

Research article

Assessing quality management systems in physical therapy: a cross-sectional analysis of service performance and patient satisfaction

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Abstract: (1) Background: This study examined the quality of physical therapy services across di-verse settings through a cross-sectional correlational analysis. Its fundamental objective lies in exploring the nuanced factors that contextualize the quality of physical therapy practices. (2) Methods: We introduced the Physical Therapy Services Evaluation Questionnaire (PSEQ) and gathered patient satisfaction data through a Visual Analog Scale (VAS). The study involved 30 physical therapists (average age 39.57 ± 9.37 years, 40% males and 60% females), assessed via PSEQ, with their work experience (WE) specified. Each physical therapist received feedback from 10 patients using VAS. (3) Results: Follow-ing content validation, PSEQ demonstrated strong internal consistency (Cronbach's alpha coefficient = 0.89). Correlational analyses showed significant positive associations be-tween age and WE, age and PSEQ global score, WE and PSEQ global score, and between VAS score and PSEQ global score ($p \leq 0.001$). Linear regression analyses confirmed these relationships ($p \leq 0.001$) and offered a quantifiable basis for predictions, essential for in-formed decision-making in physical therapy service management and research. (4) Con-clusions: The study established robust correlations between physical therapists' age, WE, and service evaluations. Patient satisfaction, measured through VAS, significantly influ-ences service evaluations, underscoring the importance of continuous professional devel-opment and patient-centered care in physical therapy services.

Keywords: quality assurance; physical therapy; service quality, patient experience; cross-sectional study; healthcare assessment

1. Introduction

The Quality Management System (QMS) plays a fundamental role within healthcare service organizations [1]. Ensuring the quality of medical and therapeutic services provided to patients is essential for achieving desired therapeutic outcomes and enhancing patient satisfaction [2]. In an ever-changing world where quality standards and legal requirements evolve, it is of utmost importance for physical therapy service organizations to implement and maintain an efficient quality management system.

The implementation and maintenance of an effective quality management system in physical therapy service organizations are necessary for delivering high-quality care, enhancing patient satisfaction, and gaining a competitive advantage. Service evaluations and patient feedback drive positive healthcare change and improve service quality [3]. By setting high standards, identifying and eliminating inefficiencies, and demonstrating a commitment to quality, organizations can strengthen their trust and reputation within the medical industry, ensuring sustainable long-term growth.

In physical therapy, understanding and knowledge of the quality management system are critical elements to certify efficient and ethical professional practice [4-5]. Physical therapists must be aware of the importance of this aspect in delivering medical services. During their practice and in the exercise of the physical therapy profession, they will be responsible for providing high-quality services that enhance patients' health and contribute to their recovery and rehabilitation. Adherence to quality standards and continuous evaluation of procedures are critical to guaranteeing successful therapeutic outcomes and patient satisfaction [6].

The overarching theme of our research revolves around the application of quality management systems in the realm of physical therapy service organizations. We aim to delve deep into this subject, exploring the intricacies of implementing such systems effectively. Within this context, an important aspect that merits in-depth investigation is the role of patient satisfaction. Specifically, we are interested in understanding how patient satisfaction relates to the effectiveness of interventions, with a particular focus on the field of physical therapy.

As highlighted in recent research, the role of patient satisfaction in intervention effectiveness, particularly in physical therapy, warrants further exploration [7]. Patient satisfaction has been acknowledged as a determinant factor that can significantly influence the outcomes of interventions [8]. While existing evidence from various healthcare disciplines suggests that higher levels of patient satisfaction may expedite recovery [9], its precise impact on the realm of physical therapy remains relatively uncharted territory.

Therefore, our research endeavors to bridge this knowledge gap by scrutinizing the correlation between patient satisfaction and the effectiveness of interventions in the context of physical therapy. Through comprehensive analysis and empirical evidence, we aspire to shed light on how patient satisfaction contributes to improved outcomes in this field, thereby further enhancing our understanding of the interplay between quality management systems, patient satisfaction, and service performance in physical therapy.

