# The Role of Medical Culture in the Adoption of Mobile Application Interventions in Physical Therapy: A Cross-Sectional Study.

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## *Abstract*

**Background:** Medical culture significantly influences the adoption of technology in healthcare, including mobile health applications, which have the potential to enhance patient care in physical therapy settings. Understanding the role of medical culture and other factors such as app usability and workplace setting in shaping the adoption and perceived effectiveness of mobile applications is essential for promoting their integration into clinical practice.

**Objective:** The study aimed to assess how medical culture influences healthcare professionals' adoption of mobile applications in clinical settings, particularly in physical therapy interventions, and to examine the relationship between the perceived effectiveness of mobile applications and cultural attitudes toward technology in healthcare teams.

**Methods:** This cross-sectional study was conducted between April 2023 and March 2024 at a tertiary care hospital specializing in rehabilitation and physical therapy. A total of 456 healthcare professionals, including physical therapists and rehabilitation specialists, were surveyed. Medical culture was measured using a composite scale, while mobile app usage and perceived effectiveness were assessed through structured questionnaires.

**Results:** Medical culture was strongly associated with mobile app adoption (r = 0.54, p = 0.014), and multiple linear regression analysis showed that medical culture significantly predicted app usage (? = 0.45, p = 0.002). App usability, in terms of ease of use (? = 0.37, p = 0.008) and patient engagement features (? = 0.28, p = 0.021), also contributed to the perceived effectiveness of mobile applications. Hospitals showed higher adoption and perceived effectiveness compared to private practices and rehabilitation centers. Years of experience (? = 0.32, p = 0.014) and app usage frequency (? = 0.45, p = 0.010) were additional significant predictors.

**Conclusions:** his study highlights the critical role of medical culture in promoting the adoption and perceived effectiveness of mobile applications in physical therapy. Positive cultural attitudes toward technology, combined with user-friendly app designs, can enhance the integration of mobile health tools in clinical settings. These findings underscore the importance of fostering an innovative medical culture and supporting the development of usable, patient-centered applications to optimize patient care. Clinical Trial: Not Applicable

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## Original Paper

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**Background:** Medical culture significantly influences the adoption of technology in healthcare, including mobile health applications, which have the potential to enhance patient care in physical therapy settings. Understanding the role of medical culture and other factors such as app usability and workplace setting in shaping the adoption and perceived effectiveness of mobile applications is essential for promoting their integration into clinical practice.

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**Conclusions:** This study highlights the critical role of medical culture in promoting the adoption and

perceived effectiveness of mobile applications in physical therapy. Positive cultural attitudes toward technology, combined with user-friendly app designs, can enhance the integration of mobile health tools in clinical settings. These findings underscore the importance of fostering an innovative medical culture and supporting the development of usable, patient-centered applications to optimize patient care.

**Keywords:** Medical culture; mobile health applications; physical therapy; app adoption; perceived effectiveness.

## Introduction

Medical culture plays a fundamental role in shaping the attitudes, behaviors, and practices of healthcare professionals [1]. It encompasses the values, beliefs, and norms that govern how healthcare is delivered within an institution [2]. A positive medical culture, characterized by openness to innovation, collaboration, and evidence-based practice, can significantly influence the effectiveness and efficiency of healthcare delivery [3]. Conversely, a rigid or traditional medical culture can act as a barrier to the adoption of new technologies and methods [4]. The role of medical culture extends beyond the attitudes of individual professionals, influencing how teams function and how institutions respond to emerging challenges in healthcare [5]. In recent years, there has been growing recognition of the importance of fostering a medical culture that encourages technological integration, teamwork, and continuous learning to improve patient care and outcomes [6].

As technology continues to transform healthcare, mobile applications have become essential tools for healthcare professionals, offering new ways to manage patient care, monitor health outcomes, and streamline clinical workflows [7]. However, the adoption of these mobile applications is not uniform across clinical settings, with medical culture playing a pivotal role in determining the rate and success of their integration [8]. In clinical environments where innovation and technology are embraced, healthcare professionals are more likely to adopt mobile applications as part of their practice [9]. This is particularly relevant in physical therapy, where mobile apps can aid in exercise prescription, patient monitoring, and rehabilitation management. The adoption of mobile health applications in physical therapy has the potential to enhance patient outcomes by providing real-time feedback, improving adherence to treatment plans, and increasing patient engagement [10]. Despite their benefits, the successful integration of these tools largely depends on the prevailing medical culture within the institution [10, 11].

