
Citation:

Tabasam, G and Johnson, M (2021) A questionnaire survey on the attitudes, beliefs and self-reported use of transcutaneous electrical nerve stimulation (TENS) by physiotherapists in the Kingdom of Saudi Arabia. *Pain and Rehabilitation*, 2021 (51). pp. 34-53. ISSN 2051-0047

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A questionnaire survey on the attitudes, beliefs and self-reported use of transcutaneous electrical nerve stimulation (TENS) by physiotherapists in the Kingdom of Saudi Arabia

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Abstract

Objectives: The aim of this questionnaire survey was to gather information about the attitudes, beliefs and self-reported use of TENS for pain by physiotherapists in the Kingdom of Saudi Arabia.

Design: A cross-sectional paper-based questionnaire survey.

Setting: Physiotherapy staff and student interns working at five clinics of government hospitals in Riyadh, Kingdom of Saudi Arabia.

Respondents: 110 physiotherapists received the questionnaire and 58 were completed (response rate = 52.72%).

Main outcome measures: The questionnaire comprised 45 items on beliefs about TENS and clinical experience of using TENS in practice including TENS techniques.

Results: All five clinics offered TENS treatment administered by the therapist and only during clinic visits. Fifty-seven of the 58 respondents (98.3%) reported that they treated pain as part of their current clinical workload and believed that TENS was beneficial to relieve pain. Thirty-three respondents (57%) used TENS in clinical practice to relieve pain associated with musculoskeletal/orthopaedic conditions and used TENS to manage pain only in combination with other treatments. Respondents who used TENS in clinical practice also reported that treatment was administered in clinic for 10-29 minutes, on average, to generate a strong TENS sensation at the site of pain with electrodes placed over the site of pain (32 respondents, 97%). Seventeen of the 33 respondents (52%) reported that they, on average administered more than 4 TENS treatments per week per patient and 32 respondents (97%) reported that they did not advise patients to self-administer TENS treatment to manage pain unsupervised at home.

Conclusions: Physiotherapists in Saudi Arabia use TENS techniques that match good practice guidelines, although there is a need to develop service delivery systems and resources to train patients to self-administer TENS at home rather than having to visit clinics. The study revealed a need for educational programmes aimed at updating knowledge and skills about TENS in Saudi Arabia.

Contribution of paper

- The findings of this cross-sectional paper-based questionnaire survey of the use of transcutaneous electrical nerve stimulation (TENS) by physiotherapists in government run clinics in the Kingdom of Saudi Arabia demonstrates that clinicians have attitudes, beliefs and TENS techniques concurrent with good practice guidelines throughout the world.
- However, TENS treatment is only delivered under clinical supervision using short duration treatment sessions. This approach is not optimising the potential beneficial effects of TENS.
- The findings from Saudi Arabia emphasise the need to adapt service delivery to incorporate the education and training of patients so that they have the necessary skills to self-administer TENS in home settings.
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Keywords

Transcutaneous Electric Nerve Stimulation (TENS), Pain, Analgesia, Neuromodulation, Physiotherapy, Saudi Arabia

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Introduction

The prevalence of chronic pain across the world is high, with no differences between countries with high and low human development indexes, or between different regions of the world, including countries from the

Middle East and North Africa (MENA). People living with pain should be managed by multidisciplinary teams using a biopsychosocial approach that tailors pharmacological and non-pharmacological treatments to the needs of the individual. Transcutaneous electrical nerve stimulation (TENS) is a non-pharmacological neuromodulation technique used in physical therapy, nursing and medical settings to alleviate acute and chronic pain arising from various causes [1,2]. There is a long-standing debate about the clinical efficacy of TENS and this has created inconsistent recommendations by clinical guideline panels about whether TENS should be offered to patients and/or funded by public health monies [3-5].

Approaches and infrastructure for pain management varies considerably between and within countries. For example, health care provision in modern-urban settings may be inaccessible to people from lower socioeconomic groups or people from rural settings. In some countries access to certain analgesic treatments may be restricted e.g. opioids. TENS is an inexpensive treatment prescribed by health care professionals or purchased by individuals without prescription (e.g. over the internet). TENS is self-administered, with minimal potential for harm, toxicity, overdose or abuse, and there are few interactions with other treatments or lifestyle [6]. TENS is versatile and has been used successfully in modern surgical hospital settings, secondary care pain clinics, and in villages with limited resources including the MENA region [7-9]. Decisions on whether to prescribe TENS to a patient are taken according to the professional judgement of the healthcare professional.

Despite the widespread availability of TENS across the world, little is known about its clinical utility in certain regions and/or settings including countries from the MENA [8]. Trial reports of RCTs that have evaluated the efficacy of TENS on population samples from countries in the MENA region suggest that TENS is widely available and often indicated by physiotherapists [7,10]. In Saudi Arabia, TENS devices and associated accessories can be purchased without a prescription at pharmacies or via the internet for approximately 400 SAR (circa £50-100 GBP). In Saudi Arabia, the principles and practice of TENS are included as part of the curriculum for undergraduate physiotherapy courses and/or during clinical placements. Hence, it is likely that physiotherapists in Saudi Arabia may offer TENS as a treatment option to their patients, and/or provide advice about TENS to patients who have purchased a TENS device themselves. We conducted a free text

search of PubMed and found no surveys about the use of TENS in clinical practice from countries in the MENA region, including Saudi Arabia (see supplementary appendix for search string).

Previously, we have undertaken surveys on the attitudes and beliefs of physiotherapists about the use of TENS to alleviate pain in India [11] and in Sri Lanka [12]. The findings enabled us to characterise current practice, and to identify misconceptions and training needs. In 2013, Banerjee and Johnson [11] reported the findings of a self-administered paper-based questionnaire survey of a small sample of 25 physiotherapists in Jabalpur, India. Banerjee et al., [11], found that all respondents used TENS in clinical practice. Ninety six percent of respondents reported that their patients had benefitted from TENS. Respondents commonly used TENS to manage pain that was moderate-severe in intensity (64% of respondents) and of neurological (76%) and musculoskeletal (68%) origin. Sixty-eight per cent of respondents reported that patients had requested TENS treatment. In 2014, Dissanayaka et al., [12] reported similar findings from a postal survey that utilised a 12-item questionnaire to gather information about attitudes, beliefs and use of TENS in clinical practice in Sri Lanka. Sixty-seven physiotherapists working in three government hospitals and six private hospitals in the cities of Kandy and Colombo completed the questionnaire. Fifty-eight per cent of respondents reported using TENS to treat pain '*often*' or '*very often*', predominantly for neuropathic / neuralgic pain (79.1%) and musculoskeletal / orthopaedic pain (61.3%) and 95.5% of the respondents reported that patients benefitted '*considerably*' whilst using TENS.

Importantly, both surveys revealed that physiotherapists did not recommend that patients used TENS at home. Banerjee et al., [11] found that 76% of respondents did not recommend TENS for patients to use at home and Dissanayaka et al., [12] found that 76.1% of respondents did not recommend TENS for patients to use at home. Such practice is contrary to evidence that potential benefits of TENS are optimised when patients self-administer TENS at home on an as-needed basis [6]. This identified a need for modification of clinical practice through professional educational updating.

Data gathered from surveys of practitioners from different countries, cultures and settings can reveal variability of attitudes, beliefs and practice which can be used to refine existing provision and inform future

practice. The aim of this paper-based questionnaire survey was to gather information about the attitudes, beliefs and self-reported use of TENS for pain by physiotherapists in the Kingdom of Saudi Arabia.

Method:

Study design

A cross-sectional paper based-questionnaire survey was used to gather data from physiotherapy staff and student interns working in physiotherapy departments of government hospitals in Riyadh, Kingdom of Saudi Arabia. Permission to approach staff and interns was given by the head of each physiotherapy department. Cultural sensitivities were considered according to the regulations of the Saudi Health Ministry, including the privacy of women according to Islamic guidelines and regulations. Meetings with women took place in an open environment with a female chaperone. The study was approved by the Research Ethics Committee at Leeds Beckett University and the Ministry of Interior (MOI), Riyadh. The findings of the survey were disseminated to the clinics to be used to develop future service delivery.

