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Effects of Message Framing on Patients' Perceptions and Willingness to Change to a Biosimilar in a Hypothetical Drug Switch

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Objective. Patients often hold negative perceptions toward biosimilars that can create barriers to their uptake. Physicians also report uncertainty in how best to explain biosimilars. The aim of this study was to measure the effect of differently framed explanations on patients' perceptions of and willingness to change to a biosimilar in a hypothetical drug switch.

Methods. Ninety-six patients with rheumatic diseases taking an originator biologic were randomized to receive 1 of 4 biosimilar explanations: positive framing with and without an analogy, and negative framing with and without an analogy. Willingness to switch to a biosimilar, perceptions about biosimilars, and the effectiveness of the explanation were measured after the information delivery.

Results. Positive framing led to more participants being willing to switch (67%) than negative framing (46%). Framing significantly predicted willingness to switch to a biosimilar, with participants in the positive framing group being 2.36 times more willing to switch (P = 0.041). The positive framing group also reported significantly greater perceived efficacy of biosimilars (P = 0.046) and thought the explanation was more convincing (P = 0.030). The analogy did not enhance willingness to switch or increase understanding ($P > 0.05$).

Conclusion. Positive framing can improve perceptions of and willingness to switch to a biosimilar in patients currently taking biologic treatments.

INTRODUCTION

Biosimilars are the highly similar, but not identical, versions of a reference biologic medicine manufactured by a different company (1). Biosimilars have the same clinical therapeutic equivalence, purity, and potency as their reference biologic and can provide the same health benefits at a significantly reduced cost (2,3). Biosimilars have been successfully incorporated into routine care for patients with rheumatic diseases in many countries (4,5). Estimates are that $100 billion worth of biologic medicines are coming off patent by 2020, which will create significant opportunities to integrate biosimilars into pharmaceutical markets and widen the opportunity for patients to benefit from such treatments (6). This process has already begun, with patients being switched to biosimilars in large-scale clinical trials (7,8).

Patient and health care provider acceptance is vital to ensure that the benefits from biosimilar use can be gained. Previous research suggests that both patients and providers hold negative perceptions toward biosimilar safety and efficacy (9–12). Physicians also report being unsure how to go about explaining biosimilars to patients, which further restricts their use (13,14). A lack of acceptance and negative perceptions toward biosimilars may enhance the nocebo effect following a switch and increase nonadherence (15,16). Although studies highlight physicians' lack of confidence in explaining biosimilars and the importance of patient acceptance to ensure uptake (17–20), limited research has addressed these areas.

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SIGNIFICANCE & INNOVATIONS

- Little is known about the best way to explain switching to biosimilars from biologics to ensure patient acceptance and positive perceptions.
- A brief positively framed explanation significantly improved participants' willingness to switch and increased the perception that a biosimilar would be as effective as a biologic.
- Patients hold concerns about biosimilars, particularly relating to safety, efficacy, manufacturing, and clinical trials that need to be addressed to improve acceptability.

Framing has been used in medical explanations to highlight certain attributes of medicines, present medicine risk information, and present health outcomes in losses or gains (21,22). Differences in information framing have been found to change patient expectations and perceptions about medical treatments. Positively framed (e.g., 90% chance of not getting any side effects) compared to negatively framed explanations (e.g., 10% chance of obtaining side effects) have been found to enhance patients' perceptions toward vaccine efficacy and decrease both side effect expectations and reported side effects (23). Recently, positive framing of side effect information has been found to significantly decrease symptoms attributed to a medicine (24). Additional linguistic tools, such as analogies, can also be effective for communicating medical information and may be particularly helpful for improving patient understanding and retention of medical information, decreasing patient anxiety and building rapport (25–28). An analogy may help a patient understand a concept by putting it in terms of objects or processes that the patient is already familiar with. To our knowledge, no studies have compared the use of analogy and framing or examined how these methods can be used to explain information pertaining to a biosimilar switch.

This study investigated how framing and analogy could be used to explain switching to biosimilars to patients with rheumatic diseases currently taking biologics. The aim of the study was to measure the effect of different explanations on patient perceptions of and hypothetical willingness to switch to a biosimilar treatment. The hypotheses tested were: 1) that positive framing would engender more positive views of biosimilars and increase patients' willingness to switch compared to a negatively framed explanation, and 2) that using an analogy would further improve understanding and willingness to switch compared to the explanations with framing only.

