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A nonrandomised pilot study to examine the feasibility and acceptability of reflexology in patients undergoing hospital-based haemodialysis (solitude study)

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Abstract

Background: Patients with end-stage kidney disease, receiving haemodialysis can experience complications—hypotension, headache, muscle cramp, chest pain, nausea and vomiting. Patients who experience all or some of these symptoms will often report reduced health-related quality of life (HRQOL) and poor sleep quality, which may lead to increased morbidity and mortality.

Objective: The objective of this pilot study is to evaluate the feasibility of a larger randomised controlled trial to determine the effect of foot reflexology on a cohort of patients undergoing hospital-based haemodialysis.

Design: A nonrandomised pilot study using a multimethod approach.

Participants: Twenty patients undergoing hospital-based haemodialysis treatment.

Measurements: HRQOL and quality of sleep were measured using the SF-12 Health Survey and the Pittsburgh Sleep Quality Index (PSQI). Semi-structured interviews were completed with 10 patients, exploring their experiences, opinions and perceptions of the intervention.

Results: There was an increase in the mean scores examining the total physical health and mental health components of the SF-12. All corresponding p values were statistically significant following the intervention. The mean total sleep score postintervention signified positive changes in sleep quality, with the corresponding p values being statistically significant. The study established the feasibility of the intervention and the benefits for patients undergoing haemodialysis.

Conclusion: This pilot study demonstrated the possibility of recruiting and retaining patients undergoing haemodialysis to a reflexology study. The study did not impact the haemodialysis routine and was positively received. The intervention showed statistically significant improvements in patients’ HRQOL and sleep quality.
INTRODUCTION

The increasing prevalence of chronic diseases is a substantial problem facing healthcare services (Sharifi et al., 2018). The incidence of kidney failure is increasing and causes significant distress to patients, resulting in increased hospital admissions, loss of productivity, morbidity and early mortality (Elshahat et al., 2020). The prevalence of this disease in developing countries is on a growing trend, with the diagnosis being ranked 16th among the leading causes of death in 2016 and is expected to increase to being ranked 5th in 2040 (Foreman et al., 2018). Chronic kidney disease is classified based on abnormal urinalysis and/or renal tract structure and progresses along a five-stage trajectory. Stage 5 kidney failure (Elshahat et al., 2020) occurs when the glomerular filtration rate of the kidney is less than 15 ml/min, thus necessitating the need for haemodialysis, peritoneal dialysis or transplantation (Levey & Coresh, 2012). In 2016, there were 63,162 adult patients receiving renal replacement therapy in the United Kingdom (Byrne et al., 2018). Globally the number of people with kidney failure receiving renal replacement therapy is estimated to increase from 2.6 million in 2010 to 5.4 million by 2030 (Liyanage et al., 2015). Haemodialysis remains the most common treatment for 70% of patients worldwide with kidney failure. Given the 5%–6% growth of haemodialysis patients consistent with the global growth of kidney failure patients, haemodialysis is expected to remain the most common treatment for this group of patients. Despite significant medical advances over several decades, the survival of patients on haemodialysis therapy remains shorter than that of the general population (Rydell et al., 2019). Patients receiving haemodialysis experience lower health-related quality of life (HRQoL) and physical functioning as compared with individuals with normal kidney function (Murtagh et al., 2007). Most research focused on improving health outcomes for patients on haemodialysis has focused on pharmacotherapy and the actual haemodialysis prescription (Himmelfarb & Ikizler, 2011), while there is limited data on the use of complementary therapies among patients with kidney failure receiving haemodialysis and its impact on the quality of life and symptoms.

