Barriers and enablers of concordance with long term compression therapy; a scoping literature review

CHLOE JANSZ
Nurse Practitioner/CDE
Healthcare United: Nursing Service Director
PhD Candidate- LaTrobe University

A/Prof William McGuiness (Principal Supervisor) LaTrobe University, The Alfred Clinical School
Dr Charne Miller (Co-Supervisor) LaTrobe University, The Alfred Clinical School
Dr Sonja Cleary (Co-Supervisor) RMIT University
Declaration of Financial Interests or Relationships

Speaker Name: Chloe Jansz

I have no financial interest or relationship(s) to disclose
CVI is categorised by an insufficient return of blood to the heart. This can be in relation to an obstruction, valvular dysfunction or fluid retention, usually in relation to renal impairment or congestive cardiac failure.

This leads to elevation in the blood pressure within the veins, called venous hypertension causing an inflammatory response, and vicious cycle.
Significance

CVI 1-2% of population

Up to 40% Female
Up to 20% Male

(in 2013)
$400-$500 million on VLU Treatment in Australia alone

VLU 90% of wound
+4 episodes in a lifetime (69% reoccur)
What motivates you?
How Compression Stockings Work

Healthy Heart (due to efficient blood flow)

- Valve Failure
- Varicose Veins
- Edema (Swelling)
- Venous Stasis
- Ulceration
- Blood Clots

Without Compression Stockings

With Compression Stockings

Increased Blood Flow

However, Compliance is low
Theoretical Framework

Health Belief Model

Maslow’s Hierarchy of Needs

Forced Compliance Theory
What are the **enablers and hinders** of patient **concordance** in people that wear **compression therapy** to heal or prevent venous leg ulcers.
Method:
Search Strategies & Databases

**Databases:** CINAHL, Medline, EMBASE, Scopus, PubMed, Cochrane, JBI

**Search Words:**

Related to compliance: compliance, OR concordance, OR adherence, OR willingness, OR non-willingness

AND

Related to barriers: "challeng*", OR "heal*", OR "non heal*", OR "factor* that affect", OR "factor*", OR "variables", OR "predictors", OR "behaviour*", OR "barrier*", OR "facilitator*"

AND

Related to Compression: "compression garment*", OR "compression hosiery", OR "compression therap*", OR "compression stocking*", OR "compression bandag*", OR "tubular bandag", OR "tubular stocking*", OR "four layer bandag*", OR "class 2 compression", OR "class 3 compression", OR "intermittent pneumatic device*", OR "elastic stocking*", OR "elastic bandag*"
# Inclusion and Exclusion Criteria

## Screening: Inclusion / Exclusion Criteria

<table>
<thead>
<tr>
<th>Area</th>
<th>Include</th>
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<th>COMMENTS</th>
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| **Study design**| - Peer-reviewed journal articles (qualitative, quantitative + mixed methods)  
- Primary data studies | - Protocols, conference papers, editorials, theses, magazine articles, letters  
- Secondary data analysis studies  
- Guidelines  
- Opinion Pieces | Lower leg undefined in most studies so will accept VLU Mixed, not arterial  
Preferably not studies looking at healed wounds, want to capture wounds just healed, not looking at maintenance therapy, looking at the first 12 months post healing not after |
| **Language**    | - English                                                               | - Any other language                                                   |                                                                         |
| **Population**  | - Patients with mixed or venous lower leg ulcers (VLU)                 | - Acute Wounds  
- Already healed patients  
- Lymphedema Patients  
- Diabetic related studies  
- Arterial Wounds  
- Diabetic Ulcer  
- Anticoagulant/thrombin related studies |                                                                         |

