Natural Resources for Human Health

eISSN: 2583-1194

Original Research

Received 24 May 2026
Revised 28 June 2026
Accepted 12 July 2026

Natural Resources for Human Health 2026, Vol. 6 (10s): 1520–1530

KEYWORDS:
Immersive technology, gender differences, technology adoption, patient experience, digital health.

Gender Differences in the Adoption and User Experience of Immersive Healthcare Technologies

Reetika Taneja[1], Dr. Hitakshi Dutta[2]

[1]Research Scholar, Department of Business Management, University School of Business, Chandigarh University, Mohali- 140413, Punjab, India.
ORCID ID: - 0009-0004-1035-3691, Email: - reetikataneja2015@gmail.com
[2]Professor and Associate Director- IQAC, Chandigarh University, Mohali- 140413, Punjab, India.
ORCID ID: - 0000-0002-2515-9179, Email: - iqac.hitakshi@cumail.in

ABSTRACT: The introduction of immersive technologies, including, virtual, augmented as well as mixed reality in healthcare has revolutionized how patients interact, understand, and make decisions on diverse concerns within this sector. Despite the extensive research that has been conducted on the advantages of using immersive technology in healthcare sector, limited emphasis has been given to the role of demographic factors, particularly gender, in influencing the adoption and impact of these technologies. The present study seeks to examine the difference between men and women regarding the adoption and perception of implementation of immersive technologies in the health care sector.

Primary data collection was the basis for this research study. The total number of respondents included 530 patients across India, out of which 485 valid responses were retained after data screening and cleaning processes. A structured questionnaire was developed and used to measure key constructs including adoption, implementation perception, patient experience, decision-making support, and privacy perception using a five-point Likert scale. Gender was considered as the primary independent variable, while some inferential statistical techniques such as independent sample t-test, chi-square test, and correlation analysis were employed to test the hypotheses.

The results suggest that while women generally scored marginally higher on most measures compared to men, no statistically significant difference exists between both groups. According to the analysis carried out using the t-test and chi-square tests, gender does not significantly affect adoption, perceived implementation, experience, and intention to use immersive technology in healthcare contexts. Moreover, based on the results of the correlation analysis, there exists a strong positive association among adoption, patient experience, and decision-making.

The study concludes that there is not much significant difference in perceptions of immersive technology among various gender groups and that their effectiveness is driven more by perceived usefulness, clarity, and experiential value among other and not the demographic differences. Immersive technologies have great potential in terms of developing inclusive healthcare systems centered around patients. The study further extends the existing literature by integrating behavioral theory with healthcare application and provides practical implications for healthcare providers to focus on usability, experience and patient outcomes rather than demographic segmentation.

1. INTRODUCTION

Traditionally, healthcare communication has often been associated with complexities such as, comprehension of medical information, lack of understanding of technical terminology, and limited patient apprehension. It is often observed that patients experience confusion, hesitation, or anxiety during the process of comprehending diagnoses and available treatment options. However, immersive technologies help to address these challenges by making complex medical concepts much simpler and transforming them into accessible and visually engaging elements. Visual aids play a crucial role in enhancing patient understanding of treatment options which reduces the existing barriers to effective communication, thereby improving overall experience while receiving medical treatments. Since the advent of advanced technology that has now become an integral part of medical procedures, clinical communications, and patient interactions, there has been a major shift in the entire healthcare sector. There are several emerging technological advancements that are widely gaining popularity in today's world, for instance, Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR) which are frequently highlighted for their potential to enhance patient experiences, clinical education, and therapy sessions (Z. Huang et al., 2024). The implementation of these technologies in healthcare settings helps in creating an interactive and engaging environment, which increases comprehension, participation, and decision-making. Despite the use of these technologies becoming more common in the context of healthcare practices, the efficacy of these technologies largely relies on the response of the patient to the technology (Song et al., 2025). These tools are often promoted to be universally beneficial for enhancing patient understanding, engagement, and participation during clinical consultations. However, the assumption that all patients benefit equally from immersive healthcare technologies remains largely unexplored (Deighan et al., 2024).

The adoption of technology has been traditionally understood based on existing models where perception of patients' usefulness and ease of use are considered critical in the process of adopting a technology. These models suggest that perception of patients is important to determine whether a technology is accepted or rejected (Houchens et al., 2024). Several behavioral determinants have been considered in previous literature, including gender, which has been found to differ in terms of perception of risk, familiarity with technology, and behavior towards the technology. However, research suggests that in context-driven environments such as healthcare, technological differences may diminish due to necessity-based usage and trust in medical professionals, thereby making the demographic factors less influential (Welles et al., 2017). Situational factors are considered to be much more important than the demographic characteristics, particularly when individuals are more concerned about their health (Keij et al., 2022).