Participants

Adult full-time physiotherapy staff or full-time physiotherapy students undertaking internship, just prior to graduation, were eligible to take part in the study. Volunteers were recruited from outpatient and inpatient settings of physiotherapy departments at the following hospitals; Mohammed Bin Naif Medical Centre (King Fahd Security College), Mohammed Bin Naif Medical Centre (Border Guard), Security Forces Hospital, Health Centre of Public Security Training City, Health Centre of Security forces (Riyadh and Al-Kharj), and the Ministry of Interior (Special Clinic). The Saudi Ministry of Health provides 60% of the healthcare services and the remaining 40% are shared amongst other government agencies that include the Ministry of Interior. This study was carried out in Riyadh, the capital of Saudi Arabia, and participants were from hospitals regulated by the Ministry of Interior, thus representing the central area of the kingdom of Saudi Arabia. It was estimated that this would provide a sample of 110 physiotherapists involved in the rehabilitation of patients with neuromusculoskeletal, neuropediatric and cardiothoracic conditions. Participant information documentation and verbal pre-survey briefings emphasised that participation was unpaid, voluntary and anonymous.

Distribution and collection of questionnaires

The Principal Investigator (AA) attended each clinic to explain the nature of the study to the staff and interns. It was emphasised that the survey was designed to collect the views of physiotherapists about their knowledge, attitudes and clinical use of TENS, irrespective of whether they used TENS in clinical practice. Each physiotherapy staff and intern at each of the 5 clinics received one questionnaire pack and was invited to complete the questionnaire unsupervised and at their convenience. The questionnaire pack included a cover letter, consent form and questionnaire, with instructions to submit completed consent forms and questionnaires separately, to ensure the anonymity of completed questionnaires, into secure post collection boxes at a convenient place in the clinic. Staff or interns that did not wish to participate returned blank questionnaire packs to a collection box. Additional questionnaires were given to the head of the physiotherapy department for distribution to absent colleagues. Data collection at each site remained open for a period of 5 weeks. Response rates were calculated by dividing the number of completed questionnaires by the total number of physiotherapists working at the clinic. Recruitment opened at each site between 3 and 24 April 2015.

Questionnaire Development

A draft self-administered paper-based questionnaire of open and closed questions was designed based on a similar TENS questionnaire by Banerjee and Johnson [11] and Dissanayaka et al. [12]. The purpose of the questionnaire was to gather the following information: demographics; current caseload; pain management practice in the clinic; beliefs about TENS for pain relief; clinic policy and operational procedures on the use of TENS; and clinical experience of using TENS in practice including TENS techniques. Six physiotherapists from the Security Force Hospital, Riyadh, Saudi Arabia provided feedback on content, length, clarity and relevance between 22 December 2014 and 4 January 2015. Feedback recommended not to translate the questionnaire into Arabic because physiotherapists in Saudi Arabia have a BSc that was taught in the English language and would find it easier to answer questions in English. Feedback revealed no concerns about content, length, clarity and relevance of the questions, but did recommend re-ordering of questions and some grammatical and typographical amendments. The second iteration of the questionnaire was evaluated by 20 physiotherapists and health scientists working in the UK higher education and National Health Service sectors. Feedback recommended typographical

and grammatical amendments. The final version of the questionnaire comprised of 45 questions with an estimated time to complete to be no more than 30 minutes (See supplementary appendix).

Data Management and Analysis

Completed questionnaires were coded and data transferred to a password protected spreadsheet (Microsoft Office Excel software). Descriptive statistics were used to analyse frequencies and distributions of raw and percentage data using Excel-10.0 (Microsoft). Missing data points were removed from the analysis on a per question basis.

Results

Characteristics of study sample

One hundred and ten physiotherapists were eligible to take part in the study and were given survey questionnaires. Sixty-four questionnaires were returned (58.18%) and six of these questionnaires were not completed (i.e. returned entirely blank). Thus, 58 completed questionnaires went forward for analysis (response rate = 52.72%). Details about respondents' demographic characteristics are provided in table 1. The mean \pm standard deviation (SD) age was 33.96 \pm 8.64 years (minimum age = 22 years, maximum age = 65 years) and of these 28 were women. There were 36 respondents registered with Saudi Commission for Health Specialties. The majority of respondents' clinical specialism was identified as orthopaedic / musculoskeletal rehabilitation (n = 24).

Analysis of current caseload (n = 58)

The most common conditions treated in the previous month (both pain and non-pain, Question (Q1) were musculoskeletal/orthopaedic (54 out of 57 respondents, 94.7%) and post-surgical (30 out of 57 respondents, 52.6%). This matched the response profile for Q7 that found that 56 out of 58 respondents (96.5%) reported that they had treated musculoskeletal/orthopaedic pain in the previous month, 32 respondents (55.2%) had treated postsurgical pain and 11 respondents (19.0%) had treated neuropathic pain.

Analysis of pain and pain management practice (n = 57)

Fifty-seven of the 58 respondents (98.3%) reported that they treated pain as part of their current clinical workload (Q2), and these respondents went forward for further analysis. There were 34/53 respondents (64.15%) that reported that over one quarter of their current caseload involved managing patients

experiencing pain (Q3). Thirty of the 56 respondents (53.6%) reported that 'in general (on average)' their patients had experienced pain for at least 2 weeks prior to attending their first consultation (Q4). Thirty-seven of the 57 respondents (64.9%) reported that they did not know what the term 'nociceptive pain' meant (Q5) and 39 of the 57 respondents (68.4%) reported they did not know what 'neuropathic pain' meant (Q6).

Table 1: Respondent characteristics data (n = 58)

		n	%
Sex	Males	30	51.7
	Females	28	48.2
Age	21-30	23	39.7
	31-40	19	32.8
	41-50	12	20.7
	60-65	1	1.7
	Unknown	3	5.2
Clinic location	Security Forces Hospital	34	58.6
	Mohammed Bin Naif Medical Centre, King Fahd Security College	8	13.8
	Mohammed Bin Naif Medical Centre, Border Guard	7	12.1
	Health Centre of Security forces, Riyadh and Al-Kharj	5	8.6
	Health Centre of Public Security	4	6.9
Registration with the Saudi Commission for Health Specialties	Yes	36	62.1
	No - student	17	29.3
	No – non-student	5	8.6
Job distribution	Physiotherapist	29	50
	Senior physiotherapist	12	20.7
	Intern	17	29.3
Clinical specialism	Orthopaedic (Musculoskeletal)	24	41.4
	Neuro-physiotherapy	4	6.9
	In-patient	2	3.4
	Out-patient	4	6.9
	General	1	1.7
	Non-intern	17	29.3
	Not known	6	10.3

Analysis of beliefs about TENS for pain relief (n = 58)

Only 6 of the 58 respondents (10.3%) reported they had received education or training on the principles and practice of using TENS, with 10 respondents (17.2%) uncertain (Q8). Forty-two respondents (72.4%) stated that they had not received any education or training on the use of TENS. Forty-five of the 58 respondents (77.6%) reported that they believed they were sufficiently knowledgeable of precautions,

contraindications and side effects of TENS (Q16). There was inconsistency in two questions related to beliefs about TENS relieving pain. There were 57 of the 58 respondents (98.3%) that believed that TENS was “beneficial to relieve pain” (Q9), yet only 26 out of the 58 respondents (44.8%) that believed that TENS relieved pain (Q10). It was not possible to determine the reason for this discrepancy. The main reason for the 30 out of the 58 respondents (52%) that answered ‘No’ to the question “Do you believe TENS relieves pain?” (Q10) was “I have used it on patients and in general it does not relieve pain” (26 out of the 30 respondents, 86%, Q11).