## Area Criteria

<table>
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| **Field** | Health  
- Compression therapy  
- Venous Leg Ulcers  
- Lower Leg Ulcer | Non-health-related | months post healing not after |
| **Topic** | Studies that address the research topic and research questions. | Studies assessing lymphedema  
- Studies assessing CCF  
- Recurring wounds  
- Effectiveness of compression | |
all results identified through database searching (n=508)
<table>
<thead>
<tr>
<th>Authors, Year</th>
<th>Country</th>
<th>Study Purpose</th>
<th>Methodology</th>
<th>Characteristics</th>
<th>Findings</th>
<th>Adherence to CT</th>
</tr>
</thead>
</table>
| O'Neill & Lowers (2008) | AUS | To describe and explore the reasons for non-use of CT in district nurses | Qualitative study | N=22  
Age: 42 years  
5 years' nursing experience | Compression compliance increased if clinician had expertise in CT; the patient was motivated; the wound was healing. Compression with compliance was decreased if (from the nurses' perspective of the patient); there was a past negative experience with CT; nil belief in CT efficacy; pain discomfort; skin problems; cost incurred; dementia comorbidity; mobility and safety problems; loss of independence; hygiene and soiled bandages with CT. | Adherence to CT increased with clinician's CT expertise, a motivated patient, and wound healing. Adherence to CT decreased with patient's past negative experience with CT, disbelief in CT efficacy, pain discomfort, skin problems, cost incurred, dementia, mobility and safety problems, loss of independence, and hygiene issues. |
| Brooks et al. (2004) | UK | Test effect of a nurse-led education programme on CT concordance and VLU recurrence | Quasi experimental | N=49 patients from district nursing  
(19 control, usual care; 21 intervention, education program)  
Age: 80 years old/ F:75% | The control group scored the compression for a mean of 21/24 hours, and the experimental group wore CT for 16.7/24 hours; a difference that was not statistically significant. | CT adherence did not increase with nurse-led education. |
| Naby et al. (2013) | France | To identify the clinical characteristics associated with complete healing. | Cohort Study | N=94 from dermatological departments  
Age: 74 years/ F:71% | Week 4 follow up (healed 87% adherence vs non-healed 79%) Week 24 follow up (healed 88% adherence vs non-healed 59%) | CT adherence was higher for patients with healed ulcers compared to those with non-healed ulcers. |
<p>| Cerone, Vin, Nazareth &amp; Bobbot (2005) | France | To evaluate the concordance rates in ambulatory patients. | Prospective observational study | N=1397 from a general practice. | Approximate wound severity score, CT never=23.4, CT &lt;5 days a week=23, CT 5 days a week=22.9; CT 6 days a week=21.9; CT daily=21.4. Approximate peri wound severity score, CT never=18, CT &lt;5 days a week=18.1, CT 5 days a week=17; CT 6 days a week=16; CT daily=15.8. Statistically significant correlation (Spearman's rho not reported) between CT concordance and greater severity of ulcer and peri-wound severity score. | Association between lower CT adherence and greater severity of (1) the ulcer and (2) the peri-ulcer. |
| Inlayson, Edwards &amp; Coumey (2010) | AUS | To determine the relationship between self-efficacy, depression, quality of life, social | Cross sectional | N=122 VLU patients from 2 metro outpatient hospitals | Significant associations between CT adherence and socioeconomic index (SEIFA index) (Spearman's rho=0.21, p=0.021), SF-12 Physical Component Score (Spearman's rho=0.28, p=0.002), SF-12 Mental Component Score (Spearman's rho=-0.18, p=0.047). Higher socioeconomic status, physical and mental functioning, self-efficacy, knowledge of aetiology, being a primary carer, and attending tertiary units were related to CT adherence. | Higher socioeconomic status, physical and mental functioning, self-efficacy, knowledge of aetiology, being a primary carer, and attending tertiary units were related to CT adherence. |</p>
<table>
<thead>
<tr>
<th>Study</th>
<th>Country</th>
<th>Methodology</th>
<th>Participants</th>
<th>Findings</th>
</tr>
</thead>
<tbody>
<tr>
<td>Finlayson et al. (2014)</td>
