Direct-to-Consumer Pharmaceutical Advertising

Physician and Public Opinion and Potential Effects on the Physician-Patient Relationship

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Background: Previous studies have shown that direct-to-consumer (DTC) pharmaceutical advertising can influence consumer behavior and that many physicians have negative views of these advertisements. Physician and public opinions about these advertisements and how they may affect the physician-patient relationship are not well established.

Methods: Mail survey of 523 Colorado physicians and 261 national physicians and telephone survey of 500 Colorado households asking respondents to rate their agreement with statements about DTC advertising.

Results: Most physicians tended to view DTC advertisements negatively, indicating that such advertisements rarely provide enough information on cost (98.7%), alternative treatment options (94.9%), or adverse effects (54.8%). Most also believed that DTC advertisements affected interactions with patients by lengthening clinical encounters (55.9%), leading to patient requests for specific medications (80.7%), and changing patient expectations of physicians' prescribing practices (67.0%). Only 29.0% of public respondents agreed that DTC advertising is a positive trend in health care and 28.6% indicated that advertisements make them better informed about medical problems; fewer indicated that advertisements motivated them to seek care (10.5%) or led them to request specific medications from their physicians (13.3%).

Conclusions: Most physicians have negative views of DTC pharmaceutical advertising and see several potential effects of these advertisements on the physician-patient relationship. Many public respondents have similarly negative views, and only a few agree that they change their expectations of or interactions with physicians. While these advertisements may be influencing only a few consumers, it seems that the impact on physicians and their interactions with patients may be significant.

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public and personal health awareness remain unestablished. Critics argue that DTC advertisements may provide incomplete and biased information, lead to inappropriate prescribing, and consume valuable time during the physician-patient encounter. Proponents and critics tend to agree that DTC advertising is likely to increase prescription drug use and cost.

Previous studies have shown that DTC advertisements do influence consumer and physician behavior and have clearly demonstrated that such advertisements motivate discussions between patients and physicians and generate requests for prescriptions, implying a potentially significant impact on the physician-patient relationship. A recent national survey by the Kaiser Family Foundation found that 30% of adults have inquired about an advertised drug with their physician, and 44% of those actually reported receiving the requested prescription. Other studies have shown that patients who receive more exposure to DTC advertisements tend to request advertised drugs and that the drugs are frequently prescribed despite physician reservations. Lipsky and Taylor reported that 71% of family physicians surveyed felt pressured by patient requests to use drugs that they would not ordinarily use.

Direct-to-consumer advertising also influences physician and patient satisfaction with the clinical encounter. Most physicians have tended to view DTC advertisements negatively, expressing concern with such issues as the promotion of biased medical information, increased visit inefficiency/deliberation patient visits, and the increase of inappropriate prescribing practices. A possible negative effect on patient satisfaction has also been demonstrated in a hypothetical scenario survey, which reported that 46% of patients would be disappointed if they failed to receive a requested prescription and 25% anticipated that they would attempt to change their physician’s mind.

There is little information directly comparing physician with public attitudes regarding DTC advertisements and their potential influence on the relationship between physicians and patients. Our study sought to further examine and compare how physicians and the public view these advertisements in general and to investigate more specific effects they may have on the physician-patient relationship.

METHODS

PARTICIPANTS

We conducted a mail survey of 1000 Colorado physicians, randomly selected from the Colorado Board of Medical Examiners' list of active practitioners (N=12,168), and of 1000 physicians nationwide, randomly selected from a master list of practicing physicians maintained by the American Medical Association (N=730,290); this list contains members and nonmembers of the American Medical Association. The response rate for physicians was calculated by dividing the number of returned surveys by the number mailed minus the number returned undeliverable. We also conducted a random digit-dialing telephone survey of Colorado households; to obtain 500 respondents, 624 households were contacted.

Respondents were considered eligible if there was a member of the household 18 years or older willing to answer the survey. Nonworking and nonresidential numbers were omitted. The response rate was calculated as the number of respondents divided by the number of eligible households reached.

QUESTIONNAIRE

All respondents were asked to rate how often they believed certain statements about DTC advertising were true on a 4-point Likert scale: “often,” “sometimes,” “rarely,” or “never.” Respondents were also asked to rate their agreement with a set of statements regarding DTC advertising on a 4-point Likert scale, from “strongly agree” to “strongly disagree.” The statements were worded as printed in the Figure. Physicians were also asked their age, sex, specialty, and practice type and setting. Public respondents were also asked their age, sex, racial/ethnic background, income, and level of education. The study protocol and survey instruments were approved by the Colorado Multiple Institutional Review Board.

