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Availability of Antibiotics without Prescription in New York City

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ABSTRACT *Misuse of antibiotics in the community has been associated with emergence of increasingly antibiotic-resistant bacterial strains. Although antibiotics in the United States are to be prescribed by a health care provider, the extent to which they are obtained by other means is not known. The purpose of this article is to describe a survey of the availability of nonprescription antibiotics in neighborhood independent businesses in several Manhattan, New York, neighborhoods. A survey was conducted of 101 stores in three neighborhoods—one primarily Hispanic; one primarily black, non-Hispanic; and one primarily white, non-Hispanic. Antibiotics were available in all stores in the Hispanic neighborhood (n=34), but in none of the others (P < .001). If efforts to rationalize the use of antibiotics are to be successful, the beliefs and cultural norms of subpopulations must be considered, and interventions must be culturally relevant.*

KEYWORDS *Antibiotics, Antimicrobial resistance, Infection prevention.*

INTRODUCTION

As a result of reports of community-acquired outbreaks and infection with resistant bacterial strains previously isolated almost exclusively among hospitalized or chronically ill patients,[1–7] there is increasing concern about the emergence of antibiotic resistance within the community. Although not all community cases can be explained by known risk factors, the misuse or overuse of antibiotics is one clearly established causal association.[8,9] In fact, the World Health Organization has stated that high priority should be given to interventions in the general community that can eliminate risk factors for resistance, such as misuse of antibiotic agents.[10]

Because of varying cultural beliefs and ease of obtaining antibiotics over the counter in other countries, it is likely that patterns of antibiotic use differ among new immigrants to the United States. In a survey of a predominantly Latino, new immigrant neighborhood in northern Manhattan, New York, we noted a high prevalence of antibiotic use,[11] but did not query respondents regarding where or how they obtained the antibiotics. We were particularly interested in determining the ease with which antibiotics could be obtained without prescription in various neighborhoods in the same metropolitan area. Hence, the purpose of this article is to describe a survey of the availability of nonprescription antibiotics in neighborhood independent businesses in several Manhattan neighborhoods.

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METHODS

Sample and Setting

Three neighborhoods in Manhattan were surveyed. The first was a predominantly Hispanic neighborhood (74.1%) with a population of about 208,000 and 33.1% receiving some type of public assistance. The total land area is 2.9 square miles. In a recent survey, we found that about 50% of residents were born outside the United States, the majority in the Dominican Republic.[11,12] The majority of housing units were rented (93.5%) households with two or more persons (72.9%); 74.2% of the population were 18 years and older.

The second neighborhood was predominantly black, non-Hispanic (77.3%), with a population of about 107,000; 33.3% were receiving public assistance. The total land area is 1.4 square miles. The majority of housing units were rented (93.4%) households with two or more persons (57.5%); 72.4% of the population were 18 years and older.

The third neighborhood is 66.3% white, non-Hispanic with a population of about 208,000; 9.4% were receiving public assistance. The land area is 2.1 square miles. The majority of housing units were rented (71.7%) households with one person (52.2%); 86.5% of these people were older than 18 years. This was a more affluent and Caucasian neighborhood than the other two. (Demographic data from Web site of New York City Department of City Planning, http://home.nyc.gov/html/dcp/html/lucds/cdstext.html, accessed August 2003). Although the demographic profiles of these three neighborhoods varied, they were located within 3 miles of each other.

All private, independent pharmacies, grocery stores, delicatessens, bodegas (if any medications were also sold), and botanical or health food stores in 30 blocks of the major commercial areas of each neighborhood were surveyed. Stores that were part of large pharmacy or grocery chains were not surveyed.

Procedure

The study was reviewed by the Columbia University Medical Center institutional review board and determined to have exempt status. Three surveyors, all with health care experience, were trained and versed in the generic and brand names of common antibiotics. Each surveyor was a young woman of the same ethnic/racial group as the majority population in each neighborhood: Hispanic, black, or white, non-Hispanic. The surveyor entered the store and looked for antibiotics on the shelf. If any were available on the shelf, she left and recorded the name of the antibiotic available.

If no antibiotics were visible on the shelf, the surveyor asked the store attendant, "Do you have an antibiotic that I could buy?" If the attendant answered in the affirmative, the surveyor asked to see the antibiotic and thanked the attendant saying that she would decide later whether to buy it. If the attendant said "No" or stated that a prescription was necessary, the surveyor asked, "Do you have a suggestion about what I could buy without a prescription for a sore throat?" to confirm whether an antibiotic would be offered.

Data Analysis

Data were entered into the SPSS statistical package (Chicago, IL). Descriptive statistics were compiled, and Kendall's tau-b analyses were conducted to compare neighborhoods.

RESULTS

We surveyed a total of 101 stores: 34 in the primarily Hispanic neighborhood, 37 in the predominantly black neighborhood, and 30 in the primarily white neighborhood (Table). The majority of businesses (88 or 87.1%) were independent grocery stores/delicatessens or bodegas; 10 (9.9%) were independent pharmacies; and 3 (3%) were health food stores or botanicals. In 7/34 (20.6%) of stores in the Hispanic neighborhood, antibiotics were available on the shelves and were available on request in all other stores. Antibiotics offered included ampicillin (26/34 or 76.5%); ampicillin and tetracycline (2/34 or 5.9%); ampicillin and erythromycin; amoxicillin (2/34, 5.9%); or erythromycin (1/34, 2.9%). Antibiotics were offered as single doses individually wrapped and in larger quantities. Surveyors were unable to obtain antibiotics in the other two neighborhoods, although one shopkeeper referred the surveyor to the Hispanic neighborhood.

