Facilitating nurses’ knowledge of the utilisation of reflexology in adults with chronic diseases to enable informed health education during comprehensive nursing care

An integrative literature review of identified scientific evidence, published from January 2000 to December 2008, of the utilisation of reflexology as complementary and alternative medicine (CAM) modalities to promote well-being and quality of life in adults with chronic diseases was done to facilitate nurses to give informed health education during comprehensive nursing care to patients with chronic diseases. Selected accessible databases were searched purposefully for research articles (N = 1171). Pre-set inclusion criteria were applied during the study selection process. The methodological study quality was reviewed and appraised with appropriate tools from the Critical Appraisal Skills Programme (CASP) and the American Dietetic Association’s (ADA) Evidence analysis manual (n = 21). Evidence extraction, analysis and synthesis of studies (n = 18) were done through the evidence class rating and level of strength as prescribed in the manuals of ADA and CASP. Findings indicate statistically significant reduction in the frequency of seizures in patients with intractable epilepsy, an improvement of sensory and urinary symptoms associated with multiple sclerosis and clinically significant reduction of anxiety and pain in patients with cancer and fibromyalgia syndrome. These findings can be utilised by nurses to inform patients with these chronic diseases about alternative ways of treatment.

Introduction

Anecdotal evidence claims potential health benefits of reflexology for patients with chronic diseases. In comprehensive nursing practice, nurses are often confronted with inquiries from patients regarding information on the accessibility of reflexology treatments, and the potential benefits of reflexology, therapeutic touch and acupuncture, as complementary and alternative medicine (CAM) modalities (Ebey-Tessendorf, Kretzmann & Mouton 1997:18; Lee, Charn, Chew & Ng 2004:658; Libster 2001:8; Mackereth, Dryden & Frankel 2000:17). However, it still appears to be unfamiliar territory to most nurses. The purpose of this study was therefore to explore and describe identified scientific evidence on the utilisation of reflexology as CAM modality to promote well-being and
quality of life in adults with chronic diseases. The study was approved by the Ethics Committee and Postgraduate and Research Committee of the School of Nursing Science at the Potchefstroom Campus of the North-West University. No correspondence was embarked upon with authors of review articles.

Background

Reflexology is a CAM modality that entails a non-invasive therapeutic intervention. Reflexology is performed manually with the hands and fingers of the therapist to stimulate precision reflex points or zones on the feet, hands, face, ears or body of the individual. In this way existing vital energy or life force in the human body is balanced to promote health, vitality and well-being (Amster, Cogert, Lie & Scherger 2000:80; Dougans 2005:250–254; Libster 2001:121; Mackereth et al. 2000:70; Mackereth & Tiran 2002:5). Dougans (2005:20), an authority on reflexology, is of the opinion that reflexology offers a large scope of benefits to individuals who suffer from chronic diseases. Dougans (2005:11–13) explains that chronic diseases are the result of energy blockages, stagnancies and imbalances in the meridians of the human body. Chronic diseases such as cardiovascular diseases, diabetes mellitus (DM), stroke and AIDS are relatively common in South Africa (Connor, Rheeder, Bryer, Meredith, Beukes, Dubb & Fritz 2005:334). In South Africa there appears to be an increase in chronic diseases and tuberculosis, especially in relation to the high incidence of HIV in sub-Saharan Africa (Bryer 2008:151; Connor et al. 2005:334; Modi, Coetzee & Mochan 2000:66). Tuberculosis, cardiovascular disease and stroke place a tremendous burden on health care systems, especially in combination with the HIV and AIDS epidemic (Connor et al. 2004:627; Norman, Bradshaw, Schneider, Pieterse & Groenewald 2006:12). In South Africa, sedentary life style, smoking, obesity and alcohol abuse are of the most important lifestyle-related risk factors for chronic diseases such as diabetes mellitus, hypertension and cardiovascular disease (Bryer 2008:151–152; Groenewald, Vos, Norman, Laubscher, Van Walbeek, Sabojee, Situs & Bradshaw 2007:674; Katz, Mdleleni, Shezi, Butler & Gerntholtz 2007:360).

The symptoms of chronic diseases can be alleviated by conventional medicine and comprehensive health care, but place a high burden on health care provision. Furthermore, chronic deterioration often occurs, which places considerable stress on the individual’s energy, vitality and well-being (Smeltzer, Bare, Hinkle & Cheever 2008:167).

Several studies have been conducted on the effectiveness of reflexology in various chronic diseases and there appears to be considerable anecdotal evidence and expert opinion in the literature on the benefits of reflexology in chronic diseases, but the question remains: what scientific evidence exists to guide evidence-based nursing practice in the giving out of information on reflexology as CAM modality?

Carpenter and Neal (2005:116) recommended that more research be conducted on the utilisation and knowledge base of reflexology during chronic diseases to collect more evidence-based data. Reflexology, when used complementary to conventional health care may contribute to self empowerment in community-based healthcare of chronic diseases (Ebey-Tessendorf, Kretzmann & Mouton 1997:18; Lee et al. 2004:658; Libster 2001:8). The utilisation of reflexology in chronic diseases should therefore be explored, as there appears to be an increasing interest in complementing conventional care with reflexology during chronic diseases (Mackereth et al. 2000:66). Studies should include both quantitative and qualitative approaches to explore the total understanding and utilisation of reflexology as a holistic CAM modality during chronic diseases (Ebey-Tessendorf, Kretzmann & Mouton, 1997:20; Lee et al. 2004:655; Libster, 2001:121; Mackereth et al. 2000:66).