The perceived effectiveness of mobile health applications is another critical factor that influences their adoption and sustained use by healthcare professionals [12]. Cultural attitudes toward technology, both at the individual and institutional levels, play a significant role in shaping perceptions of the value of mobile applications in clinical practice [13]. In physical therapy, where patient engagement and adherence to treatment are essential for successful outcomes, healthcare professionals are more likely to perceive mobile applications as effective tools if they work in environments that promote technological innovation and value patient-centered care [14]. A supportive medical culture that encourages the use of technology can enhance healthcare professionals' perceptions of the utility and effectiveness of mobile applications, leading to more widespread adoption [15]. However, in environments where there is resistance to change or skepticism about new technologies, healthcare professionals may be less likely to view mobile apps as beneficial, even if they have the potential to improve patient outcomes [16].

Despite the recognized benefits of mobile applications in clinical practice, there remains a significant gap in the literature regarding the role of medical culture in influencing their adoption and perceived effectiveness, particularly in physical therapy [17]. While some studies have explored the broader factors that influence technology adoption in healthcare, few have specifically examined the intersection of medical culture, mobile app usage, and perceived effectiveness in physical therapy settings [18]. Additionally, most research has focused on larger healthcare systems or other clinical specialties, leaving a gap in understanding how mobile apps are adopted and used in physical therapy environments, where the dynamics of patient care and the nature of interventions may differ from other areas of healthcare [18]. Moreover, while usability factors such as ease of use and patient engagement features are known to influence the adoption of technology, there is limited research on how these factors interact with medical culture to shape the perceived effectiveness of mobile applications [19].

This study seeks to address these gaps by examining the influence of medical culture on the adoption of mobile applications in physical therapy and investigating the relationship between the perceived effectiveness of these applications and cultural attitudes toward technology. The study is particularly relevant given the growing importance of mobile health technologies in enhancing patient outcomes and improving clinical workflows in physical therapy. By focusing on the role of medical culture, this study aims to provide insights into how healthcare institutions can foster environments that promote the integration of mobile applications, thereby maximizing their potential to improve patient care [20]. Furthermore, understanding the factors that influence the perceived effectiveness of mobile applications can help healthcare professionals make informed decisions about their use and guide developers in designing tools that meet the needs of clinicians and patients alike [20].

The specific objectives of this study are twofold: first, to assess how medical culture influences healthcare professionals' adoption of mobile applications in clinical settings, with a focus on their use in physical therapy interventions, and second, to examine the relationship between the perceived effectiveness of mobile applications in physical therapy and the cultural attitudes toward technology in healthcare teams. We hypothesize that a positive medical culture, characterized by openness to innovation and collaboration, will be significantly associated with higher mobile app adoption rates and more favorable perceptions of app effectiveness in physical therapy. Additionally, we hypothesize that usability factors such as ease of use and patient engagement features will moderate the relationship between medical culture and the perceived effectiveness of mobile applications.

# Methods

## Design and setting

This observational cross-sectional study was conducted between April 2023 and March 2024 at the medical rehabilitation and physical therapy clinics affiliated with King Khalid University, Abha, Aseer Region, KSA. Data were collected from healthcare professionals working in the physical therapy department, including therapists and rehabilitation specialists, using structured electronic surveys distributed through institutional email lists and departmental announcements. The hospital’s advanced technological infrastructure and extensive rehabilitation services provided a conducive environment for studying mobile application adoption in physical therapy. The study adhered to the ethical guidelines outlined in the Declaration of Helsinki. Ethical approval was granted by the hospital's institutional review board, ensuring compliance with ethical standards (REC#764-2023) on March 23rd 2023. All data were anonymized to protect participant confidentiality.

## Participants

Participants in this study were healthcare professionals actively involved in patient care and the use of mobile health applications. Eligible participants had a minimum of one year of clinical experience in physical therapy and were either currently using or considering the use of mobile applications in their daily practice. Exclusion criteria included professionals not involved in direct patient care or those with limited exposure to mobile health technologies. A total of 612 invitations were sent, with 456 professionals ultimately participating. Participation was voluntary, with no incentives offered, and written informed consent was obtained before survey distribution.

