ORIGINAL ARTICLE

Impact of Switching from Branded to Generic Medications on Patient Acceptance and Adherence in Saudi Arabia

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Abstract

Introduction: The rising cost of pharmaceuticals has led to the increased use of generic medications as a more affordable alternative to branded medications. Despite being bioequivalent and interchangeable with branded counterparts, people remain suspicious about generic medications' safety, efficacy, and general quality. Previous research investigations have shown conflicting results: while some demonstrate cost savings and comparable effectiveness, others indicate decreased adherence, misunderstandings, and inadequate clinical outcomes in sensitive therapeutic areas. Although largely positive beliefs in Saudi Arabia, knowledge and trust gaps persist, emphasizing the need for additional research into the factors driving generic acceptance and adherence. **Objectives:** This study aimed to evaluate patient acceptance of switching from branded to generic medications and to assess treatment adherence post-switch in the Saudi Arabian population. **Materials and Methods:** In Saudi Arabia, this cross-sectional study was conducted from July to December 2025. Using Raosoft, a minimum sample size of 384 individuals was determined with a 95% confidence level and a 5% margin of error. Participants who had switched from branded to generic drugs within the previous 12 months and were at least 18 years old were eligible. The Medication Adherence Report Scale (MARS)-5 was used to measure medication adherence, sociodemographic, clinical history, and attitudes toward generic medications. The questionnaire was structured and self-administered, and it was derived from established methods. **Results:** A total of 492 participants were analyzed (mean age 30.2 ± 12.5 years); 69.1% were female, and 64.2% were aged 18–30 years. Pharmacists most commonly initiated the switch (63.6%), and 87.8% reported being informed that the medication was a generic equivalent. Most participants perceived generics as equally effective as branded medicines (58.5%) and equally safe (66.1%); 54.1% trusted generic quality, and 37.4% trusted it "somewhat." Despite this, 63.0% preferred remaining on the branded medication if cost was not an issue; leading concerns were side effects (33.1%) and reduced effectiveness (27.4%). Perception scores were mainly moderate (49.0%) or low (40.4%). The mean MARS-5 score was 15.9 ± 4.9, with low adherence most prevalent (44.7%), followed by moderate (36.4%) and high (18.9%). Region of residence was associated with perception category ($P < 0.001$). The perception category was associated with the adherence category ($P < 0.001$) and the general health category ($P = 0.005$). **Conclusion:** While perceived effectiveness, safety, and quality of generic medicines were generally favorable, conditional acceptance and suboptimal adherence were common after switching, supporting the need for consistent patient counseling and follow-up after brand-to-generic substitution.

Key words: Acceptance, adherence, brand, generic, switching

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INTRODUCTION

Amid the increasing costs of pharmaceuticals and health care services, generic medications have become an affordable alternative to their branded counterparts.[1] The Saudi Food and Drug Authority (SFDA) describes generic medications as the medications that are equivalent to a branded product in terms of dosage form, strength, quality, efficacy, route of administration and indication. Despite the fact that generic medications are interchangeable and bioequivalent to the branded medications, some people still have concerns and ask specifically for branded drugs.[2]

Generic medications are used extensively because they are 20–90% lower in cost than brand-name drugs while still providing comparable therapeutic effectiveness.[3] Switching between the same drug's products enhanced the risk of therapy discontinuation in cardiology patients, according to a 2016 study published in BMJ Open.[4] Despite data from epilepsy patients showing brand-to-generic levetiracetam had identical bioequivalence and no difference in seizure control, some patients reject generics out of fear or mistrust.[5] According to a Canadian questionnaire, patients' readiness to adopt generics is greatly increased when healthcare personnel communicate effectively with them.[4] Because generic drugs are less expensive, they can improve persistence; however, skepticism from both doctors and patients may hinder their acceptance.[6]

