Advertising techniques increase biologic treatment willingness in patients with psoriasis

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Abstract

Background: Although biologics have revolutionized psoriasis care, some patients may be reluctant to consider implementing biologic therapy.

Objective: To determine whether willingness to take a biologic is increased by commonly used advertising techniques.

Methods: An online survey was used to assess subjects with a self-reported diagnosis of psoriasis and their willingness to initiate biologic treatment (N=400). Subjects were randomized to receive one of the following surveys: clinical data with positive framing (N=80), bandwagon-based statement (N=80), testimonial-based statement (N=80), comparative advertising (N=80), and negative framing (N=80). Willingness to take treatment was recorded on a 10-point Likert scale and evaluated using one-way ANOVA, two-group t-tests, and chi-squared tests.

Results: Compared to subjects presented with positive framing (M=5.5, SD=3.2), subjects presented with a bandwagon-based statement (M=6.5, SD=2.7; P=0.04) and testimonial-based statement (M=7.0, SD=2.7; P=0.01) reported a greater willingness to take treatment, whereas negative framing (M=4.5, SD=3.0; P=0.03) decreased willingness and comparative advertising (M=5.5, SD=2.7; P=0.96) yielded the same willingness as positive framing.

Conclusion: Providers might be able to enhance biologic acceptance by utilizing commonly used advertising techniques, such as the bandwagon effect, testimonial effect, and positive framing.

Keywords: adherence, psoriasis, biologics, treatment, advertising, marketing, psychology

Introduction

Starting treatment for psoriasis can be difficult for many patients. About half of all prescriptions to treat psoriasis are unfilled [1]. Additionally, psoriasis treatment adherence rates are reported in the range of 22%-67% [2]. Biologic therapy has revolutionized treatment for psoriasis but patients may be reluctant to initiate biologics for psoriasis care. Providers might be able to enhance biologic treatment acceptance by utilizing commonly used techniques seen in advertising and elections, such as methods that use the bandwagon effect and testimonial effect, as well as comparative advertising and positive framing.

The bandwagon effect method, testimonial effect method, comparative advertising, and positive framing are often utilized to convince people to buy a product, adopt an idea, or vote for a particular candidate [3,4]. The bandwagon effect can be defined as a psychological phenomenon in which individuals follow a particular trend or movement owing to the desire to conform to the masses [5]. Similarly, the testimonial effect is a psychological phenomenon in which individuals are persuaded towards a product or service because of an increased emphasis on a relatable person endorsing that product or service [6]. Comparative advertising is a marketing strategy in which individuals are persuaded towards a product because of an increased emphasis of positive attitudes of one product versus negative attitudes of another product [7]. Finally, the framing effect is a psychological phenomenon in which individuals favor one of two identical options owing to describing one option in terms of gains (positive frame) rather than losses (negative frame), [8].

In this study, we evaluated how the bandwagon effect method, testimonial effect method, comparative advertising, positive framing, and negative framing influence willingness to take a biologic in patients with psoriasis.

Methods

Following Wake Forest School of Medicine Institutional Review Board approval, a randomized online survey study was performed in eligible subjects, 18 years or older, with a self-reported diagnosis of psoriasis. Subjects were required to have a working knowledge of English. A total of 400 subjects were recruited through Amazon Mechanical Turk (MTurk), an online crowdsourcing platform that has been extensively used by psychologists in the last few years for subject recruitment [9]. Subjects recruited through the MTurk platform received a fact sheet and were taken to the survey in Qualtrics, a secure web-based survey software that supports data collection for research studies. Subjects were compensated $0.05 for completion of the survey.

An online survey study, distributed between August 2019 to September 2019, was used to assess subjects with a self-reported diagnosis of psoriasis and their willingness to initiate biologic treatment (N=400). Subjects were randomized in a 1:1:1:1:1 ratio to receive clinical data with positive framing (N=80), bandwagon-based statement (N=80), testimonial-based statement (N=80), comparative advertising (N=80), and negative framing (N=80), **Box 1**. All groups were also presented with treatment regimen information, clinical data of drug efficacy, route of drug administration, and potential adverse effects.

Box 1. *Survey questions for presentation of biologic treatment for patients with psoriasis*[a].