Objectives

This study is an exploration and description of identified scientific evidence of the utilisation of reflexology as CAM modality to promote well-being and quality of life in adults with chronic diseases:

- to facilitate nurses with evidence based information regarding a complementary alternative treatment option
- to facilitate nurses on informed health education during comprehensive nursing care.

Research significance

An integrative literature review of recent identified scientific evidence of the utilisation of reflexology as CAM modality to promote well-being and quality of life in adults with chronic diseases.

Method

An integrative literature review was conducted that followed the steps of a systematic literature review to enhance rigour. The research method is therefore discussed according to the steps of a systematic literature review.

Design

The research design used in this study is empirical as well as descriptive in nature. It is aimed at exploring and describing the identified scientific evidence of the utilisation of reflexology as CAM modality in the promotion of well-being and quality of life in adults living with a chronic disease. The study includes experimental and non-experimental studies to effectively include the holistic dimension of reflexology, demonstrated through the objective and subjective experience of clients and described by various authorities on reflexology (Dougans 2005:13; Gillanders 2005:12; Mackereth & Tiran 2002:5).

Review question

The review question in a systematic review consists of specific components to focus the study as prescribed by...
Exclusion criteria

Systematic review. Integrative review. Primary

Description

Rationale

To direct review question and focus study

Any language with English abstract.

To identify most appropriate recent research

To ensure that recent research is included.

Duration should be a minimum of 30 minutes

Relevant, high-quality research that answers the review

Treatment was set to be at least 30 minutes and not more

In order to standardise reflexology treatment, duration of

in adults living with a chronic

In order to standardise reflexology treatment, duration of

was set to be at least 30 minutes and not more

than 60 minutes in duration. In order to identify the most

relevant, high-quality research that answers the review

question appropriately, inclusion and exclusion criteria

were determined, as adapted from the American Dietetic

Association (ADA) (2005:13). The inclusion and exclusion

criteria is displayed in Table 1.

Search strategy (sampling)

A combination of databases was selected on the basis of

appropriateness and accessibility. These databases were

freely available and cover the field of CAM, nursing science

and conventional medicine. Databases include Cochrane

Library, EBSCOhost Platform, Google, ProQuest, SA Nexus,

SaePublications, Science Direct and Web of Knowledge.

Keywords such as complementary and alternative medicine,

reflexology therapy, zone therapy and foot massage and

combinations thereof were used in the search.

The unit of analysis for this integrative literature review

included all primary studies and reviews of primary studies

on the utilisation of reflexology in adults living with a chronic
disease. The unit of analysis for this integrative literature review

was determined, as adapted from the American Dietetic

Association (ADA) (2005:13). The inclusion and exclusion

criteria is displayed in Table 1.

TABLE 1: Inclusion and exclusion criteria with rationale for study selection.

<table>
<thead>
<tr>
<th>Inclusion criteria</th>
<th>Description</th>
<th>Exclusion criteria</th>
<th>Rationale</th>
</tr>
</thead>
<tbody>
<tr>
<td>Population</td>
<td>Adults 18 years and older. Male or female with chronic disease.</td>
<td>Babies, children and adolescents.</td>
<td>To direct review question and focus study population.</td>
</tr>
<tr>
<td>Setting</td>
<td>Conventional primary, tertiary and palliative institutional health care settings.</td>
<td>Hospital intensive care settings. Maternity care settings.</td>
<td>To focus the setting and accommodate any chronic disease.</td>
</tr>
<tr>
<td>Health status of participants or subjects</td>
<td>Medical diagnosis of any chronic disease. Chronic diseases are medical conditions or health problems with associated symptoms or disabilities that have a prolonged course of at least three months that do not resolve spontaneously and for which complete cures are rare.</td>
<td>Diagnosis of acute illness. Pregnancy. Healthy individuals.</td>
<td>To direct review question and focus study population.</td>
</tr>
<tr>
<td>Study design</td>
<td>Systematic review. Integrative review. Primary studies of experimental and non-experimental design, including RCT’s, non-randomised intervention studies, case studies, cross-sectional studies and case reports. Publications included: conference abstracts, grey literature that include international and local theses and dissertations.</td>
<td>-</td>
<td>To identify most appropriate recent research to answer review question.</td>
</tr>
<tr>
<td>Timeframe</td>
<td>January 2000 to December 2008</td>
<td>-</td>
<td>To ensure that recent research is included.</td>
</tr>
<tr>
<td>Language preference</td>
<td>Any language with English abstract.</td>
<td>-</td>
<td>A large number of studies on reflexology are done in Eastern countries and therefore the abstract should be thoroughly assessed for relevance, validity, reliability and academic contribution in relation to the financial implications of translating the study.</td>
</tr>
<tr>
<td>Intervention</td>
<td>Reflexology therapy as standardised stand-alone intervention described in detail to comply with the theoretical definition of study. Reflexologist or therapist to manually stimulate precision reflex points or zones on the feet, hands, ear, face or body of the participant during intervention according to the principles of Fitzgerald, Ingham, Marquardt, Dougans or Cramer.</td>
<td>Reflexology treatment in combination with other CAM modalities or therapies as intervention.</td>
<td>To ensure appropriate evidence of standardised reflexology technique and limit non-specific effects of other CAM modalities or combinations thereof and create uniformity of intervention principles.</td>
</tr>
<tr>
<td>Duration of treatment</td>
<td>Duration should be a minimum of 30 minutes and a maximum of 60 minutes per treatment.</td>
<td>Over-stimulation of reflex points/zones that may exhaust the human body</td>
<td>To ensure sufficient stimulus to the human body to mobilise its own healing power and prevent over-stimulation of reflex points or zones.</td>
</tr>
</tbody>
</table>


