

Competence of physiotherapist and nurses in stroke care pathways at Saudi Arabia

Ohoud Ebraheem Alrefai¹, Bassam Abdullah Mohammed Maghrabi², Mohammed Ahmed Mohammed Alzahrani³, Ali Hamed Almalki⁴, Hanan Ahmed Aloryani⁵, Haitham Ahmed Almalki⁶, Hamdah Saad Almasoudi⁶, Fahad Abdullah Alasmari⁷, Abubaker Ibrahim Alshamrani⁸, Abdulaziz Mualla S Almutairi⁸, Salem Faraj Khairallah Almadawi⁸

1 Physiotherapist, King Abdulaziz Hospital In Jeddah, Saudi Arabi.

2 Physical therapy technician, King Abdulaziz Hospital in Mecca, Saudi Arabi.

3 Physical therapy technician, Hera General Hospital in Mecca, Saudi Arabi.

4 Nurs technician, Alrbwh Primary health care, Saudi Arabi.

5 nursing specialist, King fahad hospital in Jeddah, Saudi Arabi.

6 Nurse technician, King fahad hospital in jeddah, Saudi Arabi.

7 Nursing specialist, Ministry of Health Public Health Departments Riyadh branch , Saudi Arabi.

8 Nursing technician, Ministry of Health Public Health Departments Riyadh branch, Saudi Arabi.

Abstract:

Background:

A stroke, sometimes referred to as a brain attack, happens when a blood vessel in the brain breaks or when something stops the blood flow to a portion of the brain. Either way, the brain suffers damage or dies. Strokes can result in death, permanent brain damage, or long-term disability. A stroke is characterized by an abrupt stoppage of the blood flow to the brain. In order to help and improve the quality of life for senior stroke patients, care for stroke patients requires a thorough grasp of the many aspects involved in stroke management and the provision of interventions such as social, emotional, and psychological support. **Aim of the study:** To assess Competence of physiotherapist and nurses in stroke care pathways at Saudia Arabia based on their self-evaluation and identify the factors associated with competence.. Research design : descriptive cross sectional research design was utilized to conduct this study. a n electronic survey was sent to physiotherapists and nurses (n = 300) treating persons with stroke in Saudi Arabia between May and September 2024 in order to get the results. The RN-STROKE, PT-STROKE, and OT-STROKE instruments, which are based on a four-factor model, were used to assess competency in stroke care pathways. Exploratory factor analysis and Cronbach's alpha were used to verify the validity and reliability of the instruments. The data was analyzed using Kruskal-Wallis, Chi Square, Mann Whitney U, one-way ANOVA, and K-means clustering. The findings were presented as means, standard deviations, percentages, and frequencies.

Finding:

Results: There are four primary areas in which healthcare providers are proficient in stroke care pathways: (1) The ability to counsel and interact (2) proficiency with evidence-based knowledge; (3) proficiency with self-management and development; and (4) proficiency with multiprofessional collaboration. Three competency profiles of medical professionals involved in the stroke care pathway were then found by the study. Competence was rated at the highest level by professionals in Nurses a, average by those in Physiotherapist, and lowest by those in Profile C. Competency profiles were shown to be related to the occupation of nurses and physiotherabiast and their involvement in the expert network of their organization.

Conclusion: Although healthcare workers' overall proficiency in the stroke care pathway was deemed good, there is room for improvement, particularly in their ability to apply evidence-based knowledge in clinical practice. Therefore, in order to facilitate the use of evidence-based information in clinical work, organizations should expand education and training in this area and provide sufficient resources.

Implications for the profession and/or patient care: Based on participant profiles, the study identifies three profiles of healthcare workers' proficiency in the stroke care pathway. These profiles can be utilized to develop ongoing education and guarantee improved patient care.

Introduction:

A number of cerebrovascular conditions, such as cerebral infarction, intracerebral hemorrhage, subarachnoid hemorrhage, cerebrovascular thrombosis, and transient cerebrovascular ischemia, are commonly referred to as strokes [39, 41]. Cerebrovascular accidents affect over 12 million people worldwide each year [41] and are a leading cause of death and disability [11, 39]. The need for stroke rehabilitation is developing as a result of the rising incidence of stroke in those under 50 as well as the rising prevalence of stroke in aging and growing populations. The mortality rate linked to stroke has decreased as a result of improved acute stroke treatment. Investments in stroke care, rehabilitation, and support services are still crucial [11, 39].

