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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.

Direct Stenting for the Treatment of Carotid Artery Stenosis Is Effective

Angiographic success was comparable in patients receiving direct stenting and stenting with predilation

Direct stenting for carotid artery stenosis is a viable therapeutic option, and is not inferior to carotid artery stenting with predilation, according to a study published recently in the *International Journal of Cardiology*. Procedural time was shorter for direct stenting as well.

While carotid artery stenting (CAS) has been accepted as a less invasive treatment for stenosis, and consensus on the steps involved has generally been reached, the role of predilation remains unclear.

It is thought that predilation may facilitate the treatment process, especially in severely calcified vessels, by creating a larger lumen. Its alternative, direct stenting (DS), is typically used to reduce the risk of cerebral embolization by achieving early plaque debris entrapment. Little comparison data existed on these strategies; the study authors thus set out to test them in a randomized trial.

Two hundred five men and women — with a mean age of 70 years — with either 50 percent or greater symptomatic stenosis or 75 percent or greater asymptomatic stenosis who were referred to the Institute of Cardiology at the University of Milan between January 2004 and December 2006 were included. Stenosis was assessed via Doppler ultrasound, multi-

slice computed tomography (CT), or magnetic resonance angiography. Each participant was then randomly assigned to receive CAS with predila-

The authors conclude that larger studies are warranted, but that “CAS with DS is a feasible approach, not inferior to predilation.”

tion (100) or CAS with DS (105), both with a femoral approach. All patients had a full neurological examination and brain CT scan before CAS, and post-procedure CT scans were performed on patients with neurological complications. Angiographic success was the study’s main endpoint, and was defined as residual stenosis of 30 percent or less. The authors followed up with participants at

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30 days by clinical visit, telephone interview, or mail questionnaire.

Overall, when angiographic success was adjusted for type of stent and filter, there were no significant differences between groups (99 percent for predilation and 97 percent for DS). The procedural success rates were also comparable, at 97 percent each. Two in-hospital minor strokes (defined as new neurological deficits persisting greater than 24 hours but less than 7 days or increasing on the NIH Stroke Scale by 3 or less) occurred in the

predilation group. In those who had DS, procedural time was shorter and rate of filter-captured embolic debris was lower. The authors conclude that larger studies are warranted, but that "CAS with DS is a feasible approach, not inferior to predilation."

Source: Montorsi P, Galli S, Ravagnani P, et al. 2010. Randomized trial of predilation versus direct stenting for treatment of carotid artery stenosis. *International Journal of Cardiology* 138:233-238.

Hot Topic Highlights

Neuroscience 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.