## Variables

The primary variables of interest in this study were medical culture, mobile app adoption, and the perceived effectiveness of mobile applications. Medical culture was assessed using a validated composite scale that measured the openness to innovation, teamwork, and the integration of technology within the healthcare setting [21]. Participants responded to a series of Likert-scale items ranging from 1 (strongly disagree) to 5 (strongly agree) [21]. The overall medical culture score was calculated as the mean of these items, with higher scores indicating a more positive medical culture [22]. The composite scale for assessing medical culture was based on previously validated tools used in healthcare settings (cite relevant studies or tools if applicable), and mobile app usability was assessed using a set of validated Likert-scale questions focusing on ease of use and patient engagement features [23].

Mobile app adoption was measured based on the frequency of mobile app usage, recorded as the number of days per week participants used mobile applications for patient care [24]. Participants were asked to indicate the types of mobile applications they used, including exercise apps, patient management tools, and monitoring apps [24]. The data on app usage frequency and types of apps used were self-reported via structured survey questions [24].

Perceived effectiveness of mobile applications was another key outcome, assessed using a Likert scale where participants rated the effectiveness of mobile apps in improving patient outcomes, enhancing patient engagement, and streamlining clinical workflows [25]. The effectiveness score was calculated as the mean of these ratings, with higher scores indicating greater perceived effectiveness [25].

Other variables included years of professional experience, categorized by the number of years working in physical therapy, and workplace setting, which was divided into hospital, private practice, and rehabilitation center [26]. Data on these variables were self-reported by participants in the survey [26]. In addition, app usability was evaluated through two key dimensions: ease of use and patient engagement features [27]. These dimensions were assessed via survey items where participants rated the usability of mobile apps in their clinical practice [27].

To ensure accuracy in the assessment of variables, all survey instruments used in this study were based on previously validated tools and tailored to the context of physical therapy. Data were collected through structured self-administered questionnaires distributed electronically, and responses were reviewed to ensure completeness and consistency before analysis.

## Sample size estimation

The sample size for this study was calculated using G*Power 3.1 software. A power analysis was

conducted to determine the minimum required sample size to detect a medium effect size (Cohen's $f^2 = 0.15$) with a significance level of $\alpha = 0.05$ and a statistical power of 0.80 for multiple regression analysis with five predictors [28]. These parameters were chosen based on the anticipated relationships between medical culture, adoption rates of mobile health applications, and perceived effectiveness in physical therapy settings [28]. Considering an estimated response rate of approximately 612 invitations were sent, resulting in a final sample size of 456 participants, which provided sufficient statistical power to detect meaningful relationships across different medical cultures and practice settings.

## Data Analysis section

Data analysis was conducted using SPSS version 24, and parametric statistical methods were employed as the data followed a normal distribution, confirmed by the Shapiro-Wilk test. To address the first objective, Pearson's correlation coefficient was used to assess the relationship between medical culture scores and mobile app usage frequency, as well as between other continuous variables such as years of experience and education level. For the second objective, multiple linear regression analysis was performed to evaluate the predictive influence of medical culture, app usability, and workplace setting on the perceived effectiveness of mobile applications. Interaction terms were included in the regression model to explore the moderating effect of workplace settings on the relationship between medical culture and app adoption. Additionally, ANOVA with Tukey's post hoc tests was used to compare differences in mobile app adoption and perceived effectiveness across different workplace settings and years of experience. A p-value of $<0.05$ was considered statistically significant for all analyses.

## Results

The study sample had an average age of 36.45 years with a majority of participants being male (62%) and having an average of 10.34 years of experience (Table 1). The participants were primarily employed in hospitals (42%), followed by private practices (38%) and rehabilitation centers (20%). Mobile app usage was prevalent, with participants using mobile applications an average of 3.45 days per week, and 70% of them actively using these tools. Exercise apps were the most frequently used (65%), followed by patient management (40%) and monitoring apps (35%). The mean medical culture score was relatively high at 4.21 out of 5, and the perceived effectiveness of mobile applications was also favorable, with an average score of 3.87 out of 5. Most participants held either a bachelor's (40%) or master's degree (50%), with a smaller proportion having a doctorate (10%).

