapists' knowledge, skills, and attitudes towards stroke risk management. These programs should particularly address areas of uncertainty, such as the link between diabetes and stroke and the differing stroke risks in men and women, to improve the overall competency in stroke prevention and care among these professionals.

Conclusion

In conclusion, the present study provides valuable insights into the factors that influence physical therapists' beliefs about the effectiveness of physical therapy interventions for stroke prevention. The findings underscore the importance of education, training, work experience, and sources of knowledge in shaping

physical therapists' beliefs and practice behaviors. Further research is needed to investigate the effectiveness of interventions targeting these factors in improving the delivery and outcomes of physical therapy interventions for stroke prevention.

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