PATIENTS AND METHODS

Study design and participants. This study was a parallel, 4-arm, randomized controlled trial with 2 assessment points (baseline and post-presentation). The trial was approved by the Health and Disability Ethics Committee (17/NTB/245) and Auckland District Health Board (A+7961).

Based on a previous study that aimed to modify perceptions of generic medicines (29), 96 participants (24 participants per arm) were required for the trial to have 90% power, a significance level of 0.05 (2-tailed) and an effect size of f = 0.40. Participants were patients currently receiving a biologic treatment from the rheumatology department of an outpatient clinic in Auckland, New Zealand from April to July 2018. Of 247 patients who were sent recruitment letters, 41 participants were enrolled directly into the study. Participants were also recruited through Facebook groups (n = 3), and flyers distributed by nurses and rheumatologists at appointments (n = 52), which gave a total sample of 96 participants (Figure 1). Participants were included if they were age >18 years, fluent in English, and taking an originator biologic at the time of data collection.

New Zealand has a single payer health care system, and all patients must meet predetermined eligibility criteria to access publicly funded biologic medicines. At the time of the study, no biosimilars were funded for rheumatic disease indications in New Zealand.

Procedure. Eligible patients were sent a recruitment letter and participant information sheet in advance of their next appointment. Interested participants contacted the researcher to arrange a time for their study session, either before or after their next appointment at the clinic, or at the Clinical Research Centre of the University of Auckland Clinical Campus. During the study session, participants provided written consent, then completed the baseline questionnaire assessing demographic and clinical information and illness perceptions. After completion, the researcher revealed the participant's group allocation. Randomization was completed by an independent researcher not involved in the study, using a random number generator, and contained in sequentially numbered opaque envelopes.

Participants were randomized (n = 24 in each study arm) to receive 1 of 4 video explanations about switching to a biosimilar. Each explanation was delivered using a computer tablet. For each arm, the video featured a clinician providing basic information about biosimilars, followed by 1 of 4 possible explanations: positive framing, negative framing, positive framing plus an analogy, or negative framing plus an analogy (for script, see Supplementary Appendix A, available on the *Arthritis Care & Research* website at http://onlinelibrary.wiley.com/doi/10.1002/acr.24012/abstract). The positive explanation employed a positive valence attribute frame, whereby the similarities between the biologic and biosimilar were emphasized. The physician featured in the video used positive body language and verbal cues (e.g., nodding and smiling) to promote a positive interaction. Comparatively, the negatively framed explanation focused on the differences between biologics and biosimilars, and the physician used negative body language and verbal cues (e.g., less confident vocal tone) to imply uncertainty regarding efficacy

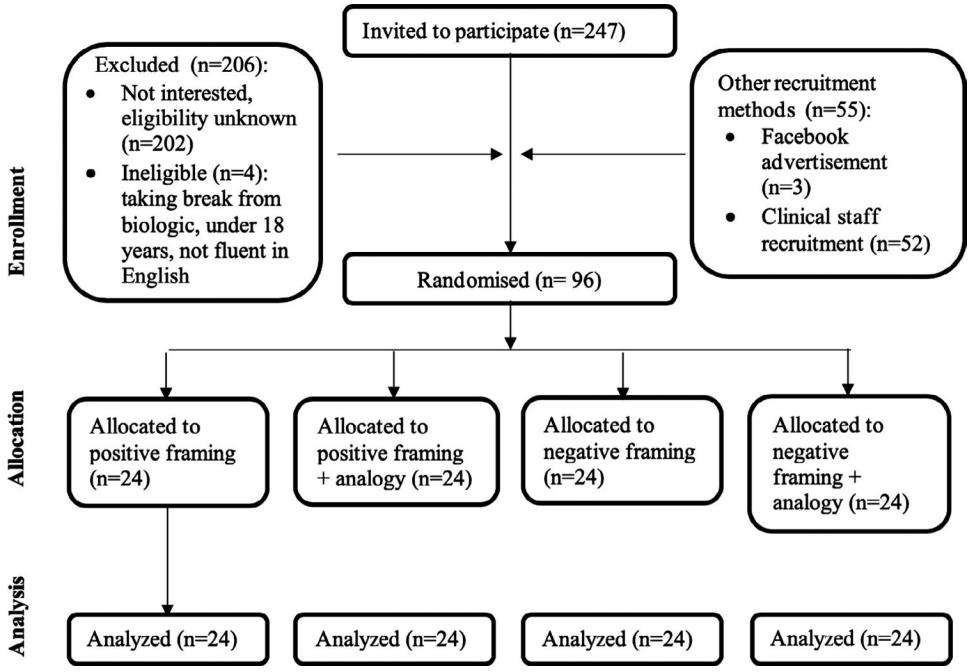

Figure 1. Study enrollment and retention.