Group 1 (Clinical data with positive framing) With just 4 months of use, a psoriasis drug has an 80% chance of helping your skin become clearer. The drug is given via injection every other week and is associated with increased risk of infection. How willing would you be, on a 1 (not willing) to 10 (completely willing) scale, to take this medication?
Group 2 (Bandwagon effect) With just 4 months of use, a psoriasis drug has an 80% chance of helping your skin become clearer. The drug is given via injection every other week and is associated with increased risk of infection. Tens of thousands of people are using this drug with great success. How willing would you be, on a 1 (not willing) to 10 (completely willing) scale, to take this medication?
Group 3 (Testimonial effect) With just 4 months of use, a psoriasis drug has an 80% chance of helping your skin become clearer. The drug is given via injection every other week and is associated with increased risk of infection. Another patient, a _____-year-old _____(male/female), recently used this treatment and saw amazing results. How willing would you be, on a 1 (not willing) to 10 (completely willing) scale, to take this medication for your psoriasis?
Group 4 (Comparative advertising) With just 4 months of use, a psoriasis drug has an 80% chance of helping your skin become clearer, while another drug available only has a 60% chance of having this effect. The drug with an 80% chance is given via injection every other week and is associated with increased risk of infection. How willing would you be, on a 1 (not willing) to 10 (completely willing) scale, to take this medication for your psoriasis?
Group 5 (Clinical data with negative framing) With just 4 months of use, a psoriasis drug has a 20% chance of not helping your skin become clearer. The drug is given via injection every other week and is associated with increased risk of infection. How willing would you be, on a 1 (not willing) to 10 (completely willing) scale, to take this medication?

[a]Responses were recorded on a 1 (not willing) to 10 (completely willing) scale.

Demographic information including age, gender, and race were also collected. Outcome measures were recorded as subject-reported willingness to take a biologic on a 10-point Likert scale. Scores were evaluated using one-way ANOVA, two-group t-tests, and chi-squared tests. P values of <0.05 were considered significant.

Results

A total of 400 subjects with a self-reported diagnosis of psoriasis completed the survey. There were 80 subjects in each of the five groups being tested. There was no significant difference between the groups' baseline characteristics. Subjects had a mean age of 39 years±12.2; 63% were female and 37% male; 76% were White, 9% Black, 6% Asian or Pacific Islander, 6% Hispanic or Latino, 1% Native American, and 2% "other"; 65% reported a bachelor's degree or higher (**Table 1**). We explored whether the effect of condition (type of advertising technique) varied as a function of any demographic variables. A significant two-way interaction was not found between condition and any of the demographic variables, including age, gender, race/ethnic group, and education.

There was a significant effect of type of advertising technique on patient willingness to take a biologic at the p<0.05 level for the three conditions [F(4,395)=8.86, P<0.0001]. Compared to subjects who received clinical data with positive framing (M=5.5, SD=3.2), subjects presented with a bandwagon-based statement (M=6.5, SD=2.7; t(154)=2.03; P=0.04) and testimonial-based statement (M=7.0, SD=2.7; t(152)=2.97; P=0.01) reported a greater average willingness to take treatment, whereas negative framing (M=4.5, SD=3.0; t(158)=2.19; P=0.03) decreased average willingness, and comparative advertising (M=5.5, SD=2.7; t(154)=0.05; P=0.96) had the same average willingness to take treatment (**Figure 1**).

More subjects were nearly completely or completely willing to initiate a biologic (score of 9 or 10) in the testimonial group (30%), the bandwagon group (23%), and the positive framing group (21%) than in the comparative advertising group (14%) and the

Table 1. *Summary of baseline characteristics*[a].