The aim of this research is to assess and analyze the quality of services provided by a significant number of physical therapists working in various settings, both in the private and public sectors, offering integrated physical therapy services such as hospitals, rehabilitation centers, private practices, NGOs, etc. Through administering a service quality evaluation questionnaire and a patient satisfaction questionnaire, the research sought to evaluate the effectiveness and efficiency of the services provided, the adherence to established quality standards, and the overall satisfaction of patients receiving physical therapy care.

By analyzing the results obtained from the questionnaire, the research will provide valuable insights and conclusions regarding the quality level of physical therapy services delivered by the participating physical therapists. This study aims to contribute to the enhancement of physical therapy practices and the improvement of patient outcomes, ultimately benefiting both healthcare providers and patients alike.

The hypothesis of this study posits that the degree of implementation of the quality management system in physical therapy service organizations is positively correlated with the overall quality level of services provided by physical therapists, thereby influencing the satisfaction of the beneficiaries of these physical therapy services.

2. Materials and Methods

In this study, we employed a cross-sectional correlational design to assess the quality of physical therapy services provided by physical therapists across various healthcare and medico-social institutions, both public and private. The study included 30 physical therapists, aged between 22 and 57 years (average age 39.57 ± 9.37 years), comprising 12 males (40% of participants) and 18 females (60% of participants).

We utilized two instruments for data collection. First, a new self-developed questionnaire assessed the quality of physical therapy services administered to managers or professionals in leadership roles within the organizations where the participating physical therapists practiced. In developing the questionnaire, we followed a rigorous process. Practically, we constructed a Physical Therapy Services Evaluation Questionnaire (PSEQ) by drawing on relevant literature, consulting experts in the field of physical therapy, and considering patient input. This initial phase ensured that the questionnaire covered the essential aspects of physical therapy service quality comprehensively.

To assess content validity, we conducted a thorough review of the questionnaire's items, focusing on their relevance and alignment with the intended construct. Additionally, we sought feedback from subject matter experts, including physical therapy professionals and patients, to refine and optimize the questionnaire's content. This iterative process confirmed that the PSEQ adequately captured the relevant dimensions of service quality.

Subsequently, we conducted an internal validity assessment on a sample of 30 physical therapists. The questionnaire was administered in various public or private organizations providing physical therapy services and was completed by the respective institution's managers after a preliminary briefing. Consequently, the managerial personnel assessed one or more physical therapists under their supervision, as appropriate, based on the PSEQ. Informed consent was obtained from each study participant. The constructed database underwent subsequent statistical analysis.

This analysis provided insights into the internal consistency and reliability of the questionnaire. In summary, the development of the Physical Therapy Services Evaluation Questionnaire involved a meticulous process that encompassed content validation and internal validity assessment. These steps ensured that the questionnaire effectively measured the intended constructs and yielded reliable results.

Additionally, another variable considered in our study was the work experience (WE) of physical therapists, measured in years. This information was obtained through direct inquiry during the survey, providing valuable insights into the participants' professional backgrounds.

Next, a visual analog scale (VAS) with a range of 1 to 10 points was used to assess patient satisfaction. Typically, the VAS is a straightforward and frequently employed method for determining variations in pain intensity [10]. However, its utility extends beyond this, as it can also be used to measure patient satisfaction in various ways [11]. In our study, each physical therapist administered the VAS to gather satisfaction ratings from 10 patients they had treated in the preceding two weeks. The questionnaire was completed anonymously by the patients.

