Commentary

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On the Efficacy of Interventions to Change Human Behavior

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Abstract

Advice, or physician counseling, has been advocated as a low cost tool to mitigate the growing costs of diseases arising from life-style choices: lack of exercise, smoking, risky sex, drug and alcohol abuse. Early trials of advice suggested that counseling may have efficacy. Yet differences between control and treatment groups were modest and short lived. Subsequent trials have failed to demonstrate durable results. Efforts to continue studies of advice-based prevention have been sustained by the concept that even small changes in human behavior could provide large decreases in health care costs, and that prevention based on advice was cheap and harmless. Despite a lack of evidence to support counseling programs, Affordable Care Act funds reimburse providers for counseling patients about life-style behaviors. Questions arise whether these counseling efforts misallocate scarce resources. Several strategies that do not depend on changes in behavior have well documented, robust efficacy for injury control.

Keywords: Physician counseling; Human behavior; Advice; Disease prevention

Introduction

By the early 1950s, patterns of morbidity were shifting in industrial countries. Growing numbers of patients were treated for diseases that resulted from life style choices such as smoking and risky sex. The economic consequences of these choices were projected to add billions of dollars yearly to heath care budgets. Medical advice appeared to be a logical tool to address the challenge. Proponents of using this intervention to combat the growing epidemic of preventable diseases claimed that advice, or counseling, was one of the oldest tools in the history of medicine. Physicians were regarded by the public as authority figures. Moreover, proponents stressed that advice was harmless and low cost.

Early reviews of counseling programs to prevent excess alcohol consumption were encouraging. Randomized controlled trials appeared to demonstrate that counseling significantly reduced drinking patterns. Soon to follow were reports that counseling could reduce smoking, risky sex behavior, and obesity. However, there were questions about the reproducibility of these small single-center trails. In every case, the gains afforded by the advice intervention were modest. The difference between the control and treatment arm generally disappeared by the one-year follow up. There also were questions about methods. Investigators frequently used self-report tools to measure compliance, a procedure with a known bias toward the treatment arm. Control groups in many studies displayed significant behavioral improvements, a finding suggesting inadequate blinding of the trial, which also generates a bias for the treatment group.

Several studies demonstrated that advice could have efficacy when coupled with drug or surgical therapy: for example, nicotine replacement to reduce cigarette smoking, and surgery to prevent overeating. However, without medical or surgical support, evidence for the efficacy of counseling floundered. Early studies casting doubts on the efficacy of advice without surgical or drug therapy were conducted in a public heath context. These trials involved population studies of people with no clinical evidence of disease. Study participants agreed to enroll in information-based interventions to improve their safety. Trials tested the efficacy of advice to decrease smoking and aggressive driving, or increase the use of seatbelts and biking helmets. The results unambiguously demonstrated that information-based interventions in populations with no clinical evidence of disease and conducted outside established physician-patient relationships afforded no difference in outcomes between the control and counseled subjects.

Trials were initiated based on the hypothesis that ignorance of outcomes, or a lack of education, was a primary cause sustaining risky behaviors. According to the "ignorance hypothesis," people would change their behavior if they understood the likelihood that risky behavior increased the probability of an injury. For example, people who smoked did not understand, and did not appreciate the risk of lung cancer. People who were obese did not know they were at risk of diabetes and heart disease. When it became clear that subjects considered the immediate benefits of their actions to outweigh long-term statistical risks investigators largely

abandoned an "ignorance" hypothesis to justify counseling interventions. A second approach invoked a rational man hypothesis. Although the "rational man" was an economic hypothesis that had been widely discredited by behavioral economics, investigators pressed forward with idea that subjects would respond to increased levels of counseling, better information, and more emphasis on negative outcomes from risky behaviors. Some programs were designed to elicit fear to achieve the desired behavioral change. A small portion of these reports frankly describe a lack of efficacy between the control and intervention arm of the study. The majority describe slight significant differences between the two groups lasting for 6-12 months. None have provided a sustainable therapeutic intervention.

Proponents of using advice as a tool to change human behavior continued to argued, correctly in my opinion, that any new therapeutic intervention would have initial flaws. Moreover, the presence of flaws does not necessarily invalidate the utility of an intervention. The key issue is that even small changes in behaviors leading to lifestyle diseases such as excess drinking and smoking in theory could lead to enormous reductions in chronic diseases. Treatment costs could plummet. Supporters in organized medicine successfully lobbied for more counseling programs and government funding for primary care providers to support the outreach. In 2014, the Affordable Care Act provided funding for counseling programs to combat life style diseases.

Since 1970, more than 10,000 reports have described counseling programs using subjects recruited from hospital or clinic populations. Although a clear physician-patient relationship had not been defined in these populations, it appeared logical to assume the recruits were motivated to prevent illness. Investigators explored methods to reduce or prevent a wide range of behaviors linked to cancer, heart disease, and stroke. The studies used counseling therapy alone and combinations of advice paired with written materials, videos, computer programs, and out-patient phone services. Programs involved brief, 10-15 minute sessions, and longer interventions lasting an hour. Providers included physicians, nurses, allied health personnel, and peer-to-peer counselors. Study centers have included hospitals and clinics in urban, suburban, and rural environments. Interventions have targeted children, teenage, adult, and senior populations. While these programs demonstrated that counseling led to more awareness of the risk of injury, they provided little evidence that advice led to a change in behavior.

Discussion

Why has progress been so slow? Proponents of advice-based therapies may object to the question by noting that progress in designing therapeutic-counseling interventions has been no slower than efforts to design drug therapies for breast cancer or sickle cell anemia. This argument assumes we know as much about the mechanisms of advice and human motivation as we do the pharmacology of drugs. Indeed, little is known about how information transferred in counseling translates into a change of behavior.

Although more research is needed to understand the process underlying behavioral change, it is equally important to focus on interventions that have resulted in documented and sustained risk reduction outcomes. Injury control experts classify these approaches into methods that shield people from harm. One example is the success of using taxes to reducing smoking. By increasing the costs of tobacco, it is more expensive for adolescents to start smoking. This decline has significantly reduced smoking rates in teenagers and adults. Seat belt usage in the United States increased dramatically with the advent of seatbelt laws and "click it or ticket" public information programs. Head injuries from bicycle and motor cycle crashes decreased with the passage of laws requiring helmet use. Laws preventing smoking in public places have decreased smoking rates and decreased the incidence of disease from second hand smoke. Public health programs providing birth control devices to women at risk of pregnancy appear to have played a major role in preventing unwanted births.

Can information-only programs change behavior? Proponents insist it is important to do more research. But without a theoretical foundation for applying a therapy, or understanding how it works, it is difficult to understand how investigators can achieve Institutional Review Board approvals to conduct trials. The theory that advice can't hurt is a myth. The idea that something is harmless also means it is worthless, and worthless therapies can be harmful.

Conclusion

More than forty years of research using randomized controlled trials testing the efficacy of advice to change human behavior have illustrated that counselling or advice alone has little efficacy. Funding policies for counseling programs should be examined to determine the appropriate allocation of resources.