LITERATURE REVIEW

Despite technical advances and changes in the way haemodialysis is delivered, it remains a challenging, arduous treatment for many patients (Lowney et al., 2015). Common complications of haemodialysis include hypotension, muscle cramps, nausea and vomiting, headache, chest pain and back pain, all of which potentially have a drastic effect on both the physical and mental well-being of patients receiving haemodialysis (Asgari et al., 2017). In most patients undergoing haemodialysis, these complications can be associated with a reduction in blood pressure and disequilibrium during the treatment (Naseri-Salahshour et al., 2019). Patients who experience some or all of the symptoms outlined will often report reduced HRQOL (Naseri-Salahshour et al., 2019), including poor sleep quality (Bonner et al., 2010).

In national and international studies, fatigue has been reported in more than half the patients receiving haemodialysis (Almutary et al., 2013; Davey et al., 2019; Sharifi et al., 2018). Fatigue is a subjective experience in which a person experiences a persistent general feeling of reduced capacity for mental and physical functioning and is also an important predictor for the survival of haemodialysis patients (Davey et al., 2019). It has been reported that between 50% and 80% of patients undergoing haemodialysis experience poor sleep quality or suffer from sleep disorders (Turek et al., 2012). The association between inadequate sleep quality and poor mental health, reduced (HRQoL) and increased morbidity and mortality for patients undergoing haemodialysis cannot be underestimated. Furthermore, it may have a direct effect on the deterioration of kidney function in patients undergoing haemodialysis treatment who experience more sleep problems than healthy adults (Colbay et al., 2007; Edley, 2020; Merlino et al., 2008). Patients undergoing haemodialysis therapy most commonly present with headache, back pain, musculoskeletal pain or muscle cramp (Davison & Jhangri, 2010). Chronic pain in patients receiving haemodialysis treatment often lacks a treatable underlying cause, and the somatosensory component of the pain assumes greater prominence than in acute pain.

There is increasing evidence that complications experienced by patients receiving haemodialysis are the most important predictor of HRQOL (Almutary et al., 2013). Complications, such as muscle cramp, pain and nausea and vomiting, make haemodialysis unpleasant for patients and thus may lead to the early discontinuation of haemodialysis, thereby creating an undesirable inadequacy of haemodialysis despite its high costs (Weisbord et al., 2014). Self-confidence may be affected, impacting significantly on work performance, family relationships and daily routine of life (Picariello et al., 2019). Haemodialysis complications reduce patient HRQOL and quality and amount of sleep. Preventing or minimising such complications will ultimately lead to an increase in patient HRQOL, improved sleep quality and greater longevity (Naseri-Salahshour et al., 2019; Unal & Akpinar, 2016).

Complementary therapies are used to describe treatments, which are employed alongside or integrated with orthodox medical treatment with the aim of providing physical, psychological and emotional support through the relief of symptoms (Sharifi et al., 2018). Even though non-pharmacological methods have attracted the attention of patients and their caregivers to control some of the symptoms of chronic diseases, the dominance of the conventional medical profession continues to limit the inclusion from some chronic disease groups, one such group being patients undergoing haemodialysis therapy (Sharifi et al., 2018). The use of complementary therapies in patients undergoing haemodialysis
treatment is reported to be relatively infrequent (Bahall, 2017) in contrast to other chronic disease groups, such as cancer, where it is a significant and growing phenomenon (Candy et al., 2020). In healthcare, reflexology is probably one of the most frequently used complementary therapies (Candy et al., 2020). Reflexology is the systematic application of pressure to specific reflex points on the feet or hands with the intention of promoting homoeostasis (Korkan & Uyar, 2014). Foot massage is considered a safe and inexpensive method and has significantly diminished fatigue in haemodialysis (Wilhelm, 2009).

