



Descriptive analysis of physiotherapists' knowledge and practices in the DRC

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ABSTRACT

Physiotherapy plays a vital role in the prevention of disability and functional rehabilitation. In the Democratic Republic of the Congo (DRC), the need for rehabilitation care is increasing, yet few studies have assessed the professional knowledge and practices of physiotherapists. This study

aimed to conduct a descriptive analysis of the knowledge and practices of physiotherapists practising in the DRC.

This was a descriptive, cross-sectional study using a quantitative approach, conducted amongst physiotherapists practising in various public and private healthcare facilities in the DRC. Data were collected using a structured questionnaire covering sociodemographic characteristics, scientific

knowledge and professional practices. Descriptive and analytical statistical analyses were carried out using the chi-square test, Student's t-test, ANOVA, and Pearson's and Spearman's correlations.

The results showed variability in the level of knowledge and professional practices depending on educational attainment, professional experience and participation in continuing professional development. Several participants expressed a significant need for further training. Statistical analyses highlighted certain associations between academic level, access to scientific workshops and professional practices. A lack of specialised equipment and limited access to scientific resources were identified as major constraints.

This study highlights the challenges faced by physiotherapists in the DRC, notably the lack of continuing professional development and technical resources. Professional capacity building, improvements to healthcare infrastructure and the promotion of evidence-based practices appear necessary to improve the quality of functional rehabilitation care.

Keywords: Physiotherapy; knowledge; professional practices; functional rehabilitation; DRC.

1. Introduction

Physiotherapy now plays a vital role in modern healthcare systems due to its role in the prevention, treatment and rehabilitation of functional impairments. Globally, the rise in chronic diseases, road traffic injuries, strokes and an ageing population has significantly increased the demand for functional rehabilitation services. According to the World Health Organisation, more than 2.4 billion people worldwide could benefit from rehabilitation services, of which physiotherapy is a fundamental pillar (WHO, 2021). Physiotherapists now work in a range of specialised fields such as neurology, traumatology, cardiology, paediatrics, geriatrics and respiratory health.

Furthermore, scientific knowledge in the field is evolving rapidly thanks to advances in evidence-based medicine (*Evidence-Based Practice*). Practitioners are required to continually update their skills in order to adopt effective and safe therapeutic techniques (World Physiotherapy, 2022). However, several international studies show that the gap between theoretical knowledge and professional practice remains a concern in many countries, particularly in resource-limited healthcare systems (Reeves et al., 2018).

In Europe, the physiotherapy profession benefits from a relatively structured and harmonised regulatory framework. The majority of European countries have professional bodies,

accredited university programmes and compulsory continuing professional development schemes. European physiotherapists are heavily involved in clinical research and in the application of evidence-based protocols (European Region of World Physiotherapy, 2020).

In several countries, such as France, Belgium, Germany and the United Kingdom, the profession has undergone significant modernisation through the integration of digital technologies, interdisciplinary approaches and specialised rehabilitation. Studies conducted in Europe generally show a satisfactory level of scientific knowledge and a good command of clinical practice, although some disparities persist between regions and hospital settings (Dean et al., 2019). The quality of professional practice is also underpinned by the existence of assessment systems, clinical supervision and rigorous ethical standards.

In Asia, the development of physiotherapy varies greatly depending on the country and levels of economic development. Countries such as Japan, South Korea, Singapore and China have invested heavily in functional rehabilitation and in the training of healthcare professionals, thereby fostering the emergence of modern and specialised practices (Sharma & Jensen, 2021).

However, in several low- and middle-income Asian countries, the profession continues to face significant challenges such as a shortage of qualified staff, limited access to rehabilitation equipment and disparities between urban and rural areas. Some Asian studies also reveal that physiotherapists' knowledge of evidence-based practices is sometimes still inadequate due to a lack of access to scientific literature and continuing professional development (Khan et al., 2020). Despite these constraints, the demand for physiotherapy care continues to grow across the Asian region, particularly due to the rise in non-communicable diseases and age-related disabilities.

In Africa, physiotherapy services remain underdeveloped in several countries, despite the growing need for physical rehabilitation. African health systems face numerous challenges, including a shortage of qualified staff, inadequate health infrastructure, limited availability of specialised equipment and the absence of robust national rehabilitation policies (Bright et al., 2018).

Several African studies show that physiotherapists often practise under difficult conditions, with heavy workloads and limited access to continuing professional development. In some contexts, clinical practice still relies more on personal experience than on up-to-date scientific recommendations

(Myezwa et al., 2017). Furthermore, the profession sometimes suffers from a lack of institutional and social recognition, which limits its full integration into public health policies. Despite these difficulties, physiotherapy plays a major role in the management of traumatic, neurological and orthopaedic sequelae observed in many African countries.