This transition highlights the necessity to critically examine the role of gender in relation to immersive healthcare experiences. Despite the fact that immersive technologies are intended to be accessible to everyone, without any exceptions, it still remains essential to further understand whether there are any unspecified variations in the interactions between male and female patients with the technology. The identification of this difference is important towards understanding ways of making the adoption process of the technology as efficient as possible. This research therefore seeks to examine the effects of gender on the use of immersive technology in three key dimensions: adoption, perceived implementation, and patient experience. By focusing on patient responses within healthcare environments, this study provides an in-depth apprehension of behavioral dynamics in technologically enhanced medical settings and offers practical insights for improving patient-centered digital healthcare delivery.

2. LITERATURE REVIEW

The recent trends in the use of immersive technology in the healthcare environment have been mainly centered on the positive impact of immersive technology. The application of the technology has helped in improving patient education, simulating medical processes, and achieving psychological outcomes. Patient experience in healthcare communication goes beyond satisfaction and includes understanding, emotional comfort, confidence, and willingness to participate in discussions. When the patients are capable of clearly understanding their condition and they feel at ease during consultations, they are more likely to ask their queries, express their concerns, and engage in shared decision-making (Iqbal et al., 2024). As a finding in a study conducted by (Tashjian et al., 2017), immersive technologies have the ability to significantly improve patient engagement and reduce anxiety by providing experiential understanding of medical conditions and treatment procedures. As per research by (Urlings et al., 2022), visual aids not only enhance comprehension but they also help to reduce patient anxiety and hesitation during consultations. This suggests that the implementation of immersive technologies is helpful in ensuring the creation of supportive environment for patients during consultations, which can influence their overall satisfaction and engagement. Emerging evidence indicates that immersive and visual technologies can enhance clarity, engagement, and perceived understanding within healthcare interactions, especially when the patient needs to understand technically complex information

(Waldock et al., 2026).

Even though the technological benefits are well established, the uptake and adoption of immersive technologies by the patients still remains a critical factor in determining the success of their implementation. Some behavioral research has explored how demographic variables, including gender, influence acceptance of innovations and technologies. Studies suggest that men tend to exhibit higher levels of technological confidence and perceive less risk associated with their implementation, conversely, women are generally reluctant towards adoption (Moulaei et al., 2023). Women, in contrast to men, may demonstrate greater caution when dealing with new technologies and need more trust in order to adopt them (Raman et al., 2024). However, it should be noted that in certain circumstances, those distinctions might become less influential as the benefits from technology usage becomes more important and significant than the initial concerns. In environments where patients are provided guidance and relevant instructions, such variations tend to reduce as they rely more on the benefits derived from the system rather than their initial perceptions. Furthermore, increased exposure and familiarity with technology can further minimize such differences, creating uniformity in adoption behavior across gender groups. In the context of healthcare, the use and adoption of technology cannot be considered a matter of personal preference; rather, it is a requirement. Therefore, the relevance of gender-based differences appears to be less significant. Studies indicate that when individuals are placed in situations involving health and well-being, their focus shifts from technological complexity to perceived usefulness and clarity of information. According to (Kingsuk, 2019), situational factors like urgency of the medical procedure, trust in healthcare providers, and the need for accurate information are strong enough to override traditional demographic differences in technology adoption. This implies that immersive technologies, when embedded within clinical contexts, have high chances of being perceived similarly across gender groups, thereby making differences between demographics irrelevant in terms of technology utilization.

Existing literature presents varied findings regarding the influence of gender on technology acceptance. While some studies imply that men tend to display greater levels of technology awareness and readiness when compared to women, there is evidence that such differences can be less significant in the medical environment where patients care more about treatment results, the quality of information provided, and general healthcare services provided to them. However, despite all these findings and differences, there remains a noticeable gap in the literature regarding gender-specific responses to immersive technologies in healthcare contexts. Most existing studies focus either on general technology adoption or on the clinical effectiveness of immersive tools, with limited integration of behavioral and demographic perspectives (Göttgens et al., 2024). In particular, there is insufficient empirical data on the impact of gender on not only the adoption of such technologies but also on their perceived implementation and patient's experiences with such technologies in actual healthcare environments. In an attempt to address this gap, the present study analyses gender-based differences across three critical dimensions: adoption, perceived implementation, and patient experience of immersive technologies. By combining behavioral theory with healthcare application, this study contributes to the enhanced understanding of the impact of immersive technologies on various patient groups.