Of the 26 out of the 58 respondents (45%) who answered ‘Yes’ to the question “Do you believe TENS relieves pain?” (Q10), 18 respondents (69%) believed that TENS was a cost-effective treatment for managing pain (Q12). Fifteen respondents (58%) believed TENS was most effective for the relief of mild pain and 11 respondents (42%) believed TENS was most effective for the relief of moderate pain (Q13). Fifteen of the 26 respondents (58%) believed that the pain-relieving effects of TENS take place only during TENS (Q14) and 18 respondents (69%) believed that the pain-relieving effects of TENS disappeared within a few minutes after TENS has been switched off (i.e. immediately, Q15).

Analysis of clinic policy and operational procedures on the use of TENS (n = 58)

There were 41 out of 54 respondents (75.9%) reporting that their clinic offered TENS treatment to patients (Q17). Forty of these 41 respondents (97.5%) that reported that TENS treatment takes place “only during clinic visits” (Q18). Thirty-nine of the 41 respondents (95.1%) reported that TENS is administered only by the clinician/therapist and only two respondents reported that TENS treatment was administered only by the patient (i.e. self-administered, Q19). Thirty-nine of the 41 respondents (95%) working in clinics that offered TENS treatment reported that their clinic did not encourage patients to use TENS at home (Q20) and 38 respondents (92.7%) reported that their clinic did not supply TENS devices for patients to use at home (Q21). Irrespective of whether the clinic offered TENS, 33 of the 58 respondents (57%) stated that patients attending their clinic bought their own TENS devices from source other than the clinic e.g. from the internet, pharmacy or medical store (Q22).

Analysis of clinical experience of using TENS in practice (n =33)

Thirty-three of the 58 respondents (56.9%) reported that they used TENS as part of their clinical practice (Q23). The most common reasons for not using TENS (Q45, multiple responses allowed) were “I believe that TENS is not beneficial for the patients that I treat based on previous training” (31 respondents, 53%) and “I have found that TENS is not beneficial based on my clinical experience” (28 respondents, 48%). The 34 respondents that reported that they used TENS did so to relieve pain, with one respondent also reporting that they used TENS to improve blood flow and muscle function (Q24). If the respondent stated in Q24 that they did not use TENS to relieve pain, they did not complete any of the questions relating to the TENS technique or the clinical experience of using TENS in practice. Fifteen of the 33 respondents (45%) who used TENS in clinical practice reported that they used TENS to treat less than 25% of their patients with pain, and 18 respondents (55%) reported that they used TENS to treat between 25-49% of their patients who experienced pain (Q25). Of the 33 respondents who used TENS in clinical practice, 27 (81.8%) reported that their patients achieved “minor pain relief” from TENS with only two respondents (6%) reporting patients achieving moderate pain relief (Q26). Fourteen of the 33 respondents (42%) reported that 25-49% of their patients who experience pain and are treated with TENS obtain clinically meaningful pain relief (Q27, Fig 1.).

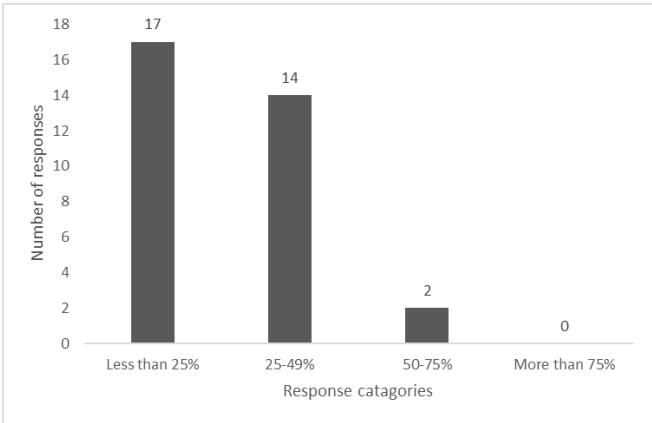


Figure 1: Responses to Q27 - What Percentage of your patients who experience pain and are treated with TENS obtain clinically meaningful pain relief with TENS?

Only two respondents reported that more than 50% of their patients obtained clinically meaningful relief of pain with TENS (Q27, Fig 1). Of the 33 respondents who used TENS in clinical practice it was reported that TENS was used to relieve pain associated with

musculoskeletal/orthopaedic conditions (33 respondents, 100%), neuropathy/neuralgia (14 respondents, 42%), and 6 out of the 33 respondents (18%) reported it was used to relieve pain associated with post-surgery (Q28, Fig 2. multiple answers allowed). TENS treatment was administered ‘in clinic’ for 10-29 minutes ‘on average’ to generate a strong TENS sensation at the site of pain (Q33). All thirty-three respondents used TENS “only in combination with other treatments” (Q30, Fig 3.), with 32 respondents (97%) reporting that the patients that they treat with TENS also take medication (Q31). Thirty-one respondents (94%) reported that they would not use TENS to manage pain in patients who also had epilepsy or unusual/abnormal heart rhythm or deep vein thrombosis or skin allergy or pacemakers and other implantable devices or pregnancy or malignancy (Q32).

Analysis of TENS techniques used in clinical practice (n = 33)

Thirty-two of the 33 respondents (96.7%) that used TENS reported that ‘an average’ duration of TENS treatment in the clinic to manage pain was reported to be between 10-29 minutes (Q33). Only one respondent (3%) reported that they advised patients to self-administer TENS treatment to manage pain unsupervised at home (Q34). Twenty-nine respondents (88%) reported that they administered TENS so that “they should feel a strong but not painful sensation from TENS without muscle contractions” and 2 respondents (6%) reported that they administered TENS so that “they should feel a painful but tolerable sensation from TENS without muscle contractions” (Q35, Fig 4.).

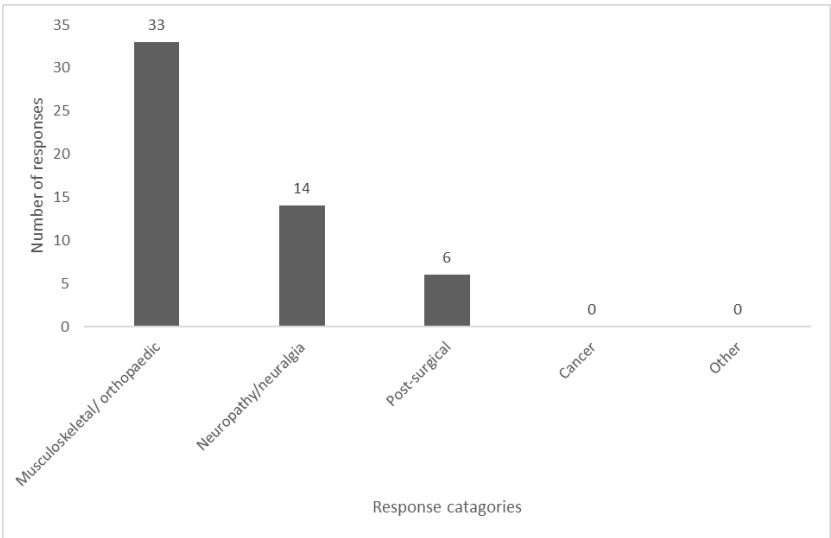


Figure 2: Responses to Q28 - Which categories of medical conditions do you find that TENS is useful to relieve pain? Participants could choose more than 1 category.