The utilization of a VAS in our study offered several advantages. Firstly, it provided a straightforward and easily understandable method for patients to express their satisfaction levels, utilizing a numeric scale that ranged from 1 (indicating the lowest satisfaction) to 10 (indicating the highest satisfaction). This simplicity facilitated efficient data collection. Secondly, the VAS allowed for a continuous and fine-grained assessment of patient satisfaction. Rather than being constrained to discrete categories, patients could position their satisfaction along a spectrum, enhancing the precision of the data collected. Furthermore, the VAS offered a degree of flexibility, permitting patients to convey their satisfaction quantitatively and allowing for nuanced responses. This flexibility accommodated variations in individual perceptions of satisfaction, ensuring a comprehensive representation of patient experiences [12].

This research aimed to explore the relationship between implementing of a quality management system in physical therapy, the professional performance of physical therapists, and patient satisfaction. The chosen design allowed us to capture a snapshot of these interconnections during the specified time frame, contributing to a deeper understanding of the dynamics within the field of physical therapy services.

The statistical analysis of data focused on a comprehensive set of methods to examine various aspects of the research findings. The collected data were processed and analyzed using advanced statistical procedures, facilitated by IBM SPSS 26.0 software (IBM Corp., Armonk, NY, USA) [13]. Descriptive statistics were used to calculate means and standard deviations, providing an overview of the central tendencies and dispersion of the data. The Shapiro-Wilk method was employed to assess the normality of data distribution, ensuring that the data met the assumptions necessary for subsequent inferential analyses. Internal consistency was evaluated using Cronbach's alpha coefficient, determining the reliability of the PSEQ in measuring the intended construct. Inferential analyses encompassed parametric Pearson and nonparametric Kendall correlation analysis to identify statistically significant correlations between variables of interest. Also, a simple linear regression analysis was conducted to explore relationships between key variables.

3. Results

3.1. Presentation of the questionnaire and its internal consistency analysis

To comprehensively assess the quality of physical therapy services, we developed the PSEQ. This questionnaire comprises five domains, each with four targeted questions, and employs a rating scale ranging from 1 to 5 for each item. The scores on the 1 to 5 scale were interpreted as follows: 1 indicating a very low level, 2 signifying a low level, 3 representing a moderate level, 4 reflecting a high level, and 5 denoting a very high level of the assessed aspect. The PSEQ is designed to provide valuable insights into various aspects of the physical therapy experience, ensuring a thorough service quality evaluation.

The five domains with the specific questions were the following:

1. Communication and interaction: this domain evaluates the quality of communication and interaction between the physical therapist and the patient.
 - a. How effectively does the physical therapist in your organization communicate with patients?
 - b. How would you rate the ability of this physical therapist to listen to patients' concerns and needs actively?
 - c. Does this physical therapist clearly explain treatment plans and progress to patients?
 - d. How well does this physical therapist create a comfortable and open environment for patients to express their concerns and ask questions?
2. Treatment effectiveness: this domain assesses the efficacy of the treatment provided by the physical therapist and its impact on the patient's condition.
 - a. How effective is the treatment provided by this physical therapist in addressing patients' specific health concerns?
 - b. To what extent does the treatment provided by this physical therapist improve patients' overall physical well-being and conditions?
 - c. How satisfied are patients with the results achieved through the treatment plans prescribed by this physical therapist?
 - d. Have you observed a noticeable reduction in patients' pain or discomfort due to the treatment provided by this physical therapist?
3. Accessibility and timeliness: this domain focuses on the ease of scheduling appointments, adherence to appointment times, and the overall timeliness of care.
 - a. How do you rate the ease of scheduling appointments for patients within the physical therapy services provided by the physical therapist?
 - b. Does the physical therapist consistently adhere to appointment times?

