Utilization and purchase of medical care services in Mexico by residents in the United States of America, 1998–1999

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Suggested citation Escobedo LG, Cardenas VM. Utilization and purchase of medical care services in Mexico by residents of the United States of America, 1998–1999. Rev Panam Salud Publica. 2006;19(5):300–5.

ABSTRACT

Objectives. *We assessed self-reported frequency of purchase of medications and medical care services in Mexico by southern New Mexico (United States, [U.S.]) residents in relation to their medical insurance coverage.*

Methods. *We analyzed data obtained in 1998 and 1999 from a health interview survey of residents in a six-county region of southern New Mexico, using prevalence and logistic regression methods for complex survey data.*

Results. *About 22% of southern New Mexico residents had purchased medications and 11% had sought medical care in Mexico at least once during the year preceding the survey. When we adjusted for the effects of other variables, persons able to pay for services out of pocket and those who were uninsured were more likely than persons who were fully covered to purchase medications or medical care in Mexico.*

Conclusions. *Large numbers of people residing near the border in New Mexico traveled south to Mexico to purchase medications and medical care. Lack of medical insurance was associated with higher frequencies of these purchases. There seems to be a need to establish relationships between U.S. private and public care plans and Mexican medical care providers to identify appropriate mechanisms for U.S. residents to purchase medical care in Mexico.*

Key words Health services, medications, surveillance, utilization, Mexico.

The United States of America (U.S.), unlike some industrialized countries, lacks a coordinated medical care system (1). The U.S. medical care system relies on service delivery from private medical care providers and health plans through a variety of financial arrangements, including government assistance programs for the poor, the elderly, and the disenfranchised. Despite these programs and the use of advanced medical technology, lack of medical insurance presents a formidable barrier for more than 40 million people who need basic medical care (2).

Near the U.S.-Mexico border, the two medical care systems in the respective countries operate in the context of different economies, cultures, and medical system infrastructures. The U.S. medical care system enjoys greater depth and coverage, whereas the Mexican medical care system must serve a sizable population with fewer resources (3). Notwithstanding these disparities, the U.S.-Mexico border represents a "buffer zone" between the two countries with regard to their respective medical care systems. Compared to the rest of Mexico, the wealthier northern Mexican states are able to provide greater medical coverage through a mix of subsidies and health

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maintenance arrangements supported by the federal government (3) and complemented by the private sector and workers' contributions. Medical institutions in Mexico tend toward diversity in their mission, as exemplified by the roles of community pharmacies and the Mexican Red Cross, which provide great amounts of primary care for common ailments and injuries, respectively. Nontraditional medical providers such as herbalists, lay providers and folk healers also figure prominently in Mexican society (3). Because the U.S. side of the border is economically depressed (4), with nearly one in every three persons lacking medical insurance and many others underinsured (2), hospitals and other medical institutions report financial difficulties (5). Cross-border utilization of medical and related social services thus presents a viable alternative for U.S. residents who face barriers in their home country and are drawn to alternative sources of care available abroad in not-so-distant Mexico.

It has long been assumed that Mexican residents cross the border north to receive free medical care in the U.S. (5). However, the overwhelming majority of Mexican border residents receive care in their own country (6), and illegal residents of Mexican origin experience difficulties in obtaining medical care in the U.S. (6–11). There are data that document medical care utilization by U.S. residents who travel to Mexico to purchase such care (7–11). One could posit that the availability of lower cost services in Mexico is a powerful incentive for U.S. residents regardless of their ability to speak Spanish. Additionally, for U.S. monolingual Spanish speakers who seek culturally appropriate services, care by Mexican providers probably offers additional incentives. To measure medical care utilization in Mexico by New Mexico residents, we obtained information about the purchase of medications and medical care in relation to their medical insurance coverage. In this report, we tested the hypothesis that U.S. residents without medical insurance were more likely than other residents to purchase medical services in Mexico.