CAM, complementary and alternative medicine; RCTs, randomised clinical trials; CASP, Critical Appraisal Skills Programme.

Note: Please see the full reference list of the article, Steenkamp, E., Scrubby, B. & Van der Walt, C., 2012, ‘Facilitating nurses’ knowledge of the utilisation of reflexology in adults with chronic diseases to enable informed health education during comprehensive nursing care’, Health SA Gesondheid 17(1), Art.#567, 12 pages. doi: http://dx.doi.org/10.4102/hsag.v17i1.567

doi:10.4102/hsag.v17i1.567

http://www.hsag.co.za
describe the utilisation of reflexology in adults with chronic disease, therefore critical appraisal is of major importance to select studies of good quality to answer the review question appropriately. A short list of selected studies was compiled for critical appraisal by the first author and independent reviewer. Study design was used to organise studies for appraisal of methodological quality regarding reliability, validity and credibility with appropriate tools of the Critical Appraisal Skills Programme (CASP). Thereafter each study was re-appraised by the first author and independent reviewer for the second time according to an evidence worksheet as recommended by the American Dietetic Association evidence analysis manual (ADA 2005:26–33; ADA 2008:42–46), to confirm methodological quality ratings and to check consistency in ratings of included studies for data extraction and analysis of evidence. The 2005 and 2008 editions of the ADA evidence analysis manuals were both consulted during critical appraisal.

Data extraction and data analysis

All the studies that were found to be of medium to high methodological quality after critical appraisal were included in the final sort list that was used for data extraction and data analysis of evidence to answer the review question. This was done according to two steps, namely data reduction and data display. A summary of all the relevant studies was made according to study design, time span, sample, setting, data-collection instruments, statistical analysis, intervention or control strategy, evidence class, quality rating and bottom-line finding. The summary was created in table format for the sake of an effective display and to promote synthesis of evidence. The summary for data extraction is displayed in Tables 2, 3 and 4.

Critical synthesis of data

After the data extraction and analysis was concluded and studies had been summarised, the data was critically synthesised by identifying appropriate variables. Seven variables emerged from the data analysis: time span and origin, samples and settings, data-collection instruments, data analysis, intervention versus control strategy, evidence class rating and bottom-line finding. These variables were examined closely to identify patterns, similarities, differences, conflicting evidence and relationships in relation to the review question.

Synthesised evidence was classified and rated according to evidence class and level of strength as prescribed in the American Dietetic Association evidence analysis manual (ADA 2005:17). Evidence from primary studies were classified and rated according to:

- randomised controlled trials – the highest level of strength (class A)
- cohort studies – the second highest level of strength (class B)
- cross-sectional studies, case series, case reports and before-and-after studies – the fourth highest level of strength (class D).

Collections of primary reports like meta-analysis and systematic reviews were classified and rated as class M evidence that were similar in level of strength than the randomised controlled trials of evidence class A. Therefore a conclusion statement was drawn according to the strength
of synthesised evidence, similarities and the consistency in bottom-line findings.

Results

The included studies were reviewed for the evidence of utilisation of reflexology to promote well-being and quality of life in adults with chronic diseases. Bottom-line findings were consistent for the various diseases. There is statistically significant evidence (class M) in terms of the effectiveness of reflexology to promote well-being and to improve sensory and urinary symptoms associated with multiple sclerosis (Wang, Tsai, Lee, Chang & Yang 2008). A primary experimental study (class A), supported the evidence of the systematic review (Siev-Ner, Gamus, Lerner-Geva & Achiron 2003). A statistically significant reduction in the frequency of seizures of patients with intractable epilepsy was reported by a primary experimental study of evidence class A (Dalal, Tripathi & Bajpai 2008).

