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Theoretical Foundation Bolsters Effect of Internet Interventions

More extensive use of theory, and supplementary tools such as email and text messaging, contributes to greater behavior change

Internet-based health interventions have greater impact when they are grounded in science theory, according to a study published recently in the *Journal of Medical Internet Research*. Incorporating multiple behavior change techniques and modes of delivery also increases their power.

Prior research indicated that health promotion interventions delivered via the Internet have positive yet variable effects on behaviors such as tobacco use, physical activity, and diet. No data existed regarding effectiveness of the different strategies, so the authors of the current study sought to investigate. They used a recently developed behavior change coding system to identify the characteristics of successful programs and to assess how theories and various delivery methods affected results.

Interventions based on the theory of reasoned action/ planned behavior appeared to have the most positive impact on patients' behavior.

The authors conducted computerized searches of Web of Science conference proceedings, BIOSIS Previews, and Medline, and included randomized trials involving Internet-based programs that measured a health-related behavior after the intervention. Eighty-five

studies met these criteria. Mode of delivery was divided into automated functions such as testimonials and games or reinforcing messages, communicative functions such as discussion boards or "Ask-the-Expert" capabilities,

and supplementary functions such as email and videoconferencing. A wide variety of theoretical tools were employed in the studies. The three most frequent ones were social cognitive theory, the transtheoretical model, and the theory of reasoned action/planned behavior.

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Analysis revealed a larger effect in studies utilizing theory — and increasing effect when more than one theory was used — especially in interventions that targeted one specific behavior versus multiple behaviors. Interventions based on the theory of reasoned action/planned behavior appeared to have the most positive impact on patients' behavior. This theory states that an individual's behavior is determined primarily by his or her intention to perform an action, which is a product of attitude, subjective norms, and perceived efficacy. The authors noted that subjects were influenced more by others' behavior than by others' approval. Interventions addressing stress management or general communication skills training had the largest effects overall. Also, use of communication functions, particularly access to an advisor, text messages, and

email, in conjunction with the Internet intervention, was highly effective.

The authors concluded that more study is necessary, but that their review “provides a framework for research that can contribute to a science of Internet-based interventions and our findings provide a rationale for investing in more intensive theory-based interventions that incorporate multiple behavior change techniques and modes of delivery.”

Source: Webb TL, Joseph J, Yardley L, Michie S. 2010. Using the Internet to promote health behavior change: a systematic review and meta-analysis of the impact of theoretical basis, use of behavior change techniques, and mode of delivery on efficacy. *Journal of Medical Internet Research* 12(1):e4.

Polytetrafluoroethylene Stent Graft Superior to Balloon Angioplasty for Failing Dialysis-Access Grafts

Longer-term patency occurred when stent graft was placed following angioplasty

Placement of a stent graft in patients who have an arteriovenous access graft with venous anastomotic stenosis is superior to standard balloon angioplasty, according to a study published recently in the *New England Journal of Medicine*. Longer-term patency and freedom from repeat interventions were also observed with the stent graft.

Hemodialysis is very common in the United States, and although the National Kidney Foundation recommends autogenous fistulas for venous access, many patients continue to receive prosthetic arteriovenous grafts. Balloon angioplasty, the first-line therapy for graft failure due to stenosis, often leads to recoil and restenosis, but little data existed regarding other strategies. The authors of the current study thus sought to investigate.

In a prospective randomized controlled trial at 13 sites, the authors compared revision with balloon angioplasty and then a self-expanding nitinol stent — both straight and flared configurations were used — covered in carbon-impregnated expanded polytetrafluoroethylene (the same material as the access graft) to

angioplasty alone. They included 190 patients (69 men and 121 women) with end-stage renal disease who were undergoing long-term hemodialysis with failing, but nonthrombosed, prosthetic arteriovenous grafts. Before randomization, any secondary lesions more than 3 centimeters from the treatment area were treated until stenosis was less than 30 percent.

Each patient treated with a stent graft was given a single dose of a prophylactic intravenous antibiotic, and all participants had

At 6 months, patients who received stent grafts fared better all around: they had significantly greater primary patency of the treatment area and freedom from loss of primary patency, significantly less binary restenosis, and significantly shorter restenotic lesions.

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clinical evaluations and magnified quantitative angiography at 2 and 6 months post-procedure.

Ninety-four percent of the patients in the stent graft treatment arm completed the 6-month study, and 93 percent in the balloon angioplasty arm completed it. Device deployment was successful in 96 of the 97 patients in the stent graft group. At 6 months, patients who received stent grafts fared better all around: they had significantly greater primary patency of the treatment area and freedom from loss of primary patency, significantly less binary restenosis, and significantly shorter restenotic lesions. Also at 210 days,

the stent graft group had superior freedom from subsequent intervention. The authors conclude that more research is needed, but that "As compared with balloon angioplasty, the stent graft was associated with graft function for a longer period before subsequent intervention and a graft lumen that had a greater diameter and had patency for a longer period."

Source: Haskal ZJ, Trerotola S, Dolmatch B, et al. 2010. Stent graft versus balloon angioplasty for failing dialysis-access grafts. *New England Journal of Medicine* 362:494-503.

Hot Topic Highlights

Vascular Domain recently posted the following Hot Topic to your website:

Study: Carotid Stenting Effective Treatment for Stenosis in Women

Carotid artery stenting (CAS) is equally or more effective than endarterectomy (CEA) for women with carotid stenosis, according to a study published in the *Journal of Vascular Surgery*. There were no major differences between women who had CAS and women who had CEA in the period right after the procedure. The authors did see a slightly lower risk of heart problems, stroke, and death with CAS, and this effect was greater in women who had no symptoms. Long-term (5-year) survival was also about the same in both groups of women. Overall, women did not fare worse than men after CAS.

Source:

De Rango P, Parlani G, Caso V, et al. 2010. A comparative analysis of the outcomes of carotid stenting and carotid endarterectomy in women. *Journal of Vascular Surgery* 51:337-344.