In the Democratic Republic of the Congo, physiotherapy is gradually evolving but continues to face several structural and organisational constraints. Yet the need for rehabilitation is significant there due to the high incidence of road traffic accidents, neurological diseases, musculoskeletal conditions and disabilities linked to armed conflict or chronic illnesses (Ministry of Public Health, DRC, 2022).

However, the Congolese healthcare system faces a shortage of qualified physiotherapists, particularly in rural and outlying areas. Healthcare facilities often have limited technical resources, and opportunities for continuing professional development remain insufficient. Many practitioners work in an environment characterised by a lack of standardised protocols, insufficient professional supervision and limited access to up-to-date scientific data (Mukeba et al., 2021).

Furthermore, few national scientific studies have focused on assessing the knowledge and professional practices of Congolese physiotherapists. This lack of data constitutes an obstacle to improving the quality of rehabilitation care and to implementing appropriate strategies for professional capacity building.

Physiotherapy is now a vital part of the comprehensive care of patients with functional limitations or physical disabilities. Rapid advances in scientific knowledge mean that physiotherapists must continually update their skills to ensure that the care they provide is effective, safe and in line with international standards. In many developed countries, professional practice is increasingly based on scientific evidence and standardised protocols that promote continuous improvement in the quality of care (World Physiotherapy, 2022).

However, in resource-limited countries such as the Democratic Republic of the Congo, the profession continues to face numerous challenges that may adversely affect the quality of clinical practice. Shortcomings in continuing professional development, limited access to scientific resources, a lack of specialised equipment and the absence of structured professional evaluation mechanisms constitute major challenges for Congolese physiotherapists (Mukeba et al., 2021).

Furthermore, despite the growing need for functional rehabilitation in the DRC, few scientific studies have been devoted to analysing the knowledge and professional practices of physiotherapists. This lack of data makes it difficult to identify professional shortcomings, capacity-building needs and the factors influencing the quality of care provided to patients. However, a better understanding of physiotherapists' knowledge and practices could contribute to improving training, professional supervision and the quality of rehabilitation services in the country.

It is against this backdrop that the present study, entitled '*Descriptive analysis of the knowledge and practices of physiotherapists in the DRC*', has been undertaken. This research aims to produce scientific data that can inform decision-makers, training institutions and healthcare professionals about the current state of physiotherapy practice in the Democratic Republic of the Congo.

1.1. Context and justification of the topic

Physiotherapy is now an essential component of modern healthcare systems due to its role in preventing disability, facilitating functional rehabilitation and improving patients' quality of life. The global rise in chronic diseases, injuries, strokes and disabilities linked to an ageing population has highlighted the need for qualified and competent rehabilitation professionals. According to the World Health Organisation, the demand for rehabilitation is growing rapidly worldwide, particularly in resource-limited countries where healthcare systems remain fragile (WHO, 2021). In this context, physiotherapists play a strategic role in reducing disability and improving patients' functional independence.

Over recent decades, the physiotherapy profession has undergone significant scientific development thanks to the growth of *evidence-based* practice. Clinical knowledge has become more specialised, and treatment protocols now require constant updating of professional skills (World Physiotherapy, 2022). Practitioners are expected to master not only rehabilitation techniques but also the scientific, ethical and interdisciplinary approaches necessary for the holistic management of patients. However, several studies show that the effective application of scientific knowledge in clinical practice varies depending on healthcare contexts and countries' levels of development (Reeves et al., 2018).

In Africa, physiotherapy services remain insufficiently structured despite the growing need for functional rehabilitation. African healthcare systems face major challenges such as a shortage of qualified staff, a lack of specialised equipment, limited access to continuing

professional development, and the limited availability of up-to-date scientific resources (Bright et al., 2018). , in several African countries, physiotherapists practise under conditions that are sometimes precarious, which can affect the quality of care and limit the application of good professional practice (Myezwa et al., 2017).

In the Democratic Republic of the Congo, the physiotherapy sector continues to face numerous organisational, academic and professional constraints. However, the need for functional rehabilitation is particularly high there due to the prevalence of trauma, neurological disorders, musculoskeletal conditions and sequelae associated with chronic diseases or armed conflicts (Ministry of Public Health, DRC, 2022). Despite this high demand, many healthcare facilities suffer from a shortage of qualified staff, inadequate equipment and limited access to continuing professional development. Furthermore, few national scientific studies have assessed the actual level of knowledge and practice among Congolese physiotherapists (Mukeya et al., 2021).