and safety. The analogy used focused on the concept of baking bread, using a cheaper yeast from a different brand. The analogy used the concept of 2 brands of yeast that would provide the same outcome and work in a similar biologic way to produce bread, despite having differences in cost and manufacturing. The same physician was featured in each video explanation to ensure consistency. Each explanation video was approximately 2 minutes in length, with the analogy conditions lasting closer to 2.5 minutes.

Immediately after viewing the explanation, participants completed the post-presentation questionnaire, which assessed beliefs about willingness to switch, as well as perceptions and concerns about biosimilars. All participants were offered a $20 shopping voucher for participation.

Measures. In the baseline questionnaire, participants reported their age, ethnicity, sex, and education level. Participants also provided the name of their current biologic treatment, length of treatment, and the condition being treated.

At baseline, illness perceptions were assessed using the 9-item Brief Illness Perception Questionnaire (Brief IPQ) (30). The Brief IPQ is a scale where each item assesses the presence of an illness perception construct, on an 11-point numerical rating scale from 0 (not at all) to 10 (extremely). All items except the casual beliefs opened-ended question were included in the current study. The Brief IPQ has demonstrated appropriate discriminant validity and test–retest reliability (31).

To assess how effective the explanations were, 4 items asked how reassuring and convincing the explanation was, how easy it was to understand, and how important participants believed a conversation about biosimilars to be. Participants were also asked their willingness to switch from their current medication to a biosimilar in this hypothetical situation (yes/no).

Perceptions of biosimilars were assessed using 5 items. Participants rated how much they expected side effects from a biosimilar, how effective and safe they believed them to be, and how anxious and concerned they were about switching to a biosimilar, on an 11-point numerical rating scale from 0 (not at all) to 10 (extremely). Higher scores indicated stronger perceptions of each item (e.g., more safe or more anxious).

Three open-ended questions asked participants to describe concerns they had about switching to a biosimilar, what they found most worrying about the explanation, and what information would be important for patients to know about switching. One item also asked participants to state how much time they would want to discuss the change with their doctor and whether they would like to be referred to relevant websites.

Statistical analyses. Analyses were performed using SPSS software, version 22. Chi-square tests of independence and one-way analyses of variance (ANOVAs) were used to assess differences between groups at baseline in demographic and clinical characteristics. Two logistic regressions were employed to test the effect of framing on willingness to switch (coded as negative framing [0] versus positive framing [1]), and to test the effect of the analogy on willingness to switch (analogy [0] versus framing [1]). In both regressions, willingness to switch was a binary outcome variable, coded as willing (0) or not willing to switch (1).

Independent samples *t*-tests were used to assess the effect of positive and negative framing on perceptions of biosimilars. A two-way ANOVA was conducted to ascertain the effects of positive and negative framing (factor 1: positive versus negative framing), and an analogy (factor 2: analogy versus no analogy) on participants' understanding of the explanation.

Exploratory analyses were conducted, whereby responses to each of the open-ended concern items were categorized, and frequencies are reported. Each concern reported by a given patient was classified (total percentages may exceed 100%). Correlations were used to assess the association between the amount of time patients wanted to discuss switching with their physician and the patients' preference for biosimilars, perceptions toward biosimilars (safety, side effects, and efficacy), and concern and anxiety about switching.