In Saudi Arabia, Almohammed *et al*. found that while 60% of participants had a positive view of generics, only 40.5% possessed adequate knowledge, with higher education correlating with better understanding and attitudes ($P < 0.01$).[7] A randomized controlled trial by Goldszmidt *et al*. in 2018 showed that patients who received medication labeled as "generic" had lower adherence rates, increased consumption of non-prescribed pills, and reported higher pain levels compared to those who received the same medication labeled as "brand-name" ($P < 0.05$).[8] Akhtar and Orayj evaluated public knowledge and attitudes toward generic drugs and reported that, despite generally positive attitudes, misconceptions regarding safety and efficacy remain common, highlighting the need for targeted education to improve patient trust.[9] A literature review by Straka *et al*. (2015) highlighted that switching from branded to generic medications can reduce costs; however, it may also lead to poorer adherence and clinical outcomes in sensitive therapeutic areas such as neurology.[10]

While switching to generics or biosimilars can improve healthcare sustainability, patient reluctance remains a barrier that may negatively affect adherence. Research in inflammatory bowel disease patients showed that negative perceptions about generics contributed significantly to refusal of switching, despite many maintaining remission and adherence post-switch.

Objectives

This study aimed to assess the acceptance level of patients who were switched from branded to generic medications, and to evaluate their adherence to the treatment after the switch in Saudi Arabia.

MATERIALS AND METHODS

Study design

This is a cross-sectional study that is conducted between July 2025 and December 2025 in Saudi Arabia. To guarantee a representative sample from different parts of Saudi Arabia, social media sites, including Instagram, WhatsApp, X, Snapchat, and Telegram, will be the main source of participants.

Sample size

From July 2025 to December 2025, data collection was conducted targeting a minimum sample size of 384 participants. The sample size was calculated using the Raosoft online sample size calculator to ensure the representativeness of the general Saudi population. The parameters used for this estimation included a confidence level of 95% and a margin of error of 5%.

The formula used to calculate the sample size was:

$$n = P(1\text{-}P) * Z_{\alpha}^{2}/d^{2} \text{ with a 95\% confidence level.}$$

n: Calculated sample size.
Z: The z-value for the selected level of confidence (1-a) = 1.96.
P: An estimated prevalence of knowledge.
Q: (1–0.50) = 50%, i.e., 0.50.
D: The maximum acceptable error = 0.05.

Therefore, the calculated minimum sample size was:

$$n = (1.96)^2 \times 0.50 \times 0.50/(0.05)^2 = 384.$$

Inclusion and exclusion criteria

The inclusion criteria were subjects aged 18 years or older, currently taking or previously taking a generic medication after being switched from a brand-name medication within the past 12 months, able to understand and respond to the questionnaire, and residing in Saudi Arabia during the study period. Exclusion criteria were subjects who had never been switched from a brand-name to a generic medication, those with cognitive impairments or psychiatric conditions that may interfere with answering the questionnaire reliably, those who declined to participate or did not complete the

questionnaire, and those not residing in Saudi Arabia at the time of data collection.

Method for data collection and instrument (data collection technique and tools)

Data were collected using a structured, self-administered questionnaire adapted from previously validated instruments.[12,13] On perceptions of generic medicines. The questionnaire consisted of five sections covering sociodemographic characteristics, clinical information, perceptions of generic medicines, medication adherence, and self-reported health status.

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Perceptions of generic medicines were measured through six questions, five of which were included in the score calculation. Score results ranged from 0 to 12, and were divided as:

- Low 0–6
- Moderate 7–9
- High 10–12.

Medication adherence was assessed using the five-item Medication Adherence Report Scale (MARS-5). Each question was scored from 1 (always) to 5 (never). An average score across all items was calculated (range 1–5), where higher scores indicated better adherence.

The total adherence score ranged from 5 to 25.

Divided as:

- Low 5–15
- Moderate 16–20
- High 21–25.

Health status was evaluated with five questions retrieved from the RAND-12 Health Status Scale. The score was calculated using these five questions. The score results ranged from 4 to 22.

Divided to:

- Impaired 4–11
- Moderate 12–16
- Good 17–22.