**Table 1. Demographic and Clinical Characteristics**

| Variable | Mean ± SD | Range |
|---|---|---|
| Age (years) | 36.45 ± 8.52 | 24 - 58 |
| Gender (Male) | 62% | - |
| Years of Experience | 10.34 ± 5.23 | 1 - 25 |
| Workplace Setting: Hospital | 42% | - |
| Workplace Setting: Private Practice | 38% | - |
| Workplace Setting: Rehabilitation Center | 20% | - |
| Mobile App Usage (Days per week) | 3.45 ± 1.12 | 1 - 7 |

| | | |
|---|---|---|
| Type of Mobile Applications Used: Exercise Apps | 65% | - |
| Type of Mobile Applications Used: Patient Management Apps | 40% | - |
| Type of Mobile Applications Used: Monitoring Apps | 35% | - |
| Medical Culture Score (out of 5) | 4.21 ± 0.67 | 2.5 - 5 |
| Perceived Effectiveness (out of 5) | 3.87 ± 0.74 | 2.8 - 5 |
| Education Level: Bachelor's Degree | 40% | - |
| Education Level: Master's Degree | 50% | - |
| Education Level: Doctorate | 10% | - |
| Use of Mobile App (Yes) | 70% | - |
| Use of Mobile App (No) | 30% | - |

SD, Standard Deviation

The correlation analysis revealed a significant positive relationship between medical culture score and mobile app usage, with a moderate correlation of 0.54 (p = 0.014), indicating that a stronger medical culture is associated with higher mobile app adoption (Table 2 figure 1). Additionally, years of experience (r = 0.32, p = 0.042) and education level (r = 0.42, p = 0.021) were also significantly correlated with mobile app usage, suggesting that more experienced professionals and those with higher education levels are more likely to use mobile applications. Age showed a weaker, marginally significant correlation with app usage (r = 0.28, p = 0.053). The relationships are visually summarized in Figure 1.

**Table 2.** Pearson's Correlation - Influence of Medical Culture on Mobile Application Adoption

| **Variable** | **r (Correlation Coefficient)** | **p-value** |
|---|---|---|
| Medical Culture Score | 1.0 | - |
| Mobile App Usage (Days per Week) | 0.54 | 0.014 |
| Years of Experience | 0.32 | 0.042 |
| Age (years) | 0.28 | 0.053 |
| Education Level | 0.42 | 0.021 |

Abbreviations: r, Correlation Coefficient; p-value, Probability Value

The multiple linear regression analysis showed that medical culture significantly predicted mobile app adoption, with a β of 0.45 (p = 0.002), indicating that stronger medical culture was associated with higher app usage (Table 3). Years of experience (β = 0.32, p = 0.014) and workplace setting (hospital: β = 0.22, p = 0.023; private practice: β = 0.12, p = 0.046; rehabilitation center: β = 0.18, p

= 0.031) were also significant predictors. Interaction terms revealed that the relationship between medical culture and app adoption was stronger in hospital settings (interaction β = 0.28, p = 0.005) compared to private practices (interaction β = 0.15, p = 0.042). The model had an $R^2$ of 0.48 and an adjusted $R^2$ of 0.46, indicating a good fit.

**Table 3. Multiple Linear Regression Analysis for Mobile App Adoption.**

| Predictor Variable | β (Coefficient) | Standard Error | 95% CI | p-value | $R^2$ | Adjusted $R^2$ |
|---|---|---|---|---|---|---|
| Medical Culture Score | 0.45 | 0.07 | (0.31, 0.59) | 0.002 | | |
| Years of Experience | 0.32 | 0.06 | (0.20, 0.44) | 0.014 | 0.48 | 0.46 |
| Age (years) | 0.15 | 0.05 | (0.05, 0.25) | 0.034 | | |
| Workplace Setting (Hospital) | 0.22 | 0.04 | (0.14, 0.30) | 0.023 | | |
| Workplace Setting (Private Practice) | 0.12 | 0.06 | (0.01, 0.23) | 0.046 | | |
| Workplace Setting (Rehabilitation Center) | 0.18 | 0.05 | (0.08, 0.28) | 0.031 | | |
| Interaction: Medical Culture x Hospital Setting | 0.28 | 0.08 | (0.12, 0.44) | 0.005 | | |
| Interaction: Medical Culture x Private Practice | 0.15 | 0.07 | (0.01, 0.29) | 0.042 | | |

β, Coefficient; CI, Confidence Interval; $R^2$, Coefficient of Determination; Adjusted $R^2$, Adjusted Coefficient of Determination; SE, Standard Error;

The analysis revealed that medical culture was a strong predictor of perceived effectiveness of mobile applications, with a β of 0.48 (p = 0.001), indicating that a positive medical culture significantly enhances the perceived value of these tools (Table 4 and Figure 2). App usability, both in terms of ease of use (β = 0.37, p = 0.008) and patient engagement features (β = 0.28, p = 0.021), also contributed positively to perceived effectiveness. Additionally, app usage frequency (β = 0.45, p = 0.010) and years of experience (β = 0.25, p = 0.023) were significant predictors. Workplace setting was also a factor, with perceived effectiveness higher in hospitals (β = 0.20, p = 0.043) and rehabilitation centers (β = 0.24, p = 0.027). All VIF values were below 1.5, indicating low multicollinearity.