MATERIAL AND METHODS

Data source and population

The New Mexico Border Environmental Health Survey was carried out from June 1998 through May 1999 with a total of 781 adults 18 years of age or older residing in six counties immediately adjacent to or within 100 kilometers (60 miles) of the U.S.-Mexico border (4). We used multistage cluster sampling with census blocks within all census tracts in the region as the primary sampling units, followed by secondary random selection of housing units within these blocks. Within each housing unit a single respondent was chosen at random. Interviewers trained to ensure adherence to quality control procedures administered the survey questionnaire face to face in English or Spanish. The response rate was slightly greater than 70%. Data were weighted for the probability of respondent selection at all three stages of randomization, and adjusted to reduce undercoverage and nonresponse bias to reflect the age and gender composition of the New Mexico border region population.

Sociodemographic characteristics of the population sample showed a nearly even split by gender and ethnicity (Hispanic vs. non-Hispanic). About one in every three respondents was between 18 and 34 years of age, one in every five had less than a high school education, and one in every four earned an annual income of less than US$15 000 (4).

Definitions

Respondents were asked the following questions:

"During the past 12 months, was there any time that you did not have any health insurance or coverage?"

"Was there a time during the last 12 months when you needed to see a doctor but could not because of the cost?"

"In the last year, how often did your household buy any medications in Mexico?"

"How many times in the last year did you seek medical care in Mexico?"

Persons were considered to have full health coverage if they reported having medical insurance and not having any difficulty seeing a doctor because of cost. Persons who lacked medical insurance but had no difficulty seeing a doctor because of cost were considered able to pay for services out of pocket. Persons who had medical insurance and had difficulty seeing a doctor because of cost were considered underinsured. Persons who lacked medical insurance and had difficulty seeing a doctor because of cost were considered uninsured.

Statistical analysis

Prevalence and logistic regression analyses were conducted with the complex survey design of the SAS SUDAAN software package, version 8.0 (Research Triangle Institute, Research Triangle Park, North Carolina, U.S.). We calculated the prevalence of purchase of medications and medical care by population subgroup, and the prevalence ratios between subgroups. We used logistic regression procedures to determine the relationship between purchase of medical services (medications and medical care) and medical insurance coverage while adjusting for the effect of sociodemographic variables. The model odds ratios calculated were then converted to prevalence ratios with a formula developed by Zhang and Yu (12). Compared to the odds ratio, this prevalence ratio measures more accurately the strength of association for high-frequency outcomes such as those observed in this study. However, McNutt and colleagues have shown that this estimate can introduce some degree of bias, so they recommend use of a ratio of the probabilities predicted from logistic regression models for greater accuracy (13). We compared estimates obtained from logistic regression analyses with the Zhang and Yu method and the ratio of the predicted probabilities of McNutt and coworkers, and found estimates to be in agreement. We used the likelihood ratio test to evaluate trends in pur-

chase prevalence according to level of medical insurance coverage on an ordinal scale.

RESULTS

Of all New Mexico border residents in this survey, 22.1% traveled to Mexico to purchase medications and 11.2% to receive medical care (see overall totals in Tables 1 and 2). Although there were variations in medication purchases between subgroups, only variations by ethnicity and medical insurance status were statistically significant after adjustment for other variables (Table 1). Hispanic Americans were 70% more likely than non-Hispanic participants to make these purchases. Purchase rates increased with decreasing medical insurance coverage and ability to pay. Those who lacked health insurance and had difficulty paying for services (uninsured) were most likely to purchase medications in Mexico. Persons who had medical insurance but had difficulty paying for services (underinsured) had the next highest purchase level, followed by those who lacked insurance but had no difficulty paying for services (self pay), and the lowest purchase level was found for persons who had insurance and no difficulty paying for services (full coverage).