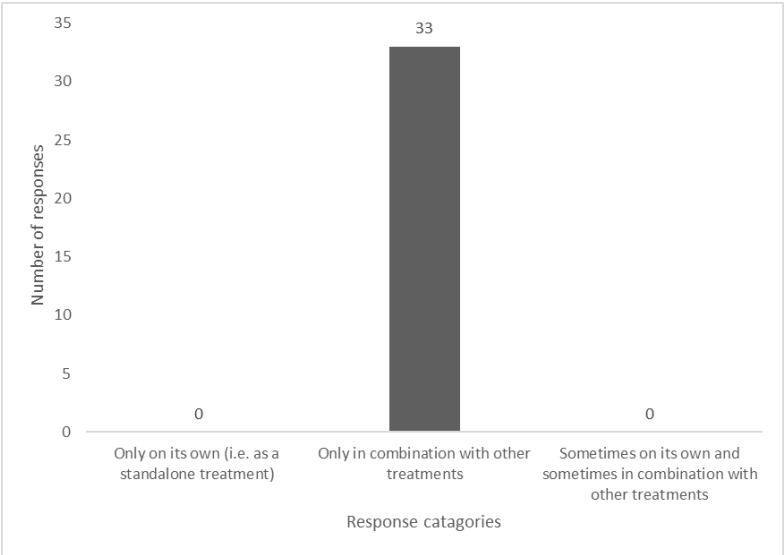


Figure 3: Responses to Q30 - In general, when I use TENS to manage pain I use it:

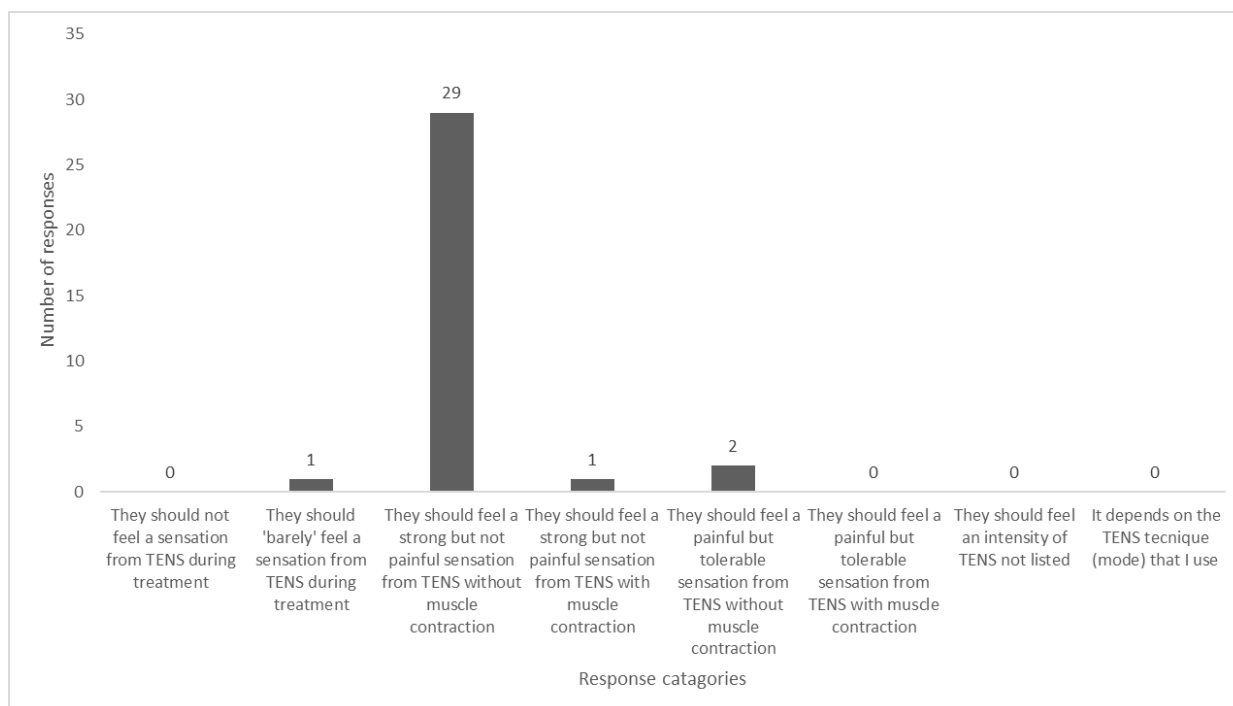


Figure 4: Responses to Q35 - What intensity of TENS do you advise your patients to use to manage pain?

Thirty-two of the 33 respondents (97%) that used TENS reported that they placed TENS electrodes *“over the site of pain”*, 23 respondents (70%) *“over dermatomes related to the pain”*, and 19 respondents (58%) *“over trigger points or acupuncture points”* (Q36, multiple answers allowed, Fig 5.). Seventeen respondents (52%) reported that ‘on average’ they administered *“more than 4 treatments per week”* in the clinic per patient and 16 respondents (48%) reported that they administered 2 - 4 treatments per week per patient (Q37). Thirty respondents (91%) reported that they do not advise patients to self-administer TENS away from the clinic (Q38).

Twenty-nine of the 33 respondents (88%) that used TENS reported that they *“only use conventional TENS”* and 3 respondents (9%) reported that they *“did not know that there were different TENS techniques”*. One respondent (3%) reported that they *“use conventional TENS and acupuncture-like TENS”* (Q39). All of the 33 respondents that used TENS reported that they used different electrical settings (parameters) for different painful conditions (Q40). Thirty respondents (90%)

reported that they used *“high frequency (e.g. above 70 Hz)”* and 2 respondents (6%) reported that they used *“whatever the patient prefers”* (Q41, Fig 6.); 28 respondents (85%) reported that they used a continuous pulse pattern, 1 respondent (3%) used modulated, 1 respondent (3%) whatever the patient preferred and 2 respondents (6%) did not know (Q43, Fig 7).

Only one respondent that reported that they advised patients to self-administer TENS and reported that they advised patients to use low frequency (e.g. below 10 Hz), one respondent advised patients to use continuous pulse pattern, and one respondent advised patients to use a modulated pulse pattern (Q42, Q44). One respondent reported that they advised the patient to use whatever frequency or pattern that they prefer (Q42, Q44). Thirty-one of the 33 respondents (94%) reported that they considered using TENS to manage pain as a second line treatment, after other treatments had been used and only 2 respondents (6%) used TENS as a first line treatment (i.e. the first treatment (Q29, Fig 8).

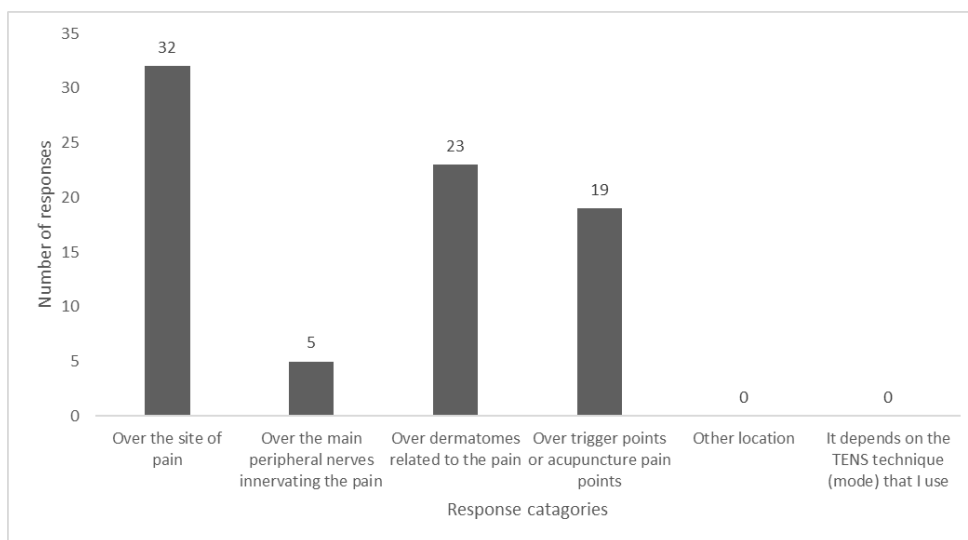


Figure 5: Responses to Q36 - Where do you place TENS electrodes when you manage pain? Participants could choose more than 1 category.