RESULTS

Characteristics of the sample are shown in Table 1. The mean ± SD age of the sample was 54.09 ± 15.9 years, and the majority of participants were female (69%), identified as New Zealand European (67%), and had received a tertiary-level education (53%). The most common biologic that participants were currently taking was rituximab (35%), and more than half of the sample were taking their biologic treatment for rheumatoid arthritis (65%). There were no differences in any clinical and demographic

Table 1. Demographic, clinical, and baseline psychological measures in experimental groups*

	Total sample (n = 96)	Positive framing (n = 24)	Positive framing with analogy (n = 24)	Negative framing (n = 24)	Negative framing with analogy (n = 24)	*P* (n = 96)
Age, years	54.09 ± 15.9	51.9 ± 17.6	56 ± 15.7	55 ± 13.5	53.5 ± 17	0.831
Sex, no. (%)						0.131
Female	66 (69)	20 (83)	13 (54)	15 (63)	18 (75)	–
Male	30 (31)	4 (17)	11 (46)	9 (38)	6 (25)	–
Ethnicity, no. (%)						0.301
NZ European/European	64 (67)	14 (58)	17 (71)	10 (42)	15 (63)	–
Asian	15 (16)	3 (13)	–	5 (21)	1 (4)	–
Pacific	7 (7)	1 (4)	1 (4)	2 (8)	1 (4)	–
Māori	6 (6)	1 (4)	–	1 (4)	1 (4)	–
Other	4 (4)	5 (21)	6 (25)	6 (25)	6 (25)	–
Education, no. (%)						0.147
Primary	5 (5)	–	3 (13)	1 (4)	1 (4)	–
Secondary	30 (31)	6 (25)	11 (46)	6 (25)	7 (29)	–
Tertiary	51 (53)	17 (71)	9 (38)	14 (58)	11 (46)	–
Postgraduate	10 (10)	1 (4)	1 (4)	3 (13)	5 (21)	–
Current biologic, no. (%)						0.599
Rituximab	34 (35)	5 (21)	10 (42)	11 (46)	8 (33)	–
Adalimumab	21 (22)	8 (33)	5 (21)	3 (13)	5 (21)	–
Tocilizumab	17 (18)	3 (13)	5 (21)	5 (21)	4 (17)	–
Infliximab	16 (17)	5 (21)	1 (4)	4 (17)	6 (25)	–
Etanercept	8 (8)	3 (13)	3 (13)	1 (4)	1 (4)	–
Time taking biologic, months	29.95 ± 29.1	33.1 ± 30.6	22.9 ± 22.8	21.7 ± 16.4	42.2 ± 38.4	0.238
Rheumatic disease, no. (%)						0.461
Rheumatoid arthritis	62 (65)	15 (63)	16 (67)	17 (71)	14 (58)	–
Ankylosing spondylitis	16 (17)	3 (13)	5 (21)	2 (8)	6 (25)	–
Psoriatic arthritis	13 (14)	3 (13)	3 (13)	4 (17)	3 (13)	–
Granulomatosis with polyangiitis	2 (2)	–	–	1 (4)	1 (4)	–
Juvenile idiopathic arthritis	2 (2)	2 (8)	–	–	–	–
Adult-onset Still's disease	1 (1)	1 (4)	–	–	–	–
Perceived sensitivity to medicines	14.5 ± 4.2	14.8 ± 5.3	13.8 ± 3.6	15.3 ± 3.9	14.2 ± 4.0	0.547
General beliefs about medicines	27.4 ± 5.5	28.2 ± 4.6	26.3 ± 6.1	26.5 ± 5.1	28.7 ± 6.1	0.314
Illness beliefs						
Consequence	5.8 ± 2.8	5.9 ± 2.6	6.3 ± 2.2	5.8 ± 3.2	5.2 ± 3.1	0.388
Timeline	9.4 ± 1.5	9.7 ± 0.9	9.5 ± 1.4	9 ± 1.9	9.5 ± 1.6	0.425
Personal control	5.7 ± 2.6	5.8 ± 2.0	5.5 ± 2.6	6.1 ± 2.6	5.3 ± 3.1	0.719
Treatment control	8.0 ± 2.0	8.0 ± 1.6	7.8 ± 2.4	8.6 ± 1.4	7.7 ± 2.3	0.372
Identity	6.0 ± 2.6	6.1 ± 2.5	6.5 ± 2.3	6.2 ± 2.9	5.0 ± 2.7	0.115
Concern	6.4 ± 3.1	7.3 ± 2.6	6.0 ± 3.3	6.8 ± 2.9	5.5 ± 3.3	0.130
Understanding	7.9 ± 2.2	8.5 ± 1.8	7.1 ± 2.3	8.3 ± 2.3	7.6 ± 2.4	0.127
Emotional response	5.0 ± 2.8	5.5 ± 2.3	5.4 ± 2.6	5.0 ± 3.2	4.1 ± 3.1	0.329

* Values are the mean ± SD unless indicated otherwise. NZ = New Zealand.