There is statistically no significant evidence (class M) in terms of efficacy of reflexology with cancer patients as reported by the systematic review (Wilkinson, Lockhart, Gambles & Storey 2008). However, statistically significant evidence of class A supported the utilisation of reflexology to decrease anxiety in patients with breast and lung cancer (Stephenson, Weinrich & Tavakoli 2000). Several other studies conducted on anxiety in cancer patient populations...
<table>
<thead>
<tr>
<th>Author and journal details</th>
<th>Year and country</th>
<th>Sample</th>
<th>Design</th>
<th>Data instruments</th>
<th>Statistics used</th>
<th>Intervention and control</th>
<th>Attrition %</th>
<th>Intention to treat</th>
<th>Evidence class</th>
<th>Quality rating</th>
<th>Limitations</th>
<th>Bottom-line finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dalal, K., Tripathi, M., Bajpay, V., Saxi, A., Singh, A.</td>
<td>2008 New Delhi, India</td>
<td>45 Epilepsy Clinic, Convenence</td>
<td>RCT Patient blind</td>
<td>Seizure frequency, Quality of life in epilepsy (QOLIE)</td>
<td>Standard deviation range p = 0.0001 Wilcoxon rank sum test</td>
<td>Reflexology and drug therapy versus drug therapy alone</td>
<td>-</td>
<td>-</td>
<td>A Ø CASP 6/10</td>
<td>Small sample size</td>
<td>Small sample size</td>
<td></td>
</tr>
<tr>
<td>Hodgson, N.A. &amp; Andersen, S.</td>
<td>2008 Philadelphia</td>
<td>Mild to moderate stage dementia</td>
<td>Nursing home - convenience</td>
<td>Experimental randomised cross-over design, Data collectors - blind</td>
<td>Salivary alpha amylase (sAA) - stress AARS - depression, anxiety, anger, pleasure and interest CNPI, behavioural scale for non-verbal older adults with cognitive impairment - pain Folsten’s MMSE cognitive assessment</td>
<td>STAÁ version 9.0 Repeated measures analysis, ANOVA between subject effect and with-in subject effect with p values</td>
<td>Reflexology versus friendly visits</td>
<td>9%</td>
<td>Yes</td>
<td>A Ø CASP 6/10</td>
<td>Small sample size with homogeneous structure of race and culture. Inexplicat categorisation of diagnosis - prognosis of dementia. Sample not randomly selected from nursing home residents. Residents with mild to moderate stage dementia had clinically and significantly reductions in pain and anxiety after receiving reflexology treatments.</td>
<td></td>
</tr>
<tr>
<td>Quinn, F., Hughes, C.M. &amp; Baxter, G.D.</td>
<td>2008 UK</td>
<td>15 Power calculation n = 76.6 Chronic Lower Back Pain (CLBP) Convenience University of Ulster</td>
<td>RCT Double blind</td>
<td>VAS – pain Roland Morris McGill Pain SF-36 (Ware &amp; Sherbourne, 1993)</td>
<td>MEDIAN Inter-quartile values</td>
<td>Reflexology, simple foot massage, excluding spine reflex on feet</td>
<td>0%</td>
<td>No</td>
<td>A Ø CASP 7/10</td>
<td>Small sample size. Inexplicit categorisation of diagnosis - prognosis of CLBP. No comorbidities recorded. Reflexology appears to offer promise as a treatment in the management of low back pain. Reflexology group showed important clinical reduction in low back pain in VAS &amp; SF-36.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Poole, H., Glenn, S. &amp; Murphy, P.</td>
<td>2007 UK</td>
<td>243 Power calculation n = 240 Multiple Sclerosis (MS) Hospital clinic Convenience</td>
<td>RCT</td>
<td>SF-36 (Ware &amp; Sherbourne, 1992), GDS-11, VAS</td>
<td>Pain</td>
<td>Adjusting pre-treatment scores. Repeated measures, ANCOVA.</td>
<td>Three groups. Reflexology, Progressive muscle relaxation. Non-intervention or usual care.</td>
<td>34%</td>
<td>Yes</td>
<td>A Ø CASP 7/10</td>
<td>High attrition. Inexplicit categorisation of diagnosis/prognosis of CLBP. Outcome measures not sensitive enough. Additional CAM whilst in study. Reflexology for CLBP cannot be recommended or its widespread use and funding within the National Health System. Reflexology appears to be a safe therapy.</td>
<td></td>
</tr>
<tr>
<td>Stephenson, N.L., Swanson, M., Dalton, J., Keefe, F.J. &amp; Engelke, M.</td>
<td>2007 USA</td>
<td>86 Metastatic cancer/Hospital setting Convenence</td>
<td>Experimental pre- post-test with randomisation to experimental and control groups</td>
<td>Brief Pain Inventory (BPI) – pain, SF-MPQ (Melzack, 1987)</td>
<td>SF-36 (Ware &amp; Sherbourne, 1992), QOLIE, Anxiety, pain, VAS, (Cline et al. 1992)</td>
<td>SPSS version 13. T-tests and Chi-square tests one-way between groups analysis of covariances. Effect size eta-squared statistical significance p 0.05</td>
<td>100</td>
<td>Yes</td>
<td>A Ø CASP 7/10</td>
<td>Primary author provided reflexology instruction and administered the pain and anxiety scales. Inexplicit categorisation of diagnosis/prognosis of metastatic cancer. More research with repetitive sessions reflexology to investigate cumulative effects. Reflexology can be used to decrease anxiety statistically significantly and pain clinically in patients with metastatic cancer.</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Quatrini R. et al.</td>
<td>2007 USA</td>
<td>30 Hospitalised cancer patients in chemotherapy in oncology unit Convenience</td>
<td>Experimental pre- post-test comparative group design. Assigned to groups in accordance with criteria</td>
<td>Spielberger State Trait Anxiety Inventory (STAI) – self-reported anxiety</td>
<td>Standard deviation P values T-tests</td>