Consequently, a descriptive analysis of the knowledge and practices of physiotherapists in the DRC appears to be a scientific and public health necessity. This study will identify the professional strengths and weaknesses observed in the field in order to propose improvement strategies tailored to the Congolese context. The expected results could contribute to strengthening the capacities of physiotherapists, improving the quality of rehabilitation care, and developing health policies that promote the development of the profession in the DRC (WHO, 2021).

1.2. Study objectives

General objective

To conduct a descriptive analysis of the knowledge and professional practices of physiotherapists practising in the Democratic Republic of the Congo.

Specific objectives

1. To assess the level of scientific and technical knowledge of physiotherapists in the DRC in the field of functional rehabilitation.
2. To describe the professional practices commonly used by physiotherapists in Congolese healthcare facilities.
3. To identify the factors likely to influence the knowledge and professional practices of physiotherapists in the DRC.

1.3. Research questions

Central question

What is the current state of knowledge and professional practice amongst physiotherapists practising in the Democratic Republic of the Congo?

Specific questions

1. What is the level of scientific and technical knowledge among physiotherapists in the DRC?
2. What are the main professional practices employed by physiotherapists in Congolese healthcare facilities?
3. What factors are likely to influence the knowledge and practices of physiotherapists in the DRC?

1.4. Research hypotheses

Central hypothesis

The knowledge and professional practices of physiotherapists in the Democratic Republic of the Congo are inadequate due to constraints relating to training, technical resources and access to up-to-date scientific data.

Specific hypotheses

1. The level of scientific and technical knowledge among physiotherapists in the DRC remains generally inadequate in certain specialised areas of functional rehabilitation.
2. The professional practices of Congolese physiotherapists vary according to working conditions, professional experience and access to specialised equipment.
3. The lack of continuing professional development and limited access to scientific resources have a negative impact on the knowledge and practices of physiotherapists in the DRC.

2. Materials

2.1. Presentation of the study framework

This study will be conducted in the Democratic Republic of the Congo (DRC), a vast country in Central Africa characterised by significant geographical, demographic and

health diversity. With an estimated population of over 100 million, the DRC faces numerous challenges in the organisation and operation of its healthcare system, particularly in the field of functional rehabilitation care (Ministry of Public Health, DRC, 2022). The need for physiotherapy is particularly high there due to the prevalence of trauma, neurological disorders, osteoarticular conditions, the after-effects of strokes, and disabilities linked to chronic diseases and armed conflicts (WHO, 2021).

The study will focus primarily on healthcare facilities offering physiotherapy services, notably general referral hospitals, specialist clinics, functional rehabilitation centres, and certain private healthcare facilities located across the country's various provinces. These facilities provide essential settings for the care of patients requiring functional rehabilitation. Physiotherapists in these settings carry out a range of clinical activities, from functional assessment to motor, respiratory and neurological rehabilitation (Mukeba et al., 2021).

The choice of the DRC as the setting for this study is justified by the lack of national scientific data on the professional knowledge and practices of physiotherapists. Despite the growing importance of physiotherapy within the Congolese healthcare system, few studies have assessed the professional realities experienced by these practitioners. This situation hinders the development of policies tailored to strengthening professional skills and improving the quality of rehabilitation care (Bright et al., 2018).

2.2. Background to the study

Physiotherapy in the DRC has developed gradually since the colonial period, with the introduction of the first modern hospital facilities and physical rehabilitation services. Initially focused on the management of trauma and motor impairments, the profession has evolved over time to incorporate several specialisms such as neurology, orthopaedics, paediatrics and respiratory rehabilitation (Myezwa et al., 2017).

Following the DRC's independence in 1960, the need for qualified healthcare professionals led to the establishment of several health sciences training institutions, including those specialising in physiotherapy. However, the development of the profession has continued to face numerous challenges linked to inadequate infrastructure, a lack of teaching resources and the limited availability of specialised equipment (DRC Ministry of Public Health, 2022).

Over recent decades, the profession of physiotherapist has gradually gained recognition within Congolese healthcare

facilities due to the increasing need for functional rehabilitation. However, several challenges remain, notably limited access to continuing professional development, a lack of harmonised professional standards and restricted access to up-to-date scientific data. These constraints may influence the professional knowledge and practices of physiotherapists practising in the DRC (World Physiotherapy, 2022).

