

Assessment of Patient Satisfaction with Generic Medication in Emerging Economy Using the Treatment Satisfaction Questionnaire for Medication

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Abstract

The purpose of this study was to explore the factors influencing patient satisfaction with generic medication in India using the treatment satisfaction questionnaire for medication (TSQM) scale. This study proposed a set of hypotheses that were tested using structural equation modeling (SEM). This study was based on primary data collected from 542 sample respondents using the judgmental sampling method. The findings of this study revealed an affirmative relationship of effectiveness and convenience with patient satisfaction with generic medication. The study's findings demonstrated that the TSQM is a psychometrically sound tool with high reliability and construct validity. Path analysis revealed that the effectiveness and convenience of generic medication contributed significantly to patient satisfaction, with standardized coefficients of 0.254 and 0.237, respectively.

Keywords

satisfaction, patient satisfaction, generic medication, tSQM

Introduction

Addressing a country's citizens' health concerns is every government's top priority, and it is a particularly critical challenge in emerging economies where healthcare disparities are widespread. Providing patients with safe and high-quality medicine is one of the ways to improve health standards (1). As a result, the government of many nations intends to change healthcare by allowing access to generic medicines (2). In the United States, the government encourages generic drug substitutions, and it is estimated that generic drugs fill half of all prescriptions (2). Generic drugs have also been implemented in several European countries like Germany, Portugal, Spain, etc. Recently, in India, one of the world's prominent emerging economies, the government has mandated physicians and pharmacies to prescribe and ensure the availability of generic medicines (3). The recent spike in demand for certain common drugs has been exacerbated by the emergence of the COVID-19 pandemic, resulting in severe drug shortages in hospitals and pharmacies (4). These shortages have compelled the Indian healthcare system to rely on generic drugs. Furthermore, the rising cost of healthcare has forced many Indians to prefer generic medications over the branded ones. As a result, by 2020, generic drugs have captured more than 75% market share of the

Indian pharmaceutical market (5). According to a recent Indian Brand Equity Foundation (IBEF) report, the Indian pharmaceutical market is expected to reach US\$ 41 billion by the end of 2021, US\$ 65 billion by 2024, and US\$ 120-130 billion by 2030 (6). To ensure growth and sustainability, pharmaceutical companies have focused heavily on patient-related outcomes in the last decade. Patient satisfaction is a key outcome of how well the healthcare facilities satisfy patients' needs and expectations (7). Satisfaction with medication is an important facet of patient satisfaction that both physicians and pharmaceutical companies should pay attention to. Since generic medicines are usually 30–80% less expensive than brand-name equivalents, their quality and performance are always in doubt (8). Thus, generic drug manufacturers must assess patient satisfaction with generic medication to sustain and grow in a competitive market, particularly in emerging economies such as India.

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Few studies have been conducted in recent years to investigate the factors influencing physicians' and patients' adoption decisions toward generic drugs, but to the best of our knowledge, there is a lack of studies assessing patient satisfaction with generic medication, particularly in emerging economies like India. As a result, there is a need to investigate the factors influencing patient satisfaction with generic medication in India, and the current study aims to do so using the treatment satisfaction questionnaire for medication (TSQM) scale (9). The implications of this study can be seen in two ways. First, theoretically, the outcomes of this study will reinforce the existing literature on patient satisfaction and generic medications. Next, it will also aid generic drug manufacturers and marketers in crafting strategies to encourage generic medications in emerging economies such as India.

Review of the Literature and Formulation of Hypotheses

The US Food and Drug Administration (FDA) defines a generic drug as "identical – or bioequivalent – to a brand-name drug in dosage form, safety, strength, route of administration, quality, performance characteristics, and intended use" (10). The preceding definition makes it obvious that the main difference between a brand name drug and a generic is that brand name pharmaceuticals are sold under a proprietary name and are more expensive due to the cost of advertising, whereas generics are much cheaper and are marketed with the pharmaceutical salt name alone (1). One of the most concerning aspects of ever-increasing healthcare costs is the expense of medications (11). One of the primary goals of promoting a generic drug is to give significant cost savings to the patients in response to the ever-increasing expense of medications. Given that India is one of the highest per-capita out-of-pocket expenses (12,13), such generic medications will save a significant amount of money that can be used to address other health concerns. Despite the financial advantages, there is substantial debate

among physicians and patients over the usage of generic drugs in terms of clinical outcomes and safety profiles (14). Since patients are the final users of any kind of medications, it's crucial to know what they think and how satisfied they are with the generic medications.