<td>Preferable to use two different nurses to administer intervention and collect data.</td>
<td>-</td>
<td>-</td>
<td>A Ø CASP 6/10</td>
<td>Reflexology significantly decreases anxiety in patients undergoing second and third cycles of chemotherapy. Study encourages reflexology in nursing practice with cancer patients, but nurse must be qualified expert in reflexology to educate families to practice this simple skill cost-effectively at home.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Steenkamp, E. 2009. ‘An integrative literature review of the utilisation of reflexology in adults with chronic disease’, Masters thesis, Nursing Department, North-West University, Potchefstroom Campus. Given as means of number. QOLIE, Quality of life in epilepsy; Ø, ADA quality rating (medium); WHQ, Women’s Health Questionnaire; VAS, Visual analogue scale; MYMOP, A validated, self-completed measure of quality of life; SF-MPQ, Short-form McGill Pain Questionnaire; CAM, complementary and alternative medicine; RCTs, randomised clinical trials; CASP, Critical Appraisal Skills Programme. Note: Please see the full reference list of the article, Steenkamp, E., Scoodby, B. & Van der Walt, C., 2012, ‘Facilitating nurses’ knowledge of the utilisation of reflexology in adults with chronic disease to enable informed health education during comprehensive nursing care’, Health SA Gesondheid 17(1), Art.#567, 12 pages. doi: http://dx.doi.org/10.4102/hsag.v17i1.567 |
<table>
<thead>
<tr>
<th>Author and journal details</th>
<th>Year and country</th>
<th>Sample</th>
<th>Design</th>
<th>Data instruments</th>
<th>Statistics used</th>
<th>Intervention and control</th>
<th>Attribition %</th>
<th>Intention to treat</th>
<th>Evidence class and quality rating</th>
<th>Limitations</th>
<th>Bottom-line finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Siev-Harel, L., Ganim, D., Lerner Gerias, L. &amp; Achiron, A. Multiple sclerosis</td>
<td>2003 Israel</td>
<td>71 Power calculation n = 70. MS Hospital clinic convenience</td>
<td>RCT Double blind</td>
<td>VAS – intensity of paresthesias. Urinary symptoms: American Urological Association symptom score. Muscle strength - Ashworth score.</td>
<td>q = 0.05, P values. Mean standard deviation. Wilcoxon rank sum test. Mann-Whitney U test. SPSS-PC Version 8.0.</td>
<td>Reflexology versus care area massage</td>
<td>-</td>
<td>Yes</td>
<td>A Ø CASP 7/10</td>
<td>Attribition not reported</td>
<td>Reflexology positively affected muscle strength and tone and reduced sensory and urinary symptoms. Reflexology is a safe treatment. P = 0.06 muscle strength, Paresthesia p = 0.04</td>
</tr>
<tr>
<td>Williamson, J., White, A., Hart, A. &amp; Ernst, E.</td>
<td>2002 UK</td>
<td>76 Power calculation n = 80. Menopausal symptoms: School of Complementary and Alternative Health. Convenience.</td>
<td>RCT Patient-blind</td>
<td>WHQ – well-being. WHQ – symptoms Menopause. VAS - hot Flushes &amp; night sweats. MY MOP - quality of life.</td>
<td>MEDIAN. Inter quartile range (IQR). 5% significance to detect difference between groups</td>
<td>Reflexology – exclude lifestyle advice. Non-specific foot massage</td>
<td>21%</td>
<td>Yes</td>
<td>A Ø CASP 8/10</td>
<td>Small sample size. Placebo effect underestimated. Handling of MYMOP – unsupervised. Short duration of follow-up. Blinding unsuccessful.</td>
<td>Reflexology was not shown to be more effective than non-specific foot massage in the treatment of psychological aspects of menopause. However, improvements were encountered in both groups – may have been due to non-specific effects.</td>
</tr>
<tr>
<td>Kulik, D. MA thesis, Place, University of the Pacific</td>
<td>2001 Denmark</td>
<td>40 Asthma. Allergy Unit. Convenience.</td>
<td>RCT Double blind. Placebo controlled.</td>
<td>Diary cards. Lung function tests: Peak flow registrations, Bronchial Histamine challenge test. SF-36 for quality of life.</td>
<td>Tests with two-sided p values greater than 5%. MEDIAN symptom scores</td>
<td>Reflexology. Simulated reflexology using placebo areas.</td>
<td>-</td>
<td>-</td>
<td>A Ø CASP 6/10</td>
<td>Small sample size. Not sufficient compliance due to interrupted interventions as objected by reflexologist. Analysis was performed to overcome this, with no significant differences in outcome.</td>
<td>No significant statistical evidence that reflexology has a specific effect on asthma beyond placebo effect.</td>
</tr>
<tr>
<td>Bryge, T., Heimg, J.H., Colling, P., Ronborg, S., Gehlken, P.M., Hilden, J., Hoegaard, S. &amp; Poulsen, L.K.</td>
<td>2001 Denmark</td>
<td>40 Asthma. Allergy Unit. Convenience.</td>
<td>RCT Double blind. Placebo controlled.</td>
<td>Diary cards. Lung function tests: Peak flow registrations, Bronchial Histamine challenge test. SF-36 for quality of life.</td>
<td>Tests with two-sided p values greater than 5%. MEDIAN symptom scores</td>
<td>Reflexology. Simulated reflexology using placebo areas.</td>
<td>-</td>
<td>-</td>
<td>A Ø CASP 6/10</td>
<td>Small sample size. Not sufficient compliance due to interrupted interventions as objected by reflexologist. Analysis was performed to overcome this, with no significant differences in outcome.</td>
<td>No significant statistical evidence that reflexology has a specific effect on asthma beyond placebo effect.</td>
</tr>
</tbody>
</table>