Healthcare services must adapt to people's changing health demands as the healthcare environment changes continuously. Ensuring the quality of healthcare services in this setting requires implementing evidence-based practice, enhancing and growing the pertinent competencies of nurses and physiotherapists, and [14, 18, 22].

There have been several attempts to categorize and evaluate competencies, and definitions fluctuate depending on the environment and field of study. Numerous studies have been conducted on the competency of the healthcare profession [1, 3, 12, 15, 20, 26, 34, 38], leading to both national and international definitions of the skills needed by nurses and physiotherapists [8, 9, 30]. Although concepts like "performance," "ability," "skills," "knowledge," "know how," "qualification," "capability," "professional agency," and "expertise" are surrounded by conceptual and terminological ambiguity, competence is a notion that is frequently utilized [10, 23]. According to the European e-competence framework [7] e-CF User Guide, competence is the capacity to use information, abilities, and attitudes to produce measurable outcomes. Occupational therapists, physiotherapists, and registered nurses are considered nurses and physiotherapists in this study. These professionals are qualified to work in healthcare and may participate in ongoing education and development because they possess high levels of both fundamental skills and practical knowledge that they have gained via their studies [8, 9, 30].

Vascular nurses and other nurses and physiotherapists working in the stroke care pathway must possess a variety of competencies [14, 20], such as clinical skills, interpersonal skills, and the ability to collaborate, consult, and coordinate with other professionals [8, 9, 15, 19, 38]. Acute care in the emergency room, critical care and ward care, including early rehabilitation in those units, rehabilitation and various forms of therapy in the rehabilitation unit, home care and late phase rehabilitation, and control visits three to six months after discharge are all included in this study's list of stroke care pathways [41].

The competencies needed by nursing and rehabilitation professionals in the stroke care pathway can be broken down into six main areas, according to Jarva et al. [20]: clinical competence, interaction skills, using self-management techniques, recognizing family, integrating the available evidence base into patient care, and clinical competence.

The ability to plan, coordinate, and carry out high-quality, evidence-based care throughout the care process is a component of competency in care processes, and it calls for multiprofessional and multidisciplinary abilities on the side of the care professional [6, 8, 20]. Clinical competence include the capacity to set nursing and rehabilitation goals as well as practical nursing and rehabilitation abilities [1, 6, 20].

Having the experiential knowledge necessary to support individualized patient care is another aspect of clinical competence [25, 26]. Clinical reasoning abilities and the capacity to evaluate the patient's circumstances are necessary for evaluating and enhancing the quality of care as well as for guiding patients [15, 21]. In order to listen, inform, and include patients and their families in their treatment, a professional's interaction skills are crucial [1–38]. Natural interactions between patients and professionals are essential, and this calls for both verbal and nonverbal communication abilities [8, 20, 26].

Patient-centered treatment is enhanced by professionals' proficiency with self-management techniques [20]. It allows them to change their approach to patient empowerment and accountability, emphasizing patient-centered problem-solving and decision-making, and collaboratively establishing recovery and stroke prevention goals [14, 21]. In order to guide and involve family members in patient care and to facilitate patient-relative collaboration, it is necessary to possess empathy and interaction skills [1], which are part of being competent in acknowledging the family [20].

Healthcare providers can better understand their patients as individuals by paying attention to and communicating with their families, which facilitates patient-centered and individualized care [6]. Additionally, interactive counseling is beneficial for stroke patients, particularly when it comes to self-care and when the counselor has enough resources [32]. Counseling is based on the professional duty of nurses and physiotherapists and is intimately related to the backgrounds of both the patient and the nurses and physiotherapists. It is active, goal-oriented, built within an interactional relationship, and executed with the right resources. [24, 32].

Both using and putting the evidence into practice are necessary for competently incorporating the existing body of evidence into patient treatment [3, 15, 20, 22, 26]. Vascular nurses and other neurology-specialists involved in the stroke care pathway need a broad range of abilities, therefore it's critical to develop fresh perspectives on the knowledge and skills that are actually needed in practice and where shortages exist. New resources for competence management, competence development, and continuing education design are provided by this study.

Aim of the study:

To describe nurses, physiotherapist ' self-assessed competence in stroke care pathways based on their self-evaluation and identify the factors associated with competence.