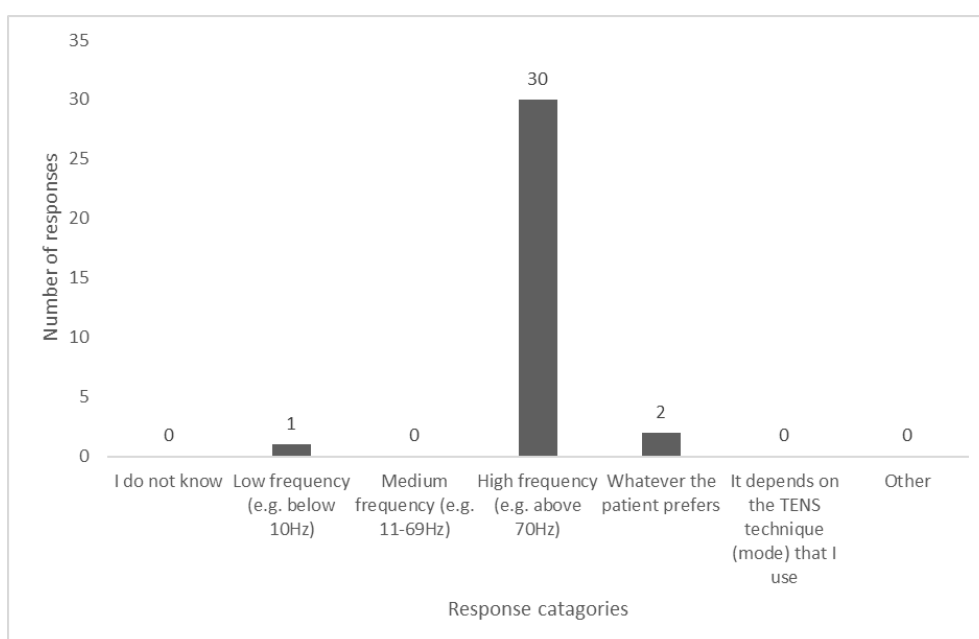


Figure 6: Responses to Q41 - Which pulse frequency (rate) of TENS do you use the most in the clinic to manage pain?

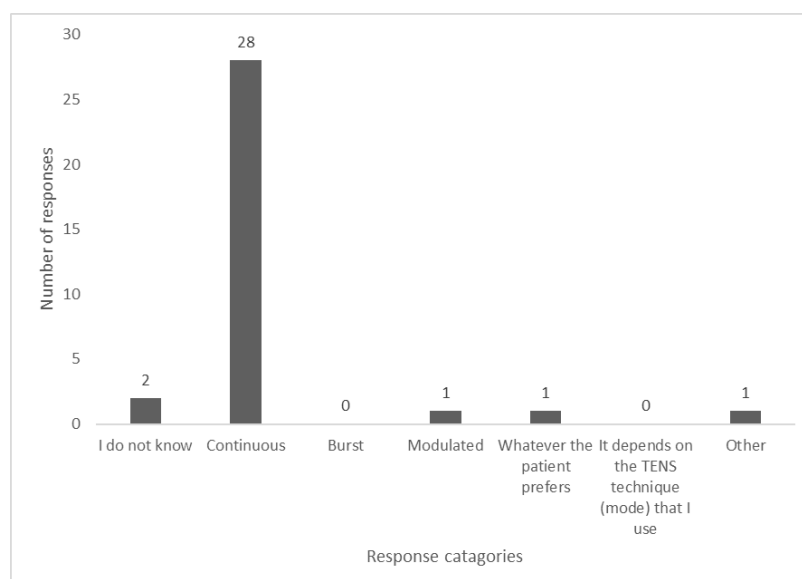


Figure 7: Responses to Q43 - Which pulse pattern (mode) of TENS do you use the most in the clinic to manage pain?

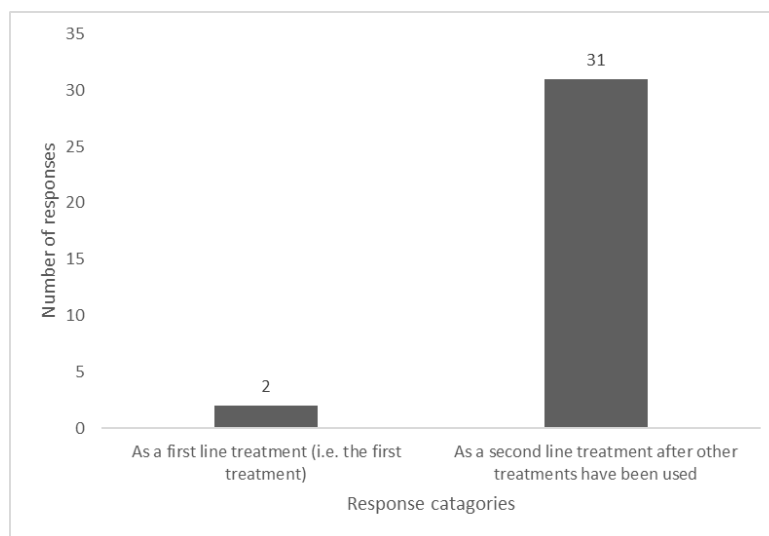


Figure 8: Responses to Q29 - When do you consider using TENS to manage pain?

Discussion

Summary of findings

This is the first evaluation of attitudes, beliefs and self-reported use of TENS by physiotherapists undertaking clinical practice in non-private settings in Riyadh, Saudi Arabia. The findings are remarkably similar to the findings of previous surveys on attitudes and beliefs conducted on physiotherapists in India [11], Sri Lanka [12], USA [13], Hong Kong and the UK [14] and on usage trends in Canada [15,16], Australia and the UK [17]. Thus, our findings add further evidence of that attitudes, beliefs and self-reported use of TENS for pain by healthcare professionals operating in urban hospital settings is similar even when they operate from culturally distinct countries. Our findings also confirm that attitudes, beliefs and usage trends of TENS have not changed since the first surveys in the late 1970s, with most physiotherapists believing that there is a role for TENS in clinical practice. Limitations of the survey will be considered before discussing the implications of the findings.

Limitations

A limitation of this survey was the relatively small sample size, although sample sizes and response profiles were similar to previous surveys conducted in other countries [11, 12, 18]. Survey findings are constrained by biases associated with self-reporting, including selective and period recall, and social desirability. We put in place control measures to reduce social desirability bias through anonymity of responses but recognise that recall errors may contaminate the precision of data. Participants were not randomly selected, biasing the socioeconomic and regional mix of the sample population to the area studied, although the survey was conducted in the capital city of the largest country in the Middle East

which would support in part generalisability of findings to physiotherapists working in the other cities in Saudi Arabia and the wider MENA region. The majority of the respondents had many years of clinical experience although some respondents were interns with relatively little experience of clinical practice but with more recent physiotherapy training. The survey was limited to government-employed physiotherapists and did not capture the views of physiotherapists who work in the private sector.

Overall, the consistency of our data with previous surveys provides some confidence that these limitations did not have a significant impact on our findings and support our desire to conduct follow-up studies that document the *actual* use of TENS.

Meaning of the study findings

Clinical experience of using TENS in practice.

In our sample, over 55% of physiotherapists reported using TENS 'often' or 'very often', predominantly for mild to moderate pain of musculoskeletal origin. Over 95% of the physiotherapists offering TENS reported that their patients achieved 'considerable benefit'. In 2020, Alshehri et al., [19] conducted a cross-sectional on-line survey of the attitudes and beliefs of 304 physiotherapists working in Saudi Arabia towards chronic low back pain and treatment selection. They found that 61.9% of physiotherapist respondents used electrotherapy, with home exercises (87.1%), patient education (82.0%), specific back exercises (80.6%), soft tissue release (58.8%) and spinal mobilisation or manipulation (57.8%) also being popular. Interestingly, electrotherapy was more likely to be used by physiotherapists with a stronger biomedical than biopsychosocial treatment orientation.

The findings of clinical research on the effectiveness of TENS are inconsistent. There are some meta-analyses that provide evidence that TENS is superior to placebo TENS (e.g. sham TENS device with no current output) for chronic musculoskeletal pain [20] and for post-operative pain [21,22]. In 2020, an overview of Cochrane reviews on TENS that included a descriptive analysis of 51 RCTs was inconclusive [4] and generally Cochrane reviews on other pain conditions are inconclusive due to insufficient high-quality data [23-25]. The status of clinical research evidence is likely to remain uncertain into the future [26].