STATISTICAL ANALYSIS

Statistical analyses were performed using SAS statistical software, version 8.01 (SAS Institute Inc, Cary, NC). Differences in agreement were measured between the Colorado public and the Colorado physicians and between Colorado and US physicians. For questions regarding how often certain statements were true, responses of often or sometimes were combined and responses of rarely or never were combined. Agreement with statements was compared between groups along the entire range of responses using the Mantel-Haenszel $\chi^2$ test, and agreement was analyzed as a dichotomous variable, with responses of strongly agree or agree and strongly disagree or disagree combined. Because there were no significant differences in the 2 analyses, we chose to report the dichotomous agreement variables. Differences in agreement rates between physician groups and between physician and public respondents and demographic differences within groups were tested with the $\chi^2$ test.

To compare the respondents with the larger populations from which they were drawn, we calculated 95% confidence intervals (CIs) for the demographic characteristics of physicians and the public in our samples. Public respondents were compared with census figures for Colorado and Colorado Department of Housing figures for 2000. For physicians, data on US physicians from the American Medical Association were used for comparison; no separate demographic data for Colorado physicians are available. We considered demographic characteristics to be significantly different from the larger population if the population figures were outside of the 95% CI for our respondents.

Multivariate logistic regression analyses were performed within groups (physicians or the public) to determine predictors of agreement with each statement. For the public, variables included in the models were age, analyzed by decade; race, which was dichotomized into white and nonwhite; educational level, which was dichotomized by high school graduate or not; and annual household income, which was dichotomized at less than or equal to and greater than $35,000 (near the median income in Colorado). For physicians, variables included in the model were age, primary care (family medicine, general internal medicine, general pediatrics, and general practice) vs subspecialty practice, and urban vs rural practice setting. Because age was not a significant factor, younger than 65 years vs 65 years and older was also examined as a dichotomous variable for physicians.
RESULTS

PHYSICIANS

In Colorado, 523 of 896 eligible physicians completed the questionnaire, for a response rate of 58.4%. In the national sample, 261 of 885 eligible physicians completed the survey, for a response rate of 29.5% (Table 1). Overall, Colorado and national physician respondents were demographically similar to each other and to physicians nationwide. A slightly higher percentage of Colorado and national physician respondents practice primary care and practice in rural settings compared with physicians nationwide.

Regarding DTC advertisements in general, most physicians seem to have negative opinions of these advertisements (Figure). Most physicians indicated that DTC advertisements do not provide enough information on cost, alternative treatment options, or adverse effects, and few believe that these advertisements are a positive trend in health care. Most believe that they increase overall drug consumption and that better regulations for DTC advertisements are needed.

Regarding specific effects of these advertisements on their interactions with patients, most physicians believe that these advertisements sometimes or often lead patients to request specific medications, change patients' expectations of their prescribing practices, and increase time spent with patients (Figure). Primary care physi-

Table 1. Characteristics of Physician Respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Colorado Physicians (n = 523)*</th>
<th>US Physicians (n = 261)*</th>
<th>All US Physicians†</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male sex</td>
<td>74.3 (70.6-78.0)</td>
<td>75.1 (89.9-80.3)</td>
<td>76.6</td>
</tr>
<tr>
<td>Age, y</td>
<td>47 (27-75)‡</td>
<td>45 (26-80)‡</td>
<td>45-54§</td>
</tr>
<tr>
<td>Elderly persons</td>
<td>9.5 (7.0-12.0)</td>
<td>10.2 (6.6-14.0)</td>
<td>10.2</td>
</tr>
<tr>
<td>Urban (population ≥100 000)</td>
<td>75.3 (71.6-79.0)</td>
<td>76.7 (71.6-81.8)</td>
<td>86.9</td>
</tr>
<tr>
<td>Primary care</td>
<td>42.8 (38.6-47.0)</td>
<td>47.4 (41.3-53.5)</td>
<td>37.0</td>
</tr>
</tbody>
</table>

*Data are given as percentage of physicians (95% confidence interval) unless otherwise indicated.
†Data are given as percentage of physicians unless otherwise indicated.
‡Data are given as median (range).
§Data are given as range.
| "Agree" or "strongly agree." | "Often" or "Sometimes." |

Physician and public opinions about direct-to-consumer pharmaceutical advertisements.

