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Appropriate antibiotic use: variation in knowledge and awareness by Hispanic ethnicity and language

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Abstract

Background. Recent campaigns are informing the public that antibiotics are inappropriate for viral respiratory infections. As little is known about their effect on populations challenged by less access to care, lower education, low income, low English proficiency, or non-mainstream cultural backgrounds, this study assessed knowledge, attitudes, and awareness in an ethnically diverse community.

Methods. A telephone survey in English or Spanish of a cross-sectional, random sample of 692 non-Hispanic whites (NHWs) and 300 Hispanics in Colorado.

Results. For all respondent groups, knowledge of appropriate antibiotic use for colds and bronchitis was low. Hispanics surveyed in Spanish, compared with non-Hispanic whites, had significantly lower knowledge about antibiotics for colds, higher knowledge for bronchitis, lower awareness about antibiotic resistance, and greater dissatisfaction if an antibiotic were not prescribed. In all comparisons, English-language Hispanics tended to reflect non-Hispanic white response patterns. Independent predictors of awareness were ethnicity, education, and age. Independent predictors of dissatisfaction were ethnicity, knowledge about antibiotic use for colds, and bronchitis. Ethnicity was an independent predictor of knowledge about the inappropriateness of antibiotics for colds and bronchitis.

Conclusions. To bridge knowledge gaps, educational campaigns for all segments of the population are needed. Content should be responsive to heterogeneity within populations.

Keywords: Antibiotic resistance; Hispanics; Prevention; Health communication; Health education; Respiratory infections

Introduction

Community-acquired infections caused by antibiotic-resistant microbes are a major and growing threat to public health both in the United States and globally [1–5]. To help reduce the rate of antibiotic-resistant infections, there is an urgent need to curb excess antibiotic use in ambulatory practice [6–8]. Acute respiratory tract infections (ARIs) account for approximately 50% of the antibiotics prescribed in community settings (Source: National Ambulatory Medical Care Survey, 2001), and over half of the antibiotics prescribed for these infections are likely unnecessary [7]. In response, national and international campaigns are promoting judicious antibiotic use, particularly for ARIs [9–13].

Patients frequently expect antibiotics when they seek medical care for ARIs [14–22]. Studies show that patients' and parents' expectations (explicit or perceived) are the strongest impetus for prescribing antibiotics when they are not necessary, despite patients' pervasive lack of knowledge about appropriate antibiotic use for respiratory infections [21–27]. Intervention studies have shown that education programs targeting physicians alone are rarely effective, whereas comprehensive programs addressing physician, patient, and system factors can significantly reduce antibiotic use in ambulatory practice [13,14].

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There is a great need to extend public and patient education efforts from the office-based medical practice to the community [20,28,29]. Community level approaches are less costly than patient-centered approaches, and have the potential to reach a broader population, raise general awareness of the issue, and shape social norms around antibiotic use [30]. To the extent that antibiotics are prescribed in response to patient demands, greater patient awareness should lead to less pressure on providers to prescribe antibiotics when they are not indicated, which should contribute to fewer prescriptions, and ultimately, fewer antibiotic resistant infections.

Multifaceted educational strategies show great promise in reducing inappropriate antibiotic use, but their effectiveness may differ with different populations. Access to care, language, literacy, and cultural factors compromise the receipt and acceptance of messages. Sociocultural and economic factors underlie cross-national differences in expectations, access to medications, and prescribing patterns [31–36]. Little is known about the effect of antibiotics-related health campaigns on populations within the United States that are challenged by less access to care, lower education, low income, low English proficiency, or non-mainstream cultural backgrounds. These populations have not yet been specifically targeted in appropriate antibiotic use campaigns [37].

The Minimizing Antibiotic Resistance in Colorado (MARC) project is developing, implementing, and evaluating community education and awareness interventions to reduce unnecessary antibiotic use [38]. Supported by the Agency for Healthcare Research and Quality (AHRQ), with additional support from the Centers for Medicaid and Medicare Services (CMS), and the Centers for Disease Control and Prevention (CDC), two segments of Colorado's general population are being targeted: the general population of non-Hispanic whites (NHW) and the Hispanic–Latino population (called Hispanics here).

This article highlights sociocultural factors that influence the design and receipt of campaign messages by examining relationships among ethnicity, primary language use, and antibiotic-related knowledge, attitudes, and awareness. We describe baseline levels, and identify predictors, of knowledge and attitudes about appropriate antibiotic use, and awareness of the problem of antibiotic resistance, among Hispanics and NHW in Colorado.

Methods

Cross-sectional data from NHW and Hispanic–Latino respondents to telephone surveys in metropolitan areas of Colorado were collected and analyzed. Study protocols including instruments and procedures were reviewed and approved by the Institutional Review Boards of the University of Colorado at Denver and the University of California, San Francisco.

Survey instrument

Major domains of the survey included knowledge of appropriate antibiotic treatment for colds and bronchitis, attitudes about not receiving antibiotics when they are expected, awareness about antibiotic resistance, and respondent demographics. Questions were largely derived from instruments used in previous studies and modified based on input from the MARC Scientific Advisory Board and pretest results [39,40]. Spanish translation of the survey was performed by bilingual survey specialists at Quantum Consulting, Inc., Berkeley, CA, and then back-translated by bilingual MARC staff (Corbett and Gonzales) and pilot tested. Assessment of reading level, using Microsoft WORD and consultation with a reading specialist, assisted in development of items readily comprehensible to persons with little formal education.

Questions to assess knowledge about appropriate antibiotic use were, "How often are antibiotics needed for the common cold?" and "How often are antibiotics needed for bronchitis?" Likert-scale responses for these items were *always*, *sometimes*, *seldom*, and never. Awareness about antibiotic resistance was assessed with the item, "Some germs are becoming harder to treat with antibiotics." Patient dissatisfaction if an antibiotic is not prescribed was measured from the item, "If I visit a doctor for bronchitis and do not get antibiotics, I will be dissatisfied." Response options for the awareness and dissatisfaction items were *strongly agree*, *somewhat agree*, *somewhat disagree*, and *strongly disagree*.

Sociodemographic variables included age, gender, education, total household income, health insurance, and number of children under 5 years old. An item about internet access at home was included as an indicator of information access. Race or ethnicity was reported in standard census categories. The language variable was defined by the respondent's choice of English versus Spanish for the survey response.

Data collection

The surveys were performed during two consecutive winters by Quantum Consulting, Inc. in English and Spanish using a computer-aided telephone interviewing (CATI) system. The initial statements were made in English, but Spanish was offered if the person on the phone appeared to have low English proficiency. The interviewer asked to speak with an adult member of the residence who was 18 years of age or older. In addition to programming response ranges and consistency checks into the CATI system, to reduce the probability of coding error by interviewers, quality control methods included ongoing monitoring and training as well as data entry and editing checks. Survey personnel were trained by Quantum Consulting, Inc., on building rapport with respondents, methods to avoid interviewer bias, reading questionnaire items