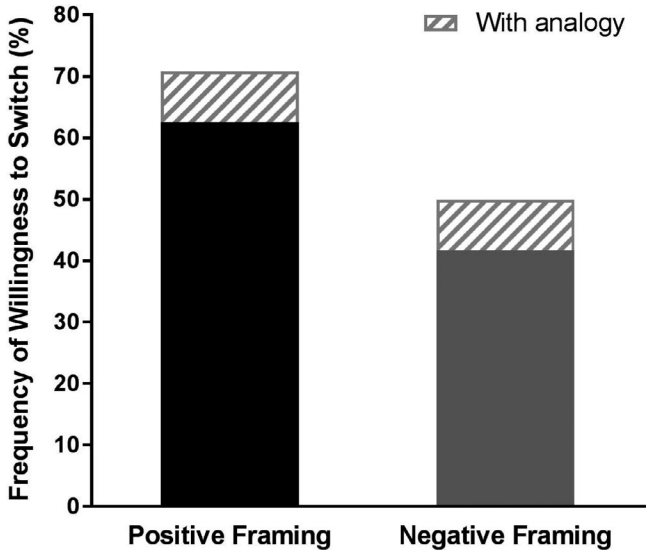

Figure 2. Bar graph demonstrating frequencies between groups in willingness to switch to a biosimilar.

characteristics, or in medicine- or illness-related beliefs at baseline between trial arms.

Willingness to switch. *Framing*. When comparing the participants who received positive framing (with or without an analogy) with those who received negative framing (with or without an analogy), there was a statistically significant association between group and willingness to switch ($\chi^2(1) = 4.27$, $P = 0.039$) (Figure 2). More than half of the positive framing group (67%, 32 of 48) reported that they were willing to switch to a biosimilar, compared to only 46% (22 of 48) of those who received a negatively framed explanation. The logistic regression model was statistically significant ($\chi^2(1,96) = 4.27$, $P = 0.039$). Framing significantly predicted a willingness to switch to a biosimilar (Wald $\chi^2 = 4.17$, $P = 0.041$, B = 0.86, Exp(B) = 2.36) (Table 2). The model explained 5.8% (Nagelkerke R^2) of the variance in being willing to switch to a biosimilar and correctly classified 60% of cases. Participants in the positive framing group were 2.36 times more likely to be willing to switch to the biosimilar (95% CI 1.04–5.40).

Analogy. A logistic regression was also conducted to examine the effects of the analogy on participants' willingness to switch to a biosimilar. This regression model was not statistically significant, showing that adding an analogy did not predict willingness to switch (Table 2).

Perceptions of biosimilars. Participants who received a positively framed explanation thought the biosimilar would be significantly more effective (mean ± SD 6.40 ± 2.25) than those who received a negatively framed explanation (mean ± SD 5.54 ± 1.83; $P = 0.049$). There were no significant differences between the positive and negative framing groups in perceived safety, expected side effects, concerns, or anxiety about switching ($P > 0.05$ for all).

Efficacy of the explanation. The positively framed explanation was rated significantly more convincing (mean ± SD 6.58 ± 2.87) than the negatively framed explanation (mean ± SD 5.27 ± 2.99; $P = 0.030$). There were no differences between the framed explanations in reassurance, understanding, and perceived importance of a conversation about biosimilars ($P > 0.05$ for all). A two-way ANOVA investigating differences between framing (positive or negative) and analogy (analogy or no analogy) on understanding of biosimilars found no significant interaction or main effects between groups ($P > 0.05$).

Consultation time. Participants reported that if they were to switch to a biosimilar in the future, they would want a mean ± SD initial discussion time with their physician of 38.7 ± 25.4 minutes (range 2 to 120 minutes). Length of consultation time was positively correlated with concerns about biosimilars (rs = 0.30, $P = 0.004$), with patients who had greater concerns about taking a biosimilar wanting longer consultation times. Consultation times were not related to preferences for biosimilars, anxiety about switching, or the safety, side effects, or efficacy of biosimilars ($P > 0.05$). Most patients (76%, n = 73) also wanted to be referred to a website with more information about switching.