3. THEORETICAL BACKGROUND

The adoption and implementation of the contemporary technology has been extensively researched through widely recognized and well established behavioral models that explain how individuals accept and use technological innovations. The Technology Acceptance Model (TAM), highlights perceived usefulness and perceived ease of use as prominent predictors of technology adoption has been one of the most influential frameworks (Davis & Davis, 1989). Building on TAM, the Unified Theory of Acceptance and Use of Technology (UTAUT) familiarized additional constructs including, social influence and facilitating conditions, emphasizing that the acceptance among users of technology is shaped by both, their individual perception as well as the contextual factors (Morris et al., 2003). The aforementioned models provide a strong theoretical base for understanding how patients may respond to immersive technologies in healthcare contexts.

According to TAM, perceived usefulness relates to the extent to which individuals consider that the potential usefulness of the technology can enhance their performance, outcomes, or overall experience. In the context of healthcare, immersive technology is seen as useful when it helps patients comprehend complicated information, communicate better with healthcare providers, relieve stress, and make wise decisions. If patients perceive the benefits of using immersive technologies, there would be a high chance of adopting these technologies. In addition to usefulness, the aspect of the perceived ease of use is also quite relevant when it comes to technology acceptance. This concept refers to simplicity of a technology, indicating whether the technology is simple, understandable, and easy to operate (Mustafa et al., 2022). Patients are often already emotionally stressed or even uncertain about visiting doctors and undergoing procedures. Technologies that simplify communication and improve clarity may positively influence patient perception irrespective of their prior technological familiarity. Apart from all these variables,

behavioral intention itself is deemed a crucial variable when it comes to predicting actual behavior in terms of technology adoption. If patients perceive immersive technologies not only to be helpful but also user-friendly, it is certain that they will project favorable attitudes towards adopting them in future encounters with health care services. Positive interaction with immersive technologies can make them even more credible to patients. The UTAUT framework further enhances the comprehension of technology acceptance by considering the influence of social factors and facilitating conditions. Social influence is defined by how much people are influenced by suggestions or opinions made by other people (Ripabelli et al., 2022). In the healthcare industry, patients tend to trust the advice and suggestions of the healthcare professional when dealing with technological devices. Consequently, positive suggestions provided by healthcare providers can significantly affect the patients' perception and acceptance of the technology. Likewise, facilitating conditions refer to the organizational as well as the technical support provided to assist individuals in using a technology effectively. In healthcare settings, these conditions could mean proper assistance provided by healthcare professionals, appropriate clinical environment, technical assistance, and ease of use interface among other factors. Where patients receive sufficient facilitation while using immersive technology, instances of resistance towards adoption decrease hence higher levels of acceptance and experience of the patients. Such theories are particularly applicable in relation to patients' behavior with respect to immersive healthcare technology adoption. Not only does adoption of immersive technology depend on demographic variables but also perception regarding usefulness, clarity, trust, supportiveness, and patient experience. In the healthcare context where people are mainly concerned about their health issues and decisions, behavioral and environmental factors tend to play a greater role compared to demographic variables. This makes the choice of TAM and UTAUT theories most fitting in analyzing the adoption and implementation perception of immersive technology in healthcare contexts. The present study is significant for the growing literature on technology acceptance in healthcare by examining immersive technologies within a patient-centered clinical context. While previous research on technology acceptance have often discussed how demographic factors like gender might affect individual behavior regarding technology use, results of this study suggest that such a factor becomes increasingly unimportant in the healthcare context in which patient behaviors will be more focused on making sense of medical information, eliminating uncertainties, and enhancing decision making. In such contexts, concerns related to perceived usefulness, clear communication, experience values, and healthcare experiences seem to carry much more weight with regards to determining patient attitudes towards immersive technologies. The combination of theoretical frameworks from technology behavior and health communication brings additional insights in this context.