Pilot test

The survey was sent to 20 people, who were instructed to complete it. Tests of the study's viability and the questionnaire's ease of use were conducted. Data from the pilot research was not included in the study's final data.

Analyzes and entry method

Data were initially entered using Microsoft Excel software (2016) for Windows. The collected data were then transferred to the Statistical Package for the Social Sciences, version 20 (IBM Corp., Armonk, NY), to be statistically analyzed.

RESULTS

A total of 492 adult participants who met the inclusion criterion of switching from a branded medication to a generic alternative within the previous 12 months were analyzed. Participants had a mean age of 30.2 ± 12.5 years. Table 1 describes the sociodemographic profile. The sample was predominantly female (340/492, 69.1%) and largely composed of young adults aged 18–30 years (316/492, 64.2%). Most participants were Saudi nationals (95.3%). Residency was concentrated in the Western region (73.0%), whereas the Central (12.8%), Southern (8.1%), Eastern (5.1%), and Northern (1.0%) regions were less represented. Educational attainment was high, with bachelor's degree holders comprising 74.6% of the sample, and 49.6% were students.

Clinical and medication history findings are presented in Table 2. Pharmacists most frequently reported initiating or deciding the switch to a generic medication (63.6%), whereas physicians accounted for 24.2%. More than half of respondents had used the generic medication for <1 month (51.6%), and 15.4% reported a duration longer than 6 months. Communication-related indicators were generally favorable: 87.8% stated they were informed that the medication was a generic equivalent, and 74.6% stated the reason for switching was explained.

Table 3 details perceptions of generic medications. A majority perceived generic medications as having the same effectiveness as branded medications (58.5%), and two-thirds perceived the same safety profile (66.1%). Trust in generic quality was also high, with "Yes" and "Somewhat" responses totaling 91.5%. However, brand preference remained prominent: 63.0% indicated they would prefer staying on the branded medication if cost were not an issue. Side effects (33.1%) and reduced effectiveness (27.4%) were the leading concerns. Future acceptance of generic substitution was mixed, with 46.7% reporting it "Depends on the medication" and 44.9% reporting "Yes."

Medication adherence item distributions are summarized in Table 4. For unintentional non-adherence, forgetting medications was commonly endorsed as "Sometimes" (32.7%) or "Often" (21.3%). For intentional non-adherence,

Table 1: Sociodemographic characteristics of participants (*n*=492)

Parameter	No.	Percentage
Gender		
Female	340	69.1
Male	152	30.9
Age group		
18–30 years	316	64.2
31–45 years	100	20.3
≥46 years	76	15.4
Nationality		
Saudi	469	95.3
Non-Saudi	23	4.7
Region		
Central	63	12.8
Eastern	25	5.1
Western	359	73.0
Northern	5	1.0
Southern	40	8.1
Marital status		
Single	303	61.6
Married	179	36.4
Divorced	6	1.2
Widowed	4	0.8
Education level		
Primary	4	0.8
Intermediate	8	1.6
Secondary	80	16.3
Bachelor's	367	74.6
Postgraduate	33	6.7
Employment status		
Employed	176	35.8
Student	244	49.6
Retired	22	4.5
Self-employed	8	1.6
Unemployed	42	8.5
Income level		
<3000 SAR	218	44.3
3000–5000 SAR	112	22.8
>10000 SAR	162	32.9

stopping medication when feeling better was frequently reported as "Always" (28.9%) or "Often" (21.3%). In contrast, dose alteration was less common, as over half selected "Never" (52.2%). These patterns suggest that while some behaviors (e.g., dose alteration) were relatively uncommon, discontinuation-related behaviors contributed meaningfully to lower adherence scores in a considerable subgroup.

