



## Consumers' knowledge, perceptions, and responsiveness to direct-to-consumer advertising of prescription medicines

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### Abstract

**Aim** This research explored whether direct-to-consumer-advertising of prescription medicines (DTCA) increased disadvantaged consumers' knowledge of important health issues and encouraged those with lower health knowledge to consult their doctor (as has been argued by supporters of DTCA).

**Method** A mail survey of 1042 New Zealanders was undertaken between October and December 2002 using a stratified random sample drawn from the electoral roll. After two reminders were sent, 632 completed questionnaires were returned (64% response rate). We examined the relationship between respondents' self-assessed knowledge of health-related issues, their perceived health status, and their response to DTCA (using self-efficacy theory to aid interpretation of the results).

**Results** Respondents with greater health knowledge found DTCA easier to understand and were more likely to have sought further information about an advertised medicine than those with less knowledge.

**Conclusions** These results suggest DTCA may reinforce existing knowledge rather than educate or provide new knowledge. The results also cast doubt upon claims that DTCA enhances awareness of health issues among groups with lower health knowledge thus helping them overcome barriers to better health. Although changes to DTCA regulation could increase the information conveyed by this advertising, the advertising and pharmaceutical industries' failure to respond to well-documented concerns about DTCA raises serious questions about the power of policy refinements to control advertisers' conduct.

Advertising of prescription medicines directly to potential end-users (DTCA) has become pervasive in both New Zealand and the United States, the only two countries where these promotions are permitted. Not surprisingly, the effects and ethics of this advertising have attracted detailed scrutiny in both countries.<sup>1,2</sup>

Opponents argue that prescription medicines differ from fast-moving-consumer-goods and should not be promoted using the same techniques or via similar media.<sup>3</sup> They note that medicines have potentially serious consequences that lay consumers may not understand and suggest only those trained to assess these risks should receive promotional material.<sup>2,4,5</sup> Others suggest DTCA erodes the trust on which a healthy doctor-patient relationship depends,<sup>6,7</sup> and makes doctors more likely to accede to patients' requests even if they do not fully agree with these.<sup>8</sup>

As a result, patients may adopt pharmaceutical solutions to health problems instead of implementing lifestyle changes, such as losing weight.<sup>9,10</sup> This alleged increase in the "medicalisation" of well populations has been compounded by the confusion resulting from incomplete or omitted risk, side effect, and cost details.<sup>11,12</sup>

More seriously, critics claim DTCA's profit-driven goal is at odds with health practitioners' aim to improve their patients' quality of life.<sup>2,3,13</sup> They argue that since DTCA increases demand for promoted drugs (thereby reducing funding available for other medicines), it may also result in a sub-optimal allocation of scarce health resources.<sup>14</sup>

Supporters of DTCA have responded by arguing that consumers can no longer rely on doctors to provide them with details of all treatment options for a condition within a standard 15-minute consultation.<sup>15</sup> DTCA is thus said to fill an information void by providing facts consumers may be unlikely to obtain from other sources.<sup>16-20</sup>

Provision of information that contains details of both symptoms and treatment options is also claimed to promote earlier diagnosis of chronic disorders and improve patients' quality of life while reducing the need for more expensive interventions in the future.<sup>19,21</sup> Moreover, disadvantaged individuals with less access to health information are said to be most likely to benefit from DTCA,<sup>22</sup> as it will help them overcome "lack of awareness and understanding, misinformation and low health literacy".<sup>17</sup>

Overall, supporters of DTCA claim it fulfils a valuable function by increasing patients' knowledge; more generally, they believe it reflects a social environment where patients see themselves as active participants in their health care management.<sup>17,23</sup>

Although consumer survey evidence suggests many individuals have welcomed the opportunity to access information disseminated via DTCA,<sup>24-26</sup> surveys of the New Zealand public have consistently revealed serious limitations in the comprehensiveness and balance of information provided via DTCA.<sup>26,27</sup> Indeed, several researchers have called for details in DTCA promotions to be better formatted, made available aurally as well as visually, and re-defined to emphasise key risk elements.<sup>5,27-29</sup> However, in New Zealand at least, these concerns have persisted, despite revisions to the self-regulatory process developed to manage DTCA.<sup>27</sup>

There has been considerable debate over the robustness of the self-regulatory model currently used to oversee DTCA promotions. While tighter regulation—including strengthening the provisions of the self-regulatory code or instituting a more defined role for government regulators—could improve the quality of information provided via DTCA, others question whether restrictions would protect consumers. They argue that stricter regulatory frameworks increase consumers' trust in advertising and thus create greater incentives for advertisers to utilise misleading promotions.<sup>15</sup>

The existence of these market-driven incentives has led others to conclude that DTCA is most unlikely to assist the improvement of public health and that, on balance, the negative effects of medicine advertising greatly outweigh any benefits it could be expected to bring.<sup>2,9</sup>