Variable	Positive Framing (n=80)	Bandwagon Effect (n=80)	Testimonial Effect (n=80)	Comparative Advertising (n=80)	Negative Framing (n=80)
Patient					
Age[b] (y)	39.2 ± 12.9	38.4 ± 12.3	39.4 ± 10.8	38.9 ± 12.5	39.0 ± 12.4
Male sex (%)	25 (31%)	32 (40%)	32 (40%)	27 (34%)	33 (41%)
Female sex (%)	55 (69%)	48 (60%)	48 (60%)	53 (66%)	47 (59%)
Ethnicity (%)					
White	62 (78%)	57 (73%)	62 (79%)	62 (79%)	57 (73%)
Black	8 (10%)	8 (10%)	9 (11%)	5 (6%)	7 (9%)
Hispanic or Latino	4 (4%)	3 (4%)	2 (3%)	5 (6%)	9 (11%)
Native American	1 (1%)	2 (3%)	0 (0%)	0 (0%)	1 (1%)
Asian or Pacific Islander	4 (4%)	6 (8%)	5 (6%)	6 (8%)	3 (4%)
Other	1 (1%)	3 (4%)	1 (1%)	1 (1%)	2 (3%)
Education level (%)					
No schooling	0 (0%)	1 (1%)	0 (0%)	0 (0%)	0 (0%)
Completed	30 (38%)	28 (35%)	33 (41%)	28 (35%)	24 (30%)
High school graduate	38 (48%)	39 (50%)	28 (35%)	32 (41%)	39 (50%)
Bachelor's degree	11 (14%)	7 (9%)	13 (18%)	11 (14%)	11 (14%)
Master's degree	0 (0%)	0 (0%)	1 (1%)	2 (3%)	1 (1%)
Professional degree	1 (1%)	4 (5%)	4 (5%)	6 (8%)	3 (4%)
Doctorate degree					

[a]There were no significant differences between the groups' baseline characteristics.
[b]Values are represented in mean ± standard deviation.

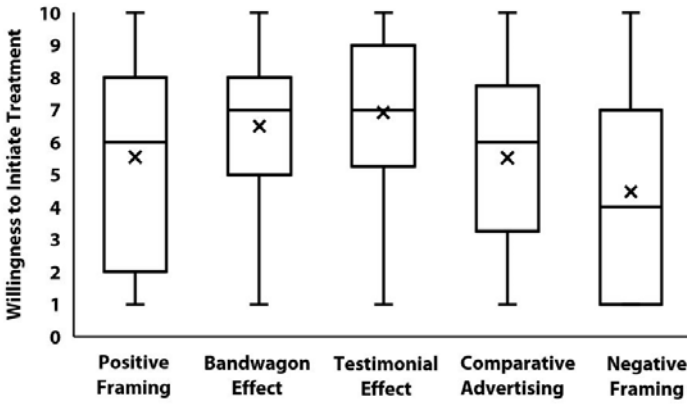

Figure 1. *Comparison of the different types of advertising techniques on willingness to initiate treatment. Compared to subjects presented with clinical data with positive framing (M=5.5, SD=3.2), subjects presented with a bandwagon-based statement (M=6.5, SD=2.7; P=0.04) and testimonial-based statement (M=7.0, SD=2.7; P=0.01) reported a greater average willingness to take treatment, whereas negative framing (M=4.5, SD=3.0; P=0.03) decreased average willingness, and comparative advertising (M=5.5, SD=2.7; P=0.96) had the same average willingness to take treatment. Boxes depict 25th and 75th quartiles. Error bars indicate maximum and minimum scores. Median scores are depicted as the horizontal line in each box, whereas mean scores are indicated by the "X" in each box.*

negative framing group (10%), ($\chi^2(4)=12.5$; P=0.01). Regarding the testimonial group versus clinical data with positive framing, more subjects were fairly willing or completely willing to take treatment (score greater than 6) in the testimonial group (70%) than in the clinical data with positive framing group (45%; P=0.001). Regarding the framing groups, there were more subjects who were nearly completely or completely willing to take treatment (score of 9 or 10) in the positive framing group (21%) than in the negative framing group (10%; P=0.05).

More subjects were fairly unwilling or completely unwilling to take treatment (score of three or less) in the clinical data with positive framing group (33%) than in the bandwagon group (16%; P=0.02). Additionally, more subjects were nearly unwilling or completely unwilling to take treatment (score of 1 or 2) in the clinical data with positive framing group (26%) than in the testimonial group (10%; P=0.01). There was a trend for more subjects to be completely unwilling to take treatment (score of 1) in the clinical data with positive framing group (18%) than in the comparative advertising group (10%; P=0.17). Regarding the framing groups, more subjects were completely unwilling to take treatment (score of 1) in the negative framing group (33%) than in the positive framing group (18%; P=0.04).