- c. How would you rate patient satisfaction regarding the overall timeliness of care within the physical therapy services offered by the physical therapist?
- d. To what extent does the physical therapist ensure timely and easily accessible patient care within the physical therapy services?
4. Professionalism and ethics: this domain examines the professionalism, ethical standards, and respect for privacy and confidentiality demonstrated by the physical therapist.
- a. How do you rate the professionalism demonstrated by the physical therapist in interactions with patients?
- b. In your opinion, how consistently are ethical standards upheld within the physical therapist's practice?
- c. How strongly does the physical therapist commit to patient privacy and confidentiality?
- d. How effective is the physical therapist in maintaining a respectful and courteous demeanor during patient interactions?
5. Facilities and resources: this domain considers the quality and maintenance of facilities and equipment, as well as the availability of information about treatment resources.
- a. How effectively does the physical therapist utilize the facilities and resources for delivering services to patients?
- b. How satisfied are you with the physical therapist's ability to maintain a clean and organized workspace within the facilities used for physical therapy services?
- c. To what extent do you believe the physical therapist effectively manages equipment and technology to support delivering of physical therapy services?
- d. How would you rate the physical therapist's ability to adapt to changes in technology and equipment to enhance the quality of physical therapy services?

The PSEQ is scored using a global, summative score, with a maximum of 100 points. The global score is calculated by summing the scores for all questions in the questionnaire. A higher score indicates a better quality of services provided by the physical therapist. A score closer to 100 suggests a higher quality of service, while a lower score may indicate room for improvement in physical therapy services.

After constructing the questionnaire through content validation, our research endeavor included an examination of internal consistency, yielding a robust Cronbach's alpha coefficient of 0.89. This value represents a high level of internal consistency [14] and confirms the questionnaire's reliability for research purposes. Subsequently, with the questionnaire's internal consistency firmly established, we investigated the correlation between the PSEQ score and other variables: age of the physical therapist, WE, and patient satisfaction measured using the VAS.

3.2. Correlational analysis

The participant profile, as outlined in Table 1, showcases a cohort of 30 experienced physical therapists. On average, they demonstrated significant professional expertise, with a mean WE of 9.8 ± 5.89 years). Their proficiency was reflected in their high global score on the PSEQ, averaging 84.27 ± 7.82 points. Patient satisfaction, measured through the VAS, stood at an average of 8.33 ± 0.79 points out of a maximum score of 10, indicating a high overall satisfaction level within the patient group. These findings highlight the robustness and diversity within our participant group.

Table 1. Summary of the characteristics of study participants (n = 30).

Variable	Age (years)	WE (years)	PSEQ global score	VAS score
Mean	39.57	9.8	84.27	8.33
SD	9.37	5.89	7.82	0.79
Min	22	1	68	6.1
Max	57	22	98	9.7

Note - WE: work experience of physical therapists; PSEQ: Physical Therapy Services Evaluation Questionnaire; VAS: visual analog scale for patient satisfaction; *n*: group size.

The examination of data distribution using the Shapiro-Wilk test revealed a normal distribution for age, PSEQ global score, and WE, underlining the stability of these variables within our dataset. However, the patient satisfaction score (VAS) showcased a non-normal distribution, indicating a distinct pattern in the responses related to satisfaction levels among the participants.

Next, we conducted a correlational analysis using Pearson's coefficient for normally distributed variables (age, WE, and global PSEQ score). For the non-normally distributed variable, WAS, we employed the nonparametric Kendall's rank correlation coefficient. This approach allowed us to assess relationships between variables despite their differing distributions appropriately. In the described correlational analysis, we introduced the nominal variable, sex, to explore nonparametric Kendall's tau correlations alongside other variables. Table 2 presents the correlation matrix between pairs of variables and the statistical significance of these correlations.

Table 2. Correlation output (Pearson's correlation coefficient "r" for normal distributed variables and Kendall's tau "τ" correlation coefficient for nonnormal distributed variables and the nominal sex variable) and the statistical significance level of correlations "p" (*n* = 30).