At the same time as researchers have debated whether DTCA can be adequately regulated, consistent concerns over the lack of balance provided in DTCA promotions have been identified, as has a core group of consumers that sees DTCA as unbalanced, potentially misleading, and ultimately unhelpful.<sup>27,30</sup>

There are several possible explanations for the existence of this group. Research into consumers' responses to advertising has noted that some find advertising distasteful and irritating, and resent its intrusiveness; opposition to DTCA may thus stem from a

more generic dislike of advertising.<sup>31</sup> However, an alternative explanation is that some respondents find DTCA difficult to access and understand; this latter view implies that consumers may react against the content and format of DTCA if they find this incomplete or poorly structured. This latter explanation implicitly challenges the claim that DTCA provides information consumers may not otherwise be able to access and raises particular questions about whether it benefits people less likely to obtain health information from other sources.

Because DTCA includes complex information that lay consumers may not always understand, individuals' response to DTCA may be mediated by their perceived knowledge of health related issues. Consumers who are confident in their ability to access and utilise the information provided might be more likely to have positive perceptions of DTCA, and to be more responsive to it. However, few studies have explored how consumers' knowledge of health issues might mediate their responses to DTCA.

This paper briefly reviews the psychological construct of self-efficacy, which we propose may mediate consumers' response to pharmaceutical advertisements, before examining the relationship between respondents' perceived health knowledge and status, and their perceptions of and responses to DTCA advertising.

*Self-efficacy* is an important psychological construct that has been used successfully to explain and predict a wide variety of health related behaviours.<sup>32</sup> Originally outlined by Bandura,<sup>33</sup> self-efficacy describes individuals' beliefs regarding their ability to perform a specific behaviour, and has two dimensions: individuals' assessment of the likely outcome of a particular behaviour, and their belief in their own competence to achieve that outcome.

Self-efficacy is conceptualised as highly domain specific, rather than as a stable trait, so it varies across behaviours within individuals.<sup>34,35</sup> When individuals have low self-efficacy beliefs, they only feel capable for performing the most simple behaviours, while those with high self-efficacy are assured in their ability to undertake more complex tasks.<sup>32</sup> Those with high self-efficacy for particular behaviour patterns are thought more likely to adopt these where they offer clear and accessible benefits.<sup>36,37</sup>

Variance in self-efficacy levels may help explain consumers' reactions to DTCA. Respondents' perceptions of this advertising—particularly their ability to access and understand the information it contains, their trust in this, and their use of it—may reflect self-efficacy for 'health management'; a term used here to reflect patients' confidence or willingness to actively participate in health care decisions, including discussions with professionals about diagnosis and treatment of conditions. This framework recognises that DTCA contains technical information that not all consumers will process or understand sufficiently to act upon.

Because medicines cannot be purchased directly, behavioural indications of self-efficacy may include attempts to obtain additional information from websites or 0800 telephone numbers and requests for promoted brands from doctors. These actions depend on consumers' belief that they will locate and comprehend more detailed information, and then be able to use this in a discussion about the promoted drug with their doctor.

DTCA advertisements might also shape consumers' personal agency beliefs: if DTCA improves overall knowledge of health issues, then it could promote self-efficacy for health management by increasing respondents' perceived control over their well-being by providing them with a greater understanding of symptoms, possible conditions and some treatment options.

If DTCA does provide valuable information to those with limited health knowledge or access to information from other sources, then we would expect respondents with lower reported levels of health knowledge to view these messages positively. Similarly, those who report higher levels of ill health might also be more appreciative of this advertising if, as claimed by supporters, it increased their knowledge of treatments they could discuss with their doctor.

This paper tested the assertion that DTCA benefits disadvantaged consumers. Firstly, we examined factors that may influence consumers' response to DTCA by exploring the relationship between their self-assessed knowledge of health issues and their reactions to pharmaceutical advertising. More specifically, we explored whether respondents with lower self-assessed health knowledge and health status were more responsive to DTCA and held more favourable views of this advertising.

## Methods

A mail survey of 1042 New Zealanders was undertaken between October and December 2002. A random sample was drawn from the 2002 electoral roll and was stratified by electorate, with over-sampling in the Māori electorates, to ensure adequate representation of Māori in the final sample.

After an initial mail out and two reminders, the survey achieved a 64% response rate, representing 632 completed responses. The sample was weighted to ensure it corresponded to the age and gender profile of the population based on 2001 census data.

The questionnaire began by defining DTCA (to ensure respondents shared a common understanding of this advertising).

It then gauged respondents':

- Awareness of different prescription medicines and media (through which they saw or heard about these medicines);
- Recall of information in DTCA promotions as well as their ability to read and understand this information;
- Attitudes to DTCA and its wider implications, and
- Behavioural response to DTCA promotions;

Finally, it collected demographic information and details of respondents' perceived health status and knowledge.