Table 2: Clinical and medication history of participants (*n*=492)

Parameter	No.	Percentage
Switched to generic in the past 12 months		
Yes	492	100.0
Decision maker for switching		
Physician	119	24.2
Pharmacist	313	63.6
Insurance provider	12	2.4
Myself	48	9.8
Duration of using the generic		
<1 month	254	51.6
1–3 months	99	20.1
4–6 months	63	12.8
>6 months	76	15.4
Informed that the medication is a generic equivalent		
Yes	432	87.8
No	24	4.9
Not sure	36	7.3
Reason for the switch was explained by healthcare provider		
Yes	367	74.6
No	86	17.5
Not sure	39	7.9

General health responses are displayed in Table 5. Almost all participants rated their health as excellent or very good (47.4% and 42.1%, respectively). Nearly half reported no limitation in daily physical activities (49.0%), whereas 18.7% reported being limited a lot. Pain interference was mostly low ("Not at all" 41.9%; "A little bit" 36.6%). Energy and calmness were commonly reported as "Most of the time" (39.4%) and "Most of the time" (50.6%), respectively.

Table 6 presents the score-based classifications. The perception of generic medications score (0–12) averaged 6.89 ± 2.12; 49.0% were categorized as moderate perception, 40.4% as low, and 10.6% as high. The MARS-5 adherence score (5–25) averaged 15.9 ± 4.9, and low adherence was most prevalent (44.7%), followed by moderate (36.4%) and high adherence (18.9%). The general health score (4–22) averaged 16.9 ± 2.7; most participants were classified as having good general health (60.6%). Figures 1 and 2 illustrate the distribution of perception and adherence categories.

Figure 1 shows the distribution of perception of generic medications score categories (n = 492). Nearly half of the participants were classified as having a moderate perception score (241/492, 49.0%), whereas 199/492 (40.4%) had low perception and 52/492 (10.6%) had high perception.

Figure 2 shows the distribution of MARS-5 score categories (n = 492). Low adherence was the most frequent classification

Table 3: Perception of generic medications (*n*=492)

Parameter	No.	Percentage
Perceived effectiveness of generic versus branded		
More effective	57	11.6
Same	288	58.5
Less effective	68	13.8
Not sure	79	16.1
Perceived safety of generic medication		
Safer	67	13.6
Same	325	66.1
Less safe	23	4.7
Not sure	77	15.7
Trust in quality of generic medications		
Yes	266	54.1
Somewhat	184	37.4
No	42	8.5
Prefer staying on branded medication if cost was not an issue		
Yes	310	63.0
Doesn't matter	114	23.2
No	68	13.8
Main concern about generic medications (if any)		
None	116	23.6
Side effects	163	33.1
Reduced effectiveness	135	27.4
Quality control	73	14.8
Other	5	1.0
Accept generic substitution in the future		
Yes	221	44.9
Depends on the medication	230	46.7
No	41	8.3

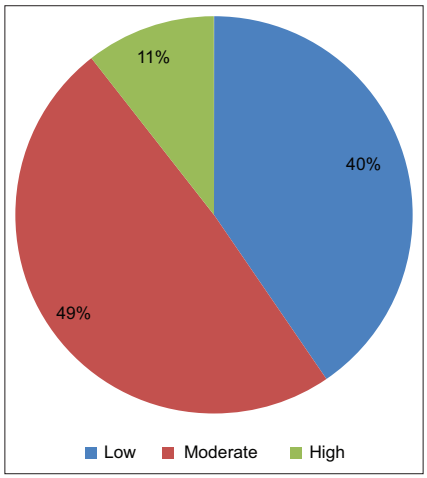

Figure 1: Distribution of perception of generic medications score categories (*n* = 492)

(220/492, 44.7%), followed by moderate adherence (179/492, 36.4%), whereas 93/492 (18.9%) demonstrated high adherence.