Shikiar and Rentz (15) define it as the "patient's evaluation of the medication-taking process and the medication's outcomes." Patient satisfaction with the medication influences medication adherence. Patients' adherence would be poor if they were unhappy with their medications (1). For this study, we define patient satisfaction as "individual values arising from patient experience with specific attributes of the treatment with generic medicines such as side effects, the complexity of administration, and effectiveness." Since patient satisfaction is a subset of treatment satisfaction (7), the Treatment Satisfaction Questionnaire for Medication (TSQM), a commonly used generic measure of medication satisfaction, can be used in this study to assess patient satisfaction with generic medication. The TSQM covers four dimensions: effectiveness, side effects, convenience, and global satisfaction, all related to patient satisfaction with their treatment. According to recent research, TSQM is the only framework used for both generic and disease-specific contexts (16,17). Thus, the current study attempts to assess patient satisfaction with generic medication in an emerging market like India using the TSQM model. The following conceptual model and hypotheses were developed by the study's goal and conceptual background (Figure 1):

H1: Effectiveness of generic medication positively influences the patient's global satisfaction.

H2: Convenience associated with generic medication positively influences the patient's global satisfaction.

H3: Side-effects associated with generic medication positively influence the patient's global satisfaction.

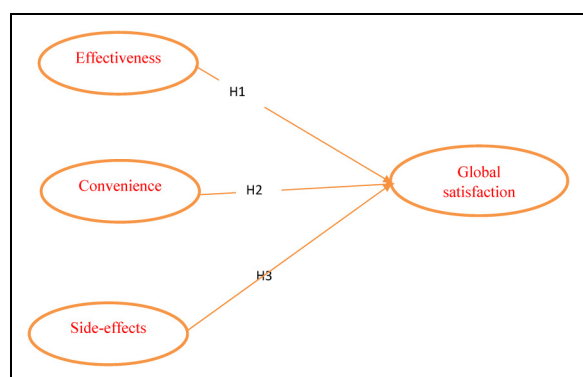


Figure 1. Conceptual model.

Source: Author's Own.

Method

Respondents were chosen based on convenience sampling. Patients purchasing medicine from the Jan Aushadhi medical stores in Delhi were among those who took part in the survey. Delhi was selected as the study region as it is the capital city of India and has the largest market share of generic medicine (18). Only 567 of the 715 patients contacted by the researcher agreed to participate in the study. Out of the 567 responses, 25 were consisting of more than 50% of missing data and thus dropped from the study. Finally, the data obtained from 542 respondents were retained for further investigation. Hair et al. (19) recommended a sample to a variable ratio of 15:1 for conducting any multivariate data analysis. In this study total of fourteen variables were used. Thus, the sample size of 542 seemed to be sufficient for the study (19). Individuals in the sample were affected by four major disease categories: general illness, cardiac ailment, diabetes, and gastric ailments. The

first is a non-chronic condition, while the following three are chronic conditions. Participation in this study was entirely voluntary, and participants were informed of their right to refuse participation or withdraw from the study.

A survey instrument was then created by incorporating items from Atkinson, et al.'s TSQM-II (Validation of a general measure of treatment satisfaction, the Treatment Satisfaction Questionnaire for Medication (TSQM), using a national panel study of chronic disease, 2004). Since respondents had to carefully read the items, negatively worded items were also included in the questionnaire to reduce response bias (20). During the data analysis, the same variables were reverse coded. A pen and paper survey was conducted at 60 randomly selected Janausadhi kendras in Delhi and the National capital region during July-October 2020. The questionnaire mostly consisted of close-ended questions and ratings on a five-point Likert scale with 1 representing "Highly dissatisfied" and 5 representing "Highly satisfied."

The data analysis was done in two stages. Confirmatory factor analysis (CFA) was used in the first phase to assess the validity of all latent variables. Following that, structural equation modeling (SEM) was done for testing the proposed hypotheses.

Normality

One crucial assumption in completing the CFA and SEM is that the data have a multivariate normal distribution. A skewness-kurtosis technique was employed to test each variable's normalcy (21). Multivariate normality was assessed to be adequate for all variables because the computed skewness was less than the standard value of 3 and the computed kurtosis was less than the standard value of 7 (22).

Table 1. The Sample Respondents' Demographic Profile.

Demographic Characteristics	Frequency	Percentage
Gender		
Male	314	57.93%
Female	228	42.07%
Age		
Less than 25	104	19.19%
26–35	162	29.89%
36–45	160	29.52%
Above 45	116	21.40%
Qualification		
Undergraduates	124	22.88%
Graduates	178	32.84%
Post Graduates	166	30.63%
Others	74	13.65%
Disease		
Chronic	251	46.31%
Non-chronic	291	53.69%

Source: Author's.

Validity Analysis

Prof. Gaskin's Microsoft Excel-based toolkit was used to calculate the discriminant and convergent validity for the individual constructs for this study Gaskin. (23) and presented in Table 1. The composite reliability (CR), average variance explained (AVE), maximum shared variance (MSV), and average shared variance (ASV) numbers in Table 1 can be used to assess the construct's convergent and discriminant validity. The following criterion must be met to assure convergent validity: CR of more than 0.7, CR of more than AVE, and AVE of more than 0.5 (19).