The research questions:

1. How do profiles of physiotherapist workers' self-reported competence in stroke care pathways cluster?
2. What characteristics are linked to those nurses and physiotherapists' competence profiles?

Methods

Design

This research is a descriptive and explorative cross-sectional study [16]

Participants

a n electronic survey was sent to physiotherapists and nurses (n = 300) treating persons with stroke in Saudi Arabia between May and September 2024 in order to get the results. Inclusion criteria for

this study were (1) being a relevant professional, i.e. nurse, physiotherapist, (2) currently working with stroke patients, and (3) with at least one year's work experience in neurological nursing. The exclusion criteria were as follows: nurses and physiotherapist not currently working with neurological patients and those with less than 1 year of experience in neurological nursing.

Data collection

A survey was used to gather data between May and September 2024 from pertinent medical professionals (registered nurses, physiotherapists, and occupational therapists: $n = 300$, response rate 17.9%). Potential participants were gathered from clinical settings that are pertinent to neurological care, such as emergency rooms, critical care and stroke units, neurology and neurosurgery wards, neurology and neurosurgery polyclinics, primary care wards, home care and rehabilitation, and first aid. The survey was made available electronically in order to increase the number of responses [36].

Instrument

An earlier systematic review [20] established the domains of stroke competency and the factors influencing that competence, which served as the basis for the survey. In this study, the researchers' newly created instruments—which were based on a previous systematic review [20]—were statistically tested and utilized for the first time to evaluate professionals' proficiency in the stroke care pathway. The measures that were chosen were the PT-STROKE (144 items) for physiotherapists, and the RN-STROKE (161 items) for registered nurses. The 45 items in all three measures were standard for all professional groups and were scored on a Likert scale of 1 to 5 (bad, moderate, good, very good, and excellent). Professional groups at various phases of the stroke targeted the remaining items. stroke care pathway.

Seven general areas of competence were included in the RN-STROKE scale: (1) clinical competence; (2) multiprofessional collaboration competence; (3) guidance, interaction, and psychoeducational-emotional support competence; (4) rehabilitation methods competence; (5) care and rehabilitation planning and organization competence; (6) evidence-based information utilization competence; and (7) self-management and development skills competence. Six of the same areas of competence were covered by the PT-STROKE assessments, but competency in rehabilitation techniques was not.

The stroke care pathway's stages—first aid/emergency care, intensive care unit, ward care, further rehabilitation, home care, and control visit three to six months later—were used to classify each domain of the measurements into subcategories. The questionnaire asked about the background information of the respondents, including their age, gender, occupation, role at work, organization, and length of employment since earning their degree. Both the expert panel ($n = 21$) and the project team ($n = 9$) examined the measures' face and content validity, leading to the modification of some items and the elimination of others from each measure. The Content Validity Index (CVI), which evaluated the measures' items' clarity and relevance, was used to test the content validity [33].

Exploratory factor analysis, which is essential for assessing a novel measure, was used to assess the measure's construct validity [16, 29]. Because of the small amount of data, EFA could only be applied to elements that were comparable to all respondents ($n = 45$). Before factor analysis was used, multivariable deviations ($n = 10$) were found and removed from the data for construct validation using the Mahalanobis distance ($p < 0.001$ as the cutoff value). Principal axis factoring and Promax rotation were used by the EFA. Consequently, 41 components were separated into four factors. We eliminated four items that loaded slowly (less than 0.400) [16].

The four sum-variables on the scale had Cronbach's alpha values ranging from 0.916 to 0.968, while the overall scale (Stroke Care Competence Scale) had a Cronbach's alpha of 0.896. De- Von

et al. [5] state that a new scale's Cronbach's alpha value should be more than 0.700, with higher values signifying improved scale reliability. Thus, the scale's internal consistency can be regarded as good.

Data analysis:

IBM SPSS was used to analyze the data (version 28.0). Knowledge of the stroke care pathway among health care workers (n = 45) was examined using exploratory factor analysis (EFA) [16]. The Kolmogorov-Smirnov test was used to test the distributions of the four sum-variables that were constructed from the factors. K-means clustering (n = 214) was used to evaluate the data and produce the competence profiles A (high competence), B (medium competence), and C (poor competence). The Chi-Square test and one-way ANOVA were used to assess the statistical significance of the relationship between the competency profiles and the background variables. Using the Kruskal-Wallis and Mann-Whitney U tests, together with a final Bonferroni correction of the p-values, the relationship between the sum-variables and the competency profiles was examined. The findings were presented as means, standard deviations, percentages, and frequencies. Because the participants were required to rate their level of competence at the time of measurement, there were no missing values in the data. The data analysis stage involved consulting a statistical specialist. For every statistical test, the significance level was set at $p < 0.05$ [16].

