Confidence in Biosimilar Drugs is Not Much Improved by Framing Them as the “Gold” Alternative Treatment Option to Bio-originators

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ABSTRACT

Introduction: Biosimilar drugs have promising potential to provide substantial health, financial, and access benefits to patients and the entire healthcare system. However, skepticism remains a hurdle to their incorporation into clinical practice.

Methods: In this study, we evaluated how confidence in biosimilar drugs is impacted by framing them as the “gold” alternative treatment option to bio-originators. An online survey was administered to subjects with self-reported diagnoses of psoriasis. All participants were provided a hypothetical scenario that their insurance would not cover the costs of a bio-originator agent. They were randomized to one of two groups which both received three alternative treatment options; group one was presented a biosimilar without framing and group two was presented a biosimilar framed as the “gold” alternative treatment option.

Results: More respondents in the “gold” framing intervention group than in the control group were confident in the biosimilar (30.3 vs. 25.8%); however, the differences were small and not statistically significantly different ($p = 0.266$).

Conclusion: It does not appear that framing biosimilar drugs as the “gold” alternative treatment option to their reference products has a large impact on confidence in them.

Keywords: Biosimilars; Confidence; Psoriasis; Treatment

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Key Summary Points

Biosimilar drugs have the potential to provide substantial health, financial, and access benefits to both patients and the entire healthcare system; however, skepticism remains a hurdle to their clinical implementation.

Psychological interventions, such as positive framing, can be used to improve patient willingness to initiate biological treatment; thus, we hypothesized that framing biosimilar drugs as the ‘gold’ alternative treatment option to their reference products would improve confidence in them.

More respondents in the intervention group than in the control group were confident in the biosimilar (30.3 vs. 25.8%); however, the differences were small and not statistically significantly different ($p = 0.266$).

Identifying effective methods to improve confidence in biosimilar drugs remains a challenge, and further research may be warranted to help them gain traction and fulfill their promising potential.

DIGITAL FEATURES

This article is published with digital features, including a summary slide, to facilitate understanding of the article. To view digital features for this article go to https://doi.org/10.6084/m9.figshare.14485026.

INTRODUCTION

Patients with psoriasis are undertreated, with almost 40% of patients with moderate-severe psoriasis receiving no therapy [1]. Biologics are appealing treatment options for psoriasis, but their high costs (roughly US $50,000 per year) may hinder patient access [2]. While biosimilars have encouraging potential to overcome the economic burden associated with biological therapies, they have experienced limited adoption. Several factors may be contributing to their stunted growth, such as marketing barriers and skepticism [3]. Because psychological interventions, such as positive framing, can improve willingness among patients for biological treatment [4], we hypothesized that framing biosimilar drugs as the “gold” alternative treatment option to their bio-originator products would increase confidence in them.

METHODS

Wake Forest School of Medicine Institutional Review Board approval (#IRB00065491) was obtained to recruit participants aged > 18 years with a self-reported history of psoriasis through Amazon Mechanical Turk, an online crowdsourcing platform used extensively in psychosocial research [5]. Subjects were directed to an online survey on Qualtrics, a secure web-based survey software, where they were all provided a hypothetical scenario in which they had severe psoriasis and their insurance would not cover the costs of a potent bio-originator treatment. The subjects were randomized to one of two groups in a 1:1 ratio, and presented with three alternative treatment options: a biosimilar injection, a systemic immunosuppressant pill, and a topical cream. Group one was presented the biosimilar without framing (Fig. 1); group two was presented the biosimilar framed as the “gold” alternative treatment option (Fig. 2).

| Treatment Options     | Administration       | Possible Side Effects           |
|-----------------------|----------------------|---------------------------------|
| Biosimilar            | Injections every 8 weeks | Headache, fatigue, infection    |
| Systemic immunosuppressant | Oral pills to take twice daily | Nausea, diarrhea, infection     |
| Topical cream         | Cream to apply twice daily | Dry, flaky skin                 |

**Fig. 1** Alternative treatment options presentation without framing intervention
Subjects were recommended the biosimilar and asked to rate their confidence in their planned treatment, using a 6-point Likert-type scale. Responses were dichotomized into one of three categories for analysis (e.g., response values of 1 or 2 were classified as “not confident,” values of 3 or 4 were classified as “neutral,” and values of 5 or 6 were classified as “confident”). Results were treated as ordinal categorical variables and analyzed using R (version 4.0.3; R Foundation for Statistical Computing, Vienna, Austria) with pre-planned $\chi^2$ statistical analysis, to compare the reported confidence between the “gold” framing intervention group and the control group. Sociodemographic data were collected, including: age, sex, race, ethnicity, education level, and annual household income. Subjects were compensated US $0.05 upon survey completion.

RESULTS

Of the 503 subjects with self-reported psoriasis who agreed to participate, 499 completed the survey; of these, the majority were Caucasian (67.5%) and female (58.1%) with a Bachelor’s degree or higher (59.5%) and an annual household income of > US $50,000 (66.9%); mean age was 35.6 years. The “gold” framing intervention group had a higher proportion of respondents who were confident with the biosimilar than the control group (30.3 vs. 25.8%), but the differences were small and not statistically significantly different ($p = 0.266$).

DISCUSSION

Despite the potential of biosimilar drugs to provide substantial benefit to patients, they have experienced sparse uptake [3]. Psychological interventions, such as anchoring and framing, are simple and cost-effective techniques that can improve patients’ willingness to undergo various dermatological treatments [4, 6], and may be applied in the context of catalyzing the acceptance of biosimilar drugs. However, the ethical implications of applying psychological techniques should be considered, as balancing a patient’s autonomy with a physicians’ duty to act in the patient’s best interest is a delicate and nuanced art. Manipulating patients’ perceptions might sound unsettling, but leveraging an understanding of human psychology to guide patients’ mindsets may be appropriate when it improves the chances for a positive outcome [4].

Web-based surveys can allow for quick and convenient recruitment of subjects, but this study has limitations. Recruited participants had self-reported diagnoses of psoriasis without in-person clinical evaluation, thus it is unclear if all patients were eligible for biological therapy. Additionally, while the presentation of treatment options was intentionally simplified to best isolate the effect of “gold” framing in this experiment, additional information regarding biosimilars may further improve perceptions of them. Subjects were not asked to provide justification for their reported confidence levels, and it is possible that the variable routes of administration of the treatment choices influenced their responses. Despite these limitations, we believe our preliminary data is sufficiently valid in providing insights on how confidence in biosimilar drugs is impacted by framing them as the “gold” alternative option to bio-originator agents. Implementing this presentation technique in a real-world, clinical setting may aid in supporting our findings.
CONCLUSION

Identifying simple and cost-effective methods to overcome skepticism in biosimilars remains a challenge, and further research may be warranted to help biosimilar drugs gain traction and fulfill their promising potential.

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Compliance with Ethics Guidelines. This study was reviewed and approved by the Wake Forest School of Medicine Institutional Review Board (#IRB00065491). The IRB formally determined that the study met criteria for a waiver of written (signed) consent. No protected health information or identifiers were collected for analysis.

Data Availability. All data generated or analyzed during this study are included in the text of the published article and/or in the electronic supplementary material file.

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