TENS technique

There has been much debate about the optimal settings for TENS, with current evidence from human studies suggesting that pulse amplitude and location of stimulation being the critical factors for success. Most respondents reported that they used conventional TENS. Appropriate application of the technique was reflected in these respondents reporting that they administered TENS so that the patient experiences a strong but not painful sensation from TENS without muscle contractions either over the site of pain and/or over dermatomes related to the pain. Three respondents reported that they did not know that there were different TENS techniques although their response to other questions suggested that they were applying conventional TENS.

A strong, non-painful TENS sensation is a prerequisite for success and that maximal pain relief occurs during stimulation, with long-term users of TENS self-administering TENS treatment regularly throughout the day because pain may return within minutes once TENS has stopped [6]. The majority of respondents reported that they used “*high frequency (e.g. above 70 Hz)*” and a “*continuous pulse pattern*” which is in line with parameters recommended for conventional TENS in literature. Much has been written about the role of other TENS parameters such as pulse waveform, width, frequency, and pattern on the outcome. Studies on animals models of nociception suggest that different central mechanisms may operate between high and low-frequency TENS although this has yet to be shown to be consistently observed in studies of the healthy human exposed to experimentally induced pain or in patients experiencing pain [27-33]. All TENS users in the current study reported that they used different electrical settings (parameters) for different painful conditions, although the questionnaire did not gather data related to the criteria used for this choice. In the absence of robust evidence, it has been suggested that

in clinical practice the best approach to take is to allow the patient to select frequency and pattern based on whatever the patient prefers [6]. Only two respondents in our sample reported that this was their approach.

TENS regimen

Our sample of respondents reported that TENS was always administered “*only during clinic visits*” under the supervision of a clinician/therapist. This was because clinics did not supply TENS devices for patients to use at home. Of note, was the finding that the majority of respondents did not recommend that TENS should be used at home. This meant that patients were required to visit clinic to receive TENS treatment (commonly 2 - 4 treatments per week) and that treatment were of short duration (commonly 10-29 minutes). This reflects constraints of a clinical rota and is not consistent with best practice guidelines [6]. Unfortunately, the questionnaire did not include an item to gather information about why physiotherapists did not recommend that patients should self-administer TENS at home. One reason for this may be inappropriate beliefs that the analgesic time course of effects associated with TENS are long-lasting. Experimental and clinical studies on humans suggest that TENS alleviates pain when patients experience a strong comfortable TENS sensation within, or close to the site of pain and these effects are short-lived after TENS has been switched off [6].

We have highlighted the inappropriate practice of requiring patients to attend clinic to receive TENS treatment nearly two decades ago [34]. Bringing patients into the clinic is not only financially costly and inconvenient for patients and staff but likely to produce sub-optimal analgesia. Evidence suggests that patients can safely administer TENS themselves providing they are trained on safe and appropriate technique by a competent healthcare practitioner [6]. The need for continuous professional development on pain management and the principles and practice of TENS was reflected by 69% of respondents reporting that they were unaware of common mechanistic descriptors of pain such as nociceptive pain and neuropathic pain. Moreover, 77.6% of respondents reported that they had enough knowledge of precautions, contraindications and side effects of TENS. All respondents reported that they would not use TENS to manage pain in patients who also have epilepsy, unusual/abnormal heart rhythms, deep vein thrombosis, skin allergies, pacemakers and other implantable devices, or malignancy. TENS is contraindicated for patients with these conditions,

unless there has been a detailed evaluation conducted by a physician or a senior health care practitioner [35].

Clinic policy

Clinic policy on the use of TENS is similar to that seen in other countries with clinics offering TENS treatment but not supplying or advocating the use of TENS devices for patients to use at home [11,12,14,15,,18, 36-42]. Generally, local policy and practice dictates whether TENS is offered and whether patients should purchase their own TENS device, guided by government policy. In the U.K. there has been a longstanding debate about whether TENS should be available on the National Health Service and funded by public (government) monies. In the U.K. guidelines by the National Institute of Health and Care Excellence (NICE) recommend to offer TENS as an adjunct to core treatment for osteoarthritis [43] and rheumatoid arthritis [44] but not for non-specific chronic low back pain [45] or intrapartum care [46]. Clinical guidelines on the assessment and management of chronic pain in over 16's published by NICE on the 7th of April 2021 [47] do not recommend TENS for pain management because there is no supporting evidence of benefits. This was despite the inclusion of a high quality large-multi site RCT with 301 participants demonstrating that TENS alleviated movement-evoked pain in women with fibromyalgia [48]. Even if government policy is not to offer TENS through public health care services, patients may still wish to try TENS and/or have already obtained TENS equipment without prescription at pharmacies or via the internet. Thus, physiotherapists need to be able to advise patients on principles and practice of use.

Implications for practice and research

The findings from this survey identify a need for continuous professional updating on the basic principles and practice of TENS for practitioners in Saudi Arabia. This is particularly important from a number of perspectives. Recent concern about the safety of long-term use of analgesic medication has shifted a focus on the role of non-pharmacological analgesic techniques. This shift of emphasis requires education and training and human and technical resources, including access to physiotherapy clinics and the availability of equipment including TENS. There is a need for general clinical practice guidelines that can be culturally and situationally adapted for patient populations in hospitals, clinics and urban and rural community settings. In rural areas there are social and economic challenges associated with poverty, limited access to healthcare services and a lack of awareness

of non-pharmacological options to control pain. A community-based pain management education programme would be useful in this regard.

There is a need to develop TENS training packages for patients to support them to self-administer TENS and personalize TENS treatment (e.g. electrode positioning and electrical settings). This would include education about direct and indirect benefits of TENS including improvements in functional outcomes such as mobility, muscle tension, and sleep [49]. Technological advances mean that TENS equipment can now interface with mobile phone technology that captures patient data during real-world use and provide feedback on optimal TENS settings not only for pain but also for functional outcomes including sleep [50-52]. Practitioners and patients need to be able to interact with such equipment.

Further research is warranted to investigate factors influencing TENS outcome to optimise the effectiveness of TENS in clinical practice.

CONCLUSIONS

Physiotherapists from the hospitals in Saudi Arabia in this survey were generally positive in their attitudes towards TENS and many used it in clinical practice to alleviate chronic musculoskeletal pain. TENS techniques match good practice guidelines except for a tendency to administer TENS in clinic under supervision. There is a need to develop service delivery systems and resources to train patients to self-administer TENS at home rather than having to visit clinics. This study revealed a need for academic educational programmes aimed at updating knowledge and skills about TENS.

Acknowledgements

We wish to thank the following: Dr Rashoud, Security Force Hospital, Saudi Arabia for guidance during the data collection phase of the study; managers, clinical supervisors and practitioners of the relevant physiotherapy departments for their time and participation; and the anonymous reviewers for their constructive advice.

Ethical Approval

Research Ethics Committee of Leeds Beckett University

Conflict of interest

AA and GT declare no conflicts of interest. M.I.J. has received modest royalties from Oxford University for his book TENS: Research to support clinical practice. In

the previous 5 years M.I.J.'s employer has received financial income from the Neuromodulation Society of the United Kingdom and Ireland (NSUKI), Glaxo-SmithKline plc, TENS Care Ltd. and IPulse Medical for expert consultancy services.

Funding

This work was supported by a PhD bursary from the Interior ministry of Saudi Arabia.