Respondents used a single-item 4-point scale to estimate their personal health knowledge; responses were subsequently dichotomised. Respondents rated their current health status on a single-item 5-point scale anchored by 'poor' and 'excellent'. (A copy of the full questionnaire is available from the first author.)

The questionnaire was pre-tested using depth interviews on a small sample of respondents and the penultimate version was circulated to several interest groups known to hold varied views on the desirability and effects of DTCA. Improvements and clarifications resulting from both procedures were incorporated before the questionnaire was finalised.

The data were analysed using a series of statistical procedures. Chi-squared ( $\chi^2$ ) tests were used to examine the relationship between respondents' health status and their self-assessed health knowledge. Next, a series of ANOVAs were undertaken to test whether health knowledge affected respondents' perceptions of DTCA.

## Results

Initial analyses explored the relationship between respondents' knowledge of health-related issues and medicines and their own perceived health status. As Table 1 shows, respondents' perceived health knowledge was significantly related to their perceived health status; respondents who rated themselves less knowledgeable about health issues were more likely to describe themselves as having less robust health, and vice versa. Respondents' education level was also significantly related to their perceived health knowledge, and followed the same pattern ( $\chi^2=10.75$ ,  $p<0.01$ ).

**Table 1. Perceived health knowledge and perceived health status**

Perceived health status	Perceived health knowledge	
	Less knowledgeable (n=243) %	More knowledgeable (n=373) %
Poor–Fair	19	15
Good	43	32
Very Good	26	33
Excellent	13	20

$\chi^2=12.74$ ,  $p<0.01$

The relationship reported in Table 1 is important, since it highlights the potential role of DTCA as an educational tool that could augment respondents' knowledge of health issues, thereby assisting them to improve their actual health.

Self-efficacy theory suggests that if DTCA supported knowledge development, it would be viewed more positively by respondents who felt it extended their knowledge. Thus, if DTCA consolidated existing knowledge, it would be viewed more positively by those with higher levels of knowledge; conversely, if it developed new knowledge, we would expect those with lower levels of knowledge to be more positive about this advertising.

A series of ANOVAs were undertaken to test the relationship between respondents' knowledge status and their attitudes to DTCA. The attributes tested were examined using a 5-point Likert scale; the higher the mean score, the higher the level of agreement. Mean scores for the two groups are reported in Table 2.

Respondents first indicated the ease with which they could ascertain whether a medicine required a prescription. Although respondents who considered themselves knowledgeable about health issues found it significantly easier to establish the status of advertised medicines, the overall mean scores were low, thus suggesting that neither group found this information particularly easy to access.

Scores across other attributes were very similar, although the more knowledgeable group was less likely to agree that DTCA contained too much risk information or was difficult to understand. This group was also more cynical about the content of DTCA; members were more likely to agree that DTCA overstated the benefits of the promoted drug and more likely to disagree that only the safest drugs were advertised.

Although respondents considered that DTCA provided them with information they could use in discussions with their GPs, they were less positive about the quality of information provided and the extent to which they could trust this information.

**Table 2. Perceived health knowledge and perceptions of DTCA (direct-to-consumer advertising)**

Attribute	Perceived level of health knowledge	
	Less knowledgeable (n=223)	More knowledgeable (n=361)
<b>Knowledge of Rx (treatment) status</b>		
Easy to know prescription required in TV DTCA <sup>α</sup>	2.8	3.2
Easy to know Rx required in print DTCA <sup>α</sup>	1.9	2.5*
<b>Information provision</b> <sup>β</sup>		
DTCA increases awareness of medicines	4.1	4.1
DTCA should have more risk information	4.1	4.1
DTCA provides enough information	3.6	3.6
DTCA should have more benefit information	3.5	3.5
DTCA contains too much risk information	2.3	2.1†
Easy to read TV DTCA <sup>α</sup>	1.8	2.0
<b>Usefulness of and trust in information</b> <sup>β</sup>		
DTCA promotes better decisions about health	3.4	3.3
I find DTCA helpful	3.3	3.4
DTCA make medicines seem better than they are	3.1	3.3†
DTCA confuses people	3.0	3.0
I trust the information in DTCA	2.9	2.9
DTCA is difficult to understand	2.7	2.6†
Only the safest drugs are advertised	2.7	2.5*
DTCA should be banned	2.3	2.2
<b>Effect on GP relationship</b> <sup>β</sup>		
DTCA fosters better discussions with doctors	3.6	3.7
DTCA implies a GP is not required	3.0	3.0

<sup>α</sup> 1 (very difficult) – 5 (very easy);

<sup>β</sup> 1 (strongly disagree) – 5 (strongly agree);

\*p<0.01; †p<0.05; TV=Television.