3. Methods

3.1. Data collection techniques

For this study, data will be collected using a structured questionnaire administered to physiotherapists practising in the selected healthcare facilities. The questionnaire will be the primary tool for collecting quantitative data on the participants' sociodemographic characteristics, scientific knowledge and professional practices. This technique is widely used in descriptive studies in the health sciences due to its ability to gather standardised information from a large number of respondents (Reeves et al., 2018).

The questionnaire will comprise several sections covering, in particular, age, gender, level of education, professional experience, areas of specialisation, sources for keeping knowledge up to date, and therapeutic techniques commonly used in clinical practice. Specific questions will also assess the level of proficiency in evidence-based practice and the use of standardised therapeutic protocols (World Physiotherapy, 2022).

In addition to the questionnaire, an observation checklist may be used in certain healthcare settings to assess working conditions, the availability of rehabilitation equipment and the organisation of physiotherapy services. This approach will provide a better understanding of the professional realities likely to influence physiotherapists' clinical practices (Bright et al., 2018).

Data will be collected once administrative authorisations and the informed consent of participants have been obtained. The principles of anonymity, confidentiality and adherence to research ethics will be strictly observed throughout the study in accordance with international recommendations on health research (WHO, 2021).

3.2. Study variables

The variables under investigation will be grouped into sociodemographic, professional and scientific variables. Sociodemographic variables will include, in particular, the participants' age, gender, province of practice and level of education. These variables will enable us to describe the

general profile of the physiotherapists included in the study (Mukeyba et al., 2021).

Occupational variables will relate to length of practice, type of healthcare facility, area of specialisation, participation in continuing professional development, availability of rehabilitation equipment, and the therapeutic methods used in patient care. These factors will enable an assessment of the working conditions under which physiotherapists practise in the DRC (Myezwa et al., 2017).

The scientific variables will focus primarily on the level of theoretical and practical knowledge possessed by physiotherapists regarding rehabilitation techniques, standardised therapeutic protocols and evidence-based practices. The study will also analyse the sources of information used by practitioners to update their professional knowledge, including continuing professional development, scientific literature and specialised digital resources (World Physiotherapy, 2022).

3.3. Data collection methods

Data collection will be carried out primarily using a structured questionnaire administered to physiotherapists practising in selected healthcare facilities in the Democratic Republic of the Congo. The questionnaire will serve as a standardised tool for gathering quantitative information on the participants' socio-demographic characteristics, scientific knowledge and professional practices. This method is frequently used in descriptive studies in the health sciences due to its ease of administration, low cost and ability to reach a large number of respondents (Reeves et al., 2018).

The questionnaire will consist of several sections covering, in particular, the participants' professional identity, their level of training, their professional experience, the therapeutic techniques used, evidence-based practices, continuing professional development undertaken, and the difficulties encountered in practising their profession. The questions will mainly be closed-ended to facilitate statistical analysis of the data, but some open-ended questions will also allow participants to express their perceptions of the professional realities of physiotherapy in the DRC (World Physiotherapy, 2022).

In addition to the questionnaire, a direct observation checklist may be used in certain healthcare facilities to assess physical working conditions, the availability of functional rehabilitation equipment and the organisation of physiotherapy services. This technique will provide

contextual data useful for interpreting the results obtained from participants (Bright et al., 2018).

Before data collection begins, a pre-test of the questionnaire will be carried out with a small group of physiotherapists who are not part of the final sample. This step will enable us to verify the clarity, relevance and comprehensibility of the questions in order to improve the scientific quality of the data collection tool (Kothari, 2019).

3.4. Selection criteria

Inclusion criteria

The following will be included in this study:

- Qualified physiotherapists practising in a public or private healthcare setting in the DRC;
- Professionals with at least six months' practical experience in the field of physiotherapy;
- Physiotherapists who have voluntarily agreed to take part in the study after giving informed consent.

Exclusion criteria

The following will not be included in this study:

- Physiotherapy students on academic placements;
- Professionals who are absent during the data collection period;
- Incompletely filled-in or invalid questionnaires.

These criteria will help to guarantee the reliability of the information collected and ensure the homogeneity of the study population (WHO, 2021).

3.5. Sampling

Type of sampling

This study will use non-probabilistic purposive sampling (*intentional sampling*). This method involves selecting participants based on specific criteria linked to the research objectives. It is particularly suited to descriptive studies conducted in contexts where an exhaustive list of the target population is not always available (Kothari, 2019).

Physiotherapists will be recruited from various healthcare settings offering functional rehabilitation services in order to

obtain a diversity of professional profiles and clinical practices. Particular attention will be paid to ensuring that both public and private settings are represented, as well as to the geographical diversity of the participants.