TABLE 1. Purchase of medications in Mexico according to demographic and socioeconomic characteristics, New Mexico Border Environmental Health Survey, 1998–1999

Characteristic	Purchase of medications in Mexico: Prevalence (%)[c]	Purchase of medications in Mexico: Subtotal[d]	Prevalence ratio[a]	95% confidence interval	Adjusted prevalence ratio[a,b]	95% confidence interval
Age (years)						
18–34	51 (20.2)	203	1.1	(0.6–1.6)	0.8	(0.5–1.3)
35–55	75 (26.4)	284	1.4	(1.4–1.8)	1.0	(0.6–1.5)
55+	57 (19.1)	288	1	Referent	1	Referent
Gender						
Male	66 (20.7)	308	1	Referent	1	Referent
Female	117 (23.5)	467	1.1	(0.8.–1.7)	1.1	(0.7–1.6)
Education						
<High school	54 (28.9)	192	1.4	(1.0–2.1)	1.1	(0.7–1.7)
High school+	129 (20.2)	583	1	Referent	1	Referent
Ethnicity[e]						
Non-Hispanic	84 (17.4)	412	1	Referent	1	Referent
Hispanic	98 (28.1)	355	1.6	(1.1–2.3)	1.7	(1.1.–2.6)
Estimated annual income[f]						
<US$15 000	45 (21.1)	200	0.9	(0.6–1.4)	0.5	(0.3–0.9)
US$15 000–US$24 999	54 (27.0)	177	1.2	(0.7–1.8)	0.7	(0.5–1.2)
≥US$25 000	74 (22.1)	335	1	Referent	1	Referent
Medical insurance						
Full coverage	102 (17.4)	545	1	Referent	1	Referent
Self pay	34 (25.2)	112	1.5	(0.9–2.2)	1.9	(1.3–2.6)
Underinsured	13 (30.0)	40	2.0	(1.0–2.8)	2.7	(0.9–2.9)
Uninsured	34 (45.3)	78	2.6	(1.7–3.6)	3.0[g]	(2.2–3.8)
Overall	183 (22.1)	775				

[a] Prevalence ratio of the subgroup divided by that of the reference subgroup.
[b] Ratio adjusted for other characteristics shown in the table.
[c] Percentages are weighted for the probability of selection and adjusted by age and gender.
[d] Excluding data for 6 participants (total survey sample = 781) for whom no data were available for the purchase or insurance variables.
[e] Data for ethnicity were missing for 8 participants.
[f] Data for family income were missing for 63 participants.
[g] Trend in graded increase in purchase rates was statistically significant ($P < 0.001$).

There were variations in the utilization of medical care in Mexico among subgroups (Table 2). However, only variations by ethnicity and medical insurance status were statistically significant after adjustment for other variables. Hispanic Americans were nearly twice as likely as other persons to obtain medical care services in Mexico. With decreasing insurance coverage and ability to pay for medical services, utilization rates for medical care services in Mexico increased. Persons who lacked medical insurance and had difficulty paying for medical services (uninsured) were six times as likely, and persons who had medical insurance but had difficulty paying for medical services (underinsured) were three times as likely to use medical care services in Mexico as persons who had medical insurance and no difficulty paying for services (full coverage).

DISCUSSION

We found that 22% of New Mexico border region residents purchased medications in Mexico. Factors other than unmet medical need because of lack of medical insurance may help explain these purchases. Lower priced medications in Mexico that resemble prescription drugs marketed in the U.S. are more affordable for border region residents. Additionally, Mexican laws enacted to regulate drug sales are more concerned with the regulation of controlled substances and sedative-hypnotics than with commonly prescribed classes of drugs such as antibiotics and antiinflammatory drugs (14). Because these less regulated drugs, typically sold only by prescription in the U.S., can be sold without a prescription in Mexico, Mexican pharmacies offer greater access (3, 8). For some Hispanic Americans, self-treatment and out-of-pocket medication purchases may represent a continuation of cultural practices common in Mexico (3). Medication purchases may become a norm across generations of U.S. immigrants of Mexican origin or in individuals fully conversant in both cultures who are well informed about price structures in both countries.