The main mechanism of the reflexology is its effect on the nervous system. Working from the premise that reflex areas in the foot are linked to principal organs and glands via energy zones, it is presumed that the application of pressure to these areas stimulates nerve reflexes, which are transmitted to the brain. The brain reacts by restoring the proper flow of blood so that haemostasis of the body can be maintained. This stimulation and manipulation, therefore, help to maintain haemostasis by provoking the chemical system of the nerves, balancing the enzymes and regulating endocrine function (Wilkinson et al., 2008). Many studies have been carried out, highlighting the benefits of reflexology (Nesami et al., 2014; Rigi et al., 2015; Unal & Akpinar, 2016). These studies have shown that reflexology can reduce nausea, vomiting, pain, anxiety, fatigue and sleeplessness in many conditions, including migraine, pre- and postnatal discomfort, cancer, and chronic obstructive pulmonary disease (Wang et al., 2008) and (Yang, 2005). Reflexology may lead to increased well-being amongst patients undergoing haemodialysis treatment. In patients receiving haemodialysis, studies have shown that reflexology has proven effective in relation to cramp, fatigue, and emotional issues. The evidence base, however, is limited and further research is required (Ozdemir et al., 2013; Unal & Akpinar, 2016).

The aim of this pilot study was to evaluate the feasibility of a larger randomised controlled trial to determine the effect of foot reflexology on patients undergoing hospital-based haemodialysis with a non-randomised pilot study using multimethods. This was achieved by evaluating the feasibility of patient recruitment within a single haemodialysis setting for a definitive trial and the feasibility of delivering foot reflexology as a component of treatment in a haemodialysis setting. Outcome measures used in the evaluation were determined by completion rates and missing data. Analysis of the collected data was conducted to identify potential outcome measures to evaluate the effectiveness of reflexology in a definitive trial.

**METHODS**

**Research design**

Although traditionally quantitative and qualitative methodologies have been viewed as two distinctly different paradigms (Parahoo, 2014), there are areas of inquiry, which can be enhanced by using a combination of both methods (Polit & Beck, 2012). Hence both approaches have been included in this study. The study protocol was approved by the local Research Ethics Committee (REC reference: 17/NI/0244). The study was a non-randomised pilot study that used a multimethod approach to explore the feasibility of a reflexology intervention for patients receiving hospital-based haemodialysis. Non-randomised pilot studies are used to explore the feasibility of intervention and certain aspects of evaluation, such as recruitment and the appropriateness of outcome measures, without randomly allocating participants to a control and intervention group (Eldridge et al., 2016).

**User involvement**

This study was developed in collaboration with members of the Northern Ireland Kidney Patient Association (NIKPA), who have personal knowledge and experience of kidney disease and offered insightful input and perspective. An advisory group was established to support the study, which included service users, renal healthcare staff, policy makers, key stakeholders and academics from Queen’s University, Belfast. Contact with these individuals was made by e-mail. The advisory group that met quarterly, provided expertise and a strategic view on the development of the research. They helped to identify emerging issues such as those related to the ethical understanding of the work and how best one might respond to these.

**Participants and setting**

The study population were patients with kidney failure who were receiving hospital-based haemodialysis in a rural renal unit in Northern Ireland during the period of January–April 2018. Male or female patients >18 years of age were recruited.

**Exclusion criteria**

Exclusion criteria included those with broken skin, foot ulceration, lower limb amputation or a diagnosis of peripheral neuropathy. Individuals with cognitive impairment (as determined by supervising consultant) were also excluded from the study.

**Sampling and recruitment**

A sample size of 20 was identified as appropriate for the aims of this pilot study (LoBiondo-Wood & Haber, 2017). Qualitative interviews were completed with 10 participants to elicit personal experiences of the intervention and outcome measures and any challenges or barriers. Patients were informed about the study by posters displayed in the haemodialysis waiting area and by
staff members working in the unit. Once patients expressed an interest in taking part in the study, a member of the research team along with the supervising consultant applied the inclusion/exclusion criteria to ensure that the specified criteria were met. All participants provided written informed consent.

Intervention

The reflexology intervention was delivered by a trained reflexologist during the patient’s regular haemodialysis session. This same reflexologist carried out all the reflexology treatments. Privacy was maintained during the delivery of the intervention using curtains, which were drawn around the bed. Participants were offered a reflexology session three times a week for 30 min over a 4-week period. During the intervention, thumb and finger pressure was applied to the reflex points of both feet. The treatment sequence began with the right foot and progressed to the left foot. The same firm but comfortable pressure was used throughout the treatment with the same amount of time spent on each foot. The same sequence and time were adhered to for each patient and for each subsequent treatment. Grapeseed oil (5 ml) was used to carry out the treatments. Grapeseed oil was chosen because it has a light nonsticky consistency and provides a high slip for reflexology treatments. Grapeseed oil is suitable for a wide variety of skin types and those with nut allergies.