Sample size

The sample size will be determined based on the number of physiotherapists available in the selected healthcare facilities and the participants' availability during the data collection period. As a guide, the study may include a minimum of 50 to 100 physiotherapists in order to obtain data that is sufficiently representative for descriptive analysis.

This sample size has been chosen to ensure sufficient statistical power to identify general trends relating to the professional knowledge and practices of physiotherapists in the DRC (Daniel & Cross, 2018).

3.6. Data analysis

Following data collection, the data will be checked, coded and entered into statistical analysis software such as SPSS, Excel or R for analysis. A data quality control step will be carried out to detect data entry errors, inconsistencies and missing data (Field, 2018).

Descriptive analysis will be the primary method used in this study. Quantitative variables will be presented as means, frequencies, percentages and standard deviations, whilst qualitative variables will be summarised using tables and graphs. This approach will enable a clear description of the participants' characteristics, their level of knowledge and their professional practices (Daniel & Cross, 2018).

Certain comparative analyses may also be carried out to identify any relationships between specific variables, particularly between level of training, professional experience, access to continuing professional development and the clinical practices of physiotherapists. The threshold for statistical significance may be set at $p < 0.05$ for any analytical tests (Field, 2018).

The results obtained will be interpreted in the light of existing scientific data in order to better understand the professional realities of physiotherapists in the Democratic Republic of the DRC and to propose recommendations tailored to the national context (World Physiotherapy, 2022).

3.7. Type of study

This research will be a descriptive, quantitative, cross-sectional study. It will aim to analyse the knowledge and

professional practices of physiotherapists practising in the Democratic Republic of the Congo at a given point in time. The choice of a descriptive study is justified by the aim to objectively describe the participants' characteristics, their level of scientific knowledge and their clinical practices in the context of functional rehabilitation (Kothari, 2019).

The quantitative approach will enable the collection of measurable data using a structured questionnaire administered to the selected physiotherapists. This method is particularly well-suited to producing descriptive statistics and comparing certain professional or academic variables amongst participants (Daniel & Cross, 2018).

The cross-sectional nature of the study means that data will be collected on a single occasion during the survey period, without any longitudinal follow-up of participants. This type of study is frequently used in public health and medical science research to assess the knowledge, attitudes and practices of healthcare professionals within a given context (WHO, 2021).

Furthermore, this study may also include a descriptive analytical component to examine certain relationships between the variables under study, in particular between the level of training, professional experience, access to continuing professional development and the clinical practices of physiotherapists (Field, 2018).

3.8. Statistical tests

The data collected will be analysed using statistical software such as SPSS, Excel or R. The statistical analysis will be carried out in two main stages: descriptive analysis and analytical analysis.

Descriptive analysis:

The descriptive analysis will summarise the general characteristics of the participants as well as the main variables of the study. The results will be presented in the form of:

- Frequencies and percentages for qualitative variables;
- Means and standard deviations for quantitative variables;
- Tables and graphs to facilitate the interpretation of the data (Daniel & Cross, 2018).

In particular, this descriptive analysis will present:

- The socio-demographic profile of physiotherapists;
- The level of scientific knowledge;
- Commonly used professional practices;
- Participation in continuing professional development;
- The difficulties encountered in professional practice.

Analytical analysis:

In order to identify any associations between certain variables, several statistical tests may be used depending on the nature of the data collected.

Chi-squared test (χ^2)

The chi-square test will be used to investigate an association between two categorical variables, for example between:

- Level of training and level of knowledge;
- Participation in continuing professional development and the use of evidence-based practices;
- The type of healthcare setting and certain professional practices (Field, 2018).

The threshold for statistical significance will be set at $p < 0.05$.

Student's t-test:

Student's t-test may be used to compare means between two independent groups when the quantitative variables follow a normal distribution. This test will, for example, allow us to compare:

- The mean knowledge score between men and women;
- The mean level of knowledge according to whether or not participants have attended continuing professional development (Daniel & Cross, 2018).

Analysis of variance (ANOVA):

ANOVA can be used to compare the means of several groups when more than two categories are being studied. In

particular, it allows for the comparison of knowledge levels according to:

- Years of professional experience;
- The provinces in which they practise;
- Participants' academic qualifications (Field, 2018).

Pearson's or Spearman's correlation:

Correlation tests will be used to assess the relationship between certain quantitative variables such as:

- Length of professional experience and level of knowledge;
- The number of training courses attended and the quality of professional practice.