DISCUSSION

Although antibiotics, when appropriately used, represent a major medical advance in the treatment of infectious diseases, their misuse is common. A sizable proportion of antibiotic prescribing, for example, is for upper respiratory infections likely of viral origin,[13,14] as confirmed in our recent survey.[11] Despite campaigns during the 1990s and into the present by many organizations (Centers for Disease Control and Prevention, American Academy of Pediatrics, Alliance for the Prudent Use of Antibiotics), data from the 1992–2000 National Ambulatory Medical Care Survey, a national probability sample survey of office-based physicians, indicated that, although the number of antibiotic prescriptions declined, there were increases in prescribing of certain broad-spectrum antibiotics. Further, the prescribing rates declined only in the physician's office, but there was an increasing trend in outpatient departments (+35%, $P = .002$).[15] As many as 20%–50% of antibiotic prescriptions in community settings are considered unnecessary,[16] and in a sample of pediatricians, prescribing patterns have been associated with physicians' perceptions of parental expectations for antimicrobials.[17]

Prescription patterns, however, represent only a proportion of antibiotic use. In a survey of 1,363 patients seen in an emergency department in New Jersey, 43% admitted to using oral antibiotics during the previous year, and many had taken "leftover" antibiotics without consulting a physician.[18]

Antibiotic prescribing and use patterns are markedly different in much of the developing world compared with the United States. In a recent survey of 5,379 persons

TABLE. Neighborhood survey of availability of antibiotics without a prescription

	Neighborhood		
	Primarily Hispanic	Primarily Black, non-Hispanic	Primarily white, non-Hispanic
Available on shelf	7/34 (20.6%)	0/37	0/30
Available if requested	23/27 (85.2%)	0/37	0/30
Recommended for sore throat	3/4 (75%)	0/37	0/30
Total stores in which antibiotic available	34/34 (100%)	0/37	0/30

Kendall's tau-b $P < .001$.

in nine countries (United Kingdom, France, Belgium, Italy, Spain, Turkey, Thailand, Morocco, Columbia), all reported that it was possible to get antibiotics without a prescription, and about 25% saved antibiotics for future use. Most respondents believed that antibiotics were necessary for most respiratory infections.[19]

In a review of socioeconomic and behavioral factors leading to acquired antibiotic resistance in developing countries, Okeke et al.[20] concluded that misuse of antibiotics by the public and by unskilled practitioners is a major cause for the global emergence of resistance. For example, few antibiotics were prescribed by physicians, antibiotics could be obtained in small quantities and subinhibitory doses, and common cultural beliefs about antibiotics included the notion that there is a "pill for every symptom."[20–22] Traditional healers and other lay practitioners often dispense antibiotics.[23,24] Kunin and Liu[25] reported a high frequency of antibiotic use among community members in Taiwan and found an association between recent use of antimicrobial drugs and delayed or missed diagnoses. They noted that "these findings reflect inherent social, economic, and cultural problems" in this society.

Few data are available specifically about antibiotic use patterns, attitudes, knowledge, and beliefs in the Spanish-speaking world. In a survey conducted a decade ago of 1,659 households in a periurban community of Mexico City, Mexico, it was reported that in only 5% of diarrheal episodes treated with antibiotics were they actually indicated,[26] and self-medication and drug purchases without physician order were common.[27] As in the United States, physician overprescribing for acute respiratory symptoms was common in Spanish emergency rooms; the percentage of inappropriate prescriptions was 34.7% for nonspecified acute respiratory infections in 11 hospitals.[28,29]

The extent to which these same factors are present among Hispanics recently immigrated to the United States is unknown. Although one group of investigators found that Hispanic ethnicity was not associated with antibiotic prescription rates,[13] we have previously reported high rates of antibiotic use[11,12] and more resistant isolates among those from Latin America.[30] During an outbreak of antimicrobial-resistant shigellosis in Oregon, young children and Hispanics were at highest risk.[31] Similarly, among individuals with drug-resistant tuberculosis along the Mexico–Texas border, being foreign born was a significant risk factor.[32] McKee et al. reported that persons from countries where antibiotics were readily available over the counter were more likely to use antibiotics not prescribed by clinicians; about one fourth of 192 persons surveyed in an ethnically diverse urban community in New York City obtained antibiotics from sources other than prescription.[33]

Hispanics are the fastest-growing ethnic group in New York City. Their numbers increased 36% between 1980 and 1990, and this rapid growth has continued over the last decade, with a proliferation of subgroups centering around specific New York City communities.[34] In the study neighborhood, 26% of household do not speak English, and the rate of reportable infectious diseases are substantially higher than in the rest of the city; these diseases include tuberculosis, chlamydia, syphilis, typhoid fever, and cryptosporidiosis (New York City Department of Health, http://www.nyc.gov/html/doh/pdf/data/2000nhp-manhattanj.pdf, accessed September 2003). In many Hispanic subcultures, Western medicine is not fully trusted, and folk remedies and healers play a more central role in treating illnesses.[35–37]

There are over 7,000 bodegas in New York State alone; these employ about 35,000 persons (http://www.bodegaassociation.org/). Because there were no differences in the types of stores (i.e., small, independent, single-owner businesses) surveyed

in the three neighborhoods, the ready availability of antibiotics without prescription in the primarily Hispanic neighborhood in New York City no doubt reflects the beliefs, practices, perceived needs, and demands of the community and may reflect the fact that many recent immigrants do not have ready access to the "formal" health care system. Clearly, if efforts to rationalize the use of antibiotics are to be successful, the beliefs and cultural norms of subpopulations must be considered, and interventions must be culturally relevant. We strongly urge that further research be conducted to better understand antibiotic use patterns and beliefs among the Hispanic population and other cultural groups and/or new immigrants.

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