Accessing Research Materials

Underlying research materials related to our paper (for example data, samples or models) can be accessed by contacting Professor Mark I. Johnson

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Appendix 1: Supplementary Material

Free Text Search of PubMed

A free text search of PubMed using the terms 'Transcutaneous electric* nerve stimulation' AND ['Attitudes' OR 'Beliefs' OR 'use'] returned over 1000 hits (20 May 2021). Titles were manually screened by GT and one survey of the attitudes and beliefs about the use of TENS for pain management by physiotherapists in Sri Lanka was identified [Dissanayaka et al. 2014]. The reference list of this publication identified a similar survey conducted in India [Banerjee et al. 2013]. Search string

("transcutaneous"[All Fields] OR "transcutaneously"[All Fields]) AND "electri*" [All Fields] AND ("nerve"[All Fields] OR "nerve s"[All Fields] OR "nerved"[All Fields] OR "nerves"[All Fields]) AND ("stimulate"[All Fields] OR "stimulated"[All Fields] OR "stimulates"[All Fields] OR "stimulating"[All Fields] OR "stimulation"[All Fields] OR "stimulations"[All Fields] OR "stimulative"[All Fields] OR "stimulator"[All Fields] OR "stimulator s"[All Fields] OR "stimulators"[All Fields]) AND ("attitude"[MeSH Terms] OR "attitude"[All Fields] OR "attitudes"[All Fields] OR "attitude s"[All Fields] OR ("belief s"[All Fields] OR "culture"[MeSH Terms] OR "culture"[All Fields] OR "belief"[All Fields] OR "beliefs"[All Fields]) OR ("statistics and numerical data"[MeSH Subheading] OR ("statistics"[All Fields] AND "numerical"[All Fields] AND "data"[All Fields]) OR "statistics and numerical data"[All Fields] OR "use"[All Fields]))

INSTRUCTION FOR COMPLETING THE QUESTIONNAIRE

Please use a ball point pen to complete this questionnaire. Correct mistakes with a pen, do not use correction fluid. Mark inside each box clearly with a tick where appropriate.

A. DEMOGRAPHICS

Date of Birth: (DD/MM/YEAR):

Sex:

Present job title (including grade):

Name of organisation of present place of employment:

Name of department of present place of employment:

Are you registered with Saudi Commission for Health Specialties? (Please tick one answer)

☐ Yes

☐ No

When did you qualify as a Health Care Professional (Physiotherapist)?

What is your clinical specialism?

B. CURRENT CASE LOAD

1. In the previous month, what types of condition(s) have you treated (both pain and non-pain)?

(Tick as many answers as necessary and try to give an indication of the percentage of these patients present in your clinical work load)

☐ Musculoskeletal/orthopaedic ... approximate percentage of clinical work load =%

☐ Neuropathy/neuralgia ... approximate percentage of clinical work load =%

☐ Postsurgical ... approximate percentage of clinical work load =%

☐ Cancer ... approximate percentage of clinical work load =%

☐ Other, please specific below ... approximate percentage of clinical work load =%

.....

C. PAIN AND PAIN MANAGEMENT

2. Do you treat pain as part of your clinical workload at the moment? (Tick one answer)

☐ Yes (Go to Q3) ☐ No (Go to section D)

3. What percentage of patients in your current case load experience pain? (Tick one answer only)

☐ less than 25%

☐ 25-49%

☐ 50-75%

☐ more than 75%

4. In general (on average), how long have the patients that you treat been in pain before you see them? (Tick one answer)

☐ Less than 2 weeks

☐ Between 2 weeks and 3 months

☐ More than 3 months

☐ I do not know. Please explain.....

5. What percentage of your patients in pain would you categorise as having nociceptive pain? (Tick one answer)

☐ I do not know what nociceptive pain is ☐ I do not know the proportion of patients

☐ less than 25%

☐ 25-49%

☐ 50-75%

☐ more than 75%

6. What proportion of your patients in pain would you categorise as having neuropathic pain? (Tick one answer)

☐ I do not know what neuropathic pain is ☐ I do not know the proportion of patients

☐ less than 25%

☐ 25-49%

☐ 50-75%

☐ more than 75%

7. In the previous month, what types of condition(s) have you treated where the patient also had pain? (Tick as many answers as necessary and try to give an indication of the percentage of these patients present in your clinical work load)

☐ Musculoskeletal/orthopaedic ... approximate percentage of these patients with pain =%

☐ Neuropathy/neuralgia ... approximate percentage of these patients with pain =%

☐ Postsurgical ... approximate percentage of these patients with pain =%

☐ Cancer ... approximate percentage of these patients with pain =%

☐ Other, please specific below ... approximate percentage of these patients with pain =%

.....

D. YOUR BELIEFS ABOUT TRANSCUTANEOUS ELECTRICAL NERVE STIMULATION (TENS)

8. Have you ever received education or training on the principles and practice of using transcutaneous electrical nerve stimulation (TENS)? (Tick one answer)

☐ No

☐ Don't know

☐ Yes, please identify the type of training (e.g. undergraduate course or one-off workshop) and how long ago the training took place

.....

9. Do you believe that TENS is beneficial for any of the following conditions? (Tick as many answers as necessary)

- ☐ To relieve pain
- ☐ To promote tissue healing
- ☐ To improve blood flow
- ☐ To improve muscle function
- ☐ Other. Please specify

The following questions relate to your beliefs about the use of TENS to relieve pain

10. Do you believe TENS relieves pain? (Tick one answer)

- ☐ Yes (Go to Q12)
- ☐ No (Go to Q11)

11. Why do you believe TENS does not relieve pain? (Tick one answer and then continue to Q16)

- ☐ I have used it on patients and in general it does not relieve pain
- ☐ Scientific evidence suggests that it is not effective for relieving pain
- ☐ Other, Please specify

12. Do you believe that TENS is a cost-effective treatment for managing pain? (Tick one answer)

- ☐ Yes
- ☐ No. Please explain

13. Do you believe that TENS is most effective for: (Tick one answer)

- ☐ Mild pain
- ☐ Moderate pain
- ☐ Severe pain

14. When do you believe that the pain relieving effects of TENS take place: (Tick one answer)

- ☐ Only during TENS
- ☐ Only after TENS
- ☐ Both during and after TENS
- ☐ It depends on the type of TENS technique (mode) used. Please explain.....

15. When do you believe that the pain relieving effects of TENS disappear: (Tick one answer)

- ☐ Within a few minutes after TENS has been switched off (i.e. immediately)
- ☐ More than a few minutes but within one hour after TENS has been switched off
- ☐ More than one hour after TENS has been switched off
- ☐ It depends on the type of TENS technique (mode) used. Please explain.....

16. Do you feel that you are sufficiently knowledgeable of precautions, contraindications and side effects of TENS?
(Tick one answer)

- ☐ Yes
- ☐ No. Please explain.....

E. YOUR CLINIC'S POLICY ON THE USE OF TENS

17. Does your clinic (present employer) offer TENS treatment to its patients? (Tick one answer)

- ☐ Yes (Go to Q18)
- ☐ No (Go to Q22)

18. Where does TENS treatment take place? (Tick one answer)

- ☐ Only during clinic visits
- ☐ Only at home
- ☐ Both at the clinic and at home

19. Who administers the TENS treatment? (Tick one answer)

- ☐ Only the clinician/therapist
- ☐ Only the patient (i.e. self-administered)
- ☐ Both the clinician/therapist and the patient
- ☐ Other e.g. care giver). Please specify.....