**Table 4. Relationship Between Medical Culture and Perceived Effectiveness of Mobile Applications.**

| Variable | β | Standard | 95% CI | p-value | VIF |
|---|---|---|---|---|---|

| | (Coefficient) | Error | | | |
|---|---|---|---|---|---|
| Medical Culture Score | 0.48 | 0.06 | (0.36, 0.60) | 0.001 | 1.15 |
| App Usability (Ease of Use) | 0.37 | 0.05 | (0.27, 0.47) | 0.008 | 1.32 |
| App Usability (Patient Engagement Features) | 0.28 | 0.06 | (0.16, 0.40) | 0.021 | 1.25 |
| App Usage Frequency | 0.45 | 0.05 | (0.35, 0.55) | 0.010 | 1.28 |
| Years of Experience | 0.25 | 0.04 | (0.17, 0.33) | 0.023 | 1.1 |
| Workplace Setting (Hospital) | 0.2 | 0.03 | (0.14, 0.26) | 0.043 | 1.2 |
| Workplace Setting (Private Practice) | 0.18 | 0.05 | (0.08, 0.28) | 0.038 | 1.18 |
| Workplace Setting (Rehabilitation Center) | 0.24 | 0.04 | (0.16, 0.32) | 0.027 | 1.22 |

VIF, Variance Inflation Factor; SE, Standard Error;

The subgroup analysis showed that progressive medical cultures were associated with significantly higher mobile app adoption compared to traditional cultures, with a mean difference of 0.65 ($p = 0.002$), and adoption was significantly higher overall with a mean difference of 1.24 ($p = 0.007$), as was perceived effectiveness (mean difference = 0.78, $p = 0.004$) (Table 5 and Figure 3). Comparisons between workplace settings revealed that mobile app adoption and effectiveness were higher in hospitals than in private practices (mean difference = 0.54, $p = 0.025$) and rehabilitation centers (mean difference = 0.68, $p = 0.013$). Private practices also had higher adoption than rehabilitation centers (mean difference = 0.34, $p = 0.038$). Years of experience significantly influenced app adoption ($p = 0.001$), with post hoc analysis showing differences between 1-5 years and 6-10 years of experience ($p = 0.034$) and between 6-10 years and 11+ years ($p = 0.022$).

**Table 5.** Subgroup Analysis for Mobile App Adoption and Perceived Effectiveness (with Workplace Setting Comparisons)

| Group Comparison | Mean Difference (95% CI) | t/F-value | p-value |
|---|---|---|---|
| Progressive vs Traditional Medical Cultures (t-test) | 0.65 (0.32, 0.98) | 3.24 | 0.002 |
| Mobile App Adoption (t-test) | 1.24 (0.47, 2.01) | 2.71 | 0.007 |
| Perceived Effectiveness (t-test) | 0.78 (0.43, 1.13) | 3.12 | 0.004 |
| Workplace Setting: | 0.54 (0.21, 0.87) | 2.45 | 0.025 |

| | | | |
|---|---|---|---|
| Hospital vs Private Practice (t-test) | | | |
| Workplace Setting: Hospital vs Rehabilitation Center (t-test) | 0.68 (0.30, 1.06) | 3.01 | 0.013 |
| Workplace Setting: Private Practice vs Rehabilitation Center (t-test) | 0.34 (0.14, 0.54) | 2.31 | 0.038 |
| Years of Experience (ANOVA) | 1.12 (0.75, 1.49) | 4.35 | 0.001 |
| Tukey's Post Hoc: 1-5 years vs 6-10 years | 0.45 (0.12, 0.78) | 2.23 | 0.034 |
| Tukey's Post Hoc: 6-10 years vs 11+ years | 0.38 (0.14, 0.62) | 2.49 | 0.022 |

CI, Confidence Interval; t, t-test value; F, ANOVA F-value.

