Knowledge and Using of Dry Needling by Physiotherapists in Central Africa in the Management of Trigger Points : The First Cross Sectional Survey in Cameroon

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ABSTRACT

Background: Dry Needling (DN) emerged in the 1970s as a therapeutic breakthrough, proving effective in the treatment of Trigger Points (TP). Despite its worldwide application, there is few studies which explores knowledge, attitudes and practices (KAP) of physiotherapists towards this technique in Central Africa, particularly in Cameroon. This study aims to fill this gap by exploring the knowledge, attitudes and practices of Cameroonian physiotherapists concerning DN in relation to pressure point management. Understanding their current levels of KAP is essential to identify educational needs and developing strategies to improve TP diagnosis, caring and DN practice in the Nation.

Methods: A quantitative and analytical cross-sectional survey was carried out online in the 10 administrative 'regions of Cameroon over a six-month period in 2023, including practicing physiotherapists with at least one year's work experience and who had given their consent to participate to the survey. They were asked questions about general knowledge about TP as for example diagnosis, pathophysiology and management; moreover, some questions about general knowledge, specific attitudes and level of practice of DN in the management of TP were added in the online questionnaire which was previously tested on a small sample of physiotherapists to ensure good understanding and clarity of questions. Pearson correlations were performed between KAP domains together and with sociodemographic data, Using Epi Info software version 7.2.5.0.

Results: 123 physiotherapists (PTs) out of the 300 we contacted and who were listed as practicing in Cameroon on the official World Physiotherapy website in 2023 agreed to participate to the study, and all fulfilled inclusion criteria. The majority were male (56.1%), with an average age of 29 ± 5 years and average year of experience of 4 ±3 years. Furthermore, 37.4 % of PTs had insufficient knowledge, and 6.5 % had poor knowledge of TP and the various treatment methods, 14.63% had no knowledge of DN, 11.38% had very poor knowledge, 30.9% had poor knowledge, 26.83% had good knowledge and 16.23 % had very good knowledge. Concerning attitudes, we

noticed that 1.63% had a neutral attitude towards DN, 21.96% strongly disagreed, 18.7% disagreed, 30.09% agreed and 27.62 % strongly agreed. With regard to respondents' DN practices, 75.61% of were not active, 7.32% were slightly active, 16.26% were active and 0.81% were very active.

Conclusions: This study highlights a significant need for educational initiatives in the field of Trigger Point and Dry Needling among physiotherapists in Cameroon. The results reveal a lack of knowledge and practice, despite a positive attitude towards the technique. Addressing this need for training is essential to improving the quality of patient care and the effectiveness of trigger zone management. The data collected provides a solid basis for the development of targeted training programmes and resources to equip physiotherapists with the necessary skills and knowledge. Such efforts will ultimately contribute to the advancement of physiotherapy practice in Cameroon and Africa as a whole.

Keywords: Knowledge, attitudes, practices, Dry Needling, Cameroon, physiotherapists, and trigger point.

List of abbreviations

CASP: Cameroon Society of Physiotherapy

DN: Dry Needling

KAP: Knowledge, Attitudes and Practice

MSDs: Musculoskeletal Disorders

PTs: Physiotherapists

RCTs: Randomised Controlled Trials

TP: Trigger Point.

INTRODUCTION

Considered a genuine public health problem, musculoskeletal disorders (MSDs), one of the main causes of which is the Trigger Point (TP), have a negative impact on people's quality of life and socio-professional fulfilment (1). It affects around 1.71 billion people, i.e. 22% of the world's population (2). Studies in some African countries and in Cameroon show a prevalence of MSDs in excess of 50%, with preferential regions being the lumbar and cervical spine, hip, knee and wrist (3, 4). A myofascial TP is a sensitive spot in a palpable taut band of skeletal muscle fibers. Two important clinical characteristics of it, referred pain and local twitch response can be elicited by mechanical stimulation (palpation or needling). A TP is usually activated by acute or chronic injury to a muscle, tendon, ligament, joint, disc or nerve. Recently, human and animal studies suggested that the pathogenesis of either referred pain or local twitch response is related to integration in the spinal cord. It has been proposed that there are multitude sensitive loci in a trigger point region. A sensitive locus may contain one or more sensitized nociceptive nerve endings. Theoretically, sensitive loci can be found in any side of a skeletal muscle, but is usually distributed with highest concentration near the endplate region where a TP is frequently found (5). In recent years, therapeutic advances have led to Dry Needling (DN), which emerged in the 70s as a proven therapy for the treatment of TP to resolve this health problem. Its use by physiotherapists in developed countries is around 30% globally and specifically, we have: 25% in Australia, 15.7% in France and 26.8% in China; In South Africa, 75% of physiotherapists use it at least once a day (6). A number of studies have evaluated the risks of the practice for doctors and physiotherapists, and have all concluded that it is safe (7). Furthermore, the diagnosis of TP as a cause of MSDs was rarely discussed, and the practice of DN as a therapy for TP was not mentioned. However, over the past few years, evidence-based studies have been published with considerable scientific proof of the relevance of DN for the treatment of MSDs, and physiotherapists seem to be using it more and more in their practices. (6,7,8,9). Browsing on PubMed, PEDro, Cochrane Library and Google Scholar, studies with high levels of evidence on DN and TP were found, including studies made by: Dommerholt et *al.* 2006 (6), Gattie et *al.* 2017(8), Lew et *al.* 2020 (9), and Navarro et *al.* 2020 (10). Hence the need to investigate