Variable	Sex	Age	WE	PSEQ global score	VAS score
Sex	1.00 ^τ				
Age	0.01 ^τ	1.00 ^r			
WE	0.05 ^τ	0.82* ^r	1.00 ^r		
PSEQ global score	-0.13 ^τ	0.75* ^r	0.72* ^r	1.00 ^r	
VAS score	-0.09 ^τ	0.31* ^τ	0.25 ^τ	0.55* ^τ	1.00 ^τ

Note - WE: work experience of physical therapists; PSEQ: Physical Therapy Services Evaluation Questionnaire; VAS: visual analog scale for patient satisfaction; *: $p < 0.05$ was considered statistically significant (2-tailed); r: Pearson's correlation coefficient; τ: Kendall's tau correlation coefficient; *n*: group size.

The main obtained statistically significant correlations between variable pairs were as follows:

1. Age and WE: strong and positive correlation ($r = 0.82$), indicating a robust relationship between age and professional experience. This correlation is intuitive, as older individuals accumulate more knowledge over time, leading to an expected strong positive association between age and WE.
2. Age and PSEQ global score: strong and positive correlation ($r = 0.75$), showing that age is associated with higher evaluations of physical therapy services.
3. WE and PSEQ global score: strong and positive correlation ($r = 0.72$), suggesting that professional experience is linked to better evaluations of physical therapy services.
4. VAS score and PSEQ global score: moderate and positive correlation ($\tau = 0.55$), indicating that the assessment of physical therapy services quality is associated with patient satisfaction.

3.3. Regression analysis

In our statistical analysis, we employed a simple linear regression analysis to explore significant correlations among variables. This approach enabled us to comprehend how these variables influence various outcome categories. The pairs of variables considered for regression analysis were, in sequence: age and PSEQ global score, WE and PSEQ global score, and PSEQ global score and VAS score. The results of the regression analysis are detailed in the subsequent sections.

The first linear regression analysis was conducted to explore the relationship between the variables age (independent variable) and PSEQ global score (dependent

variable) (Table 3). The analysis revealed a highly significant association ($p < 0.001$), indicating that age significantly predicts the evaluations of physical therapy service quality as represented by the PSEQ score. Consequently, the model demonstrates a strong fit for the data, and approximately 57% of the variance in PSEQ global score can be explained by the variations in age. This result indicates a substantial impact of age on predicting the evaluations of physical therapy service quality as represented by the PSEQ score.

Table 3. Model summary, ANOVA report, and coefficients for simple linear regression analysis - age versus PSEQ global score ($n = 30$).

Variable	r	r Square	Adjusted r Square	SE	F	p	β_0	SE	p	95%LB	95%UB	β_1	SE	p	95%LB	95%UB
PSEQ global score	0.75	0.57	0.56	4.81	37.6	0.001	60.47	3.87	0.001	52.54	68.41	0.59	0.09	0.001	0.39	0.78

Note - PSEQ: Physical Therapy Services Evaluation Questionnaire; r: Pearson's coefficient of correlation; SE: standard error; F: test for overall significance for the linear model; p: level of statistical significance; β_0 : the intercept coefficient; β_1 : the regression coefficient; 95%LB and 95%UB: lower bound and upper bound of the 95% confidence interval; n: group size.

The next linear regression analysis considered the WE as the independent variable and the PSEQ global score as the dependent variable (Table 4). This analysis was statistically significant, indicating a significant relationship between WE and the evaluations of physical therapy services, as represented by the PSEQ score ($p < 0.001$). Approximately 48% of the variance in the PSEQ global score is attributed to the WE of the physical therapist, underscoring the substantial influence his factor has on the evaluations of physical therapy services provided, as assessed by the organization's manager.

Table 4. Model summary, ANOVA report, and coefficients for simple linear regression analysis - WE versus PSEQ global score ($n = 30$).