Physicians were asked regarding “patients” and the public was asked regarding “me.”

†P<.001 for comparison.
‡P=.03 for comparison.
§P=.03 for comparison.
Direct-to-consumer pharmaceutical advertising seems to be having an important effect on physicians and on some aspects of their encounters with patients, especially among primary care physicians. In contrast, we found that most public respondents reported minimal influence of these advertisements. Consistent with prior reports,8,14 physician opinion in our study regarding DTC advertising was largely negative, with most respondents indicating that DTC advertisements increase overall drug consumption and that better regulations are needed. However, only 23.5% of physicians indicated that these advertisements change their prescribing practices at least some of the time, with no difference between primary care and specialist physicians.

**PUBLIC**

Six hundred twenty-four eligible Colorado households were contacted to obtain 500 responses, for a response rate of 80.1% (Table 3). Compared with the Colorado population as a whole, our respondents were more likely to be women (67.4% vs 50.4%), 65 years or older, and non-Hispanic white, and were less likely to have graduated from high school or to have a low income.

Nearly all public respondents (496 [99.2%] of 500) reported seeing a DTC pharmaceutical advertisement, with the most commonly cited sources being television (94.2%) and magazines or newspapers (91.1%). Public respondents were more likely than physicians to agree that DTC advertisements are a positive trend in health care, but most disagree that advertisements provide enough information on cost or other treatment options (Figure). Most public respondents believe the advertisements increase the cost of medical care.

Regarding the more direct effects of these advertisements on the public, more than a quarter indicated that these advertisements make them better informed about medical problems. However, only a few public respondents indicated that these advertisements have motivated them to seek care, led them to request specific medications from their physicians, changed their expectations of their physicians, or made them prefer the advertised medications (14.5%).

Among public respondents, those with demographic characteristics associated with a lower socioeconomic status were more likely to agree that DTC advertisements had motivated them to seek medical care. Agreement was more likely among nonwhites vs whites (31.6% vs 8.8%; P < .001) (adjusted odds ratio, 4.8; 95% CI, 2.1-11.0), those who had not attended college vs those who had attended college (18.9% vs 8.1%; P = .001) (adjusted odds ratio, 2.4; 95% CI, 1.2-4.8), and those with a lower income vs those with a higher income (18.2% vs 8.3%; P = .004) (adjusted odds ratio, 2.4; 95% CI, 1.1-5.1). Otherwise, there were no differences in rates of agreement among public respondents by age, sex, ethnicity, or level of education for any of the other statements.

### Table 2. Primary Care and Specialist Physician Opinions

<table>
<thead>
<tr>
<th>Opinion of DTC Advertisements</th>
<th>Primary Care Physicians (n = 340)</th>
<th>Specialist Physicians (n = 427)</th>
<th>Adjusted OR (95% CI)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Motivate patients to seek medical care‡</td>
<td>70.9</td>
<td>60.0</td>
<td>1.5 (1.1-2.0)</td>
</tr>
<tr>
<td>Increase the time I spend with my patients‡</td>
<td>65.3</td>
<td>48.5</td>
<td>2.0 (1.5-2.7)</td>
</tr>
<tr>
<td>Cause patients to request specific medications from me‡</td>
<td>88.5</td>
<td>74.5</td>
<td>2.5 (1.7-3.7)</td>
</tr>
<tr>
<td>Change my patients’ prescribing expectations of me‡</td>
<td>75.3</td>
<td>60.4</td>
<td>2.0 (1.4-2.7)</td>
</tr>
<tr>
<td>Change my prescribing practices</td>
<td>26.2</td>
<td>21.3</td>
<td>1.3 (0.9-1.8)</td>
</tr>
<tr>
<td>Increase dissatisfaction for patients who have restricted formularies§</td>
<td>75.9</td>
<td>60.9</td>
<td>2.0 (1.5-2.8)</td>
</tr>
<tr>
<td>Increase overall drug consumption§</td>
<td>67.1</td>
<td>57.9</td>
<td>1.5 (1.1-2.1)</td>
</tr>
<tr>
<td>Need better regulations§</td>
<td>73.2</td>
<td>65.3</td>
<td>1.5 (1.1-2.0)</td>
</tr>
</tbody>
</table>

**COMMENT**

Direct-to-consumer pharmaceutical advertising seems to be having an important effect on physicians and on some aspects of their encounters with patients, especially among primary care physicians. In contrast, we found that most public respondents reported minimal influence of these advertisements.