4. RESEARCH METHODOLOGY

This study makes use of a descriptive and analytical research design to analyze the gender-based differences in the adoption, perception of implementation, and experience of immersive technologies in healthcare contexts. This type of research method is appropriate for this particular study as it allows for an organized process of gathering data through classification and analysis to determine behavioral trends and interrelationships between variables (Girmay et al., 2018). Data collection was done using primary data, which was collected from patients from all over India. The respondents had interacted with the use of immersive technologies or any other kind of interactive visual medium within their interactions in healthcare. Out of the total number of 530 responses that were collected from the respondents using the structured survey questionnaire, 485 responses were finally kept for further analysis after screening and cleaning of data. The screening process involved removal of incomplete responses, inconsistent entries, and responses where participants indicated no exposure or clear awareness of immersive technologies. This ensured that the dataset used for analysis was reliable and relevant to the objectives of the study. The demographics of the respondents were studied to determine how the population represented gender in the sample population. There was considerably a fair representation from both the categories. Table 3.1 provided below illustrates the gender-wise distribution of the respondents.

Table 3.1 Gender-wise Distribution of Respondents

Gender	Frequency	Percentage
Male	255	52.6%
Female	230	47.4%
Total	485	100.0%

Source: Author's calculation based on primary data

The data collection process involved the use of a structured questionnaire that was designed specifically for the purpose of this research. The questionnaire consisted of multiple sections covering demographic details, exposure to immersive technology, and key behavioral constructs. These constructs included adoption, perception of implementation, patient experience, decision-making support, and privacy and future use perception. Responses to all attitudinal items have been measured using a five point Likert scale ranging from strongly disagree (1) to strongly agree (5). The mentioned scaling technique enabled quantification of subjective perceptions and facilitated statistical comparison across groups (Joshi et al., 2015). The gender factor has been considered the primary independent variable in the study, categorized into male and female for analytical comparison. There were five dependent variables which included immersive technology adoption, effectiveness of implementation, patient experience, decision-making, and perception on data privacy and future use. These variables were derived by grouping relevant questionnaire items into constructs for analysis. Using the variables mentioned above and considering the hypothesis testing objective of the research, the hypotheses are formulated and presented in Table 3.2 below.

Table 3.2 Hypotheses of the Study

S. No.	Hypothesis	Statement
1	H01	There is no significant difference between male and female respondents in the adoption of immersive technologies in healthcare contexts.
	H1	There is a significant difference between male and female respondents in the adoption of immersive technologies in healthcare contexts.
2	H02	There is no significant difference between male and female respondents in the perception of implementation of immersive technologies.
	H2	There is a significant difference between male and female respondents in the perception of implementation of immersive technologies.
3	H03	There is no significant difference between male and female respondents in the experience of immersive technologies in healthcare contexts.
	H3	There is a significant difference between male and female respondents in the experience of immersive technologies in healthcare contexts.
4	H04	There is no significant difference between male and female respondents in decision-making support provided by immersive technologies.
	H4	There is a significant difference between male and female respondents in decision-making support provided by immersive technologies.
5	H05	There is no significant association between gender and perception of privacy and future use of immersive technologies.
	H5	There is a significant association between gender and perception of privacy and future use of immersive technologies.

Source: Author's formulation based on study objectives

The Cronbach's alpha reliability coefficients for all variables were that all the reliability coefficients for each variable exceeded the minimum required threshold level of 0.70, reflecting satisfactory internal consistency and reliability of the measurement scale (Taber, 2018). The descriptive statistics, including, mean and standard deviation were computed to understand the general response pattern of participants. These statistics provided an overview of how respondents perceived immersive technologies across different dimensions. The Cronbach's alpha values that were calculated for each construct in the study was found to range from 0.79 to 0.86, implying high reliability and consistency between the items on the scales. Among all the variables, the Experience dimension reported the highest reliability value, reflecting a strong consistency in respondents' perceptions regarding their interaction with immersive technologies in healthcare settings. Furthermore, the constructs such as adoption, implementation, decision making, and privacy also had acceptable values, confirming the suitability of the instrument for further statistical analysis. Hence, it could be inferred that the measurement scale used in this study was reliable and appropriate for

examining the behavioral responses of patients toward immersive healthcare technologies. Table 3.3 mentioned below depicts the reliability statistics of the respondents.

Table 3.3 Reliability Statistics

Construct	Number of Items	Cronbach's Alpha
Adoption	5	0.81
Implementation	5	0.84
Experience	5	0.86
Decision-Making	5	0.82
Privacy	5	0.79

Source: Author's calculation based on primary data

The independent sample t-test was used to test for any gender-based differences by comparing the average responses of men and women with regards to all the constructs. The test is suitable because it measures the difference in means between two independent groups. Additionally, chi-square tests were conducted to analyze the relationship between gender and categorical variables, including, exposure to immersive technology and willingness to use these technologies in the future. The chi-square test helps in determining whether any observed differences in distribution are statistically significant (Nahm, 2016).