For all the construction, the CR estimates were determined to be more than 0.7. The estimated value of AVE for each component in this investigation was higher than the cut-off value of 0.5. Furthermore, the CR value of each particular construct is higher than the AVE value. This ensures the study's convergent validity. Discriminant validity was calculated using the construct's AVE and MSV scores. $MSV < AVE$ and $ASV < AVE$ is thought to be a good standard for establishing discriminant validity (19). In this study, MSV and ASV scores for each construct were computed and found to be appropriate for approving the discriminant validity of the components (Table 1).

Results

Data presented in Table 2 shows the demographic characteristics of the survey respondents considered for this study:

Descriptive analysis of the sample respondent's gender revealed that the majority of them, 57.93%, were males and the remaining 42.07% were females. Age-wise classification of the sample respondents revealed that the majority of them, i.e., 29.89% were under within the age bracket of 26-35, followed by 29.52% in the age bracket of 36–45, 21.40% were above 45, and only 19.19% were less than the age of 25. In the same way, in terms of qualification, 32.84% of the total respondents were graduates, 30.63% were postgraduates, 22.89% were undergraduates, and only 13.65% had some other professional qualification with them. Finally, it was also revealed that the majority of the sample respondents i.e., 53.69% were suffering from certain non-chronic diseases

Table 2. Model Fit Indices for the Measurement Model.

Model Fit Indices	Recommended Value	Computed Value
Absolute Fit Measures		
Chi-square/df (χ^2/df)	< 3	2.89
GFI (Goodness of Fit Index)	> 0.9	0.917
RMSEA	< 0.10	0.065
AGFI (Adjusted Goodness of Fit Index)	> 0.90	0.901
NFI (Normality Fit Index)	> 0.90	0.918
CFI (Comparative Fit Index)	> 0.90	0.934

Source: Compiled from the AMOS output.

Table 3. Validity for Individual Constructs.

	CR	AVE	MSV	ASV	Convergent validity	Discriminant validity
Effectiveness	0.828	0.537	0.358	0.167	Yes	Yes
Convenience	0.83	0.539	0.428	0.331	Yes	Yes
Side-effects	0.821	0.57	0.367	0.23	Yes	Yes
Patient satisfaction	0.902	0.633	0.423	0.258	Yes	Yes

Source: Compilation of Gaskin toolbox output from Microsoft Excel.

and the remaining 46.31% were suffering from certain chronic diseases.

Confirmatory Factor Analysis

Presence of common technique bias, Harman's single-factor analysis was applied (24). All components were reduced to a single variable using EFA in SPSS. The percentage variation represented by an individual construct in the un-rotated component result was calculated to be 39%, which was less than the normal level of 50%, confirming the absence of common method bias in this analysis.

Model Fit Indices for the Measurement Model

The model fit indices computed with AMOS are shown in table 3. These indices are acceptable for defining the overall model fit for the CFA performed as part of our investigation.

The computed value of the comparative fit index, goodness fit index, and normality fit index was greater than 0.9, and the value of the root mean square of error approximation was less than 0.1, indicating that the measures are robust for this study (25). All preceding validation efforts by Atkinson and coworkers (9), as well as a comparable attempt by Bharmal et al. (17), found constructs like effectiveness, side effects, convenience, and overall satisfaction to be legitimate for evaluating patient satisfaction with any kind of medication.

Model Fit Indices for the Structural Model

The computed values of the comparative fit index, goodness fit index, and natural fit index were all greater than 0.9, indicating that the model is well-fitting. The root means square error approximation was likewise less than 0.1, implying that the measurements are reliable (25) (Figure 2).

Results of Path Analysis

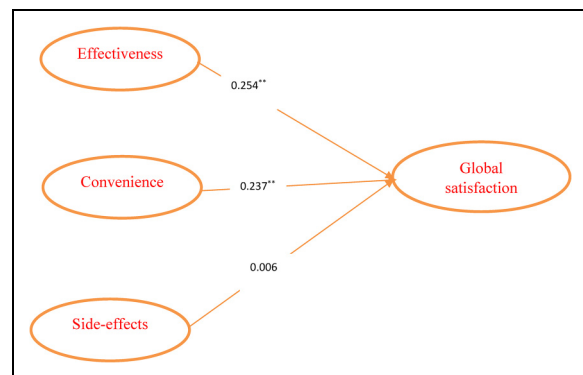
The results of hypothesis testing are shown in table 4.