Concerns. Table 3 shows example responses, frequencies, and categories for each of the 3 open-ended items. When asked about their concerns regarding biosimilars, most participants were concerned about reduced efficacy (50%) and safety (46%) after switching. The manufacturing processes (9%) and lack of clinical evidence (5%) were also reported concerns about biosimilars, with 13% of responses classified as "other." Participants reported that what was most worrying about the explanation were concerns regarding reduced efficacy (34%), cost and quality (28%), and safety (25%). Finally, participants reported that information that would be important for patients to know before switching included information around safety (including possible side

Table 2. Effect of framing and an analogy on willingness to switch*

Variable	B	SE	Wald chi-square	OR Exp(B) (95% CI)	Significance
Framing†	0.86	0.42	4.17	2.36 (1.04–5.40)	0.041
Analogy and framing‡	0.34	0.41	0.68	1.40 (0.63–3.16)	0.411

* The dependent variable is being willing to switch to a biosimilar, coded 0 = yes, 1 = no. OR = odds ratio; 95% CI = 95% confidence interval.
† 0 = negative framing, 1 = positive framing. Model chi-square Nagelkerke = 4.27, $P = 0.039$, $R^2 = 0.058$.
‡ 0 = analogy, 1 = framing. Model chi-square Nagelkerke = 0.68, $P = 0.410$, $R^2 = 0.009$.

Table 3. Representative responses and frequencies from open-ended items

Open-ended item: categories	No. (%)	Example responses
Concerns about biosimilars		
Reduced efficacy	52 (50)	"Might not work as well…in comparison with the current biologic." "No guarantee that it would be effective as the branded version."
Reduced safety (side effects)	48 (46)	"Same concerns as for biologics–the side effects, especially cancer." "Safety–is it safe for human consumption?"
Manufacturing	9 (9)	"Made in other country without Pharmac control over quality and process." "…why they need to use a different process."
Lack of clinical trials	5 (5)	"Not enough history…how many people tested it, where it's made." "Lack of studies to determine long-term effects on patients."
Concerning information from explanations		
Reduced efficacy	21 (34)	"It has taken almost 20 years to find a medication combo that works reasonably well. I worry that a biosimilar would be going backwards." "No guarantee that it would be as effective."
Cost and quality	17 (27)	"The outstanding message in the video for me was cost savings." "Seems like a slightly inferior product."
Reduced safety (side effects)	15 (25)	"More side effects could be possible."
Lack of clinical trial evidence	7 (12)	"Not much research as to how successful the switch will be, are we guinea pigs."
Lack of similarity	4 (5)	"Change of ingredients–that they're not identical."
Information patients should know before switch		
Reduced safety (side effects)	40 (38)	"What side effects are different between original and biosimilar."
Efficacy	39 (37)	"How efficacy may differ (especially for drugs with high immunogenicity)." "That it would work the same or would be more effective."
Clinical trial evidence	20 (19)	"Rigorous trials to understand treatment success with branded/current biologic."
Manufacturing	10 (10)	"Where it is made. By whom." "How it is made plus how it works."
Switching back	7 (7)	"Can you go back if it is a choice (and it doesn't work as well)."

effects, 38%), efficacy (37%), evidence from clinical trials (19%), and manufacturing information (10%), and whether switching back to a biologic is possible (7%) (Table 3).

DISCUSSION

This study found that a positively framed explanation about switching to biosimilars encouraged 21% more participants to be willing to switch, compared to a negatively framed explanation. Positive framing was also more convincing and increased the perception that a biosimilar would be effective. The use of an analogy did not significantly improve willingness to switch or increase patient understanding of the explanation. Participants were predominantly concerned about efficacy and safety in regard to biosimilars, but they also perceived evidence from clinical trials and information about manufacturing processes to be important. Participants who were more concerned about switching wanted longer consultation times to discuss this process.

The findings from the current study are consistent with previous literature that suggests that framing can influence patients' treatment-related decisions and perceptions toward new medicines (23,32). The findings also accentuate the importance of considering how biosimilars are explained to patients to ensure acceptance and enable informed choices (16,18,33). Previous research would suggest that positive framing can improve perceptions about safety and the side effects of medicines (32), although this result was not found in the current study. The content of the explanation, particularly the uncertainty regarding the development of side effects, may have been too tentative to modify these concerns or perhaps too brief to impact perceptions. Alternatively, modifying these perceptions in relation to biosimilars rather than other medicines may be more difficult, because biosimilars are still largely unfamiliar to the lay public.

