Understanding Preoperative Patient Education in Vascular Surgery: A Systematic Review and Meta-Analysis

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Background

- Preoperative patient education can reduce anxiety and complications, improve informed consent, and enhance shared decision-making[1-3]
- Peripheral artery disease (PAD) and abdominal aortic aneurysm (AAA) patients have poor disease and procedure knowledge[4-7]

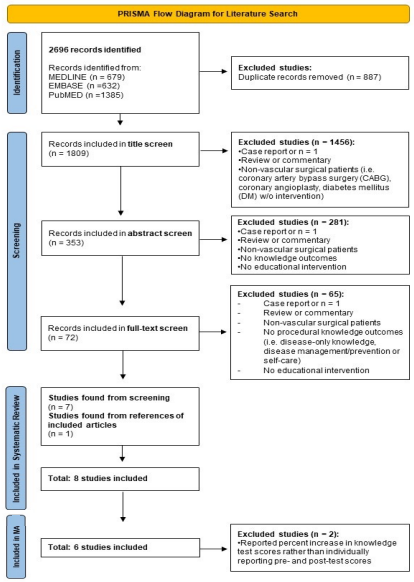
Research Objective

To identify patient education interventions in vascular surgery and their impact on patient understanding of procedures

Methods

- **PRISMA search (Fig. 1):** Embase, PubMed, and Ovid (MEDLINE)
- **Inclusion criteria:** vascular surgery procedure, education intervention, patient knowledge is outcome variable
- **Forest plot with standardized mean difference (SMD)** generated using pre- and post-intervention knowledge scores
- **Subgroup analyses:** AAA repair, interventions with decision aid (Fig. 2)

Figure 1. PRISMA Flow Diagram

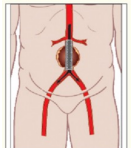


Results

Study Characteristics

- **6 studies:** 5 randomized controlled trials and 1 prospective cohort study
- **Total patients:** 654 (mean age 66 ± 9.9 years; 68% male)
- **Procedures:** open/endovascular AAA repair, femoral-popliteal bypass, carotid surgery, and endovenous thermal ablation
- **Educational interventions:** verbal/written informed consent discussions, online/written decision aids, and 3D/virtual reality displays

Forest Plot Data (Fig. 3)



- **~100% power** to detect a significant fixed-effects mean effect (Z-score=5.38, p<0.01)
- **Overall: SMD 0.64 (95% CI, 0.48-0.79)**
- For AAA repair (n=4), SMD=0.58 (95% CI, 0.42-0.75)
- For decision aids (n=4), SMD= 0.62 (95% CI, 0.45-0.79)

Figure 2. Decision Aid Examples

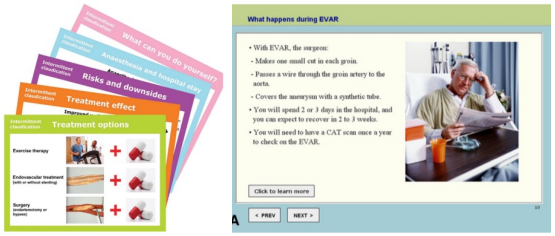
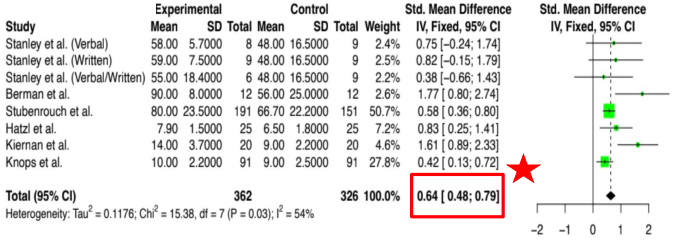


Figure 3. Forest Plot



Conclusions

- Online, written, and multimedia patient education tools can enhance understanding of operative interventions
- Small sample size suggests need for further investigation

References

1. Muscat DM, et al. J Gen Intern Med. 2021;36(2):521-524. doi:10.1007/s11606-020-05912-0
2. Zhang CY, et al. J Cardiovasc Nurs. 2012;27(1):84. doi:10.1097/JCN.0b013e3182189c4d
3. Villanueva C, et al. Patient Educ Couns. 2018;101(12):2047-2053. doi:10.1016/j.pec.2018.06.008
4. Van Leeuwen G, et al. Eur J Vasc Endovasc Surg. 2024;67(6):935-947. doi:10.1016/j.ejvs.2024.03.040
5. Bridgwood BM, et al. Vasc Med. 2020;25(3):263-273. doi:10.1177/1358863X19893003
6. Byskosh N, et al. J Vasc Surg. 2022;75(4):1358-1368.e5. doi:10.1016/j.jvs.2021.11.036
7. Suckow B, et al. J Vasc Surg. 2016;63(5):1156-1162. doi:10.1016/j.jvs.2015.12.042