Variable	r	r Square	Adjusted r Square	SE	F	p	β_0	SE	p	95%LB	95%UB	β_1	SE	p	95%LB	95%UB
PSEQ global score	0.70	0.48	0.47	5.29	26.23	0.001	75.23	1.9	0.001	71.35	79.12	0.85	0.17	0.001	0.51	1.2

Note - WE: work experience; PSEQ: Physical Therapy Services Evaluation Questionnaire; r: Pearson's coefficient of correlation; SE: standard error; F: test for overall significance for the linear model; p: level of statistical significance; β_0 : the intercept coefficient; β_1 : the regression coefficient; 95%LB and 95%UB: lower bound and upper bound of the 95% confidence interval; n: group size.

The last statistical regression analysis focused on the relationship between the VAS score (independent variable) and the PSEQ global score (dependent variable) (Table 5). Although the VAS variable had a non-normal distribution, we could apply this regression analysis because the residuals (errors) of the regression line were approximately normally distributed.

Table 5. Model summary, ANOVA report, and coefficients for simple linear regression analysis - VAS score versus PSEQ global score ($n = 30$).

Variable	r	r Square	Adjusted r Square	SE	F	p	β_0	SE	p	95%LB	95%UB	β_1	SE	p	95%LB	95%UB
PSEQ global score	0.63	0.4	0.38	5.69	18.85	0.001	35.01	11.24	0.004	11.99	58.03	5.83	1.34	0.001	3.08	8.59

Note – VAS: visual analog scale for patient satisfaction; PSEQ: Physical Therapy Services Evaluation Questionnaire; r: Pearson's coefficient of correlation; SE: standard error; F: test for overall significance for the linear model; p: level of statistical significance; β_0 : the intercept coefficient; β_1 : the regression coefficient; 95%LB and 95%UB: lower bound and upper bound of the 95% confidence interval; n: group size.

The results indicate that approximately 40% of the variation in the PSEQ score is explained by the variation in the VAS score ($p < 0.001$). These findings robustly establish that patient satisfaction, as assessed by VAS, significantly impacts the evaluations of physical therapy services, as measured by PSEQ.

4. Discussion

Quality-based care, fundamental in physical therapy, underscores the need for clear treatment effectiveness visible to various stakeholders [15]. In our research, we delved into the intricate dynamics surrounding the implementation of quality management systems in physical therapy. The aim of the study was to investigate the complex relationship between the implementation of quality management systems in physical therapy. To achieve this goal, our study introduced an innovative tool, the PSEQ. This instrument, crafted through a rigorous process of content validation and internal consistency analysis, enabled us to probe deeply into implementing quality management systems in physical therapy services. By validating such a questionnaire, management gains a valuable tool to identify areas for improvement and recognize strengths within the physical therapy care team and processes [16].

Unlike many previous studies, our approach incorporated not only traditional metrics of quality but also the nuanced perspectives of both physical therapists and patients. Patient satisfaction, historically oversimplified, shifted towards a multidimensional evaluation, moving from opinions to concrete facts to comprehensively assess care quality [17]. Incorporating patient experience measures in physical therapy enhances clinical outcomes and ensures patient-centered care [18]. For this reason, our questionnaire was employed to analyze its interplay with other factors, such as the professional experience of physical therapists and patient satisfaction. By integrating this methodology with an exploration of physical therapists' professional experience, our research sought to unravel the intricate web of factors influencing patient satisfaction in the context of quality physical therapy services.

Our comprehensive analysis revealed significant correlations among some investigated variables. Age and years of professional experience were robust predictors of the quality of physical therapy services, indicating that older, more experienced physical therapists tend to provide higher-quality care. Other authors have confirmed that the ethical aspects of the clinical relationship between physical therapists and patients are profoundly influenced by practitioners' attitudes and values, which are shaped by their professional experiences [19]. This requirement is practically conditioned by the physical therapist's years of service, directly correlated with their chronological age.

The direct relationship between work experience and chronological age highlights the necessity of accumulating expertise through years of practice. Each passing year allows professionals to gather valuable insights and skills, enriching their overall experience in the field. While this correlation is predominantly positive, it's important to note the potential adverse influences of certain occupations on individual health. For instance, certain job-related aspects like service-oriented tasks, limited control over work, heavy physical demands, and extended working hours, especially during middle age, have been associated with an expedited biological aging process [20]. Although this topic raises intriguing discussions, it falls outside the scope of our current research.