Consistent with prior reports,8,14 physician opinion in our study regarding DTC advertising was largely negative, with most respondents indicating that DTC ad-

### Table 3. Characteristics of Public Respondents

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Respondents (n = 500)†</th>
<th>Colorado Population (n = 2,939,138)‡</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male sex</td>
<td>32.6 (28.5-36.7)</td>
<td>49.6</td>
</tr>
<tr>
<td>Age, y</td>
<td>42 (20-82)‡</td>
<td>35-44§</td>
</tr>
<tr>
<td>Elderly persons (≥65 y)</td>
<td>23.2 (19.5-26.9)</td>
<td>13.0</td>
</tr>
<tr>
<td>Race/ethnicity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Non-Hispanic white</td>
<td>92.3 (90.0-94.6)</td>
<td>72.8</td>
</tr>
<tr>
<td>Black or African American</td>
<td>3.0 (1.5-4.5)</td>
<td>3.8</td>
</tr>
<tr>
<td>Hispanic or Latino</td>
<td>2.2 (0.9-3.5)</td>
<td>17.1</td>
</tr>
<tr>
<td>Asian or Pacific Islander</td>
<td>0.4 (0.0-1.0)</td>
<td>2.3</td>
</tr>
<tr>
<td>Native American</td>
<td>1.4 (0.4-2.4)</td>
<td>1.0</td>
</tr>
<tr>
<td>High school graduate</td>
<td>77.6 (73.9-81.2)</td>
<td>87.7</td>
</tr>
<tr>
<td>Annual household income, $§</td>
<td></td>
<td></td>
</tr>
<tr>
<td>&lt;20,000</td>
<td>8.8 (6.3-11.3)</td>
<td>13.3</td>
</tr>
<tr>
<td>20,000-34,999</td>
<td>13.2 (10.2-16.2)</td>
<td>NA</td>
</tr>
<tr>
<td>35,000-49,999</td>
<td>15.4 (12.2-18.6)</td>
<td>NA</td>
</tr>
<tr>
<td>≥50,000</td>
<td>49.6 (45.2-54.0)</td>
<td>NA</td>
</tr>
</tbody>
</table>

Abbreviation: NA, data not available.

*Data are given as percentage of respondents (95% confidence interval) unless otherwise indicated.
†Data are given as percentage of each group.
‡Adjusted for age, sex, number of years in practice, practice type, and setting.
§“Sometimes” or “often.”
§§“Agree” or “strongly agree.”

Cations in particular were more likely than specialists to indicate that these advertisements have an effect on their patient interactions (Table 2). Primary care physicians were also more likely than specialists to believe that these advertisements increase overall drug consumption and that better regulations are needed. However, only 23.5% of physicians indicated that these advertisements change their prescribing practices at least some of the time, with no difference between primary care and specialist physicians.
advertisements fail to provide adequate information on cost, adverse effects, or alternative treatment options and that better regulation of these advertisements is needed. Most also agreed that DTC advertising has an impact on the physician-patient relationship by influencing patients to request specific medications and altering patient expectations of physicians’ prescribing practices. This perceived concern with a deviation from standard prescribing practice, as previously noted by Lipsky and Taylor, may have real consequences, because patient demand is the most commonly offered physician explanation for inappropriate prescribing. However, only 23.5% of our physician respondents believed that these advertisements have led to an actual change in their prescribing practices.

Many physicians also expressed that these advertisements will sometimes or often increase time spent with patients. We did not assess if physicians perceive this increase in a positive or negative way. For many practicing physicians, the amount of time they can spend face-to-face with individual patients is decreasing. Thus, DTC advertising, which may increase time demands and may direct the interaction in ways that are not on the physician’s agenda for the visit, is likely to be perceived in a negative way. To patients, more time with their physicians, especially if it relates to pertinent health matters, may be more likely to be perceived in a positive light. The interactions between time, content, and visit satisfaction, as related to DTC advertising, warrant further investigation.

Primary care physicians as a group tended to demonstrate more negative attitudes toward DTC advertising than specialists. Primary care physicians surveyed in our study were significantly more likely than specialists to indicate that DTC advertisements have an impact on their patient interactions and lead to an overall increase in drug consumption. This is not surprising, because this group generally provides the first line of care for most conditions targeted by DTC advertisements.