Study ethics

The research is trustworthy and ethical since every phase was carried out in compliance with applicable laws, sound scientific practices, and other pertinent standards [35]. In compliance with each organization's protocol, research consent was requested from all participating organizations. Since the study did not gather sensitive data, ethics committee permission was not necessary in accordance with Finnish law ([28] /794). No specific grant from a public, private, or nonprofit funding organization was obtained for this study. Participants provided their informed agreement to participate in the study, which was voluntary. In compliance with the EU Data Protection Regulation, consent was obtained before any data was collected. In a cover letter, participants were told of the study's objectives and their freedom to discontinue participation at any moment ([13] /679). In order to prevent participant identification, the findings are given anonymously ([13] /679). Only the researchers processed the research data, which is kept in a password-protected cloud service at the University of Oulu. When no longer required for the study endeavor, all research data will be discarded [35]

.Results

Nurses, physiotherapist background information

The poll received responses from 300 medical experts from various organizations. Women made up the majority of responders (90.7%). The average age of the participants was 44.5 years. Of the participants, 32.1% were physiotherapists and 42.8% were nurses. 75.8% of respondents said they worked with stroke victims every day or every week, while the remaining respondents did so less frequently. The majority of responders (88.3%) were employed in primary healthcare (35.2%) or hospital care (53.1%). In the field for which they were qualified, more than half of the respondents (60.2%) had worked for more than ten years. In the two years before the research, 42.6% of respondents actively engaged in their organization's expert network (Table 2).

Table (1): Number and Percentage Distribution of Studied Nurse's and physiotherapist Socio-demographic Characteristic

Items	No.	%
Gender		
Male	28	8.9
Female	272	90.7

Age		
25 -30 years	30	10.0
31 - 35 years	15	5
36 - 40 years	196	64.0
More than 41 years 21	42	21.0
Mean $\pm$ SD 37.90 $\pm$ 10.46		
Marital status		
Married	216	72
Unmarried	78	28
Religion		
Muslim	288	96
Christian	12	4
Level of education		
Diploma of nursing	141	47
Technical institute of nursing	88	22
BSCs	93	31
Years of experience in working in clinics		
>1 years 12	36	12.0
1> 3 years 13	39	13.0
$\leq$ 3 years 75	225	75.0
Mean $\pm$ SD 4.16 $\pm$ 9.89		
Taken training courses about stroke		
Yes	63	21
No	237	79
If yes, mention the name of the course (	63)	
Acute Stroke Pathway	45	71.42
Advanced Stroke Practice	18	28.57
Workplace		
Internal Neurological Clinic	114	38
Reception and Emergency Unit	112	37
Physiotherapy clinic	60	20
Speech clinic	15	5
Working with stroke Patients		
Daily	122	41.4
Weekly	102	34.4
Monthly	26	16.7

Nurses and physiotherapist' competence and associated factors

Out of all the sum-variables, multiprofessional and cooperation competence obtained the highest overall score (mean 3.67, SD 0.81 on a Likert scale from 1 (poor) to 5 (excellent). Additionally recognized as good were self-management and development competence (mean 3.56, SD 0.68), as well as counseling and interaction competence (mean 3.25, SD 0.81). On the other hand, the ability to apply evidence-based information was assessed as the stroke patient care pathway's weakest component (mean 2.85, SD 0.91) and did not receive a high overall score (Table 2).

Three competency profiles among nurses and physiotherapist in the stroke care pathway were identified in this study, and each of them showed statistically significant differences ($p < 0.001$). The makeup of the competency files (Table 2) was statistically significantly impacted by

respondents' education ($p = 0.004$) and involvement in their organization's expert network during the previous two years ($p < 0.001$). The distribution of age and gender across the three pro-files was identical to that of the entire dataset. No statistically significant correlation was found between the formation of competence profiles and work experience, organization, or frequency of working with stroke patients.