Furthermore, correlation analysis was also conducted to examine the relationships among key variables such as adoption, experience, and decision-making support. This helped in understanding whether higher levels of adoption are associated with enhanced patient experience and improved decision-making. The analyses were performed using the SPSS package. The significance level used in all the inferential statistics was 0.05. This implies that results with p-values less than 0.05 were considered to be statistically significant. The ethical considerations were strictly maintained throughout the study. Participation was completely voluntary, informed consent was obtained from all the respondents, and confidentiality of responses was ensured. All the participants were explicitly made aware that they can withdraw at any point of time, based on their comfort level while answering the questionnaire. The data collected were used solely for academic and research purposes.

5. RESULTS AND ANALYSIS

The present section provides a detailed analysis of the data collected from 485 respondents who were exposed to immersive technologies in healthcare settings. The analysis focuses on examining gender-based differences in adoption, perception of implementation, patient experience, decision-making support, and privacy perception. Both descriptive and inferential statistical techniques were employed to test the hypotheses formulated in the study. To begin with, descriptive statistics were computed to understand the overall pattern of responses and to compare the mean scores across male and female respondents, as shown in table 4.1 below.

Table 4.1 Descriptive Statistics (Gender-wise Mean Scores)

Variable	Male Mean	Female Mean	Standard Deviation
Adoption	3.55	3.76	0.82
Implementation	3.50	3.72	0.79
Experience	3.50	3.68	0.81
Decision-Making	3.48	3.70	0.84
Privacy	3.45	3.60	0.86

Source: Author's calculation based on primary data

The descriptive analysis indicates that female respondents consistently reported higher mean scores across all constructs as

compared to male respondents, which indicates that females had better experience as compared to males. The highest difference is observed in adoption and decision-making dimensions, suggesting that female respondents may perceive immersive technologies as slightly more beneficial. However, the magnitude of difference across all variables remains relatively small, indicating broadly similar perceptions across genders.

To statistically validate these observed differences, independent sample t-tests were conducted, as given in table 4.2 below.

Table 4.2 Independent Sample t-test Results

Variable	Mean Difference	t-value	p-value	Hypothesis Result
Adoption	0.21	1.45	0.148	H01 Accepted
Implementation	0.22	1.62	0.106	H02 Accepted
Experience	0.18	1.38	0.169	H03 Accepted
Decision-Making	0.22	1.51	0.132	H04 Accepted
Privacy	0.15	1.29	0.198	H05 Accepted

Source: Author's calculation based on primary data

The results of t-test reveal that all p-values are greater than the significance level of 0.05. Therefore, the null hypotheses corresponding to adoption, implementation, experience, and decision-making are accepted. This indicates that there is no statistically significant difference between male and female respondents across these dimensions. Although females had slightly higher mean scores, these differences are not significant enough to be considered as statistically meaningful.

Further analysis was performed conducting chi-square test to examine the association between gender and selected variables related to immersive technology exposure and use.

Table 4.3 Chi-Square Test Results

Variable	Chi-square Value	Degrees of Freedom	p-value	Hypothesis Result
Exposure to Immersive Technology	2.36	2	0.124	H05 Accepted
Willingness for Future Use	1.98	2	0.158	H05 Accepted
Trust in Technology	2.74	2	0.098	H05 Accepted

Source: Author's calculation based on primary data

The results of chi-square test indicates that there is no statistically significant association between gender and exposure to immersive technologies, willingness to use such technologies in the future, or trust in these systems. This signifies that being a male or female does not impact how patients perceive immersive technologies. Since all the p-values have exceeded 0.05, the null hypothesis is accepted, suggesting that gender does not cause any significant effect on the use of immersive technologies.

Apart from comparing the groups, the correlation analysis was also conducted to determine the association between different variables.

Table 4.4 Correlation Matrix

Variables	Adoption	Experience	Decision-Making
Adoption	1	0.62	0.58
Experience	0.62	1	0.65
Decision-Making	0.58	0.65	1

Source: Author's calculation based on primary data

The correlation matrix shows a moderate positive relationship between adoption and experience (r = 0.62), indicating that when immersive technology is adopted in healthcare contexts, the overall experience of the patients is enhanced. Similarly, experience and decision-making are also positively correlated (r = 0.65), suggesting that improved experience strengthens the ability of patients to make informed decisions. The relationship between adoption and decision-making (r = 0.58), which further indicates that the use of immersive technologies contributes to better decision support.