Table 4: Medication Adherence Report Scale-5 item responses (*n*=492)

Parameter	No.	Percentage
I sometimes forget to take my medicines		
Always	61	12.4
Often	105	21.3
Sometimes	161	32.7
Rarely	110	22.4
Never	55	11.2
I stop taking my medicines when I feel better		
Always	142	28.9
Often	105	21.3
Sometimes	87	17.7
Rarely	68	13.8
Never	90	18.3
I sometimes alter the dose of my medicines on my own		
Always	49	10.0
Often	29	5.9
Sometimes	79	16.1
Rarely	78	15.9
Never	257	52.2
I stop taking my medicines when I feel worse		
Always	105	21.3
Often	81	16.5
Sometimes	113	23.0
Rarely	87	17.7
Never	106	21.5
I sometimes stop taking my medicine for a while		
Always	72	14.6
Often	81	16.5
Sometimes	135	27.4
Rarely	81	16.5
Never	123	25.0

Chi-square analyses examining associations between demographic variables and perception score categories are shown in Table 7. Region of residence was the only demographic variable significantly associated with perception category ($P < 0.001$). Within-region proportions indicated higher "High" perception in the Central region (13/63, 20.6%) and Southern region (6/40, 15.0%) compared with the Western region (30/359, 8.4%), whereas no Eastern-region participants were classified as "High" perception (0/25). Although the Northern region displayed a high proportion of "High" perception (3/5), the very small subgroup size limits interpretability. Gender, age group, nationality, marital status, education, employment, and income showed no statistically significant associations with perception categories (all $P > 0.05$).

Table 5: General health item responses (*n*=492)

Parameter	No.	Percentage
In general, would you say your health is		
Excellent	233	47.4
Very good	207	42.1
Good	43	8.7
Fair	5	1.0
Poor	4	0.8
Does your health limit you to daily physical activities?		
Yes, limited a lot	92	18.7
Yes, limited a little	159	32.3
No, not limited at all	241	49.0
During the past 4 weeks, how much did pain interfere with your normal work?		
Not at all	206	41.9
A little bit	180	36.6
Moderately	83	16.9
Quite a bit	19	3.9
Extremely	4	0.8
During the past 4 weeks, how much of the time did you feel you had a lot of energy?		
All the time	46	9.3
Most of the time	194	39.4
Some of the time	192	39.0
Little of the time	58	11.8
None of the time	2	0.4
During the past 4 weeks, how much of the time have you felt calm and peaceful?		
All the time	78	15.9
Most of the time	249	50.6
Some of the time	121	24.6
Little of the time	28	5.7
None of the time	16	3.3

Table 6: Distribution of participants by scoring system categories (*n*=492)

Scoring system	Frequency	Percentage
Perception of generic medications score		
Low	199	40.4
Moderate	241	49.0
High	52	10.6
Medication Adherence Report Scale-5		
Low	220	44.7
Moderate	179	36.4
High	93	18.9
General health score		
Impaired	17	3.5
Moderate	177	36.0
Good	298	60.6

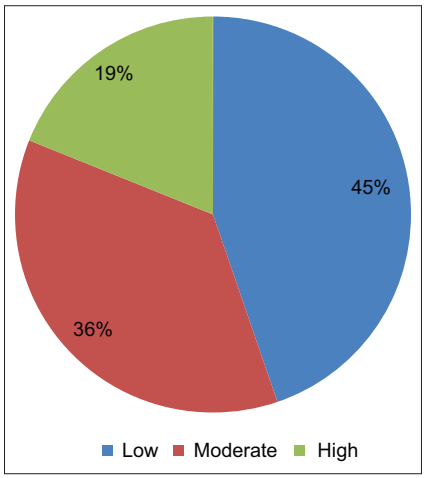

Figure 2: Distribution of medication adherence report scale-5 score categories (*n* = 492)

The perception category was significantly related to the general health category ($P = 0.005$) and to the medication adherence category ($P < 0.001$). Impaired general health occurred more frequently among participants with low perception scores, whereas no impaired cases were observed in the high-perception group. Regarding adherence, the moderate-perception group showed the highest proportion of high adherence, whereas the high-perception group ($n = 52$) showed a higher proportion of low adherence (61.5%). Collectively, these findings emphasize that perceptions and adherence behaviors may be influenced by multiple contextual factors (including regional differences), and may not increase in a strictly linear manner.