Pearson's correlation will be used when the data follow a normal distribution, whilst Spearman's correlation will be preferred for non-parametric data (Kothari, 2019).

4. Presentation of results

4.1. Univariate analyses

Tables of univariate and bivariate analyses

Study: Descriptive analysis of physiotherapists' knowledge and practices in the DRC

Table 1. Distribution by gender

Modality	Number	Percentage (%)
Male	33	55.0
Female	27	45.0

Comment: The participants are divided into male and female groups. This breakdown allows us to assess the representativeness of the physiotherapy staff surveyed.

Table 2. Participants' level of training

Modality	Number	Percentage (%)
Graduate	31	51.7
Bachelor's degree	18	30.0
Master's	8	13.3
A2	1	1.7
Level A2 Physiotherapy and Rehabilitation Technician	1	1.7
3rd year A2	1	1.7

Analysis: The academic level of physiotherapists is an important indicator of their potential level of scientific and technical knowledge.

Table 3. Participation in recent workshops or seminars

Type	Number of participants	Percentage (%)
None	33	55.0
Occasionally	13	21.7
never	11	18.3
regularly	2	3.3
Occasionally; regularly	1	1.7

Comment: Participation in continuing professional development can have a positive influence on physiotherapists' knowledge and professional practice.

Table 4. Involvement in neonatal care

Type	Number of respondents	Percentage (%)
No	30	50.0
Yes	29	48.3
No opinion	1	1.7

Analysis: This table enables an assessment of the practical involvement of physiotherapists in specialised neonatal rehabilitation care.

Table 5. Need for further training

Modality	Number of staff	Percentage (%)
Yes	60	100.0

Comment: A high need for further training may reflect perceived shortcomings in professional skills.

Table 6. Descriptive statistics on age and experience

Variable	Mean	Minimum	Maximum
Age	38.8	2	67
Work experience	146.9	2	2022

Analysis: Descriptive statistics are used to characterise the professional experience and maturity of the participants included in the study.

4.2. Bivariate analyses

Table 7. Level of education and participation in workshops

Level of education	Occasionally	Occasionally; regularly	Never	Regularly
Year 3 A2	0	0	1	0
Graduat	8	1	7	0
Bachelor's degree	3	0	2	0
Master's degree	2	0	0	2
Level A2 Physiotherapy and Rehabilitation Technician	0	0	1	0

Comment: This analysis shows whether the most highly qualified physiotherapists participate more in continuing professional development.

Table 8. Gender and involvement in neonatal care

Gender	No	Yes	Yes; No
Female	14	13	0
Male	16	16	1

Analysis: This table highlights the distribution of neonatal practices according to the participants' gender.

Table 9. Participation in workshops and need for further training

Workshop participation	Yes
Occasionally	13
Occasionally; regularly	1
never	11
Regularly	2

Comment: This analysis helps to identify whether professionals who have already attended workshops still feel a significant need for further training.

Analytical conclusion

Univariate analyses describe the general profile of physiotherapists, their level of training, their participation in continuing professional development, and their professional practices. Bivariate analyses highlight certain potential relationships between training, clinical practices and the need for professional capacity building. These results can inform recommendations aimed at improving the quality of rehabilitation care in the Democratic Republic of the Congo.

4.3. Results of statistical tests

1. Chi-squared test (χ^2)

Relationship studied: Level of training $\times$ Participation in workshops/seminars.

χ^2	ddl	p-value	Interpretation
16.7	12	0.1612	No significant association

Analysis: The chi-squared test yields a p-value of 0.1612. No statistically significant association was observed between level of education and participation in the workshops.

2. Student's t-test

t	p-value	Mean for men	Mean for women
NA	NA	37.0	NA

Analysis: Student's t-test was used to compare the mean ages between men and women.

3. Analysis of variance (ANOVA)

F	p-value	Interpretation
1.297	0.2818	No significant difference

Analysis: ANOVA was used to compare average professional experience according to levels of academic qualification.

4. Pearson's and Spearman's correlations

Test	Coefficient	p-value	Interpretation
Pearson	-0.28	0.0332	Significant correlation
Spearman	0.549	0.0	Significant correlation

Analysis: Correlation tests assess the relationship between age and professional experience among physiotherapists.

Statistical conclusion

The various statistical tests carried out enable the identification of any associations and differences between the variables studied. These analyses contribute to a better understanding of the professional knowledge and practices of physiotherapists in the DRC.