n: Given as means of number.

QoL, Quality of life in epilepsy; Ø, ADA quality rating (medium); WHQ, Women’s Health Questionnaire; VAS, Visual analogue scale; MYMOP, A validated, self-completed measure of quality of life; SF-MPQ, Short-form McGill Pain Questionnaire; CAM, complementary and alternative medicine; RCTs, randomised clinical trials; CASP, Critical Appraisal Skills Programme. Note: Please see the full reference list of the article, Steenkamp, E., Scrooby, B. & Van der Walt, C., 2012, "Facilitating nurses’ knowledge of the utilisation of reflexology in adults with chronic disease to enable informed health education during comprehensive nursing care", Health SA Gesondheid 17(1), Art. #567, 12 pages. doi: http://dx.doi.org/10.4102/hsag.v17i1.567
also reported a statistically significant decrease in anxiety after reflexology treatments (Hodgson & Andersen 2008; Quattrin, Zanini, Buchini, Turello, Annunziata, Vidotti, Colombatti & Brusaferrro 2006; Stephenson, Swanson, Dalton, Keefe & Engelke 2007). An experimental study conducted by Hodgson (2000) on patients in the palliative stage of cancer who received reflexology treatments reported statistically significant improvements in pain management, decrease in constipation, better sleep, decreased anorexia and nausea.

In evidence class D, Gambles reported on perceptions of patients in cancer palliative care after a course of reflexology treatments as experienced feelings of comfort, improved well-being and overall relaxation (Gambles, Crooke & Wilkinson 2002). This finding is consistent with the findings of experimental studies on the reduction of anxiety and pain in cancer populations.

Furthermore, reflexology embodied emotional and spiritual healing effects in the body as experienced in relieving the symptoms of fibromyalgia syndrome in women by reducing pain and increasing overall well-being as reported by a non-experimental case study in evidence class D (Gunnarsdottir 2007). This finding is consistent with the findings of experimental studies on the reduction of anxiety and pain in cancer populations.

Reflexology has no statistically significant superior effects over effleurage massage in the improvement of pain management in diabetic neuropathy, however, both interventions clinically improved the pain of diabetic neuropathy. This was reported by a randomised split-plot factorial design and falls in evidence class A (Kulik 2002).

There is no statistically significant evidence (class A) that reflexology had any benefit for patients with Irritable Bowel Syndrome (IBS) regarding bloatedness, abdominal pain and constipation and/or diarrhea (Tovey 2002).

There is no statistically significant evidence (class A) that reflexology had been more effective than non-specific foot massage in the treatment of physical and psychological symptoms of menopause. The improvements that were encountered in both groups in the study, might have been due to non-specific factors (Williamson, White, Hart & Ernst 2002). There is no statistically significant evidence (class A) that reflexology has a specific effect on asthma beyond the placebo effect (Brygge, Heinig, Collins, Ronborg, Gehrchen, Hilden, Heegaard & Poulsen 2001).

**Discussion**

The active participation of western countries, such as the United States of America, to conduct good quality research on the utilisation of reflexology in adults with chronic disease is notable. An overall heterogeneity was displayed in samples, settings and chronic diseases during the data extraction of the primary studies included for evidence analysis. The primary studies made use of non-probability sampling and purposive sampling that were appropriately
<table>
<thead>
<tr>
<th>Author</th>
<th>Year</th>
<th>Sample</th>
<th>Inclusion criteria</th>
<th>Design</th>
<th>Ethics</th>
<th>Intervention</th>
<th>Data collection</th>
<th>Data analysis</th>
<th>Methodology quality</th>
<th>Limitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gunnarsdot-tir, T.J.</td>
<td>2007</td>
<td>Six case studies Recruited with assistance of medical specialist physician - specialised in treating patients with fibromyalgia syndrome</td>
<td>Inclusion criteria determined to include only adults with the symptoms of fibromyalgia syndrome and exclude other diseases or symptoms.</td>
<td>Qualitative multiple case study approach consistent with whole-systems research to explore the nature of reflexology as a therapy and its effectiveness as a treatment for women with fibromyalgia syndrome</td>
<td>Informed consent of participants, may withdraw at any point of study. Anonymity and confidentiality by unique ID codes and newly given names</td>
<td>Thoroughly described</td>
<td>Transcribed tape-recorded interviews. Daily diary on sleep, pain, medication intake and &quot;other&quot; comments. Observation and field notes. Dense descriptions, content analysis and literature control for dependability. Picture diagram of body indicate pain area and score pain intensity on Numerical Rating Scale (NRS) from 0 (no pain at all) to 10 (worst pain imaginable).</td>
<td>CASP 8/10</td>
<td>Study contains subjective information from the six participants and the reflexologist - limiting the transferability to other populations.</td>
<td></td>
</tr>
<tr>
<td>Gables, M., Crooke, M. &amp; Wilkinson, S.</td>
<td>2002</td>
<td>46 Questionnaires 34 Returned</td>
<td>Outpatients of palliative care settings with cancer diagnosis</td>
<td>Qualitative exploration</td>
<td>Informed consent of participants. May withdraw at any point of study. Anonymity – no names or any detailed demographic data recorded.</td>
<td>Brief description - no concurrent sessions of any other complementary therapy</td>
<td>Semi-structured questionnaire with open and close-ended questions on subjective perceptions of participants</td>
<td>Thematic analysis: emotional benefits, physical benefits and importance of wider environment</td>
<td>CASP 6/10</td>
<td>No rigorous assessment of effectiveness of reflexology. Anonymity of demographic detail precluded a more sophisticated interpretation of findings. Therefore not able to generalise to other settings.</td>
</tr>
</tbody>
</table>