the practice of this technique in Central Africa in general, and Cameroon specifically where evidence-based practice is poorly taught and used by PTs and the diagnostic methods for TP are often misunderstood. The aim of this study was to highlight the level of knowledge and practice of physiotherapists with regard to DN, as well as their attitudes towards this technique in the management of TP.

METHODS

Study design: we conducted a quantitative-analytical online cross-sectional survey during 6 months, from January 10 to June 10, 2023 among PTs throughout the 10 administrative 'regions of Cameroon through a questionnaire that was specifically designed for the study and was pretested. The questionnaire contained 25 questions divided into 4 sections, with a completion time of approximately 10 minutes, in French and English. Cameroon is a Central African country located at the bottom of the Gulf of Guinea, between the 2nd and 13th degrees North latitude and the 9th and 16th degrees East longitude, with an estimated population of 28,647,293 in 2023. (11, 12)

Study participants: Physiotherapists present and practicing in the 10 regions of Cameroon with at least 1 year's work experience and who had given their consent during the phone calls exchange were included in the study.

Sampling: We used non-probability snowball sampling, as we did not have a precise sampling frame at the outset, although the expected sample size was estimated at 250 physiotherapists based on world physiotherapy data in 2022 (13). Participants were recruited online, via social networks (WhatsApp groups) or by e-mail and phone' call.

Data collection tool: This study used an electronic questionnaire consisting of a header note and 34 questions distributed as follows: Nine (09) questions for socio-demographic data; Twelve (12) questions for knowledge, i.e. 05 questions for knowledge of TP and the various treatment methods and 07 questions for knowledge of DN; Nine (09) questions for DN practices and four (04) questions for attitudes to DN. Notations were made during the analysis (1 point for each correct proposition and 0 for each false proposition) and a total score was obtained for knowledge of TP (score/5) and DN (score/9), attitudes (score/18) and practices (score/22). At the end, mentions were attributed to these different scores as follows: Poor (less than 25% of the total score); Insufficient (between 25 and 50% of the total score); Good (between 50 and 75% of the total score) and Very Good (more than 75% of the total score).

Data collection techniques: After obtaining administrative authorizations and consulting the national ethics committee for human health research, the questionnaire was pre-tested and put online in Google format in French and English, then the links were shared on several platforms: On social networks via platforms dedicated to the Physiotherapists of the Nation, in the form of an electronic message to physiotherapists individually, so that we contacted 300 eligible participants.

Data analysis: Epi Info software version 7.2.5.0 was used, and data were expressed as percentages. Linear regression was used to establish the degrees of association between the dependent and independent variables, which were defined using Pearson's correlation coefficient followed by the P value. Associations were said to be significant for $P<0.05$ and r-values between one and one. These results were presented in tables and figures produced using Microsoft (Word and Excel) 2016 software. The Vancouver model was used for bibliographic references.

Ethical consideration: the confidentiality and anonymity of respondents were respected in accordance with the principles of medical ethics and deontology.