A recent study, consistent with our research findings, highlighted that physical therapists with significant experience (more than 5 years) were more likely to make accurate management decisions compared to their less experienced counterparts.

Moreover, in the study, the interviewed physical therapists emphasized that experience played a critical role in making correct management decisions [21].

Our findings have emphasized that the quality standards in physical therapy services within an institution are shaped significantly by the age and experience of the employed physical therapists. This scenario might pose challenges in hiring younger physical therapists, as organizational management often prioritizes experienced professionals to maintain service quality. Furthermore, managers are inclined to retain skilled employees and reward them, encouraging them to prolong their professional tenure within the organization. This situation can strain the employee-employer relationship, as the employee's expectations may increase over time, relating to needs for career advancement, salary raises, additional benefits, or rewards, among others [22].

Consequently, some managers might be tempted to hire younger physical therapists, who might have lower retention expectations and a greater desire for career development. Ultimately, according to the interpretation mentioned above, this could negatively impact the quality of physical therapy services provided due to the limited experience of new hires. From this analysis, the complexity of the relationships between the age, work experience of physical therapists, and the organizational environment becomes apparent.

Furthermore, patient satisfaction, measured through the VAS, emerged as a determinant factor associated with the evaluations of physical therapy services. Practically, patient satisfaction significantly shapes the overall assessments of physical therapy services. This can be explained by the fact that patients' satisfaction levels directly mirror the quality of their experience during treatment and their confidence in the skills and competence of physical therapists. Positive patient feedback and experiences enhance the reputation and quality of services provided by physical therapy institutions. This close connection between patient satisfaction and service evaluations underscores the importance of proper patient experience management in the field of physical therapy.

Our study bridges the gap between patient satisfaction and physical therapy service quality, shedding light on essential aspects of healthcare excellence, focusing on the intricate interplay between patient satisfaction and service quality, and offering valuable insights into an often-neglected area of research [23]. We can establish a connection between research in physical therapy and studies in other medical domains that share the same objective: highlighting the link between patient satisfaction and the quality of medical care.

For example, studies are comparing physical therapy and primary care, spotlighting significant differences in aspects such as communication and knowledge, clinicians' characteristics, efficiency, treatment methods, assessment skills, and the quality of services provided compared to general practitioner care [24]. These comparisons highlight key aspects of patient satisfaction and service quality in both medical fields. Moreover, juxtaposing physical therapy with other disciplines allows for a comprehensive assessment of best practices. This process potentially enriches strategies for physical therapy by integrating successful approaches observed across healthcare domains.

Several authors have demonstrated that patients' satisfaction levels in the public healthcare system, as observed by physical therapists, are comparable to those seen by other specialists, such as surgeons in traditional clinics [25]. This phenomenon can be attributed to the comprehensive and patient-centered approach adopted by physical therapists in the public healthcare system, which aligns with the high standards of care provided by other specialists in traditional clinics. The emphasis on holistic patient care and effective communication might contribute to similar satisfaction levels reported by patients across different healthcare settings [26]. Integrated patient care and effective communication guarantee consistent patient satisfaction, ultimately embodying the fundamental principles of patient-centered care [27].

In the face of growing care transfers and the rising complexity of health issues among older adults, there is a pressing need to create new roles. This need is especially pertinent in physical therapy, where specialized expertise is evolving to meet the distinctive healthcare requirements of older adults and ensure smooth transitions of care [28]. The

increasing number of older adults with complex health issues and the shifting landscape of healthcare necessitate a reassessment of patient satisfaction in physical therapy recovery services [29]. As the population ages, the expectations and needs of patients evolve [30]. Hence, it's essential to reevaluate how physical therapy services cater to these changing demands, ensuring that patient satisfaction remains at the core of the care provided.