In contrast to the hypothesis and previous literature (26,28), the addition of the analogy in the 2 treatment arms did not improve understanding compared to the framed explanations. Participants may not have correctly understood the analogy or may have perceived it as irrelevant to their current medical treatment (34). Analogies unrelated to health care can lead to patients misbelieving that a problem or decision is trivial (35). The study findings highlight the importance for physicians to carefully formulate and explain analogies that can be tailored to the patient's level of health literacy, or to consider using analogies that have a medical focus. It is likely that analogies can increase patient understanding and inform treatment-related decisions if patients are able to establish a clear connection between the information and their specific situation.

Another important finding in the current study is that many patients have concerns about switching that need to be addressed

when biosimilars become available. Importantly, those participants who were more concerned about switching indicated that they would want longer consultation times. Health care systems are already burdened by time constraints, and patient dissatisfaction clearly occurs when consultation times do not match expectations (36). Patients may turn to alternate and possibly inaccurate sources of information-seeking, such as the internet (37). Interestingly there is quite a mismatch between the average time patients say they require for explanation (>30 minutes) and the time doctors indicate is sufficient for an explanation of a switch to a biosimilar (approximately 10 minutes) (14). Thus there is a need for further research into the most effective methods for describing biosimilars to patients in a method that addresses concerns such as safety and efficacy.

There are limitations of the current study that need to be considered. First, the assessment of willingness to switch measured behavioral intention in a hypothetical situation, which may not necessarily reflect the behavioral outcomes in a real-life switching scenario. Outcomes were only measured immediately following the explanation, so how these perceptions toward biosimilars may change over time is unknown. All explanations were delivered by a male physician. Patients often prefer same-sex physicians (38–41), meaning that the use of a male physician only for the video explanations in a majority-female sample may have influenced the results. Notably, the explanations were relatively brief and much shorter than the ideal time indicated by patients. The recruitment for the study may influence the generalizability of the results, because a large number of patients approached about the study were not interested in participation. Finally, the researcher collecting the patient assessments was not blinded to participant group allocation. Strengths of the study include the relevance of the sample included, because these patients are likely to be similar to those affected by the introduction of biosimilars. The explanations and study sessions were also conducted in a clinical setting, which further increases ecologic validity. Additionally, the use of a video explanation by the same clinician ensured standardization of information within each experimental condition.

In terms of clinical implications, the results suggest that a similar video explanation could be developed into an intervention to improve perceptions and willingness to switch to biosimilars. Patients could view such an intervention video prior to their consultation, to receive initial information about biosimilars. This approach could help to prevent lengthened consultation times, while still ensuring that patients have sufficient information to make informed treatment decisions.

Future research should investigate the efficacy of medically relevant analogies and consider tailoring the explanation to different levels of health literacy. Future explanations should also incorporate information around efficacy, safety, and side effects to attempt to alleviate these concerns within patients. Once biosimilars are available, research could also investigate how positive framing might affect nocebo responses and nonadherence after switching.

In summary, this study suggests that positive framing can improve patients' perceptions of biosimilars and increase their hypothetical willingness to switch to a biosimilar from a biologic treatment. The study also revealed that patients with rheumatic diseases currently taking biologics have various concerns about switching to biosimilars, particularly regarding efficacy and safety. The findings emphasize the importance of carefully constructing and delivering information to patients about biosimilars and highlight important areas of concerns that physicians should aim to address as biosimilars become readily available as treatment options.

AUTHOR CONTRIBUTIONS

All authors were involved in drafting the article or revising it critically for important intellectual content, and all authors approved the final version to be submitted for publication. Dr. Petrie had full access to all of the data in the study and takes responsibility for the integrity of the data and the accuracy of the data analysis.

Study conception and design. Gasteiger, Horne, Dalbeth, Petrie.
Acquisition of data. Gasteiger, Lobo, Dalbeth, Petrie.
Analysis and interpretation of data. Gasteiger, Jones, Kleinstäuber, Petrie.

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