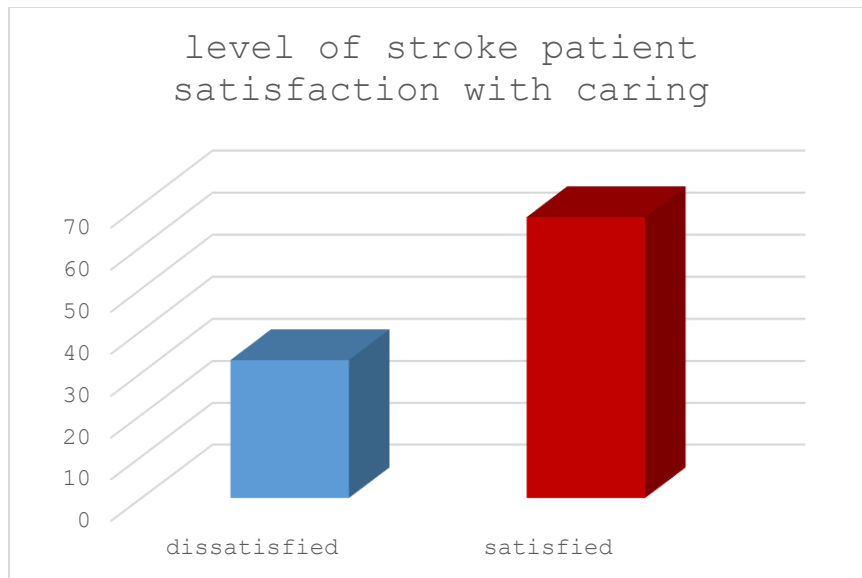
34% of participants ($n = 72$) were nurses, and their average age was 43.5 years. The distribution of the three professions was rather even, with 36.1% being occupational therapists ($n = 26$), 33.3% being nurses ($n = 24$), and 30.6% being physiotherapists ($n = 22$). While 20.8% of nurses worked with stroke patients less frequently, the majority of nurses—80%—worked with stroke patients daily or weekly. In the previous two years, 60% ($n = 39$) had taken part in the expert network of their organization. According to this study, nurses had the highest degree of competency in the care route for stroke patients (mean varied from 3.73 to 4.40). Professionals in the nursing field evaluated themselves as having the highest level of multiprofessional and collaborative competence among the sum-variables. to use evidence-based information (mean 3.73, SD 0.59). 34% of participants ($n = 72$) were nurses, and their average age was 43.5 years. 36.1% were occupational therapists ($n = 26$), 33.3% were nurCoun- selling and interaction competence (mean 4.05, SD 0.50) and self- management and development competence (mean 4.15, SD 0.45) were likewise regarded as very good by professionals in Nurses a (Table 2). With an average age of 44.5 years, physiotherapist made up 42% of the study's participants ($n = 89$). Physiotherapist had fewer occupational therapists ($n = 19$) but an equal number of nurses ($n = 35$) and physiotherapists ($n = 35$).

less than a quarter worked with stroke patients less frequently than once a week, whereas the majority of physiotherapist dealt with stroke patients daily or weekly. In the last two years, 41.6% of physiotherapist professionals had taken part in their organization's expert network. The average physiotherapist' proficiency in the stroke care pathway ranged from 2.75 to 3.64. Similar to nurses, physiotherapist rated their ability to collaborate and work across professional boundaries as their strongest sum-variable (mean 3.64, SD 0.51) and their ability to use evidence-based information as their lowest (mean 2.75, SD 0.50). Professionals in physiotherapy evaluated self-management and development competence (mean 3.52, SD 0.45) and counseling and interpersonal competence (mean 3.12, SD 0.52) as good (Table 2).