<td>AUS</td>
<td>Cohort Study</td>
<td>N=80 Wound Clinic patients (Mage: 75 years / F: 58%)</td>
<td>Significant association between lower CT adherence and higher GDS score (depression) (Spearman’s r = -0.22, p = 0.021). High CT concordance among those with a knowledge of the cause of the condition (Mann-Whitney U = 827, p = 0.001), primary care (Mann-Whitney U = 417, p = 0.041) and participants attending 3 or 6 month preventative care visits versus none (F = 3.53, p = 0.01). No CT adherence differences found for type of health professional clinic providing active or preventative ulcer care. Reasons given for CT non-concordance included difficulty in applying/removing CT, for reasons such as, weakness, arthritis in hands, knees, joint mobility problems (21%) nil belief in CT efficacy (22%), aesthetics of CT (11%), ability to wear normal shoe, time spent applying CT, inconveniences on hygiene (91% percentage reported).</td>
</tr>
<tr>
<td>Harper et al. (1986)</td>
<td>UK</td>
<td>RCT</td>
<td>N= 500</td>
<td>The non-concordance patients were 2.5% increased risk of ulcer recurrence. The relative risk of reoccurring without compression therapy was 2.58, 95% confidence interval 1.33 to 5.01. Lower CT adherence found with higher depression scores, diagnosis of osteoarthritis, &lt;2 follow up preventative ulcer care visits (F = 2.85, p = 0.045), history of &gt;1 previous leg ulcer (F = 2.92, p = 0.04). Nil significant association between CT adherence and social support and self-efficacy. Nil association between CT adherence and social support and self-efficacy.</td>
</tr>
<tr>
<td>Kapp, Müller de Deneuse (2014)</td>
<td>AUS</td>
<td>Cross-sectional (within RCT)</td>
<td>N=100 patients receiving domiciliary nursing (Mage: 78.7 years / F: 71.7%)</td>
<td>Type of device did not influence adherence to CT nor did the type of user of the device (patient, informal carer, formal carer). CT concordance did not differ from the type of device used or the user applying the device.</td>
</tr>
<tr>
<td>Author(s)</td>
<td>Country</td>
<td>Study Title</td>
<td>Study Design</td>
<td>Participants</td>
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<tr>
<td>Kapp, Miller &amp; Donohue (2015)</td>
<td>AUS</td>
<td>To investigate effect on local of compression on recurrence rate</td>
<td>RCT</td>
<td>N= 93</td>
</tr>
<tr>
<td>Mayberry, Monea, Taylor &amp; Porter (1991)</td>
<td>USA</td>
<td>The effects of comorbidities on CT, in a 15 year study on ambulatory patients.</td>
<td>Cohort Study</td>
<td>N= 113 Vain and vascular clinics: Adherence to CT decreased over time (baseline= 102/113 compared to 30 months= 58/113).</td>
</tr>
<tr>
<td>Morgan &amp; Moffatt (2006)</td>
<td>UK</td>
<td>To examine the factors associated with patient’s labelled as non-healing and non-concordance.</td>
<td>Qualitative study</td>
<td>N= 4 focus groups with community nurses (between 3-7 people per group): Concepts identified from the findings related to CT adherence included patient’s efficacy with treatment, and patient’s motivation to concord with CT. CT adherence decreased with increased reliance on nursing service, peripheral issues, obesity, or non-participation in health promotion programs.</td>
</tr>
<tr>
<td>Mudgej, Hollorey, Simmonds &amp; Price (2006)</td>
<td>UK</td>
<td>To identify the issues around adherence in people living with VLU</td>
<td>Focus Groups</td>
<td>N= 6</td>
</tr>
<tr>
<td>Van de Giands, Heesen, Evans, &amp; Achterberg (2015)</td>
<td>Netherlands</td>
<td>To evaluate the effect of nurse-led lifestyle counselling on health behaviour change</td>
<td>Pre-post study</td>
<td>N= 71</td>
</tr>
<tr>
<td>Van Hecke, Gypenouch, Bello, Vanderwae &amp; Deforc (2011)</td>
<td>Belgium</td>
<td>To examine the changes associated with adherence to CT post educational nursing interventions</td>
<td>Mixed method, pre and post study</td>
<td>N= 26 patients from community nursing: Self-reporting diary was kept by the patient. Week 1: 13.8/24 hours CT worn Week 2: 13.7/24 hours CT worn Week 3: 13.3/24 hours CT worn No statistical significant recorded.</td>
</tr>
</tbody>
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**Key:** Bold: Secondary Resources
Results directly impacting concordance with CT

