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Review

Use of group-randomized trials in pet population research

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Abstract

Communities invest considerable resources to address the animal welfare and public health concerns resulting from unwanted pet animals. Traditionally, research in this area has enumerated the pet-owning population, described pet population dynamics in individual communities, and estimated national euthanasia figures. Recent research has investigated the human–animal bond and explored the community implications of managed feral cat colonies. These reports have utilized traditional epidemiologic study designs to generate observational data to describe populations and measure associations. However, rigorous scientific evaluations of potential interventions at the group level have been lacking. Group-randomized trials have been used extensively in public health research to evaluate interventions that change a population's behavior, not just the behavior of selected individuals. We briefly describe the strengths and limitations of group-randomized trials as they are used to evaluate interventions that promote social and behavioral changes in the human public health field. We extend these examples to suggest the appropriate application of group-randomized trials for pet population dynamics research.

Keywords: Group-randomized trial; Pet overpopulation; Study methodology

1. Introduction

Unwanted pets are a widely recognized problem in the United States that is associated with considerable animal welfare and public health concerns. The common means by which

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communities manage the problem of unwanted pets is with animal shelters. Shelters serve to reunite owners with lost pets, find unclaimed animals new homes, or euthanize unwanted animals. Today, there is a major movement among animal sheltering groups to reduce or eliminate the euthanasia of healthy, adoptable animals in shelters and to identify means to increase adoptions (Rowan and Williams, 1987). It appears that some success in reducing euthanasia in shelters has been achieved. Annual euthanasia numbers have declined from an estimated 13.5–18.6 million dogs and cats in the 1970s to the most recent national estimates of 4–6 million dogs and cats (Rowan and Williams, 1987; Nassar et al., 1992; Arkow, 1994; Irwin, 2001). Despite this progress, a large number of unwanted dogs and cats continue to be euthanized in shelters each year, demanding further investment of resources and need for better solutions.

The academic research community has also invested resources to better understand pet population dynamics. In the 1970s, the major focus of research was on the basics of trying to enumerate the pet-owning population, describe the pet population dynamics in several communities, and estimate national euthanasia figures (Schneider and Vaida, 1970; Franti and Kraus, 1974; Griffiths and Brenner, 1976; Nassar and Mosier, 1980, 1982, 1986; Nassar et al., 1984). National humane groups such as the American Humane Association and the Humane Society of the United States also invested resources in trying to estimate the number of animal shelters and national euthanasia figures (Rowan and Williams, 1987; American Humane Association, 1992). These early efforts faced many obstacles, primarily the lack of a census for the pet-owning community and the lack of an accurate list for the number of animal shelters in the United States. These problems remain today.

Since the 1990s, the focus of pet population dynamic research (called by many ‘‘pet overpopulation’’ research) has shifted to attempt to better understand reasons for owner relinquishment of pets resulting from the breakdown of the human–animal bond, factors associated with successful adoptions, evaluation of the health effects of early age spay-neuter and the implications of the increasing feral cat population (Patronek et al., 1996a,b; Salman et al., 1998, 2000; Scarlett et al., 1999; New et al., 2000; Hughes et al., 2002; Hughes and Slater, 2002; Levy et al., 2003; Spain et al., 2004a,b). Much of this research has utilized basic epidemiological study designs including cross-sectional studies, case–control studies, and retrospective cohort studies. This era of research has made a tremendous contribution toward a better understanding of the factors associated with overpopulation and has laid the groundwork for further advancement.

Although basic epidemiologic data have been generated and reported, studies of population interventions to reduce pet overpopulation are sparse. Few reports of rigorous scientific evaluation of interventions such as the use of individual randomized trials and group-randomized trials have been reported. Just as individual randomized trials are considered the ‘‘gold standard’’ for studies to evaluate interventions at the individual level, group-randomized trials (GRT) are considered the ‘‘gold standard’’ for evaluation of interventions delivered at the group level. Group-randomized trials have been used extensively in public health research to evaluate interventions that change a population’s behavior not just the behavior of selected individuals. The value of group-randomized trials is their effectiveness in evaluating population-level strategies that seek to change the social norm for a particular behavior. Although increasing the use of individual randomized trials would be of benefit in pet population research, their techniques are well described in the veterinary literature and will not be discussed further in this paper. Despite being used commonly in public health research, group randomized trials have not been utilized in companion animal research and will be the focus in this manuscript.