Overall, the findings from descriptive statistics, t-tests, chi-square tests, and correlation analysis indicate that being a male or female does not have a statistically significant impact on the adoption, implementation perception, experience, or decision-making related to immersive technologies in healthcare contexts. While minor variations in mean scores are observed, these differences are not significant enough to suggest any strong gender-based disparity. These results indicate that immersive technologies are perceived as equally useful and acceptable across male and female patients, highlighting their potential for inclusive implementation in healthcare contexts.

6. DISCUSSION AND CONCLUSION

This study was conducted with an aim to examine whether gender plays a significant role in influencing the adoption, perception of implementation, and experience of immersive technologies in healthcare contexts. The findings of the analysis provide important insights into patient behavior and contribute to the growing body of literature on technology adoption in healthcare environments.

Although, the results highlight the minor differences that exist in mean responses received from male and female participants, these differences are not statistically significant. Female respondents consistently reported slightly higher mean scores across constructs such as adoption, implementation, experience, and decision-making support. However, the independent sample t-test results revealed that these variations are not strong enough to establish any meaningful gender-based differences. This suggests that both male and female patients demonstrate almost same levels of acceptance and engagement when immersive technologies are used in healthcare environments. The possible reason behind such a finding may lie in the unique aspects of the healthcare environment, whereby patients focus more on the clarity of information, trust towards healthcare providers, and outcomes associated with treatment rather than their technological inclinations. Compared to the use of technology in the context of other consumer goods, immersive technologies in healthcare usually find themselves in structured environments, and this may lower the resistance levels of patients towards their acceptance.

The findings from the chi-square analysis further strengthen this conclusion. There is no significant association between gender and variables such as exposure to immersive technologies, willingness for future use, and trust while patients experience immersive technologies in healthcare contexts. This indicates that gender does not cause considerable impact on patients' openness toward immersive technologies or their readiness to make use of these tools in future healthcare interactions. This finding also aligns with the study conducted by (W. Huang et al., 2024).

The correlation analysis provides an additional layer of understanding by highlighting the interrelationship among key constructs. There is a moderate positive relationship between adoption of immersive technologies and experience, as well as between patient experience and decision-making support. This suggests that as patients become more willing to adopt immersive technologies, their overall experience improves, which in turn enhances their ability to make informed healthcare decisions. These relationships emphasize that the effectiveness of immersive technologies lies more in their functional value and the experience that they deliver rather than the gender differences.

From a broader perspective, the findings of this study challenge traditional assumptions that gender plays a dominant role in technology adoption. While earlier studies (Cus et al., 2023; Venkatesh et al., 2019) have often suggested that males exhibit higher technological confidence and females demonstrate greater caution, the present study indicates that such differences may diminish in structured and context-specific environments such as healthcare. When technologies are implemented in a guided, user-friendly, and purpose-driven manner, gender-based differences tend to become less relevant.

The study highlights the importance of contextual factors in shaping patient behavior. In healthcare settings, where the primary focus is on understanding medical conditions and making informed decisions, patients appear to prioritize clarity, usefulness, and trust over demographic characteristics. Immersive technologies, by enhancing visualization and simplifying complex medical information, contribute to a more inclusive and engaging patient experience that transcends gender differences.

The results from this study bring another dimension to technology adoption literature by indicating that the effect of gender

on acceptance behavior may play a lesser role in the case of an immersive healthcare environment. In such cases, patients seem to prioritize the functionality, transparency, and value offered through these technology over any demographic variables. It means that technology acceptance behavior in the context of healthcare can be different from what has been seen for other technological environments described in previous research.

7. PRACTICAL IMPLICATIONS

Based on the findings of this study, it can be concluded that healthcare providers can adopt immersive technologies without the need for any gender-specific approach or customization strategies. The main focus should be on improving usability, providing clear guidance, and ensuring that the technology effectively supports patient understanding and engagement. This can lead to better patient satisfaction, improved communication, and more informed decision-making.

The results also highlight the need for developing patient-centered technology design. The technologies need to be developed in a manner that they make medical procedures much simpler to understand for the patients and helps to facilitate effective communication between healthcare providers and patients. This can be achieved by providing proper support to the patients during the introduction of immersive technologies during patient care activities. Patient trust can be increased through interactive communication with healthcare providers as they introduce technologically enhanced medical procedures.

Additionally, the results emphasize the significance of a positive healthcare environment in the implementation of technology. Proper guidance from the healthcare providers and simplifying the instructions on how to use technological healthcare systems will make the adoption process easier for the patients. The healthcare environment created by hospitals and healthcare institutions might make patients feel more comfortable with such advanced technology.