Data collection

Quantitative

At baseline, questionnaire data included patient characteristics of age, gender, time on dialysis, marital status, ethnicity, employment, income, accommodation status, assessment of (HRQoL) using the SF12 Health Survey questionnaire (Ware et al., 1996) and patient quality of sleep using the Pittsburgh Sleep Quality Index (PSQI) (Buysse et al., 1989). The SF12 includes physical and health components and is scored such that a higher score is indicative of a better quality of life, with scores ranging from 0 to 100. The PSQI is the most commonly used generic measure to provide information on a respondent’s sleep quality, discriminating “good” and “poor” sleepers whilst acknowledging the reliability and validity of the tool. The scores range from 0 to 21, with lower scores indicating better sleep quality. Participants were required to complete the same questionnaires one month after the intervention had been completed to compare baseline and post-intervention responses.

Qualitative

Following the completion of the intervention semistructured interviews were completed with ten patients who had received the intervention. These interviews were carried out by a research assistant during the patient’s haemodialysis session to explore their perceptions and opinions of the reflexology intervention. A topic guide was prepared covering a list of issues to be covered with each participant. This flexible approach helped ensure the researcher elicited the information required whilst giving participants the opportunity to elaborate on issues, which the researcher may not have considered.

Data analysis

Quantitative

Data from the questionnaires were coded to attribute a numeric value and were entered and analysed in IBM SPSS Statistics for Windows, Version 22.0 (IBM Corp.). A range of descriptive statistics was used, including mean and standard deviation for continuous data, median and interquartile range for ordinal and frequency and percentages for categorical data. To compare changes in outcome measures and in the identification of mean scores before and after the intervention, the paired samples t test or the Wilcoxon signed ranks test was used. This analysis was exploratory and assisted in identifying appropriate outcome measures for a definitive trial, as opposed to evaluating impact (Eldridge et al., 2016).

Qualitative

All interviews were transcribed verbatim. Thematic analysis was used to analyse the interview data selected since it allows for a systematic process that increases accuracy or sensitivity in understanding and interpreting observations about, for example, people, events, and situations. The inductive approach to thematic analysis was used as coding, and theme development was directed by the content of the data. In line with thematic analysis guidance, codes were used to label the key concepts identified from the data set, which were used to develop themes. NVivo was used to manage the collected data due to its versatility in assisting the management of many different types of qualitative data (Parahoo, 2014).

Progression criteria

To determine the feasibility of a definitive trial of reflexology, we set the following progression criteria: 80% of the target sample size (n = 20) was recruited within a single haemodialysis centre. There was less than a 20% attrition rate following baseline data collection. Acceptability of outcome measures was reported according to completion rates and missing data, with the acceptability of the reflexology intervention according to completion rates and qualitative data.
RESULTS

Recruitment and retention

All 24 patients who expressed interest provided informed consent. However, only 20 participants received the intervention as 4 withdrew before implementation. Reasons for ineligibility (after informed consent had been given) included receiving a renal transplant ($n = 3$) and sustaining a fractured ankle ($n = 1$) after providing informed consent. This resulted in an attrition rate of 17%. The flow of participants is presented in Figure 1, an adapted CONSORT flow diagram from the CONSORT extension for reporting pilot and feasibility studies (Schulz et al., 2010).

Demographics

The characteristics of the study participants are summarised in Table 1. The mean age of participants availing of the reflexology intervention was 72 years and 60% ($n = 12$) were male. Time on haemodialysis ranged from less than 6 months to 10 years. Patients attending all three haemodialysis sessions (morning, afternoon, and evening) participated in the study (see Table 1). The ethnicity of those who availed of the reflexology intervention was 100% White, which is typical of the local population. Finally, 90% (18 out of the 20) who participated in the study were retired.