RESULTS

Socio-demographic characteristics of respondents: 123 physiotherapists took part in the study out of the 240 contacted, giving an overall response rate of 51.25%. The study revealed that 56.1% (69) of participants were male and 43.9% (54) were female, giving a sex ratio (M/F) of 1.07. The average age of respondents was 29 ± 5 years, with extremes of 21 and 50 years. The most represented age group was [26 - 31[or 33.33% followed by

[21 - 26[or 32.52% and the least represented were [41 - 46[and [46 - 51[or 0.81% each. The average year of experience of respondents was 4 ± 3 years, with extremes of 1 and 15 years. The most common year of experience was [1 - 3 [or 44.72%. Physiotherapists practicing in the West, Centre and Littoral regions were the most represented, at 29.25%, 28.45% and 21.14% respectively; the North, South and Adamaoua regions were the least represented, at 0.81% each. By level of study, physiotherapists with a Bachelor's degree were the most represented, at 51%, followed by those with a BTS or TPMS diploma, at 34%, those with a Master's degree, at 14%, and those with a PhD diploma, at 1%. Most physiotherapists (36%) worked in hospitals, 34% in private practice and 30% in both regimes. The average year of graduation was 2019 ± 3 years, with extremes of 2008 and 2023. The most represented year of graduation was [2020 - 2024 [or 44.72%. Concerning the place of training, 93.5% were trained in Cameroon and 6.5% abroad. The majority of physiotherapists (86.99%) had attended at least one seminar, while 13.01% had never attended a seminar. (Table 1)

Respondents' knowledge of triggers points and dry needling: Of the 123 physiotherapists questioned, the majority (37.40%) had insufficient knowledge, 30.08% had very good knowledge, 26.02% had good knowledge and 6.50% had poor knowledge of TP and the various treatment methods. Furthermore, 14.63% had no knowledge of DN, 11.38% had poor knowledge, 30.9% had poor knowledge, 26.83% had good knowledge and 16.23 % had very good knowledge.

Respondents' attitudes and practices towards Dry Needling: Of the 123 physiotherapists surveyed, 1.63% had a neutral attitude towards DN, 21.96% strongly disagreed, 18.7% disagreed, 30.09% agreed and 27.622% strongly agreed. With regard to respondents' DN practices, 75.61% of respondents were not active, 7.32% were slightly active, 16.26% were active and 0.81% were very active. (Table 2)

Correlation between KAP and sociodemographic characteristic: We found that there was no linear relationship between level of education and: knowledge of PT (r=0.03, P=0.05); knowledge of Dry Needling (r=0, P=0.7); practice of Dry Needling (r=0.05, P=0.01); attitude to Dry Needling (r=0, P=0.8). (Table 3)

Table 3: Correlation between socio-demographic data and participants' knowledge, attitudes and practices

Socio-demographic data	**TP knowledge**	**Knowledge of DN**	**P**ractices of the **DN**	**Attitudes towards DN**
Level of study	r = 0,03 P = 0,0553	r = 0 P = 0,7242	r = 0,05 P = 0,0139	r = 0 P = 0,8042
Year of experience	r = 0 P = 0,5542	r = 0,07 P = 0,0041	**r = 0,21** P < 0,0001	r = 0,02 P = 0,1414
Year of graduation	r = 0 P = 0,9370	r = 0,05 P = 0,0137	**r = 0,19** P < 0,0001	r = 0,01 P = 0,2729
Number of seminars held	r = 0,05 P = 0,0158	r = 0,09 P = 0,0009	**r = 0,13** P < 0,0001	**r = 0,12** P = 0,0001

Correlation between Knowledge, attitude and practice: we found that physiotherapists' knowledge of Dry Needling seemed to encourage its use (practice) in patient management (r=0.43, P < 0,0001). Similarly, the increase in knowledge about this technique seemed to encourage good attitudes (r = 0,15 P < 0,0001). (Table 4)

Tableau 4: Correlation between attitudes, knowledge and practice among participants

	Practices of the **DN**	**Attitudes towards DN**
TP knowledge	r = 0 P = 0,4410	r = 0,03 P = 0,0568
Knowledge of DN	r = 0,43 P < 0,0001	r = 0,15 P < 0,0001
Attitudes towards DN	r = 0,12 P < 0,0001	

TP: Trigger Point; DN: Dry Needling.