We found that 11% of New Mexico border region residents utilize medical services in Mexico. Notwithstanding

TABLE 2. Purchase of medical care services in Mexico according to demographic and socioeconomic characteristics, New Mexico Border Environmental Health Survey, 1998–1999

Characteristic	Purchase of health care in Mexico: Prevalence (%)[c]	Purchase of health care in Mexico: Subtotal[d]	Prevalence ratio[a]	95% confidence interval	Adjusted prevalence ratio[a,b]	95% confidence interval
Age (years)						
18–34	26 (9.1)	203	1.2	(0.6–2.6)	0.7	(0.4–1.2)
35–55	41 (16.2)	284	2.1	(1.4–4.0)	1.3	(0.7–2.2)
55+	22 (7.8)	288	1	Referent	1	Referent
Gender						
Male	30 (9.1)	308	1	Referent	1	Referent
Female	59 (13.2)	467	1.4	(0.7–2.8)	1.1	(0.6–2.0)
Education						
<High school	32 (15.6)	192	1.6	(0.9–2.7)	0.8	(0.3–2.0)
High school+	57 (10.0)	583	1	Referent	1	Referent
Ethnicity[e]						
Non-Hispanic	35 (7.5)	412	1	Referent	1	Referent
Hispanic	54 (16.0)	355	2.1	(1.4–3.2)	2.0	(1.1–3.6)
Estimated annual income[f]						
<US$15 000	28 (16.2)	200	1.7	(0.9–3.1)	1.0	(0.4–2.2)
US$15 000–US$24 999	26 (13.8)	177	1.6	(0.7–2.8)	0.9	(0.5-1.7)
≥US$25 000	32 (8.9)	335	1	Referent	1	Referent
Medical insurance						
Full coverage	42 (6.5)	545	1	Referent	1	Referent
Self pay	14 (11.8)	112	2.0	(0.7–5.9)	1.9	(0.6–5.0)
Underinsured	9 (22.8)	40	3.4	(1.5–6.2)	3.2	(1.4–6.6)
Uninsured	24 (37.3)	78	5.8	(2.8–9.2)	6.1[g]	(2.7–11.2)
Overall	89 (11.2)	775				

[a] Prevalence ratio of the subgroup divided by that of the reference subgroup.
[b] Ratio adjusted for other characteristics shown in the table.
[c] Percentages are weighted for the probability of selection and adjusted by age and gender.
[d] Excluding data for 6 participants (total survey sample = 781) for whom no data were available for the purchase or insurance variables.
[e] Data for ethnicity were missing for 8 participants.
[f] Data for family income were missing for 63 participants.
[g] Trend in graded increase in purchase rates was statistically significant ($P < 0.001$).

the importance of social and marketing factors associated with utilization in Mexico, we know that medical need also plays a role in care-seeking behavior. Persons who use these services probably reside legally in the U.S., since illegal U.S. residents are not allowed re-entry into the U.S. Travel distances between southern New Mexico and points of utilization in Mexico (10), combined with arduous waiting times to cross the international border back into the U.S., suggest compelling personal reasons for using these services. Residents in the U.S. concerned about the high cost of medical services may perceive that medical care in Mexico is a reasonable alternative and that U.S. dollars increase their choices of medical care abroad. Care by traditional and nontraditional medical providers in Mexico may offer additional advantages to New Mexico residents who seek a sense of greater control over their medical problems. Medical care in Mexico may also represent a source of primary, urgent or "specialist" tertiary care, if it is assumed that the condition requires this level of care. Ironically, with a large percentage of medical care costs in Mexico supported through government assistance programs (3), the Mexican government, in practice if not intention, may support medical care for those U.S. residents who request services on the basis of a claim of program eligibility. Because these purchases occur elsewhere in the border region (7–11), purchase patterns reported here are probably border-wide.

Perceptions of care received in the U.S. compared to Mexico may play a role in cross-border purchases. If monolingual Hispanic American clients believe that U.S. medical providers are not bilingual, then they may opt to seek medical care in Mexico. Bilingual Spanish-speaking clients may seek a higher level of communication for personal matters considered sensitive, and therefore choose providers who can appreciate the full range of verbal and nonverbal cues that are part of the medical visit. Hispanic clients may perceive U.S. clinics that rely on support staff for greater efficiency (15) as impersonal and inadequate. Future studies should seek to distinguish the importance of these cultural factors in relation to other factors, such as socioeconomic and medical insurance status, already shown to have a direct role in explaining cross-border utilization.