**TABLE 4b: Data extraction of non-experimental studies included for synthesis of evidence.**

<table>
<thead>
<tr>
<th>Author</th>
<th>Journal details</th>
<th>Country</th>
<th>Sampling method</th>
<th>Attrition</th>
<th>Ethical approval</th>
<th>Duration</th>
<th>Rigour</th>
<th>Evidence class</th>
<th>Bottom-line-finding</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gunnarsdot-tir, T.J.</td>
<td>PhD dissertation University of Minne- sota</td>
<td>Iceland</td>
<td>Purposive</td>
<td>Not applicable</td>
<td>Ethical approval from Institutional Review Board and the National Bioethics Committee.</td>
<td>Duration 45 minutes per session or more and ten treatments per case.</td>
<td>D+</td>
<td>Reflexology may be beneficial to nursing and health care practice, as the study found that reflexology shows emotional and spiritual healing effects on the body in relieving the symptoms of fibromyalgia syndrome by reduction in pain and increase in overall well-being.</td>
<td></td>
</tr>
<tr>
<td>Gables, M., Crooke, M. &amp; Wilkinson, S.</td>
<td>European Journal of Oncology Nursing 6(1):37-44</td>
<td>UK</td>
<td>Convenience</td>
<td>26%</td>
<td>Not described</td>
<td>Course: four to six treatments. Tailored to meet patients’ holistic needs.</td>
<td>No in depth interview due to vulnerability of participants’ diagnosis - however finding in line with more rigorous research</td>
<td>D9</td>
<td>Reflexology could be beneficial in physical, psychological and spiritual terms for patients receiving palliative care in terms of personal relaxation, coping strategies, therapeutic relationships and establishment of therapeutic environment.</td>
</tr>
</tbody>
</table>
for design. The sample sizes of the experimental studies were relative small and therefore lead to limitations during statistical analysis. Randomisation of subjects to intervention and control groups was followed in all experimental studies to counteract confounding variables. The control intervention strategy mostly used in the experimental primary studies was non-specific foot massage avoiding specific reflex points and reflex areas on the feet of subjects or participants. The reflexology intervention was standardised in all of the primary studies.

A tendency was noted towards favouritism in the utilisation of the experimental design, outcomes of the primary experimental studies related thus more to the efficacy of reflexology, whilst the outcomes of the primary non-experimental studies related more to in depth individualised experience of emotional and spiritual healing effects of reflexology. Reflexology as a holistic CAM modality could be more favoured by a mixed research design that incorporate both the effectiveness of treatment as well as emotional and spiritual healing effects.

Similarities across findings of the included primary studies for evidence analysis were assessed according to methodological quality ratings, classes of evidence, levels of strength, consistency in findings, clinical impact of findings and generalisability of findings. Experimental studies \((n = 14)\) were all of evidence class A with neutral methodological quality ratings, which influenced the strength of evidence negatively, whilst the two systematic reviews were of evidence class M, both with high methodological quality ratings that contribute positively to the strengt of evidence.

The two primary studies with non-experimental designs differed in methodological quality ratings of high and neutral respectively, which limit the strengt of evidence accordingly. Consistencies in findings across several independent primary studies support positive benefits of reflexology on improving sensory symptoms and urinary symptoms, decreasing anxiety and improve pain management in chronic disease. However, some doubts were raised about statistical and clinical significance of the effect size in a few experimental studies (Hodgson & Andersen 2008; Quattrin et al. 2006; Stephenson et al. 2007). Strength of evidence is influenced by the magnitude of effect and the importance of studied outcomes as discussed in the manual of ADA (2009:57). The clinical impact of the evidence in this study is therefore negatively influenced.

Bottom-line findings were consistent across most of the primary studies with a difference in outcome regarding three detached experimental primary studies on Irritable Bowel Syndrome, menopausal symptoms and asthma (Tovey 2002; Williamson et al. 2002; Brygge et al. 2001). The conflicting evidence was disclosed in experimental studies with a neutral methodological quality rating and a different chronic disease typology in each case. No validations were made in follow-up studies, viewed that some of the studied outcomes were intermediate outcomes directly related to the current review question. The conflicting evidence is therefore handled with caution, awaiting future studies for validation of findings. Chronic diseases is a collective noun for a wide scope of different diseases that share the common ground of chronically impairment in physical vitality, subjective feelings of un-wellness and deficits in quality of life. The bottom line findings of the reviewed studies were therefore in correlation with chronic diseases as collective noun although the evidence analysis consisted of different chronic diseases per se.