DISCUSSION

The objective of the present study was to assess patient acceptability of the change from a branded to a generic drug and medication adherence following the change of medications in Saudi Arabia. Among the 492 adults who reported switching from a brand to a generic product in the past 12 months, perceptions were generally positive: 58.5% considered generics to be equally effective compared to branded products, and 66.1% considered them as equally safe compared to branded products, and 91.5% expressed at least some amount of trust in the quality of generics. However, there remained residual skepticism with some concern about side effects (33.1%) and reduced effectiveness (27.4%) with many participants saying that willingness to use a generic in the future was dependent upon the type of medication (46.7%). These findings indicate that in this context, acceptance is large but conditional and shaped by beliefs as well as experience.

The positive assessment of generic effectiveness and safety is consistent with the basic premise in the regulations that approved generic products are, if the quality and

Table 7: Chi-square test results sociodemographic factors versus perception of generic medications score categories (*n*=492)

Parameters	Perception level			Total (*n*=492)	*P*-value*
	Low	Moderate	High		
Gender					
Female	134	164	42	340	0.155
	67.3%	68.0%	80.8%	69.1%	
Male	65	77	10	152	
	32.7%	32.0%	19.2%	30.9%	
Age group					
18–30 years	121	159	36	316	0.516
	60.8%	66.0%	69.2%	64.2%	
31–45 years	48	44	8	100	
	24.1%	18.3%	15.4%	20.3%	
≥46 years	30	38	8	76	
	15.1%	15.8%	15.4%	15.4%	
Nationality					
Saudi	186	231	52	469	0.120
	93.5%	95.9%	100.0%	95.3%	
Non-Saudi	13	10	0	23	
	6.5%	4.1%	0.0%	4.7%	
Region					
Central	24	26	13	63	**0.000**
	12.1%	10.8%	25.0%	12.8%	
Eastern	14	11	0	25	
	7.0%	4.6%	0.0%	5.1%	
Western	144	185	30	359	
	72.4%	76.8%	57.7%	73.0%	
Northern	0	2	3	5	
	0.0%	0.8%	5.8%	1.0%	
Southern	17	17	6	40	
	8.5%	7.1%	11.5%	8.1%	
Marital status					
Single	115	152	36	303	0.193
	57.8%	63.1%	69.2%	61.6%	
Married	80	83	16	179	
	40.2%	34.4%	30.8%	36.4%	
Divorced	4	2	0	6	
	2.0%	0.8%	0.0%	1.2%	
Widowed	0	4	0	4	
	0.0%	1.7%	0.0%	0.8%	
Education					
Primary	0	4	0	4	0.479
	0.0%	1.7%	0.0%	0.8%	
Intermediate	4	4	0	8	
	2.0%	1.7%	0.0%	1.6%	

(Contd...)

Table 7: *(Continued)*

Parameters	Perception level			Total (*n*=492)	*P*-value*
	Low	Moderate	High		
Secondary	33	42	5	80	
	16.6%	17.4%	9.6%	16.3%	
Bachelor's	148	176	43	367	
	74.4%	73.0%	82.7%	74.6%	
Postgraduate	14	15	4	33	
	7.0%	6.2%	7.7%	6.7%	
Employment					
Employed	74	85	17	176	0.261
	37.2%	35.3%	32.7%	35.8%	
Student	89	122	33	244	
	44.7%	50.6%	63.5%	49.6%	
Retired	10	12	0	22	
	5.0%	5.0%	0.0%	4.5%	
Self-employed	4	4	0	8	
	2.0%	1.7%	0.0%	1.6%	
Unemployed	22	18	2	42	
	11.1%	7.5%	3.8%	8.5%	
Income					
<3000 SAR	91	103	24	218	0.685
	45.7%	42.7%	46.2%	44.3%	
3000–5000 SAR	48	51	13	112	
	24.1%	21.2%	25.0%	22.8%	
>10000 SAR	60	87	15	162	
	30.2%	36.1%	28.8%	32.9%	
Medication adherence level					
Low	86	102	32	220	**<0.001**
	43.2%	42.3%	61.5%	44.7%	
Moderate	80	89	10	179	
	40.2%	36.9%	19.2%	36.4%	
High	33	50	10	93	
	16.6%	20.7%	19.2%	18.9%	
General health level					
Impaired	7	10	0	17	**0.005**
	3.5%	4.1%	0.0%	3.5%	
Moderate	90	77	10	177	
	45.2%	32.0%	19.2%	36.0%	
Good	102	154	42	298	
	51.3%	63.9%	80.8%	60.6%	