The slightly higher purchase rate of medications in Mexico by persons in middle income levels may mean that pharmacies are used as a source of primary medical care (7), or to supplement, enhance, or complement services rendered in the U.S. Because one in every four persons who purchase medications is also able to pay for medical care out of pocket, the availability of services for a fee in Mexico probably figures prominently in deciding where to seek and purchase medical care. Persons economically less well off may be more likely to purchase folk remedies (3), which they may consider "medication." The availability of U.S. prescription medications over the counter in Mexico (7, 14) presents hazards that extend far beyond the individual buyer, and this is especially true in the case of overuse of antibiotics as a precursor of drug resistance (16).

It is now several years since the survey our data are based on was completed, and this is a limitation that needs to be taken into account. Changes in the ease of border crossings and in the availability of medications and medical care services in recent years in both countries may have affected cross-border purchase behaviors reported here. The events of September 11, 2001 and increased security

resulted in a 33% reduction in the numbers of passengers entering the U.S. in vehicles at the largest port in the area through 2003 (17). However, crossings in more recent years appear to have returned to pre-2001 levels. We know of no significant expansions in service capacity or innovations in the delivery of medical services in the U.S. border region in recent years, either in the public or private sector. Although plans are under way in Mexico to increase service capacity through the *seguro popular* program, obstacles have raised doubts about its viability and implementation (18). The data regarding trends in border crossings and delivery of medical services near the U.S.-Mexico border suggest that the data on cross-border utilization reported here reflect a continuing pattern.

Because failure to utilize U.S. government assistance programs is relatively common (19, 20), greater efforts are needed to enroll eligible persons and to keep them enrolled (20), especially if English language proficiency is limited (19). Government-funded community health centers provide relief as a "safety net" for U.S. residents, largely the medically indigent, who might otherwise travel to Mexico to receive medical care. For U.S. residents employed in Mexico, assurance of medical care in both countries is a priority, especially to ensure the availability of medical services at the workplace. The need for medical services is also a matter of importance for other U.S. residents who may develop urgent medical conditions while visiting Mexico. This medical need may be significant given the large volume of U.S. tourists and U.S. workers of Mexican origin who visit their families on any given day. In any case, the view of U.S. residents as "purchasers" of medical care services in Mexico demonstrates that border residents make clear choices about where to purchase medical care. Thus there is a real need to establish relationships among U.S. private and public care plans and Mexican medical care providers, in order to identify appropriate mechanisms for U.S. residents to purchase their medical care in Mexico.

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Manuscript received on 27 June 2005. Revised version accepted for publication on 13 March 2006.

RESUMEN

Utilización y compra de servicios médicos en México por personas que viven en los Estados Unidos de América, 1998–1999

Objetivos. Evaluamos la frecuencia con que habitantes del sur del estado de Nuevo México, Estados Unidos, autoinformaron de la frecuencia con que compraban medicamentos y servicios médicos en México y examinamos dicha frecuencia a la luz de su cobertura con un seguro médico.

Métodos. Analizamos los datos obtenidos en 1998 y 1999 mediante una entrevista de salud de residentes de una región de seis condados en Nuevo México, usando métodos de prevalencia y regresión logística para datos de encuesta complejos.

Resultados. Cerca de 22% de los residentes de la parte sur del estado de Nuevo México habían comprado medicinas y 11% habían buscado atención médica en México por lo menos una vez en el transcurso del año que precedió a la encuesta. Cuando se hicieron ajustes en función de los efectos de otras variables, las personas que podían pagar los servicios de su propio bolsillo y las que no tenían seguro eran más propensas a comprar medicinas o atención médica en México que las que tenían cobertura médica completa.

Conclusiones. Muchas personas que habitan cerca de la frontera en el estado de Nuevo México viajaban hacia el sur hasta México para comprar medicinas y atención médica. La falta de seguro médico estuvo asociada con una compra más frecuente de ambas cosas. Parece haber una necesidad de establecer relaciones entre los planes de seguro médico estadounidenses privados y públicos y los proveedores de servicios médicos mexicanos con el fin de identificar mecanismos apropiados para que los residentes de Estados Unidos puedan comprar atención médica en México.

Palabras clave Servicios de salud, medicamentos, vigilancia, utilización, México.