Feasibility of implementation

All sessions ran as planned, with each participant receiving reflexology three times a week for 30 min over a 4-week period ($n = 12$ sessions per patient). There was a 100% completion rate. The reflexology intervention was delivered by a trained reflexologist at the patient’s bedside approximately 10–15 min after their haemodialysis treatment was initiated. It had no negative impact on the patient’s haemodialysis treatment, nor did it impinge on the routine of the haemodialysis nurses or wider multidisciplinary team (MDT). No adverse events were reported. The reflexology intervention did not impact the haemodialysis procedure or functioning of the dialysis machine. It was well received by all haemodialysis nurses and other healthcare professionals working within the renal unit. Healthcare professionals were positive about the reflexology intervention, given the level of engagement and enthusiasm shown by the participating patients. Privacy was maintained as the curtains were drawn.

Outcome measures

Acceptability

The data collection tools included the SF12 HRQoL and the PSQI. The reliability and validity of both these tools have been widely published (Ware et al., 1996) and (Buysse et al., 1989). Tools were completed with ease at both time points, namely immediately before commencing and 1-month postintervention. There were no missing data, and measures were appropriate for capturing relevant outcome information.
FIGURE 1  CONSORT diagram outlining different phases of the pilot study

FIGURE 2  Themes emerging from qualitative interviews
Quality of life

There was an increase in the mean scores examining the total, physical health, and mental health components of the SF12 (see Table 2). Comparison of the pre- and postintervention measure was conducted using a paired samples t test. The assumption of the within-pair differences being drawn from a normal distribution held. The corresponding p-values are all statistically significant, indicating strong evidence in a change of the SF12, pre- and postintervention, the physical health component having strong evidence for a change in the outcome measure of improved health. The information included in Table 2 suggests that the client’s physical and mental health improved following the reflexology intervention.

Quality of sleep

The mean total sleep score at baseline was 8.80 compared with 4.70, following the reflexology intervention. A reduction in the mean total sleep score signifies more positive changes in sleep quality. A paired samples t test was again used since assumptions on the within-pair differences held. The mean difference was -4.1 (95% confidence interval [CI] [-5.6, -2.6], p < 0.001), thus providing compelling evidence that reflexology may have a positive effect on the sleep quality of patients receiving haemodialysis (Unal & Akpinar, 2016) and would be an appropriate outcome measure to evaluate in a definitive trial.

Qualitative findings

We identified two central themes, which incorporated four subthemes in total (Figure 2). These are described below, with participant quotations used to demonstrate key points.

Theme 1: Benefits of reflexology

Enjoyment/relaxation and stress reduction

Most patients expressed general enjoyment when receiving reflexology, as one participant stated, “I thought it was very good. I really enjoyed it” (P2). In addition, patients referred to a greater sense of relaxation and recommended reflexology for patients on dialysis; “Lovely, relaxing. You just lay back and closed your eyes and took yourself whenever you wanted to be” (P7). Patients receiving haemodialysis can experience high levels of anxiety around the treatment. However, participants stated that reflexology reduced this anxiety. One participant expressed his view thus, “It just helped my mind to relax and my body to relax ... for I was a bit uptight at the time about dialysis. Since that I seem to have come to accept it a bit better... It helped to take your mind of the actual dialysis” (P5).

Reduction in symptoms and improved sleep

Patients reported a reduction in pain relating to their legs and feet as a result of the reflexology intervention; “Well my legs felt better after it, you know. My legs felt better” (P3). Improved sleep was commonly regarded as a primary benefit from reflexology, with one participant explaining “I actually felt it helped me get into a sleep pattern better as well, which for me was a good thing. And from it stopped I have fell back into old ways. So yes, I think it is one of the best things I’ve have so far” (P4).