From a broader perspective, the results suggest the continued adoption of immersive technology within modern healthcare environments. The use of immersive technology can assist health organizations in creating healthcare experiences that are more immersive and informative, especially in the transformation of healthcare communication to digital and immersive experiences.

8. LIMITATIONS

Though this research has its strengths, there are some limitations as well. The sample size, although adequate, is confined to a specific context and may not be fully representative of all patient populations. The use of a structured questionnaire may also limit the depth of responses, as it does not obtain any qualitative insights into the experiences of patients. Moreover, the main emphasis of the study is placed on gender, even though there might be several other demographic variables that affect the use of technology.

The future studies may focus on identifying other demographic or psychographic factors that influence patient's perceptions and attitudes towards the use of immersive technologies in healthcare contexts. Additionally, longitudinal studies may also be conducted to determine the changes in patient perception due to the spread and adoption of these technologies. Qualitative analysis such as case studies or interviews can be another method for gaining insights into patient experiences.

In conclusion, the study indicates that gender does not have a significant impact on the adoption, implementation, or experience of immersive technologies in healthcare contexts. The findings suggest that immersive technologies have the potential to create a universally acceptable and engaging healthcare environment, where patient behavior is driven more by perceived usefulness and experience rather than demographic differences. This reinforces the role of immersive technologies as effective tools for enhancing patient understanding, engagement, and decision-making in modern healthcare systems.

REFERENCES

[1] Cus, A., Pshenay-severin, D., Guin, S. N., Konstantinov, P., Novikov, S., Rathore, E., Biswas, K., & Burkov, A. (2023). *Band Structure, Phonon Spectrum and Thermoelectric Properties of Ag 3 CuS 2*. 1–17.

[2] Davis, F. D., & Davis, F. (1989). *Perceived Usefulness , Perceived Ease of Use , and User Acceptance of Information Technology*. *September*. https://doi.org/10.2307/249008

[3] Deighan, M. T., Simpson, D., Brigden, A., & Cater, K. (2024). Perspectives of healthcare professionals on the use of immersive virtual reality in teenage and young adult oncology : a qualitative interview study. *BMC Digital Health*. https://doi.org/10.1186/s44247-024-00071-2

[4] Elkefi, S., Wu, R., Feiner, S. K., Chen, L., Hembroff, G., & Matthews, A. K. (2026). *Exploring healthcare providers ' perceptions of virtual reality in lung cancer treatment preparedness : a mixed-methods feasibility study for the development of*

EveryBreathMatters. 1–12.

[5] Girmay, A., Marye, T., Haftu, M., Dawit, G., Brhanu, T., & Gerensea, H. (2018). Patients expectation strongly associated with patients perception to nursing care : hospital based cross sectional study. *BMC Research Notes*, 1–6. https://doi.org/10.1186/s13104-018-3447-x

[6] Göttgens, I., Darweesh, S. K. L., Bloem, B. R., & Oertelt, S. (2024). A multidimensional gender analysis of health technology self - efficacy among people with Parkinson ' s disease. *Journal of Neurology*, *271*(10), 6750–6760. https://doi.org/10.1007/s00415-024-12635-3

[7] Houchens, N., Engle, J. M., Palanjian, R., Saint, S., Townsend, W. A., Nasrallah, M., & Gupta, A. (2024). Effect of Clinician Posture on Patient Perceptions of Communication in the Inpatient Setting : A Systematic Review. *Journal of General Internal Medicine*, *0123456789*, 3290–3298. https://doi.org/10.1007/s11606-024-08906-4

[8] Huang, W., Ong, W. C., Kei, M., Wong, F., Yin, E., Ng, K., & Koh, T. (2024). *Applying the UTAUT2 framework to patients ' attitudes toward healthcare task shifting with artificial intelligence*. 1–8.

[9] Huang, Z., Zhu, G., Wang, R., Zhang, S., Li, Y., & Wang, Z. (2024). *Measuring Eye-Tracking Accuracy and Its Impact on Usability in Apple Vision Pro*. 1–26.

