



ASSESSING THE PROSTHETIC NEEDS OF FARMERS AND RANCHERS

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INTRODUCTION

Farming is a dangerous occupation with many agricultural workers experiencing disabling injuries each year of which amputations account for 11% (CDC, 2002). Experiential documentation and some qualitative research suggest that current prosthetic technology may not be meeting the needs of farmers and ranchers with amputations (Reed, 2004). In order to better understand the prosthetic needs of farmers and ranchers with amputations, a descriptive qualitative study was used to gather data with an engineering perspective.

METHOD

Subjects: Forty farmers and ranchers with amputations (37 male, 3 female; 23 lower-limb involved, 17 upper-limb involved) and 26 prosthetists.

Apparatus: Interviews and a focus group

Procedures: The authors interviewed farmers with an upper- or lower-limb amputation individually by phone or in person, or in a focus group. Prosthetists who provided services to farmers and ranchers were also interviewed to gain knowledge of specific devices and practices used in their geographical region. Issues explored in the interviews included devices used by farmers now and in the past, prosthetic failures, and ability to complete farm tasks using a prosthesis.

Data Analysis: Transcribed qualitative responses to the questions were coded for thematic analysis. The coding was independently performed twice by two separate researchers.

RESULTS

Interviews with both farmers and prosthetists revealed several common themes that inform our understanding of the challenges faced by farmers and ranchers with amputation. The themes include durability/utility, environment, adaptation, cost, and education (Figure 1). The major theme we identified was lack of durability and utility of prostheses. In particular, harsh environments affect prosthesis performance. Farmers and ranchers with amputations make

changes to their equipment (with and without the help of prosthetists) as well as their farm routines in order to return to the profession they love. They incur high costs in the process. Both prosthetists and farmers described educational needs.

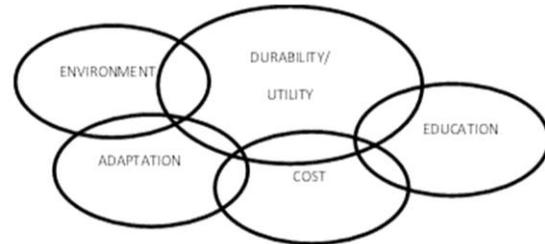


Figure 1 Themes identified in interviews of farmers and ranchers with amputations and prosthetists who serve them.

DISCUSSION

There is a lack of objective data and rigorous engineering analysis of components that could explain why prosthetic devices are not meeting the needs of farmers and ranchers with amputations. This study identified several components that commonly fail during use by farmers. Problems mentioned most often were: bolts and other parts in feet breaking due to users exceeding weight limits or walking on uneven terrain, prosthetic liners and suspension sleeves getting holes due to contact with equipment, control cables and wrists being the “weak links” in body-powered upper-limb prostheses, and electronic components being inappropriate prosthetic choices due to their inability to get wet or dirty.

CONCLUSION

It seems clear that farmers and ranchers with amputation are a population with distinct prosthetic needs that faces specific challenges when returning to work. Engineers and prosthetists could facilitate the return to farming by creating more durable, affordable, and adaptable prosthetic components.

REFERENCES

- CDC, Amputation Teacher Fact Sheet NASD Review, 2002.
- Reed D. Orthopaedic Nursing. 23(6), 397-405, 2004.
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