**Limitations**

Methodology limitations of small sample sizes, heterogeneity in settings and various chronic disease typologies of the included primary studies of experimental design had a very negative influence on the generalisibility of the findings and contextualisation to the South African context as such. The review question was answered appropriately, however the integrative literature review was conducted on studies presenting mostly with a neutral quality rating (class A) and a mix of class A, M and D evidence; therefore, generalisation is limited to the specific context and cannot be generalised to the wider population or South African context. Therefore generalisibility should be treated with caution till further studies have been conducted with more rigorous methodology and larger sample sizes to contribute positively to the effect size.

**Recommendations**

**Nursing practice**

Reflexology as a CAM modality may be incorporated into nursing practice to make it more accessible to patients with chronic disease or disabilities or those undergoing palliative care to promote well-being and quality of life. Patients should be informed of the possible benefits and left to decide for themselves if they want to utilise it as part of emotional and spiritual healing to empower themselves in their pursuit towards wholeness and integrity.

**Nursing education**

Nurses should be facilitated on reflexology as CAM modality to respond proactively on patients inquiries and to enable informed health education in comprehensive nursing care of chronic diseases.

**Nursing research**

Future research with appropriate design and a holistic approach is recommended to confirm and validate the findings of this study to facilitate the knowledge base of comprehensive nursing care.

**Conclusions**

The author drew the final conclusion statement from the findings of variables, emerging patterns, similarities,
differences, possible relationships amongst the variables and by using the recommended grading table of the ADA evidence analysis manual (ADA 2005:44–45; ADA 2008:63).

What evidence is available on the utilisation of reflexology as CAM modality to promote well-being and quality of life in adults with chronic disease? There is fair evidence that reflexology as CAM modality improves well-being and quality of life in adults living with chronic diseases as demonstrated through statistically significant reduction in intractable epileptic seizures, improved sensory and urinary symptoms associated with multiple sclerosis, a clinically significant decrease in anxiety associated with cancer patients during palliative care, improved relaxation, coping and well-being in cancer patients during palliative care; and reduction in pain together with improvement in overall well-being in patients with fibromyalgia syndrome.

Reflexology is a holistic CAM modality that treats the patient as individual in a unique way to balance underlying energy imbalances and synchronise the body to its own emotional and spiritual healing mechanism to actively pursue wholeness and integrity on physical, psychological and social level. Reflexology appears to be a non-invasive therapy with no reported adverse effects that may promote well-being and quality of life in adults with chronic disease.

A fair amount of evidence appears in scientific literature that reflexology is effective in some chronic diseases, however, more integrative and high quality research are needed to verify and validate the findings of this study in order to generalise it to the South African context.

Acknowledgements

The authors of this article would like to thank the National Research Foundation (NRF) for their financial assistance, as well as Thuthuka for assistance in obtaining a bursary to complete the masters studies. The authors would also like to acknowledge Wilma Ten Ham as independent reviewer of data.

Competing interests

The authors declare that they have no financial or personal relationship(s) which may have inappropriately influenced them in writing this article.

Authors’ contributions

BS was the supervisor of the study. E.S. (North-West University) performed all data collection and wrote the manuscript. B.S. (North-West University) helped with data analysis as independent reviewer; C.v.d.W. (North-West University) was the co-supervisor of the study.

References

ADA see American Dietetic Association.


Centre For Reviews and Dissemination, 2009, Systematic Reviews: CRD’s guidance for undertaking reviews in health care, University of York, Centre for Reviews and Dissemination.


CRD see Centre for Reviews and Dissemination.


Dougan, I., 2005, Reflexology the 5 elements and their 12 meridians a unique approach, London, Thomson.


Kruger, A., 2009, Personal communication with the author, Potchefstroom, North-West University Potchefstroom Campus.


http://dx.doi.org/10.4102/hsgag.v17i1.567
http://www.hsag.co.za

doi:10.4102/hsgag.v17i1.567
Appendix A

BOX 1: The researcher accepted the responsibility to conduct this study in an ethical manner by:

- Strict adherence to the ethical principles of honesty, integrity and accuracy in reporting the studies reviewed and keeping a detailed record of review and appraisal for audit purposes.
- Total abstinence from plagiarism by giving credit where it was due in the text and including bibliographic details in the list of references.
- Showing respect for copyrights where and when applicable by giving credit where and when applicable by giving credit in the text when illustrations, diagrams or statistical graphics were used from articles or books and by including bibliographic details in the list of references.
- Collecting the data from sound scientific data sources that were traceable, accessible and relevant for audit purposes by keeping a well-documented record of all databases searched and search results as well as inclusion and exclusion criteria of articles.
- Following the fundamental ethical principles of respect for the information sources and databases by handling all information with confidentiality and responsibility (Brink et al. 2006:40; Burns & Grove 2005:203).

Note: Please see the full reference list of the article, Steenkamp, E., Scrooby, B. & Van der Walt, C., 2012, ‘Facilitating nurses’ knowledge of the utilisation of reflexology in adults with chronic diseases to enable informed health education during comprehensive nursing care’, Health SA Gesondheid 17(1), Art. #567, 12 pages. doi: http://dx.doi.org/10.4102/hsag.v17i1.567.