20. Does your clinic encourage patients to use TENS at home? (Tick one answer)

- ☐ Yes
- ☐ No

21. Does your clinic supply TENS devices to your patients to use at home? (Tick one answer)

- ☐ Yes, patients borrow a device from the clinic for as long as they need it
- ☐ Yes, patients can borrow a TENS device from the clinic but only for a fixed period of time
- ☐ Yes, patients can buy a TENS device from our clinic
- ☐ No
22. Do any patients attending your clinic buy their own TENS devices from source other than the clinic e.g. from the internet, pharmacy or medical store? (Tick one answer)
- ☐ Yes ☐ No

F. YOUR OWN CLINICAL PRACTICE WHEN USING TENS

23. Do you use TENS as part of your clinical practice? (Tick one answer)
- ☐ Yes ☐ No (Go to Q45)
24. Do you use TENS for any of the following conditions? (Tick as many answers as necessary)
- ☐ To relieve pain (**If you do not use TENS to relieve pain please go to Q45**)
- ☐ To promote tissue healing
- ☐ To improve blood flow
- ☐ To improve muscle function
- ☐ Other. Please specify

NOTE: If you do not use TENS to relieve pain please go to Q45

25. What percentage of your patients who experience pain do you treat with TENS? (Tick one answer)
- ☐ less than 25% ☐ 25-49% ☐ 50-75% ☐ more than 75% ☐ I do not know
26. On average, how much pain relief do your patients who experience pain obtain from TENS? (Tick one answer)
- ☐ No relief ☐ Minor relief ☐ Moderate relief ☐ Complete relief
- ☐ I do not know
27. What percentage of your patients who experience pain and are treated with TENS obtain clinically meaningful pain relief with TENS? (Tick one answer)
- ☐ less than 25% ☐ 25-49% ☐ 50-75% ☐ more than 75% ☐ I do not know
28. Which categories of medical conditions do you find that TENS is useful **to relieve pain**? (Tick as many answers as necessary)
- ☐ Musculoskeletal/orthopaedic
- ☐ Neuropathy/neuralgia
- ☐ Postsurgical
- ☐ Cancer
- ☐ Other. Please specify.....
29. When do you consider using TENS **to manage pain**? (Tick one answer)
- ☐ As a first line treatment (i.e. the first treatment)
- ☐ As a second line treatment after other treatments have been used
30. In general, when I use TENS **to manage pain** I use it: (Tick one answer)
- ☐ Only on its own (i.e. as a stand-alone treatment)
- ☐ Only in combination with other treatments
- ☐ Sometimes on its own and sometimes in combination with other treatments
- Please list which other treatments you have used successfully with TENS
-

31. Do any of the patients you treat with TENS also take medication? (Tick one answer)
- ☐ Yes ☐ No
32. Would you use TENS **to manage pain** in patient who also has the following? (Tick as many answers as necessary)
- | | | | |
|--|------------------------------|-----------------------------|-----------------------------------|
| Epilepsy | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |
| Unusual/abnormal heart rhythm | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |
| Deep vein thrombosis | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |
| Skin allergy | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |
| Pacemakers and other implantable devices | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |
| Pregnancy | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |
| Malignancy | <input type="checkbox"/> Yes | <input type="checkbox"/> No | <input type="checkbox"/> Possibly |

Comment on any of your decisions if you wish

.....

G. TENS TECHNIQUES THAT YOU USE IN YOUR CLINICAL PRACTICE

33. What is the duration of 'an average' TENS treatment that you would give in the clinic **to manage pain**? (Tick one answer)

- ☐ I do not administer TENS in a clinic setting. Please explain.....
- ☐ Less than 10 minutes
- ☐ Between 10-29 minutes
- ☐ Between 30-60 minutes
- ☐ More than 60 minutes Please specify duration
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....

34. Do you advise patients to self-administer TENS treatment **to manage pain** unsupervised at home? (Tick one answer)

- ☐ Yes
- ☐ No. Why not?

35. What intensity of TENS do you advise your patients to use **to manage pain**? (Tick one answer)

- ☐ They should not feel a sensation from TENS during treatment
- ☐ They should 'barely' feel a sensation from TENS during treatment
- ☐ They should feel a strong but not painful sensation from TENS *without* muscle contractions
- ☐ They should feel a strong but not painful sensation from TENS *with* muscle contractions
- ☐ They should feel a painful but tolerable sensation from TENS *without* muscle contractions
- ☐ They should feel a painful but tolerable sensation from TENS *with* muscle contractions
- ☐ They should feel an intensity of TENS not listed above. Please specify.....
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....

36. Where do you place TENS electrodes when you manage pain? (Tick as many answers as necessary and number your answers with 1 = most often place, 2 = less often place etc.)

- ☐ Over the site of pain
- ☐ Over the main peripheral nerves innervating the pain
- ☐ Over dermatomes related to the pain
- ☐ Over trigger points or acupuncture pain points
- ☐ Other location, please specify.....
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....

37. On average, how many TENS treatments **do you administer in the clinic per patient?**

(Tick one answer)

- ☐ One treatment per week
- ☐ 2 - 4 treatments per week
- ☐ More than 4 treatments per week
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....

38. On average, how many TENS treatment **do you advise patients to self-administer TENS** (e.g. if they use TENS at home)? (Tick one answer)

- ☐ I do not advise patients to self-administer TENS away from the clinic
- ☐ Less than two treatments per week
- ☐ 2 - 4 treatments per week
- ☐ More than 4 treatments per week
- ☐ As many treatments as they need (i.e. as often as they want)
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....
- ☐ Other. Please explain

39. Do you use different TENS techniques to manage pain? (Tick one answer)

- ☐ I did not know that there were different TENS techniques
- ☐ I know that there are different TENS techniques but I do not know what they are called
- ☐ Yes, I only use conventional TENS
- ☐ Yes, I only use acupuncture-like TENS
- ☐ Yes, I use conventional TENS and acupuncture-like TENS

Feel free to explain your answer

40. Do you use different electrical settings (parameters) of TENS for different painful conditions? (Tick one answer)
- ☐ No
- ☐ Yes. Please explain
41. Which pulse frequency (rate) of TENS **do you use the most in the clinic** to manage pain? (Tick one answer)
- ☐ I do not know
- ☐ Low frequency (e.g. below 10 Hz)
- ☐ Medium frequency (e.g. 11-69 Hz)
- ☐ High frequency (e.g. above 70 Hz)
- ☐ Whatever the patient prefers
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....
- ☐ Other. Please explain
42. Which pulse frequency of TENS do you **advise patients to use if they self-administer TENS** to manage pain? (Tick one answer)
- ☐ I do not advise patients to self-administer TENS away from the clinic
- ☐ I encourage patients to self-administer TENS away from the clinic but do not advise them on which frequency to use
- ☐ Low frequency (e.g. below 10 Hz)
- ☐ Medium frequency (e.g. 11-69 Hz)
- ☐ High frequency (e.g. above 70 Hz)
- ☐ Whatever the patient prefers
- ☐ It depends on the TENS technique (mode) that I use. Please explain.....
- ☐ Other. Please explain
43. Which pulse pattern (mode) of TENS **do you use the most in the clinic** to manage pain? (Tick one answer)
- ☐ I do not know
- ☐ Continuous
- ☐ Burst
- ☐ Modulated
- ☐ Whatever the patient prefers
- ☐ It depends on the TENS technique that I use. Please explain.....
- ☐ Other. Please explain
44. Which pulse pattern (mode) of TENS do you **advise patients to use if they self-administer TENS** to manage pain? (Tick one answer)
- ☐ I do not advise patients to self-administer TENS away from the clinic
- ☐ I encourage patients to self-administer TENS away from the clinic but do not advise them on which pulse pattern (mode) of TENS to use
- ☐ Continuous
- ☐ Burst
- ☐ Modulated
- ☐ Whatever the patient prefers
- ☐ It depends on the TENS technique that I use. Please explain.....
- ☐ Other. Please explain
45. Why do you not use TENS to treat your patients? (Tick as many answers as necessary)
- ☐ The patients I treat are not suitable for TENS. Please explain
- ☐ The conditions I treat are not suitable for TENS. Please explain
- ☐ It is too costly for the clinic
- ☐ It is too costly for the patients
- ☐ Clinic policy states that TENS should not be used
- ☐ I have found that TENS is not beneficial based on my clinical experience

- ☐ I believe that TENS is not beneficial for the patients that I treat based on previous training (including reading and discussions with peers)
- ☐ I am not familiar with how to use TENS
- ☐ Other treatments are more appropriate/effective
- ☐ TENS is too difficult for patients to use
- ☐ The patients I see do not want to use TENS
- ☐ Other, please specify

Thank you for completing this questionnaire.

Please return your questionnaire by one of the following methods

1. Posting into the secure questionnaire letter box in your department
2. Handing directly to Mr Abdullah Abahussein or your Head of Department
3. Posting via the pre-paid envelope provided