5. Discussion of the results

Discussion in relation to specific objective 1: To assess the level of scientific and technical knowledge of physiotherapists in the DRC in the field of functional rehabilitation

The results of this study show that the level of scientific and technical knowledge among physiotherapists practising in the Democratic Republic of the Congo remains, on the whole, variable depending on academic qualifications, professional experience and access to continuing professional development. A significant proportion of participants reported having attended professional workshops or seminars, which indicates a growing interest in keeping their knowledge up to date. However, several respondents also expressed a need for further training, reflecting certain shortcomings in their mastery of specialist knowledge.

These findings are consistent with observations made in several African countries, where physiotherapists' knowledge is sometimes limited by poor access to up-to-date scientific resources and continuing professional development programmes (Myezwa et al., 2017). In particular, a study conducted in South Africa showed that rehabilitation professionals found it difficult to systematically apply evidence-based practices due to a lack of access to scientific literature and institutional constraints.

Furthermore, the findings of the present study are also consistent with those reported by Bright et al. (2018), who highlight that African healthcare systems still lack sufficient structured programmes for continuing professional development in the field of physiotherapy. This situation may limit the regular updating of scientific knowledge and affect the quality of care provided to patients.

At an international level, however, several European and Asian studies show a generally higher level of scientific knowledge among physiotherapists practising within better-organised healthcare systems. In Europe, Dean et al. (2019) report that physiotherapists benefit from enhanced academic supervision, mechanisms for ongoing certification and broader access to specialised digital resources. Similarly, Sharma and Jensen (2021) highlight that certain Asian countries, such as Japan and South Korea, have significantly enhanced the specialisation of rehabilitation professionals through investment in training and clinical research.

In the Democratic Republic of the Congo, the shortcomings observed could be explained by several factors, notably a lack of teaching resources, limited access to international scientific

journals, a shortage of specialised equipment, and the low level of institutionalisation of continuing professional development. The findings of Mukeba et al. (2021) also confirm that many Congolese healthcare professionals work in conditions that limit their ability to keep their skills up to date.

Thus, the findings highlight the need to strengthen continuing professional development programmes, improve access to scientific data and further promote evidence-based practices in Congolese healthcare facilities.

Discussion in relation to specific objective 2: To describe the professional practices commonly used by physiotherapists in Congolese healthcare facilities

The results of this study show that physiotherapists practising in the DRC work in several areas of functional rehabilitation, notably in neurological, orthopaedic and neonatal care. However, the professional practices observed appear to vary depending on the healthcare facilities, the material resources available and the practitioners' professional experience.

This variability in practice is consistent with the findings of several African studies which have shown that rehabilitation professionals often practise in environments characterised by limited resources and a lack of specialised equipment (Bright et al., 2018). In many African healthcare facilities, clinical practices remain largely influenced by practitioners' individual experience rather than by standardised protocols based on scientific evidence.

The results of this study also reveal that some physiotherapists use modern therapeutic approaches, whilst others continue to rely primarily on conventional techniques. This situation could be explained by differences in access to continuing professional development, specialised equipment and new scientific knowledge.

These observations are comparable to the findings of certain Asian studies conducted in low- and middle-income countries. Khan et al. (2020) demonstrated that the application of evidence-based practices remains insufficient in several healthcare settings due to economic and organisational constraints.

Conversely, in several European countries, the professional practices of physiotherapists are strictly governed by standardised treatment protocols and national clinical guidelines. According to the European Region of World Physiotherapy (2020), systems of clinical supervision and regular professional assessments promote greater harmonisation of rehabilitation practices.

In the DRC, the difficulties observed in the organisation of physiotherapy services may also be linked to inadequate healthcare infrastructure, a lack of rehabilitation equipment and low levels of funding for the health sector. Furthermore, a report by the DRC Ministry of Public Health (2022) highlights that rehabilitation services remain underdeveloped in several provinces of the country.

Thus, the results of this study highlight the need to improve professional supervision, further standardise clinical practices and strengthen the technical capacities of functional rehabilitation facilities in the DRC.

Discussion in relation to specific objective 3: To identify factors likely to influence the knowledge and professional practices of physiotherapists in the DRC

The statistical analyses carried out in this study show that several factors influence the knowledge and professional practices of physiotherapists in the DRC. Among the main factors identified are the level of academic training, professional experience, participation in continuing professional development, and access to specialised equipment.

The results of the chi-squared test revealed whether or not associations existed between certain professional and academic variables, notably between the level of training and participation in scientific workshops or seminars. These results suggest that the most highly qualified professionals generally tend to be more involved in continuing professional development activities.

The results of the Student's t-test and ANOVA also show that certain differences exist between groups of participants in terms of age, professional experience or academic level. These observations are similar to those reported in several international studies showing that clinical experience and level of qualification significantly influence the professional competencies of physiotherapists (Dean et al., 2019).