The structural model calculated the squared multiple correlations (R^2) for patients' satisfaction with generic medication as 0.668. It reveals that effectiveness, convenience, and side-effects associated with generic medication are responsible for 66.8% variation in patients' satisfaction with generic

medication. This study also showed that the effectiveness and convenience associated with generic medication significantly influence patients' satisfaction with generic medication, with a computed p-value less than 0.01. The standardized estimate linking effectiveness to overall satisfaction is computed to be 0.257, indicating that generic medication effectiveness made a significant contribution to patient satisfaction. With a standardized coefficient of 0.237, convenience has a slightly weaker influence on patient satisfaction with generic medication. But the influence of side-effect is statistically insignificant as the computed p-value is greater than 0.01 for it. This adds to the research of Faasse et al. (26) and reinforces the fact that generic medications are just as safe and effective as the branded medications.

Discussion

The purpose of this study was to investigate patient satisfaction with generic medication in an emerging like India. Initially, CFA was performed to assess the validity of the TSQM scale in the context of generic medication. Since all the model fit indices were meeting their respective threshold, the measurement model was considered valid for the study. The study's convergent and discriminant validity was also confirmed because the construct's AVE score is higher than both MSV and ASV scores. These findings indicate that the TSQM is a psychometrically sound tool that covers the majority of important aspects of patients' satisfaction with generic medications. All TSQM components were revealed to have good internal consistency, as evidenced by Cronbach's alpha values of 0.8 or higher.

**Figure 2.** Structural Model.

Source: Compiled from Amos Output. **Significant at 99 percent level of confidence

Table 4. The Outcomes of the Path Analysis.

Hypothesis	Path	Estimate	t-Statistics	P-Value	Remark
H1	Effectiveness → Satisfaction	0.254	4.897	0.001	Supported
H2	Convenience → Satisfaction	0.237	4.004	0.001	Supported
H3	Side-effects → Satisfaction	0.006	1.054	0.321	Not Supported

$R^2 = 0.668$. Source: Compilation of AMOS output.

The hypotheses proposed for this study were validated using structural equation modeling and path analysis. As predicted, our findings revealed that effectiveness is the most important driver of patient satisfaction with generic medication ($\beta = 0.254$, t -statistics = 4.897). This is in line with the previous studies conducted in certain western countries (16). The next compelling determinant of patient satisfaction with generic medication was convenience ($\beta = 0.234$, t -statistics = 4.004) in our study. However, it was also expected that side effects associated with generic medication will adversely affect the patient's satisfaction with generic medication, but not supported in this study. This result is contradicting the findings of past research (9,16) who had advocated that side effect is an important indicator of patient satisfaction. Patients in this study may not have experienced any side effects from generic medication, which may have contributed to this type of outcome in this study.

Conclusion

Knowledge of patient satisfaction with any kind of medication is critical for both physicians and pharmaceutical companies. The establishment of a valid and reliable TSQM in developing and emerging economies in the context of generic medication will serve as a strategic tool for pharmaceutical companies in improving patient satisfaction and, as a result, ensuring the company's long-term viability. The current study provides compelling evidence in support of the TSQM's reliability and validity for generic medication in the Indian context. In addition to this, the results of path analysis also ensured an affirmative association of effectiveness and convenience on patient's satisfaction with generic medication.

Limitations

This study is limited to 542 patients residing in Delhi between the months of October and December 2020. Further research along these lines, but in other developing countries, can provide more insight into patient's satisfaction with generic medication. As this study was conducted from the patient's perspective, future studies can be done from a physician's perspective. It would also be interesting to see the influence of certain other factors like health literacy and trust on the patients' satisfaction with generic medication. Due to the cross-sectional nature of the current study, it may not be able to provide an accurate picture of how patient's satisfaction would alter over

time. As a result, a longitudinal study can assist the researcher in determining the relative relevance of all factors across time.

Declaration of Conflicting Interests

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Appendix-A : Treatment Satisfaction Questionnaire

Construct	Items	Highly satisfied	Satisfied	Neutral	Dissatisfied	Highly dissatisfied
Effectiveness	How satisfied or dissatisfied are you with the ability of the generic medication to prevent or treat your condition? How satisfied or dissatisfied are you with the way the medication relieves your symptoms? How satisfied or dissatisfied are you with the amount of time it takes the medication to start working?					
Side-effects	How bothersome are the side effects of the medication you take to treat your condition? To what extent do the side effects interfere with your physical health and ability to function (i.e. strength, energy levels, etc.)? To what extent do the side effects interfere with your mental function i.e. ability to think clearly, stay awake, etc.? To what degree have medication side effects affected your overall satisfaction with the medication?					
Convenience	How difficult is it to use the generic medication in its current form? How easy t is it to plan when you will use the generic cmedication each time? How convenient is it to take the generic medication as instructed?					
Global satisfaction	How satisfied or dissatisfied you are with ease of use of the medication in its current form? Overall, how confident are you that taking this medication is a good thing for you? Taking all the things into account, how satisfied or dissatisfied are you with medication?					