Discussion

In this survey of 400 participants with a self-reported diagnosis of psoriasis, treatment presented with a bandwagon-based statement and testimonial-based statement were associated with a higher willingness to start biologic treatment, compared to treatment presented with clinical data with positive or negative framing. Additionally, treatment presented with positive framing was associated with a higher willingness to start biologic treatment compared to negative framing. Thus, motivation to start a biologic in patients with psoriasis might be improved via providers utilizing commonly used advertising techniques to present medications.

The advertising technique that led to the greatest increase in subject-reported willingness to take a biologic was the testimonial effect. We used the data reported by subjects, age and gender, to auto-populate the testimonial-based statement provided to them upon treatment presentation. Thus, if patients are given an anecdote of a similar aged and gendered patient, then their willingness to start a biologic may be increased. The mechanism underlying this effect requires further investigation. That the testimonial featured a patient similar to the participant, rather than a generic patient, could have promoted greater conformity to the patient's behavior [10]. Moreover, descriptions of specific individuals are especially evocative, partly because they promote more vivid images than do descriptions of large groups or abstract statistics [11]. Testimonial-based statements may also provide patients with increased trust in the treatment, since the treatment was already effective in a similar patient.

The next advertising technique to have a strong effect on subject-reported willingness to take a biologic was the bandwagon effect method. Presenting a medication with a bandwagon-based statement increases reported willingness to take a

biologic for patients with psoriasis. This might relate to bandwagon-based statements tapping into patients' desire to conform to the majority, whether because of a need to fit in or an assumption that the most popular treatment is likely the most effective one [5,12].

Presenting two medications with comparative advertising did not significantly affect reported willingness to take a biologic for patients with psoriasis. Our presentation of comparative advertising may not have emphasized the benefits of one drug over the other drug in a strong enough manner to induce an effect. Using comparative advertising to enhance psoriasis patients' willingness to accept treatment, at least as tried in this study, did not appear to be a useful approach.

Clinical data with positive framing increased subject-reported willingness to take treatment compared to clinical data with negative framing. Patients have a cognitive bias when it comes to seeing the following identical probabilities: 8/10 patients see clearer skin versus 2/10 patients do not see clearer skin. Although the two probabilities are mathematically identical, the former may be interpreted much more favorably by the patient [13]. Thus, providers can potentially improve patient outcomes by utilizing this psychological phenomenon to guide patients towards the most beneficial therapy available via framing the favorable outcomes that result from adherence.

This study has limitations. Closed-ended responses (10-point Likert scale) do not explain the reasoning behind subject-reported willingness to take treatment. Also, we utilized an online platform to distribute the survey, which did not recruit patients via a clinical diagnosis in person, but rather recruited participants via a self-reported diagnosis of psoriasis. However, we believe the responses are valid in beginning an exploration of the impact of commonly used advertising techniques on patient-reported willingness to initiate biologic treatment for psoriasis.

Conclusion

Shared decision making is important to consider when presenting treatment options to a patient. Shared decision making is an approach in which treatment decisions are centered around balancing patients' preferences and values with risks and expected outcomes [14]. We suggest physicians can use methods based in understanding human psychology (e.g. positive framing, bandwagon effect, testimonial effect and many others) in the context of shared decision making to help patients achieve the best possible outcomes.

In conclusion, providers might be able to enhance biologic acceptance in patients with psoriasis by utilizing commonly used advertising techniques, such as the bandwagon effect method, testimonial effect method, and positive framing. Using these approaches to present medications may be a simple and cost-effective technique for providers to increase treatment adherence and improve patient outcomes for those who suffer from psoriasis. Specifically, the utilization of the testimonial effect might be particularly useful for providers as it had the strongest effect on increasing treatment willingness.

Potential conflicts of interest

S.R.F. has received research, speaking and/or consulting support from a variety of companies including Galderma, GSK/Stiefel, Almirall, Leo Pharma, Baxter, Boeringer Ingelheim, Mylan, Celgene, Pfizer, Valeant, Taro, Abbvie, Cosmederm, Anacor, Astellas, Janssen, Lilly, Merck, Merz, Novartis, Regeneron, Sanofi, Novan, Parion, Qurient, National Biological Corporation, Caremark, Advance Medical, Sun Pharma, Suncare Research, Informa, UpToDate and National Psoriasis Foundation. He is founder and majority owner of www.DrScore.com and founder and part owner of Causa Research, a company dedicated to enhancing patients' adherence to treatment. The remaining authors declare no conflicts.

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