**P*-value was considered significant if ≤ 0.05

bioequivalence standards are met, therapeutically interchangeable with their reference medicines. International regulatory standards and guidance for equivalence assessment of interchangeable multisource (generic) products outline the role of comparator products as well as equivalence assessment in supporting decisions in the area of interchangeability.[15] In Saudi Arabia, the SFDA has product-specific bioequivalence guidance for product-specific expectations, bioequivalence and *in vitro* study design for generics development, which are part of structured approaches to regulatory plans to ensure

performance comparable to that of approved generics.[14] Taken together, these frameworks are helpful to explain why a majority of our respondents were in favor of equivalence and showed trust in the quality of generics.

At the same time, our results show a well-described "equivalence-preference gap": Although patients may express their support for equivalence, brand preference and worry about harms still exist. A systematic review on patients' and consumers' perception concluded that doubts about generic quality, effectiveness and adverse effects are still common internationally and often reinforced by visible cues such as changes in the appearance or packaging of the pills and beliefs about the origin of manufacturing.[16] Similarly, a systematic review of observational studies concluded that negative perceptions regarding generic medicines (including perceptions of inferior efficacy, safety or quality) are held by meaningful proportions of lay people, doctors and pharmacists, with the distribution of concerns varying across stakeholder groups and settings.[17] Our results, where the majority of the participants supported equivalence yet a large minority still expected more harm or less benefit, are consistent with this mixed picture.

Within Saudi Arabia, the current results agree with research showing generally positive attitudes in combination with knowledge gaps and long-lasting misconceptions. Almohammed *et al*. evaluated the public knowledge, perception, and experience with generic medicines in Saudi Arabia. They found that willingness to use generics was mixed with limited knowledge and uncertainty in certain areas, suggesting that positive attitudes may not be associated with a clear understanding of the regulation and equivalence of generics.[7] More recently, Akhtar and Orayj indicated positive perceptions of generics in general but also revealed large variations in knowledge and misconceptions about generics among the participants, highlighting the importance of an informed policy and education in addressing low public confidence.[9] In this context, our finding that the future acceptance of many participants was dependent on the type of medication used reinforces the need for medication-specific counseling that deals with the nature of generic equivalence and realistic expectations about appearance and excipients.

A key contextual observation in our study is the high prominence of pharmacists in switching decisions (63.6%), and high reported disclosure that the product was a generic equivalent (87.8%), and reasons for switching were explained (74.6%). This is important because communication has been identified as a determinant of generic acceptance on many occasions. Reviews of patient knowledge and acceptance emphasize the strong influence on comfort with generic substitution provided through interactions with healthcare professionals, especially where consistent messages are delivered by pharmacists and prescribers and where patients are supportive of their concerns relating to efficacy, safety and manufacturing standards.[18] Our data suggest that in Saudi Arabia, pharmacists are in a position as the main throughput for substitution decisions; therefore, standardized approaches of counseling and explanations based on patients may be especially impactful in further reducing uncertainty and enhancing sustained acceptance.

Expectation effects help provide another way of understanding persistent concerns and adherence patterns following switching. In a randomized controlled trial, Goldszmidt and colleagues have demonstrated that identical treatment that was labeled as "generic" (versus "brand-name") was linked to increased subjective pain and more non-adherent behavior, indicating that labeling cues and expectations can affect perceived outcomes and medication-taking behavior independent of pharmacology.[19] Complementing this, reviews of non-pharmacological (nocebo) effects in medication switching speak about how negative expectations may cause symptoms to worsen or perceived side effects after a switch that can, in turn, reduce persistence and adherence.[19] In our cohort, a significant proportion gave side effects as the concern and adherence patterns included stopping when feeling worse, which is consistent with the possibility that expectations and symptom interpretation play a role in post-switch discontinuation behaviors.

