Evaluating the Impact of a Health Literacy Intervention on Diabetic Foot Wound Complications

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Background

- Diabetes impacts 11.6% of the US population.[1]
- Around 20% of patients with DFUs require amputations[2]
- There is a positive association between health literacy and adherence, particularly with non-medication recommendations [3]
- This suggests improved health literacy may result in better adherence in diabetic wound care.
- Health Literacy + Innovation for Positive Patient Outcomes (HIPPO) is a multimedia educational resource platform for patients with DFUs.
- This retrospective study explored if HIPPO reduced risk of unfavorable outcomes (amputation and/or surgical debridement) among patients with DFUs compared to standard education alone.

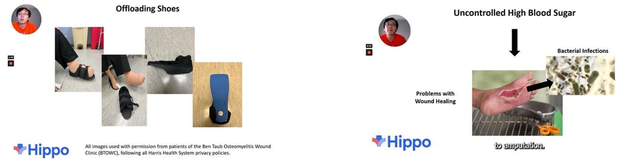


Figure 1. Examples of HIPPO Materials [4]

Methods

- 142 new adult patients with DFUs were enrolled in a study at a wound clinic in a large-city, safety net hospital that engages with underserved populations from January 2023 to December 2024 to assess the effectiveness of HIPPO in their wound healing. The participants were randomly assigned to either the intervention group (HIPPO) or the control group.
- Among the 142, we enrolled the participants whose charts were able to be reviewed and followed at least 12 months post-initial clinic visit.
- Patient charts were assessed for amputation (including type), surgical debridement, and recommendation for either procedure.
- Hazard ratios for lower extremity amputation and surgical debridement were calculated to assess how HIPPO and other factors impacted relative risk of lower extremity amputation.

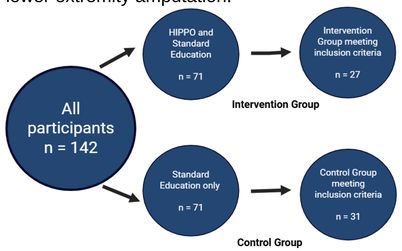


Figure 2. Approach for Control Group vs Intervention Group

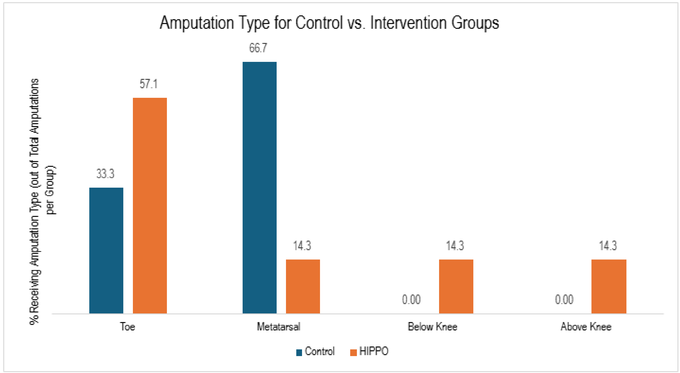
Results

Table 1. Adverse Complications amongst Control vs. Intervention Groups

	Control (Standard Education)	Intervention (HIPPO)
Lower Extremity Amputation	6/31 (19.4%)	7/27 (25.9%)
Surgical Debridement	2/31 (6.45%)	3/27 (11.1%)
Declined Recommendation for Amputation	2/31 (6.45%)	0/27 (0.00%)

- Surgical debridement was performed in 3 participants (HIPPO) and 2 participants (control). Two participants in the Control group declined amputation despite recommendation by surgeons (Table 1).

Figure 3. Amputation Type for Control vs. Intervention Groups



- Most patients with amputations in the HIPPO group received a toe amputation (57.1%) compared to a metatarsal amputation (66.7%) in the Control group (Figure 3).

Table 2. Hazard Ratios Assessing Risk of Lower Extremity Amputation.

	Hazard Ratio	p-Value
HIPPO Intervention	1.53	0.18
Wound, Ischemia, and foot Infection (WIfI)Score	1.46	0.25
Highest Education Received (Elementary vs. High School vs. College/Undergraduate)	1.50	0.83
Internet Access	0.80	0.24
Insurance Type	0.00	1.00

Results (Cont.)

- HIPPO did not significantly reduce risk of lower extremity amputation compared to standard education alone (p = 0.18) (Table 2).
- The 3-month wound healing rates were 68% in HIPPO group and 67% in control group (p=0.97).

Discussion

- An intervention to increase health literacy did not reduce the risk of lower extremity amputation in patients with DFUs.
- Wound, Ischemia, and foot Infection (WIfI) score, level of education, access to the internet, and type of insurance also did not significantly impact risk for lower extremity amputation.
- These results may be impacted by a low sample size (n=58).
- Of the 142 participants enrolled in the study, most participants were excluded due to incomplete data collection from follow-up visits (n=45), indicating an insufficient number of participants attended all 3 clinic visits.
- This also suggests an insufficient number of video views in the HIPPO group.
- A study to provide more interventions within a larger sample size of participants is warranted.

References

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Figure created in https://BioRender.com

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