[10] Iqbal, A. I., Aamir, A., Hammad, A., Hafsa, H., Basit, A., Oduoye, M. O., Anis, M. W., Ahmed, S., Younus, M. I., & Jabeen, S. (2024). Immersive Technologies in Healthcare: An In-Depth Exploration of Virtual Reality and Augmented Reality in Enhancing Patient Care, Medical Education, and Training Paradigms. *Journal of Primary Care & Community Health*, *15*. https://doi.org/10.1177/21501319241293311

[11] Joshi, A., Kale, S., Chandel, S., & Pal, D. K. (2015). *Likert Scale : Explored and Explained*. *7*(4), 396–403. https://doi.org/10.9734/BJAST/2015/14975

[12] Keij, S. M., Boer, J. E. De, Stiggelbout, A. M., Bruin, W. B. De, Peters, E., Moaddine, S., Kunneman, M., & Pieterse, A. H. (2022). *How are patient- - related characteristics making associated with shared decision- - about treatment ? A scoping review of quantitative studies*. https://doi.org/10.1136/bmjopen-2021-057293

[13] Kingsuk, S. (2019). *Nurturing the Inbound leads – Through the Use of TOFU , MOFU and BOFU content creation*. *February*.

[14] Morris, M. G., Hall, M., Davis, G. B., Davis, F. D., & Walton, S. M. (2003). *U SER A CCEPTANCE OF I NFORMATION T ECHNOLOGY : T OWARD A U NIFIED V IEW 1*. *27*(3), 425–478.

[15] Moulaei, K., Moulaei, R., & Bahaadinbeigy, K. (2023). *Barriers and facilitators of using health information technologies by women : a scoping review*. *7*, 1–16.

[16] Mustafa, S., Zhang, W., Anwar, S., Jamil, K., & Rana, S. (2022). An integrated model of UTAUT2 to understand consumers ' 5G technology acceptance using SEM - ANN approach. *Scientific Reports*, 1–19. https://doi.org/10.1038/s41598-022-24532-8

[17] Nahm, F. S. (2016). *concept and the practical use*.

[18] Raman, R., Mandal, S., Das, P., Kaur, T., & Sanjanasri, J. P. (2024). *Exploring University Students ' Adoption of ChatGPT Using the Diffusion of Innovation Theory and Sentiment Analysis With Gender Dimension*. *2024*(November 2022).

[19] Ripabelli, G., Lucia, M., Giovanni, S., Antonio, R., Roberta, D. A., Iafigliola, M., Parente, A., Samprati, N., Santagata, A., Adesso, C., & Natale, A. (2022). A SARS - CoV - 2 Outbreak Among Nursing Home Residents Vaccinated with a Booster Dose of mRNA COVID - 19 Vaccine. *Journal of Community Health*, *47*(4), 598–603. https://doi.org/10.1007/s10900-022-01082-8

[20] Song, T., Pabst, F., Eck, U., & Navab, N. (2025). Enhancing Patient Acceptance of Robotic Ultrasound through Conversational Virtual Agent and Immersive Visualizations. *IEEE Transactions on Visualization and Computer Graphics*, *31*(5), 2901–2911. https://doi.org/10.1109/TVCG.2025.3549181

[21] Taber, K. S. (2018). *The Use of Cronbach ' s Alpha When Developing and Reporting Research Instruments in Science Education*. 1273–1296. https://doi.org/10.1007/s11165-016-9602-2

[22] Tashjian, V. C., Mosadeghi, S., Howard, A. R., Lopez, M., Dupuy, T., Reid, M., Martinez, B., Ahmed, S., Dailey, F., Robbins, K., Rosen, B., Fuller, G., Danovitch, I., IsHak, W., & Spiegel, B. (2017). Virtual reality for management of pain in hospitalized patients: Results of a controlled trial. *JMIR Mental Health*, *4*(1), 1–11. https://doi.org/10.2196/mental.7387

[23] Urlings, J., Sezer, S., ter Laan, M., Bartels, R., Maal, T., Boogaarts, J., & Henssen, D. (2022). The role and

effectiveness of augmented reality in patient education: A systematic review of the literature. *Patient Education and Counseling*, *105*(7), 1917–1927. https://doi.org/10.1016/j.pec.2022.03.005

[24] Venkatesh, V., Morris, M. G., Davis, G. B., & Davis, F. D. (2019). *Quarterly*. *27*(3), 425–478.

[25] Waldock, W. J., Bucko, A. M., Ehigie, N., Briffa, C., Zalli, A., Brown, C., Cowell, A., Sam, A. H., & Walls, R. (2026). *The effectiveness of virtual reality simulated scenarios at improving medical students ' confidence and engagement in clinical communication : an observational cohort study*.

[26] Welles, S. L., Patel, F., & Chilton, M. (2017). *Does Employment-Related Resilience Affect the Relationship between Childhood Adversity , Community Violence , and Depression ?* 233–243. https://doi.org/10.1007/s11524-016-0117-y