Not all physician perceptions were negative, with nearly half of the physicians surveyed agreeing that such advertisements can make patients better informed about medical issues. While we found no differences among physician opinion by number of years in practice, other studies have identified more positive impressions of DTC advertising among those with more experience and those with more exposure to pharmaceutical promotion, implying that they were less likely to believe that their patient relationships were threatened.

Exposure to DTC pharmaceutical advertising among the general public has become nearly ubiquitous, as evidenced by the finding that 99.2% of public respondents reported seeing at least one DTC advertisement, but its effects on the public seem to be less pronounced than its impact on physicians. While public perception of DTC advertising has been previously reported to be somewhat more positive, with consumers accepting advertisements as a source of information and supplemental advice, our study did not find positive responses for most consumers. Although public respondents were more likely than physicians to consider DTC advertisements a positive trend in health care (29.0% vs 9.8%), this was still a minority, and most disagreed that advertisements made them better informed about medical problems. Only a few respondents indicated that the advertisements influenced any interaction with their physician by motivating them to seek care (10.5%) or to request specific medications (13.3%) or by changing their expectations for prescriptions (11.3%).

These reported figures regarding the effects of DTC advertisements on the public are lower than those in previous surveys, which have found that 19% to 30% of adults reported that DTC advertisements have led them to request a specific medication. The reasons for the lower rate in our survey are not clear, but may be due to demographic differences between our population and those in the other surveys or decreased exposure to DTC advertising among our population, or it may be a more accurate reflection of public perception, given that the other surveys have been more detailed and more likely to induce a positive response bias.

In our study, public respondents with a lower socioeconomic status and less education were more likely to agree that DTC advertisements motivated them to seek care. This is consistent with previous studies, which have found that individuals with a lower level of education are more likely to have positive attitudes about all forms of advertising, and are more inclined to seek information from mass media sources such as television. While previous studies have found that advanced age and the presence of a chronic medical condition are associated with a more positive view of advertised drugs, we found no other significant demographic factors, such as age, sex, or ethnicity, associated with more positive views of DTC advertising. It may be that chronic illnesses, which increase in incidence with age, are a more important factor in influencing perception than age itself.

The disparity between the relatively few consumers who reported that these advertisements affect their behavior and the frequency with which physicians see them affect their patients’ behaviors could be due to several factors. First, all consumers are not patients and many may not interact with physicians. Second, these advertisements tend to target specific groups and are not applicable to many consumers. Third, the effect of these advertisements may be magnified by physicians, especially if they are perceived as negative. Fourth, the public may have been reluctant to admit that they are influenced by advertising and may have underreported the true effects. Finally, the possibility of a self-report bias by public respondents cannot be excluded; consumers may not necessarily recognize that the advertisements could influence their interactions with physicians and, thus, underestimate their effect. Similarly, physicians also need to recognize the possibility that their individual prescribing practices may be influenced by direct pharmaceutical promotions in their offices. The real effects of these advertisements on physician and consumer behavior remain unclear.

Our study has several limitations, including different survey methods for public and physician respondents (telephone vs mail survey). While we believe this
was the most efficient way to ensure an adequate response from each group, the different modes may have affected responses. The use of a telephone survey excluded those without telephones and, thus, those with a lower socioeconomic status are more likely to be underrepresented. Nonresponse bias may be a problem in both groups, particularly among the physicians, because they received a written questionnaire. The public population surveyed had a relatively homogeneous composition, and the views of the Colorado public cannot necessarily be extrapolated to a larger population. Exposure to DTC advertising, and type of health insurance and health care available to the public, which are likely to influence the effects of DTC advertising, varies across the country. Also, we did not ascertain the frequency or types of contact our public respondents have had with the health care system, nor did we ascertain the individual health status of respondents, which could affect their interest in and responses to pharmaceutical advertisements.

In conclusion, physician perception of DTC pharmaceutical advertisements seems to be largely negative, and most of the public share these views on many aspects of these advertisements. Physicians may actually overestimate the influence of DTC advertisements on the behavior of most consumers, because only a few public respondents reported any tangible effects on their interactions with physicians. However, even if relatively few consumers respond to these advertisements, their effects on physicians and their interactions with patients seem to be significant.

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REFERENCES