Medication adherence after switching was often suboptimal in our cohort: low medication adherence on MARS-5 was reported in 44.7% of participants, with only 18.9% of participants being classified as having high adherence. Item-level responses indicated that stopped taking behavior was more prominent than dose changing for different reasons; respondents were more likely to agree with stopping medicines because they were feeling better or worse, or stopping for a while; dose change was less likely and more than half reported never changing the dose. This profile is clinically meaningful because when patients stop and start intermittently, they can have therapeutic benefit undermined even if they do not actively "experiment" with dosing. The MARS-5 is widely used as a self-report adherence measure, and some supporting published work has been carried out to validate the psychometric properties of the MARS-5 for the measurement of self-report medication-taking behavior across health conditions,[20] providing some credibility in the observed adherence distribution, but allowing for the fact that self-report may underestimate non-adherence.

The relationship between the category of perception and adherence in our data set was not linearly related but statistically significant, with the moderate-perception subgroup having the highest percentage of high adherence. This reinforces the notion that adherence is multifactorial and that general "perceptions of generics" may not be a good fit for medication-taking behavior. Longitudinal evidence also suggests complexity: Pettersen *et al*. followed patients after percutaneous coronary intervention and examined perceptions of generic medicines alongside adherence, highlighting that perceptions can shift over time and may interact with clinical context rather than behaving as a static predictor of

adherence.[13] In our study, the non-linear pattern may reflect heterogeneity within the "high perception" group (a smaller subgroup), as well as the influence of factors not captured by the perception score, such as regimen complexity, symptom volatility, or prior experiences during switching.

Finally, it is important to interpret adherence findings alongside real-world evidence suggesting that switching among products of the same active substance can, in some settings, be associated with discontinuation. Degli Esposti *et al*. reported in a retrospective cohort of cardiovascular patients that switching among different products of the same off-patent active substance (brand and/or generic) was associated with a higher risk of therapy discontinuation or substitution, underscoring that switching policies should be accompanied by strategies to maintain persistence, particularly in chronic disease populations.[4] Although our design does not allow causal conclusions or direct comparison of clinical outcomes, these data collectively support the clinical relevance of monitoring adherence after switching and strengthening patient education to mitigate avoidable discontinuation.

Several limitations should be considered. The cross-sectional design precludes causal inference regarding whether perceptions influence adherence or whether experiences after switching shape perceptions. Adherence and health status were self-reported and, therefore, vulnerable to recall and social desirability bias. The study did not stratify analyses by medication class or therapeutic area; this is important because switching concerns and susceptibility to expectation effects may differ by indication and drug type. Finally, the sample was predominantly young and female, which may affect generalizability to older populations and patients with higher medication burden, where switching-related concerns and adherence challenges may be more pronounced.

CONCLUSION

In this cross-sectional study of adults in Saudi Arabia who had switched from a branded medication to a generic equivalent within the previous 12 months, perceptions of generics were largely positive, with most participants reporting comparable effectiveness and safety and at least some trust in generic quality. Nevertheless, brand preference remained prominent and concerns about side effects and reduced effectiveness persisted. Medication adherence after switching was frequently low, and perception category was significantly associated with adherence and general health classifications, with region also influencing perceptions. These findings indicate that favorable views of generics do not necessarily translate into optimal adherence, highlighting the importance of clear communication around substitution, medication-specific counseling, and targeted educational strategies to support sustained use of generics.

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ETHICAL APPROVAL

The study was fully explained to all participants, and it was emphasized that participation was voluntary. Written informed consent was obtained from each participant prior to enrollment. All collected information was securely stored and used exclusively for research purposes.

INFORMED CONSENT

Written informed consent was obtained from all study participants.

DATA AND MATERIALS AVAILABILITY

All data generated or analyzed during this study are included in this published article.

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