Level of Stroke Care Competence Scale and their relation with healthcare workers

Items	Total	Nurse	Physiotherapis t	Significant differences
Counselling and interaction competence	3.25 (0.81)	4.05 (0.50)	3.12 (0.52)	< 0.001
Competence to use evidence-based information	2.85 (0.91)	3.73 (0.59)	2.75 (0.50)	< 0.001
Self-management and development competence	3.56 (0.68)	4.15 (0.45)	3.52 (0.45)	< 0.001
Multiprofessional and collaboration competence	3.67 (0.81)	4.40 (0.41)	3.64 (0.51)	< 0.001 d , e

Figure 1 illustrated that 66% of the patient were satisfied with nurse- physiotherapist stroke provided care



Discussion

The study's objective was to characterize the self-assessed competency of physiotherapists and nurses in the stroke care pathway. Participants in this study thought this was good overall. Collaboration and multiprofessional skills were ranked as the participants' strongest competency areas. The fact that participants operate as independent professionals in care teams, with an interest in and appreciation for collaborating to pool their skills, may account for their relative proficiency in this competency area [2]. The stroke patient care pathway requires nursing practitioners to be competent in delivering evidence-based treatment [20]. However, prior research has shown difficulties in implementing this competence [17, 25, 37], and the results of this study showed that, in fact, competence to use evidence-based information was the lowest-rated area of competence. According to other research, the availability of evidence-based information is inadequate (Baeza et al., 2016), and the context of care, the client, and the professional all influence how it is used [17, 30]. Only certain sectors of care employ evidence-based treatment, while others do not [37], and organizational factors are the primary motivators for its application [17]. Therefore, organizations should be aware that active initiatives for continual competence development are necessary to increase competency in using evidence-based information and thereby contribute to patient safety and quality of care [30]. In this study, professionals rated their self-management and development competence as good overall.

This is significant because this type of competency can affect how well patients respond to treatment, shorten treatment durations, reduce medical expenses, and stop strokes from happening again [14, 30]. In fact, it is well known that rehabilitation treatment, patient empowerment, and involvement depend heavily on the self-management and development skills of healthcare professionals [21, 31].

When it comes to organizing, directing, and carrying out rehabilitation, occupational therapists and physiotherapists have been found to have strengths in multiprofessional and collaborative competence [2] as well as counseling and interaction competence [1]. The greater percentage of rehabilitation specialists in files A (high competency) and B (medium competency) may be explained by this. According to previous research, nurses' perceptions of their own competence may suffer if they believe their role in stroke patients' rehabilitation is unclear [6, 27]. Since patients benefit from interactive counseling, particularly in sticking to self-care, and when the

counselor has enough resources [32], nurses have been highlighted as needing more training in counseling competency [34]. Nonetheless, nurses may view counseling and interpersonal skills as an inherent and instinctive aspect of their everyday nursing practice, and they do not view them as distinct areas of professional competence [27]. Practically speaking, implementing counseling may be challenging due to a lack of resources [34], and evaluating counseling competency may also be challenging. Profiles A (high competence) and B (average competence) were ranked for the majority of nurses and physiotherapist who had taken part in their organization's expert network during the two years preceding this study. Similar findings about the advantages of joining networks and actively enhancing one's own expertise and competence have been reported in other studies [2, 20].

Through assessment, development, and application in practice, social learning occurs among nurses and physiotherapists in an expert network, which is a social and professional community [30]. There were no statistically significant correlations between competency profile and length of work experience in this investigation.

This is a somewhat surprising outcome, as prior research has indicated that job experience affects nurses' and physiotherapist' competency [12, 20, 34]. Nonetheless, the study's findings indicate that healthcare professionals' general proficiency in the stroke care route is high. Organizations should be aware that in the ever-evolving healthcare landscape, competency development and ongoing education are critical. Evidence-based nursing competency should be promoted by organizations, which basically means offering more training to enable the effective use of evidence. Organizations should also facilitate teamwork and multiprofessional collaboration, assist employees in developing their self-management skills, and supply sufficient resources for high-quality supervision.

Conclusion

The results of this study can be used to inform the creation of continuing education programs and to improve the proficiency of occupational therapists, physiotherapists, and nurses. In order to maximize educational programs, understand the breadth of abilities inside the organization, and facilitate strategic planning, including the scheduling of work shifts, it is imperative to acknowledge the diversity within professions.

To ensure that evidence is used successfully, it would be especially important to increase these professionals' proficiency with evidence-based information. Clarifying the roles and responsibilities of healthcare professionals in the stroke care pathway will help with competency assessment. It is possible to suggest joining expert networks as a means of preserving and enhancing expertise. In the future, similar survey data on the skills of healthcare professionals in the stroke care pathway in other nations could be produced using the newly designed and validated measure created for this study. Additionally, it would be beneficial to investigate how training and education might enhance proficiency in using evidence-based practices and promote ongoing learning in a changing healthcare environment, for example through an intervention study.

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