



Function and Pain in Adult Mid-Southerners with Limb Loss
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Purpose

To describe function, pain, health status, and demographic factors of Minority and Caucasian adult community dwelling persons with limb loss living in the Mid-South and to estimate their bivariate relationship with function.

Limb Loss Background

Limb loss affects 1 in 190 persons with projected increased incidence. Impaired function and phantom limb pain (PLP), residual limb pain (RLP), and pain in other locations (OP) is common in persons with limb loss. Health status and demographics of the Mid-South include the highest rates of diabetes, obesity, tobacco use, African American demographic, poverty, and low educational attainment. Pain in persons with limb loss is poorly understood and undertreated.

Methods

Methods were a descriptive cross-sectional survey. The sample was a purposive snowball sample of community dwelling adult Mid-Southerners with limb loss recruited from local and regional support groups, national organizations, health care providers offices, interviewed were verbally interviewed by phone or in-person. The Instruments included the Sickness Impact Profile 68 (SIP68) and its 6 categories. Pain was assessed in the locations of phantom limb, residual limb, and other pain for intensity (5 point VDS scale), quality (8 descriptors), and pattern. Health Status variables measured were diabetes, smoking, obesity, self-assessment of health and amputation history (number of limbs lost, type, level, duration, cause). Demographics variables measured were age, gender, race/ethnicity, and education.

Demographics (N = 61)

Variable	Mean ± SD or Percent
Age	51.6 ± 15.6
Male	65.6%
Race/Ethnicity	
White	68.9%
Black	21.3%
Other	9.8%
Education	
Years Completed	13.6 ± 3.1



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Health Status

Variable	Mean ± SD or Percent
Diabetes	31.1 %
Smoke Now	16.4%
Ever Smoked	54.1%
Obesity	
BMI	28.7 ± 7.7
Obese	37.7%
Overweight	29.5%
Self Assessment of Health (5 pt scale 0-4)	2.8 ± 0.6
Amputation History	
Total Number of Limbs Lost	
One Limb	77.0%
Two or more Limbs	23.0%
Upper Limb(s) Loss Only	11.9%
Level of Amputation, AKA or AEA	48.3%
Amputation Duration (months)	104.7 ± 128.4
Traumatic Limb Loss	45.9%
Number of pain areas (36 areas)	5.4 ± 4.2

Function

Variable	Mean ± SD (Range)
SIP68	19.7 ± 14.5
SA (Somatic Autonomy)	2.6 ± 3.0
MC (Mobility Control)	6.0 ± 3.5
MR (Mobility Range)	2.3 ± 2.9
PAC (Psychic Autonomy & Communication)	2.2 ± 2.8
SB (Social Behavior)	4.9 ± 3.9
ES (Emotional Stability)	1.7 ± 1.7



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Pain

Variable	Mean ± SD or Percent		
	Phantom limb	Residual limb	Other location
Positive Pain Report	83.6%	55.0%	62.7%
Intensity (5 pt scale 0-4)			
Current	0.6 ± 0.8	0.5 ± 0.8	0.7 ± 0.9
Usual	1.1 ± 0.9	0.8 ± 1.1	1.1 ± 1.1
Worst	2.5 ± 1.4	1.7 ± 1.7	2.0 ± 1.7
Least	0.2 ± 0.5	0.2 ± 0.5	0.4 ± 0.7
Descriptor			
Burning	40.7%	23.7%	25.4%
Cramping	54.2%	25.4%	30.5%
Stabbing	59.3%	32.2%	28.8%
Shocking/Shooting	61.0%	27.1%	32.2%
Tiring	33.9%	32.2%	33.9%
Twisting	20.3%	13.6%	15.3%
Abnormal Position	35.6%	16.9%	20.3%
Tight Band	40.7%	22.0%	10.2%
Pattern			
Intermittent	83.1%	50.8%	50.8%
Continuous	20.3%	13.6%	28.8%



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Significant Correlations of Pain and Health Status with SIP68 Total ($r \geq 0.34, p < .01$)

PAIN INTENSITY	PAIN DESCRIPTOR	PAIN PATTERN	HEALTH STATUS
Current: Phantom limb	Tiring: Phantom limb	Continuous: Phantom limb	Amputation Duration
Usual: Phantom limb Other	Tight Band: Phantom limb Residual limb		Number of Pain Areas
Worst: Phantom limb			



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Summary of Findings, Correlations of Pain with Function

- Pain remains very common in persons with limb loss.
- High intensity usual phantom limb pain was most closely related to impaired function.
- The assessment of pain, in all locations needs to have a person-centered approach which addresses all pain domains including: 1) location; 2) intensity; 3) pain descriptor; 4) pain pattern; and 5) the number of pain areas.
- Pain descriptors have been linked to specific etiologies of pain, which can guide treatment. The report of different phantom limb pain descriptors suggests that there can be more than one etiology that contributes to phantom limb pain.
- More than one pain area was common and an increased number of pain areas were related to impaired function.



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Summary of Findings, Correlations of Health Status and Demographics with Function

- ✦ Amputation history is closely related to function: 1) Greater time since amputation related to better function; 2) Increased number of limbs lost associated with greater dependency on others and assistive devices, 3) Lower extremity limb loss is associated with poor mobility
- ✦ Non-White race/ethnicity closely related to function, mobility control was not related, but mobility range and social behavior were suggesting that Non-White race/ethnicity is a risk factor for isolation.
- ✦ Age was associated with greater dependency on others and assistive devices, as well as mobility control, but not with mobility range. This suggests that with increased age there are increased coping skills.



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Reading List of Key Articles

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Sherman RA, Griffin VD, Evans CB, Grana AS. Temporal relationships between changes in phantom limb pain intensity and changes in surface electromyogram of the residual limb. *International Journal of Psychophysiology*;13:71-77, 1992 Jul.

Smith DG, Ehde DM, Hanley MA, Campbell KM, Jensen MP, Hoffman AJ, et al. Efficacy of gabapentin in treating chronic phantom limb and residual limb pain. *Journal of Rehabilitation Research & Development*. 2005;42:645-654.

Resources for Persons with Limb Loss

Amputee Coalition of America. (ACA) <http://www.amputee-coalition.org>

American Amputee Foundation. (AAF) www.americanamputee.org

Association of Applied Psychophysiology and Biofeedback. (AAPB) <http://www.aapb.org/>

Christian Amputee Support Team. (CAST) <http://www.castministries.org/>