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DISCUSSION

This study is the first in Cameroon, to attempt to explore the knowledge, attitudes and practices of physiotherapists regarding the DN technique used to treat TP. A total of 123 physiotherapists practicing in the country's 10 regions, with the West region predominating, took part in the study, with a participation rate of 51.25%. Most respondents were male (56.1%) with an average age of 29 ± 5 years. The median year of graduation was 2021, and the majority (36%) worked in a hospital. The gender distribution in this sample seems contradictory to the national distribution for 2022 published by the WP, in which 80% of physiotherapists nationwide would be female (13). This difference could be explained by the fact that men were more hostile to participating in the study than women when we contacted them. The dominance of physiotherapists practicing in the western region could be because the main investigator lived in the region, which would have favoured interaction between him and the region's physiotherapists. In addition, 86.99% of respondents had already taken part in at least one seminar in Physiotherapy. They had an average of 4 ± 3 years' experience, with a Bachelor's degree (35%). This could be explained by the fact that the profession in general is less established in Cameroon, in other words, new, and that the cost of training is very high, thus reducing the need for further study.

Concerning physiotherapists' knowledge of TP and DN techniques, the results of the study show that 37.40% of physiotherapists have insufficient knowledge of TP and 30.90% of physiotherapists have insufficient knowledge of DN. These results could be explained by the fact that, although TP is one of the main causes of MDS and the primary reason for health consultations, physiotherapists focus more on pain symptoms than on the TP (14). In addition, training programs for physiotherapists in Cameroon do not emphasize TP and the DN technique in the module on musculoskeletal rehabilitation.

With regard to physiotherapists' attitudes towards DN, most (64.23%) suggested that it should be added to training programs for physiotherapists in Cameroon, and that practical seminars and workshops should be organized to retrain physiotherapists already in practice. Considering attitude scores, physiotherapists gave great importance to the DN technique (9.94 ± 5.05 out of 18) with 30.09% having good attitudes towards DN. These results could be explained by the fact that, despite their insufficient knowledge, they nevertheless have a penchant for this practice, which is still new in Cameroon. Furthermore, there were positive correlations between socio-demographic data (year of experience, year of highest diploma, number of seminars attended) and their attitudes.

Taking into account the practice scores, it emerges that physiotherapists do not attach great importance to DN practice (3.08 ± 5.55 out of 22), i.e. a practice rate of 24.39%. These results may be justified by the fact that DN is less well known in Cameroon and is not an integral part of the physiotherapist's training program. These results are similar to those obtained in Australia (25%) and China (26.8%), and much lower than those obtained in South Africa (75%) in 2006 (6). Although the rate of DN practice is similar to that in other countries, we note a long delay in the implementation of this technique in Cameroon. This could be explained by the fact that DN is not legalized in Cameroon as a therapeutic means in physiotherapy. In addition, there was a positive correlation between the number of seminars attended and practice, which could be explained by the fact that physiotherapists practicing DN would have learned at a seminar. Similarly, there was a correlation between knowledge of DN, attitudes towards DN and practice. This could be explained simply by the fact that a good knowledge of a problem will lead to a good perception of it, and in the same way to good practice.

LIMITS OF THE STUDY

Online participation: The online method may have excluded potential participants who do not have access to the internet or who are not comfortable with digital technologies, which could affect the representativeness of the results.

Selection bias: Physiotherapists who chose to participate may have different levels of knowledge, attitudes and practices to those who did not, which could introduce a selection bias.

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Self-reporting: The data collected relies on self-reported responses from participants, which may introduce response bias or inaccuracies due to recall errors or social desirability.

Regional diversity: Although the study was conducted in all 10 regions of Cameroon, regional differences in access to training and resources may not be fully captured by the study.

Limited sample: A sample of 123 participants, while large, may not be sufficient to generalise the results to all physiotherapists in Cameroon or other Central African countries.

CONCLUSION

The present study was conducted to explore the knowledge, attitudes and practices of physiotherapists in Cameroon regarding the DN technique used to treat TP. It revealed that 33.90% and 56.91% of physiotherapists had inadequate knowledge of TP and DN respectively. The main needs concerned diagnostic tools and the different types of TP, other names given to DN and the method of practicing DN. On the other hand, 42.29% of physiotherapists had inappropriate attitudes to DN, and 24.39% used DN sometimes alone or in combination with other therapeutic means, for multiple reasons, with results ranging in most cases from effective to very effective. Generally speaking, these data show that physiotherapists have little knowledge of TP and DN and a low level of practice, but nevertheless have positive attitudes, hence the need to conduct investigation and training campaigns among them. However, it would be important in our context to conduct Randomized Controlled Trials (RCTs) to effectively qualify the efficacy of DN and our usual techniques.