Overall, our findings underscore the complex interplay between professional expertise, implementation of quality standards, and patient contentment in shaping the landscape of physical therapy services. Through this endeavor, we have reinforced the observation that physical therapists adeptly manage complexity, integrating diverse factors to enhance competence while balancing intricate and straightforward activities [31]. The study not only enhances our understanding of these relationships but also highlights the imperative for healthcare organizations to prioritize the continual professional development of their staff and the satisfaction of their patients to ensure optimal service quality.

Our study holds significance for policy and practice in physical therapy. Hence, advocating for continuous and comprehensive training programs for physical therapists should be a priority, enabling ongoing skill development and adapting to evolving practices. Additionally, policymakers should explore the implementation of patient feedback systems and the advancement of patient-centric care models within physical therapy practice. Lastly, customizing existing quality management systems to suit the distinctive needs of physical therapy organizations is essential for enhancing service delivery efficiency and effectiveness.

Indeed, our study put into evidence the potential for the swift integration of our newly devised PSEQ questionnaire into an online format, which is particularly valuable for evaluating physical therapy services at an organizational management level. This electronic adaptation ensures rapid assessments, facilitating agile decision-making processes in the dynamic landscape of post-pandemic healthcare management [32, 33].

Future research, grounded in the PSEQ, aims to delve into multifaceted dimensions of patient experiences and service quality within physical therapy. The intention is to utilize the PSEQ to explore nuanced aspects of patient satisfaction, treatment effectiveness, and overall healthcare quality, considering socio-economic backgrounds and organizational cultural influences. This tool facilitates comprehensive investigations into the intricacies of physical therapy services, putting into evidence the dynamic interplay between patient contentment, professional expertise, and quality standards. Rigorous analysis employing the PSEQ holds the promise of significantly advancing patient-centered care in physical therapy, offering valuable insights for healthcare practitioners and organizations.

Moreover, extending the criteria for participants to encompass diverse physical therapists in terms of both experience and geographic diversity, coupled with expanding the research to include a wider variety of settings like acute care hospitals, outpatient clinics, and home health services, will enhance the robustness of findings and their applicability across multiple contexts. As another future research direction, the integration of qualitative methods like interviews or focus groups can reveal deeper insights into the complex aspects of patient satisfaction and therapist perspectives, thereby complementing this study's methodology. The study could also benefit from examining how digital health tools and telehealth services impact patient satisfaction and service quality in physical therapy.

The study's limitations primarily stem from the small sample size (30 physical therapists), raising the potential for self-reporting bias. Socio-economic backgrounds and organizational influences were not thoroughly investigated. Due to constraints related to data collection, it was not possible to incorporate demographic variables of the patients, such as age, gender, diagnosis, and cultural background, into the statistical analysis. The cross-sectional design hampers drawing causal conclusions. Additionally, sole reliance on numeric ratings might oversimplify nuanced patient experiences. Future research should

embrace diverse, longitudinal studies across various socio-economic contexts in physical therapy services for a comprehensive understanding.

5. Conclusions

Our study, following the validation of PSEQ, highlights substantial correlations between physical therapists' age, professional experience, and evaluations of physical therapy services. Utilizing the PSEQ, we demonstrated that older and more experienced physical therapists consistently deliver higher-quality care, emphasizing the direct impact of experience on service quality. Our study also spotlights the significant influence of patient satisfaction, assessed through the VAS, on the overall evaluations of physical therapy services. Incorporating quantitative and qualitative assessments, our research provides a comprehensive understanding of the diverse factors influencing physical therapy service quality. These findings emphasize the imperative for continuous professional development and patient-focused care in physical therapy.

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Data Availability Statement: The data are available on request from the corresponding author. All data relevant to the study are included in the article.

Conflicts of Interest: The authors declare no conflict of interest.

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