



THE UNIVERSITY
of ADELAIDE

Hand Conditions Associated with Diabetes:
an observational study characterising hand function

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Discipline of Medicine

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of the degree of Doctor of Philosophy

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"I love a hand that meets my own with a grasp that causes some sensation."

Samuel Osgood (1747 – 1813, American Politician)

ABSTRACT

In Chapter 1 of this thesis, I review the literature relating to the hand syndromes associated with diabetes. I describe their unique clinical features and current treatment options. I consider how these hand syndromes may contribute to physical disability in diabetes and formulate questions relating to the degree and the course of this disability.

In Chapter 2, I describe and discuss the rationale for selecting the methods used to measure hand function. The methods used to measure disability and quality of life from the individual's perspective and evaluate motor and sensory impairments of the hand are explained. Other data that was collected, such as body weight, height and information on diabetes duration and control, are discussed. The sample size required to detect a change in hand function is calculated and the clinics from which study participants were recruited are outlined.

In Chapter 3, I describe the characteristics of the sample of adults with diabetes and the associated hand syndromes at their first assessment. My analysis of the factors that predicted hand disability at the initial presentation in this heterogeneous group is presented.

In Chapters 4, I describe the change in hand function measured over the second and third assessments and determine the factors that were associated with this change. My analysis is extended to examine differences between the dominant and non-dominant hands and between men and women.

In Chapter 5, I consider the precision of measures of hand function and discuss how this affected the data obtained. Minimal detectable changes are analysed and recommendations regarding hand assessments are made.

In Chapter 6, I summarize the evidence that carpal tunnel syndrome and trigger finger contributed to hand disability in adults with diabetes. In addition to specific treatment strategies for these disorders strategies to address broader health issues are recommended. A greater emphasis should be given to strengthening the upper limb and implementing strategies to address physical inactivity and obesity in adults with diabetes.

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I drew on my prior experience as a physiotherapist and I have been fortunate to have had many skilled and dedicated physiotherapists as colleagues over the years. This network has expanded during my PhD and includes colleagues from different disciplines. I value their friendship and support.

Thank you also to the Modbury Hospital Foundation for supporting my scholarship and allowing me to pursue my research goals.

DECLARATION

This work contains no material which has been accepted for the award of any other degree or diploma in any university or other tertiary institution to Christine Redmond and, to the best of my knowledge and belief, contains no material previously published or written by another person, except where due reference has been made in the text.

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*** Hand syndromes associated with diabetes: impairments and obesity predict disability.**

Redmond CL, Bain GI, Laslett LL, McNeil JD

Journal of Rheumatology 2009 Dec;36(12):2766-71. Epub 2009 Nov 2.

Signed:.....

Christine Redmond

ACHIEVEMENTS

Work published during the period of this research.

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- | | |
|------|---|
| 2009 | Hand syndromes associated with diabetes: impairments and obesity predict disability.

Redmond CL, Bain GI, Laslett LL, McNeil JD

<i>Journal of Rheumatology</i> 2009 Dec;36(12):2766-71. Epub 2009 Nov 2. |
| 2008 | Predictors of shoulder pain and shoulder disability after one year in diabetic outpatients

LL Laslett; SP Burnet; CL Redmond; JD McNeil

<i>Rheumatology (Oxford)</i> . 2008 Oct;47(10):1583-6. Epub 2008 Aug 18.2007 |
| 2007 | Musculoskeletal morbidity: the growing burden of shoulder pain and disability and poor quality of life in diabetic outpatients.

Laslett LL, Burnet SP, Jones JA, Redmond CL, McNeil JD

<i>Clinical and Experimental Rheumatology</i> 2007;25(3):422-9. |
-

Prizes awarded for presentation of this research.

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- | | |
|------|--|
| 2009 | Oral presentation prize for the clinical programme: Rheumatology Association (SA Chapter) Meeting, Adelaide |
| 2008 | Dodridge prize for oral presentation: South Australian Hand Surgery Society Meeting, Adelaide |
| 2007 | "MPA 5x5" oral presentation prize: Australian Physiotherapy Association National Conference, Cairns |
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LIST OF ABBREVIATIONS

AGE	Advanced Glycosylation Endpoint
BMI	Body Mass Index
CI	Confidence Interval
CID	Clinically Important Difference
CTS	Carpal Tunnel Syndrome
DASH	Disabilities of the Arm, Shoulder and Hand
DD	Dupuytren's Disease
DM	Diabetes Mellitus
ES	Effect Size
HbA1c	Glycosylated haemoglobin
GH	General Health: general health perceptions
ICC	Intraclass Correlation Coefficient
IQR	Inter-Quartile Range
LJM	Limited Joint Mobility
MCS	SF-36: Mental Component Summary
MDC	Minimal Detectable Change
MH	Mental Health - psychological distress and wellbeing
PCS	SF-36: Physical Component Summary
PF	Physical Function: limitations in physical health because of health problems
RE	Role Emotional: limitations in usual role activities because of emotional problems
RP	Role Physical: limitations in usual role activities because of physical health problems
SD	Standard Deviation
SF	Social Functioning: limitations in social activities from physical or emotional
SF-36v2	Short Form 36-item health survey (version 2)
SRM	Standardized Response Mean
TF	Trigger Finger
VT	Vitality: energy and fatigue
WEST	Weinstein Enhanced Sensory Test

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