Theme 2: Future reflexology goals

Future goals: Helping pass time on dialysis

For patients, who spend lengthy blocks of time on dialysis, the reflexology helped to pass the time more effectively. This was perceived as a positive aspect of reflexology, as it ameliorated the boredom most patients experience during haemodialysis: “Just you come in to have dialysis done and you are lying bored most of the time. Whereas when you are getting the reflexology it was another arrow to your bow, and you were able to relax more. I would say, for definite” (P7). In addition, the duration of the reflexology intervention was considered too short, and patients would have been happy to participate in sessions for longer. As one participant explained, “It seems a good length of time. But then it suddenly comes to a stop, sort of thing” (P1).

Future goals: Openness and opportunities to improve life on dialysis

Patients expressed openness to try novel therapies, with one participant stating clearly, “...I am all for complementary

| TABLE 2 | Outcome measures before and after the reflexology intervention |
|----------------|-------------------|-------------------|-------------------|---------------------------------|-------------------|
| Quality of life and sleep quality tools                  | Initial score Mean (SD) | Final score Mean (SD) | Mean paired differences [95% CI] | p Value |
| SF12 (PHC)                                              | 40.7 (26.9)            | 54.3 (27.0)        | 13.6 [7.3,19.9]         | <0.001  |
| SF12 (MHC)                                              | 59.8 (22.5)            | 73.8 (19.4)        | 14.0 [4.0,24.1]         | 0.009   |
| SF12 total                                              | 52.7 (22.0)            | 66.0 (19.0)        | 13.3 [5.3,21.2]         | 0.002   |
| Pittsburgh Sleep Quality Index                          | 8.80                 | 4.70               | -4.1 [-5.6, -2.6]       | <0.001  |

Abbreviations: CI, confidence interval; MHC, mental health component; PHC, physical health component.
therapies..." (P7). This openness was in part because of the perception that interventions, such as reflexology, could improve life while on dialysis.

...well whenever you are working you don’t have time, sort of thing. Then things come secondary. Whenever you are not able to walk about as much as you used to, you enjoy wee things like that a lot more (P1).

DISCUSSION

The present study was undertaken to examine the feasibility of delivering intradialytic reflexology for patients undergoing hospital-based haemodialysis. The study established that the intervention was feasible and highly acceptable for patients. All feasibility progression criteria were successfully met, as 100% of the target sample size was recruited, and there was an attrition rate of less than 20%. This is similar to recruitment rates for other pilot and feasibility studies of intradialytic interventions (Thompson et al., 2016), suggesting that the provision of interventions during haemodialysis treatment is a highly acceptable mode of delivery. While there is some evidence that people may be sceptical about the benefits of reflexology and other complementary medicines and that this might have an impact on the uptake of such interventions (Hmwe et al., 2020), this study has established that there is enough interest and engagement to support evaluation within a definitive trial.

The intervention did not interfere with clinical practice and participants demonstrated high levels of adherence. The acceptability of the intervention was further reinforced by the qualitative findings as patients reported that reflexology helped them relax, reduced stress, improved their sleep and helped pass the time during haemodialysis. However, it was suggested the reflexology intervention could have been improved by increasing the length of the study and providing more reflexology sessions.