Respondents who considered themselves knowledgeable about health issues were significantly more likely to have sought more information about a medicine they had seen advertised than members of the less knowledgeable group (52% cf. 37%; p<0.001).

To explore this relationship further, and to examine the potential effect of other variables (such as respondents' demographic characteristics), a logistic regression model was developed. The dependent variable was whether respondents had sought additional information following exposure to DTCA, while the predictor variables included respondents' use of prescription medicines; their perceived health knowledge and status; and demographic traits. Table 3 contains details of the model developed.

**Table 3. Factors influencing respondents' search for further information**

Variables entered	Coefficient (B)	Statistical significance	Estimated odds ratio
Perceived knowledge	0.575	0.002	1.777
Number of medicines taken	0.342	0.000	1.408
Age	-0.001	0.920	0.999
Perceived health status	-0.032	0.746	0.968
Gender	-0.160	0.367	0.852
Constant	-1.167	0.025	0.311

Nagelkerke R Square=0.08

Two variables were highly significant predictors of the likelihood that respondents would seek more information about a medicine they had seen advertised: their perceived health knowledge ( $p < 0.01$ ), and the number of medicines they take ( $p < 0.001$ ).

The estimated odds ratio shows the magnitude of influence that greater perceived knowledge and number of current medications increases likelihood of seeking further information. This result suggests respondents' perceived knowledge may be a function of their health condition, which in turn increases the salience of drugs designed to treat that condition and prompts the search for further information.

Respondents' perceived health status was negatively associated with the search for information on advertised medicines. Logically, this is consistent with the expectation that people who consider themselves to be in good health are less likely to seek out information on medicines they have seen advertised. However, this variable failed to reach significance in the model, thus there was no evidence that DTCA encourages people who evaluate their health status as less robust to obtain more information about conditions they may have or treatments that could potentially assist these. Neither of the demographic variables (age and gender) included in the model approached significance.

Overall, the results in Table 3 do not support the claim that DTCA increases the likelihood that individuals with undiagnosed conditions will become more aware of symptoms that could foster diagnosis; nor does it appear to be encouraging people to seek further information about potential health conditions they may have.

## **Conclusions and policy implications**

Supporters of DTCA argue it improves consumers' knowledge of treatment options that may enhance their quality of living. However, our results suggest consumers who are most likely to benefit from increased knowledge are also those who find DTCA most difficult to understand, and who are less likely to seek further information after exposure to DTCA promotions.

Respondents who viewed themselves as less knowledgeable about health issues were more likely to report difficulty in identifying whether a medicine was prescription only and more likely to trust the content of advertisements for prescription medicines than those who considered themselves more knowledgeable.

The greater the number of medicines respondents took, the more likely they were to have sought more information about a medicine they had seen advertised. This

suggests that DTCA reinforces consumers' existing knowledge, thus it may promote greater self-efficacy among those who already consider themselves knowledgeable about health issues. However, we found no evidence that DTCA promotes a greater awareness of health-related topics among those who consider their health knowledge or status to be low.

Those most likely to respond to DTCA were also those who were more cynical about the quality of information provided in this advertising, which may explain their desire to seek further details from sources seen as more disinterested.

Consumers with lower perceived health knowledge had lower self-efficacy for health management and lacked the confidence to seek new information or discuss treatment options with medical professionals. These differences in consumers' self-efficacy could explain the varying reactions responses to DTCA observed in more general consumer surveys.

While a similar proportion of both the knowledgeable and less knowledgeable groups had requested a drug they had seen advertised from their doctor, those from the former group were more likely to understand the implications of their request. Doctors report having to dispel patient misconceptions attributed to DTCA;<sup>38</sup> our findings in the current study suggest this confusion may be more likely to affect those with poorer health status and knowledge of health issues.

Although preliminary, our findings question claimed benefits of DTCA, and we found no evidence to support the claim that DTCA assists individuals to overcome barriers to better health. Instead, it seems more plausible that DTCA reinforces knowledge among those who already have high levels of interaction with medical professionals and better knowledge as a consequence of this engagement. As a result, DTCA may only increase self-efficacy for consumers who already have moderate levels of belief in their ability to manage their health.

Our findings have important regulatory implications for Australian regulators, who are considering whether to introduce DTCA; and for New Zealand regulators, who are reviewing whether and in what form they should retain this advertising.

While replication research should be undertaken these results raise questions about the value of DTCA as an information source. Evidence that respondents with higher health knowledge and self-efficacy were less trusting of DTCA, while those with lower health knowledge and self-efficacy found it difficult to understand, suggests the information DTCA is claimed to provide could be more effectively and appropriately imparted via another source.

In summary, research is needed into alternative methods of communicating health information to those individuals whose health status and knowledge suggests they have the greatest potential to benefit from greater access to such information. These individuals are currently less likely to comprehend or respond to the information provided via DTCA.

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