<table>
<thead>
<tr>
<th>Author</th>
<th>Factor Influencing Concordance</th>
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<tbody>
<tr>
<td>Finlayson et al. (2012)</td>
<td>Time since ulceration</td>
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<tr>
<td>Kapp, Miller &amp; Donohue (2013)</td>
<td></td>
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<tr>
<td>Mayberry et al. (1991)</td>
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<tr>
<td>Finlayson et al. (2012)</td>
<td>High Geriatric Depression Score</td>
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<tr>
<td>Finlayson, Edwards &amp; Courtney (2010)</td>
<td></td>
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<tr>
<td>Finlayson et al. (2014)</td>
<td>Having &lt;2 follow up appointments in 1 year</td>
</tr>
<tr>
<td>Kapp, Miller &amp; Donohue (2013)</td>
<td>The type of compression therapy</td>
</tr>
<tr>
<td>Harper et al. (1995)</td>
<td></td>
</tr>
<tr>
<td>Kapp, Miller &amp; Donohue (2014)</td>
<td>The type of device used to don compression therapy</td>
</tr>
<tr>
<td>Chaby et al. (2013)</td>
<td>If the patient had an active or healed ulcer</td>
</tr>
<tr>
<td>Dereure et al. (2005)</td>
<td>The severity of the ulcer</td>
</tr>
<tr>
<td>Dereure et al. (2005)</td>
<td>The peri-ulcer severity (surrounding skin severity)</td>
</tr>
<tr>
<td>Glinds, Heinen, Evers, &amp; Achterberg (2015)</td>
<td>The patient’s age</td>
</tr>
<tr>
<td>Morgan &amp; Moffatt (2008)</td>
<td>The patient belief in their ability to heal</td>
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<tr>
<td>Other Discussed Trends</td>
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<tr>
<td>---------------------------------------------------------------------------------------</td>
<td></td>
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<tr>
<td>- The ability to reach ones toes</td>
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<tr>
<td>- Cost</td>
<td></td>
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<tr>
<td>- Pain and discomfort</td>
<td></td>
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<tr>
<td>- Skin problems (too hot, skin irritations)</td>
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<tr>
<td>- Co morbidities (dementia)</td>
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<tr>
<td>- Mobility and safety problems</td>
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<tr>
<td>- Loss of independence</td>
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<tr>
<td>- Clinician expertise (the ability to identify aetiology of the wound, application and</td>
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<tr>
<td>education of compression therapy, the education of the clinician in venous leg ulcers)</td>
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<tr>
<td>- Aesthetic of the patient (the patient’s body image, perception of others)</td>
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</tbody>
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Research Design

Phase 1
- Experts
- Delphi Study (3 tiers)
- Interview with Experts to discuss rank changes and choices

Phase 2a
- VLU Patients Questionnaire (SP-36 + SKINEX)

Phase 2b
- VLU Patient
- Delphi Study (3 tiers)

Phase 2c
- One on One Interview after Delphi Study with VLU Patient
- Compare Experts and VLU Patient Delphi Study
Research Plan

Identify a definitive list of factors (Lit Review)

Delphi Study (Experts vs VLU Patients)

Post-doctoral interventional study of correlating factors

Decrease the burden of disease and reoccurrence of VLU

Figure 3: Diagnosis of chronic wounds.
Questions

Ask no questions, and you’ll be told no lies.

Charles Dickens

Healthcare United
0432 434 289

W: www.healthcareunited.com.au
E: chloe.jansz@healthcareunited.com.au