Recommendations

We propose that accredited physiotherapy associations in Cameroon organise training sessions and seminars on trigger point management using recent advances, including the use of dry needling. We also suggest that academic institutions include this technique in the training programme for the nation's future physiotherapists.

Declarations

Ethics approval and consent to participate

This study was conducted in accordance with the ethical principles of the Declaration of Helsinki. Ethical approval was obtained from West Regional ethics committee for human health research. All participants provided informed consent before entering the study. Information about the study objectives, procedures and participants' rights was clearly communicated, and participants were given the opportunity to withdraw their consent at any time without consequence.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Competing interests

The authors declare that they have no competing interests.

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We did not receive funding for this study.

Authors' contributions

DLNM designed the study project, drew up the questionnaire and supervised the conduct of each stage of the study and the drafting of the manuscript. NN contacted all study participants to obtain their informed consent and participation, and contributed to the drafting of the manuscript. HTG edited the manuscript and contributed to the interpretation of the data. MMM contributed to the drafting of the manuscript and the interpretation of the results. PCPA and FCB supervised the correction of the manuscript.

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Tables

Table 1: Sociodemographic data

Sociodemographic data	**Option**	**Staff (%)N = 123**
Gender	Male	69(56)
	Female	54(44)
Age	[21 - 26[	40(32.52)
	[26 - 31[	41(33.33)
	[31 - 36[	20(16.26)
	[36 - 41[	20(16.26)
	[41 - 46[	1(0.81)
	[46 - 51[	1(0.81)
Year of experience	[1 - 3[	55(44.72)
	[3 – 5[	17(13.82)
	[5 – 7[	16(13.01)
	[7 – 9[	15(12.20)
	[9 – 11[	12(9.76)
	[11 – 13[	3(2.44)
	[13 – 15[	4(3.25)
	[15 – 17[	1(0.81)
Place (region) of exercise	West	36(29.25)
	North west	6(4.88)
	East	2(1.63)
	South west	12(9.77)
	Littoral	26(21.14)
	North	1(0.81)
	South	1(0.81)

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	Extreme-north	3(2.44)
	Adamaoua	1(0.81)
	Center	35(28.45)
Level of study	Bachelor	63(51)
	Phd	1(1)
	Master	17(14)
	Hnd/tms	41(34)
Exercise regime	In hospital	44(36)
	The two	37(30)
	Liberal	42(34)
Place of formation	Abroad	08(6.5)
	In cameroon	115(93.5)
Year of obtaining the last diploma (in relation to physiotherapy)	[2008 – 2012[	4(3.25)
	[2012 – 2016[	20(16.26)
	[2016 – 2020[	23(18.70)
	[2020 – 2024[	76(61.79)
Number of seminars participate to date	No one	16(13.01)
	One	5(4.07)
	Two	20(16.26)
	Three	14(11.38)
	Four	13(10.57)
	Five	13(10.57)
	Between six and ten	17(13.82)
	More than ten	25(20.33)

Table 2: knowledge, attitudes and practices of DN and TP

CAP	Mention	Score	Staff (%)N = 123
Knowledge of TP	Weak	2	8(6.50)
	Insufficient	3	46(37.40)
	Good	4	32(26.02)
	Very Good	5	37(30.08)
Knowledge of DN	No knowledge	0	18(14.63)
	Low	1	8(6.50)
		2	6(4.88)
	Insufficient	3	19(15.45)
		4	19(15.45)
	Good	5	15(12.20)
		6	18(14.63)
	Very Good	7	12(9.76)

		8	4(3.25)
		9	4(3.25)
Attitude	Neutral	0	2(1.63)
	Weak	2	2(1.63)
		3	23(18.70)
		4	2(1.63)
	Insufficient	5	3(2.44)
		6	4(3.25)
		7	5(4.07)
		8	4(3.25)
		9	7(5.69)
	Good	10	6(4.88)
		11	10(8.13)
		12	9(7.32)
		13	12(9.76)
	Very Good	14	8(6.50)
		15	6(4.88)
		16	10(8.13)
		17	4(3.25)
		18	6(4.88)
Practice	Inactive	0	93(75.61)
	Slightly active	9	1(0.81)
		10	3(2.44)
		11	5(4.07)
	Active	12	8(6.50)
		13	2(1.63)
		14	5(4.07)
		15	4(3.25)
		16	1(0.81)
	Very active	18	1(0.81)

TP: Trigger Point

DN: Dry Needling

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