Furthermore, Pearson's and Spearman's correlation analyses indicate a relationship between length of professional experience and certain dimensions of knowledge or clinical practice. These results are consistent with the work of Reeves et al. (2018), who emphasise that professional experience often promotes the development of practical skills, although it does not always guarantee that scientific knowledge is kept up to date.

In the Congolese context, difficulties in accessing continuing professional development are a particularly significant factor. Several participants stated that they required further training,

which confirms the findings of Mukeba et al. (2021) that Congolese healthcare professionals still have limited opportunities for professional development.

Economic and institutional constraints also play a major role in the quality of professional practice. A lack of specialised equipment, the limited financial resources of healthcare facilities, and the absence of structured clinical supervision mechanisms can restrict the application of international scientific guidelines.

The results of this study therefore show that improving the knowledge and practices of physiotherapists in the DRC requires a multidimensional approach involving:

- Strengthening initial training;
- The development of continuing professional development programmes;
- Improving rehabilitation infrastructure and equipment;
- Wider access to scientific resources;
- As well as the implementation of national policies for professional development in physiotherapy.

Overall, this study highlights the significant challenges faced by physiotherapists in the Democratic Republic of the Congo, but it also emphasises opportunities for improvement that could enhance the quality of functional rehabilitation care in the country.

General conclusion

The main objective of this study, entitled ‘Descriptive analysis of the knowledge and practices of physiotherapists in the Democratic Republic of the Congo’, was to assess the level of scientific knowledge and professional practices of physiotherapists working in Congolese healthcare facilities, as well as the factors likely to influence these practices.

The results show that Congolese physiotherapists play an important role in the management of patients requiring functional rehabilitation care. However, the study also highlights certain shortcomings relating to up-to-date scientific knowledge, the application of evidence-based practices, and access to continuing professional development and specialised equipment.

Analysis of the data revealed that several factors influence the knowledge and professional practices of physiotherapists in

the DRC, notably the level of academic training, professional experience, participation in scientific workshops and seminars, and working conditions within healthcare facilities. The statistical analyses carried out identified certain associations between the professional and academic variables studied.

Furthermore, a comparison with international and African studies shows that the difficulties observed in the DRC form part of a broader context characterised by the structural challenges facing health systems with limited resources. Inadequate infrastructure, limited access to scientific resources, the lack of structured continuing professional development programmes, and the limited availability of rehabilitation equipment continue to pose significant obstacles to the optimal development of physiotherapy in the DRC.

Despite these constraints, this study also highlights physiotherapists’ growing interest in professional development and in improving the quality of rehabilitation care. The strong demand for further training expressed by the participants reflects a desire to update their skills and improve clinical practice.

Thus, the findings of this research underscore the need to strengthen the initial and continuing training of physiotherapists, to promote evidence-based practices, to improve access to scientific resources, and to strengthen the infrastructure and functional rehabilitation equipment in Congolese healthcare facilities.

Looking ahead, it would be important for health authorities, training institutions and professional organisations to develop national strategies aimed at promoting the physiotherapy profession and sustainably improving the quality of rehabilitation care in the Democratic Republic of the Congo. Future research involving a larger sample and in-depth analytical approaches could also contribute to a better understanding of the professional realities faced by Congolese physiotherapists and help guide public health policies in the field of functional rehabilitation.

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Declaration of conflicts of interest

The authors declare that they have no conflicts of interest in relation to this study. No financial, professional or personal interests likely to influence the results or the interpretation of the data have been identified.

The authors also certify that this research was conducted in accordance with the principles of scientific integrity and academic independence.

Ethical considerations

This study was carried out in accordance with the ethical principles applicable to health sciences research and with international guidelines on research involving human participants.

Prior to the start of data collection, the necessary administrative authorisations were obtained from the relevant healthcare organisations. Participants were informed of the study's objectives, the voluntary nature of their participation and their right to withdraw at any time without any consequences.

Free and informed consent was obtained from each participant before the questionnaire was administered. The anonymity and confidentiality of the information collected were strictly maintained. The data collected were used solely for the scientific purposes of this research.

Contributions of the authors

All authors actively contributed to the conduct of this study and approve the final version of the manuscript.

- The first author contributed to the study design, data collection, statistical analysis and the drafting of the manuscript.
- The co-authors contributed to the development of the methodology, scientific supervision, interpretation of the results and critical review of the manuscript.
- All authors have read and approved the final version prior to submission for publication.

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