Additionally, this study established that HRQoL, as measured by the SF-12 and sleep quality as measured by the PSQI, are appropriate outcomes to be used in the definitive evaluation of this intradialytic reflexology intervention. Many haemodialysis patients may be particularly vulnerable to fatigue and sleep-related problems. These symptoms are often inadequately addressed due to the perception that poor sleep quality is an inevitable part of kidney failure (Edley, 2020). Patients on haemodialysis treatment find it difficult to fall asleep or stay asleep. They experience a disturbed sleep pattern and complain of daytime sleepiness (Agarwal & Light, 2011). The causes of poor sleep quality can be multifactorial and include uraemia, restless leg syndrome and psychological problems, such as depression and anxiety (Chu et al., 2018). The presence of sleep disorders is associated with lower quality of life and higher mortality in patients receiving haemodialysis therapy (Masoumi et al., 2013). Although research indicates significant improvements in the sleep quality of patients undergoing haemodialysis treatment using nonpharmacological interventions, such as reflexology, no intervention has improved the sleep quality of this cohort of patients to equate to that of the general population (Edley, 2020). Given the significant impact and association between reduced sleep quality, poor mental health and reduced HRQoL for patients undergoing haemodialysis therapy, this is an area that cannot be underestimated. Although improvements were measured in all outcome measures with regard to HRQoL and sleep quality, it is important that the results from this current study are not interpreted as demonstrating the efficacy of this intervention as this is a non-randomised pilot study (Eldridge et al., 2016). Instead, these results imply the measures of HRQoL and sleep quality may be appropriate clinical outcomes in a definitive trial.

IMPLICATIONS FOR CLINICAL PRACTICE

This nonrandomised pilot study demonstrated that it was possible to recruit and retain participants to a trial of reflexology for patients receiving haemodialysis. Implementation of the intervention was highly acceptable to patients and healthcare professionals who were asked for their views following completion of the intervention. This study identified appropriate outcome measures for use within a definitive trial, as significant improvements were shown in both the physical and mental scores of the SF-12 and sleep quality according to the Pittsburgh Sleep Quality Index. Despite this high level of feasibility and acceptability, additional considerations regarding randomisation and longitudinal follow-up should be made before a definitive trial can take place. The findings of this study offer renal units a greater awareness of the potential benefit of reflexology, which, in turn, may encourage more health professionals to discuss the use of these therapies with the patients under their care, thus promoting the use of reflexology as nonpharmacological treatment in addition to other conventional treatments and care.

LIMITATIONS

This study took place in a single haemodialysis unit with a homogeneous population. It is therefore difficult to determine whether recruitment or attrition rates will differ in more heterogeneous populations. The exclusion criteria for the intervention included co-morbid conditions that are common amongst patients receiving haemodialysis, including peripheral neuropathy and foot ulceration (Kaminski et al., 2011), meaning that there may be a large proportion of the population ineligible for participation. Adjustments to the intervention, for example, by providing both foot and hand reflexology, could increase the number of eligible participants and not exclude a large proportion of the population. The inclusion of hand reflexology would have enhanced this study, thus allowing exploration of an additional mode of delivery and contributing further to the understanding of intervention feasibility. As this study was a non-randomised pilot study, questions surrounding feasibility were limited by the lack of a control group, randomisation and longitudinal follow-up. The study was unable to identify any issues surrounding randomisation procedures, contamination of a control group or attrition over a longer period.
Consequently, there may be more preliminary work required to explore other feasibility issues that might impact a randomised controlled trial. However, the qualitative data demonstrated that the intervention was highly acceptable, which could suggest that a waiting list control group in a larger study may help attenuate the potential negative impact of random allocation on the retention of participants.

CONCLUSION

It is possible to recruit and retain participants to a trial of reflexology for patients receiving haemodialysis, and patients and healthcare professionals are accepting of the intervention. Introducing reflexology to patients with kidney disease may help people manage and improve sleeping patterns, ultimately improving wellbeing.

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CONFLICT OF INTERESTS

The authors declare that there are no conflict of interests.

AUTHOR CONTRIBUTIONS

The final version of the manuscript has been read and approved by all authors who agree to the submission of the manuscript to the Journal of Renal Care. All authors contributed to the study conception and assisted in the design of the study. Kim Murphy and Michael Matthews carried out the literature review. Michael Matthews and Kim Murphy were responsible for the qualitative data collection. Clare McKeaveney was responsible for carrying out the qualitative interviews. Michael Matthews and Kim Murphy performed the data analysis in collaboration with Helen McAneny. Claire Carswell and Michael Matthews were responsible for drafting the final manuscript. Helen Noble was responsible for the overall supervision of the study and made critical revisions for important intellectual content.

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