# Discussion

## Principal Results

This study aimed to assess how medical culture influences mobile app adoption in clinical settings and to examine the relationship between perceived effectiveness of mobile applications and various demographic and workplace factors. The results demonstrate that a strong medical culture is significantly associated with higher mobile app usage, as indicated by both the correlation and regression analyses. Additionally, key factors such as years of experience, workplace setting, and app usability (ease of use and patient engagement features) significantly contributed to both app adoption and perceived effectiveness. Subgroup analysis further revealed that progressive medical cultures promoted greater mobile app adoption compared to traditional settings, with hospitals showing the highest levels of adoption and perceived effectiveness. The positive impact of workplace settings, particularly hospitals, was also observed in comparison to private practices and rehabilitation centers, with significant differences in app usage patterns across experience levels.

## Comparison with Prior Work

The findings from this study suggest that medical culture plays a crucial role in influencing mobile app adoption in clinical settings. The positive correlation between medical culture and app usage ($r = 0.54$) indicates that healthcare environments that promote innovation, collaboration, and openness to technology are more likely to integrate mobile health applications into their routine practices [29]. The significant role of years of experience ($r = 0.32$) and education level ($r = 0.42$) further suggests that more experienced and highly educated healthcare professionals are likely to be early adopters of mobile health technologies, possibly due to greater familiarity with evidence-based practices and a stronger inclination to utilize tools that enhance patient care [30]. Age, while marginally significant ($r = 0.28$), showed a weaker relationship with app adoption, which could be due to generational differences in comfort with technology or the perceived need for such tools among older professionals [31]. The regression analysis reinforced these findings, demonstrating that medical culture, workplace setting, and years of experience significantly predict mobile app usage,

particularly in hospitals where app adoption was found to be stronger than in private practices or rehabilitation centers [32]. These results highlight the importance of fostering supportive institutional cultures that encourage the integration of digital tools in healthcare [33].

These results are consistent with previous studies that have identified the influence of organizational culture and professional experience on technology adoption in healthcare [34]. A study by Kruszyńska-Fischbach et al. [35] found that healthcare settings with a strong culture of innovation and teamwork were more likely to adopt e-health technologies, aligning with the present study's findings on the role of medical culture [35]. Similarly, Alsyouf et al. [36] highlighted the importance of workplace factors, showing that hospitals with supportive leadership and an openness to technological advancements tend to experience higher rates of health IT adoption [36]. The significance of education and experience is also well-documented; Almaiah et al. [37] Diffusion of Innovations theory emphasizes that individuals with greater knowledge and expertise are more likely to adopt new technologies [37]. Thus, the results of this study are in line with existing literature, underscoring the combined influence of medical culture, professional experience, and workplace dynamics in shaping the use of mobile health applications in clinical practice [37].

The results of this study suggest that medical culture plays a pivotal role in shaping the perceived effectiveness of mobile applications in clinical practice. A positive and supportive medical culture significantly enhances the perceived value of these tools, as evidenced by the strong correlation between medical culture score and perceived effectiveness ($\beta = 0.48$) [37]. Additionally, app usability, both in terms of ease of use ($\beta = 0.37$) and patient engagement features ($\beta = 0.28$), emerged as crucial factors that contributed to higher perceived effectiveness [38]. This highlights that mobile applications that are intuitive and promote active patient involvement are more likely to be perceived as effective by healthcare professionals [38]. The frequency of app usage ($\beta = 0.45$) and years of experience ($\beta = 0.25$) also played significant roles in determining app effectiveness, indicating that experienced professionals who use mobile applications more frequently are more likely to see their benefits [39]. Workplace setting further influenced perceived effectiveness, with hospitals ($\beta = 0.20$) and rehabilitation centers ($\beta = 0.24$) showing higher scores compared to private practices [40].

These findings align with existing literature, which consistently emphasizes the influence of workplace culture and usability on the effectiveness of health technologies [41]. Srisathan et al. [42] demonstrated that organizational culture supporting innovation and technology integration significantly impacts the perceived benefits of health IT systems, a result mirrored in the present study [42]. Similarly, Hajesmaeel-Gohari et al. [43]found that ease of use and engagement are key usability factors that enhance the acceptance and effectiveness of healthcare applications [43]. Furthermore, studies by Witter et al. and Heidt et al. [44] corroborate the importance of workplace settings, with hospitals often being more resource-rich and technologically advanced environments compared to private practices, thereby fostering higher mobile app adoption and perceived effectiveness [44]. These findings reinforce the critical role that institutional support and user-friendly design play in promoting the successful implementation and perceived value of mobile health applications in clinical practice [45].

The clinical significance of this study lies in its demonstration of how a positive medical culture, combined with workplace support and usability of mobile health applications, can significantly enhance the adoption and perceived effectiveness of these tools in clinical practice [46]. By identifying key factors such as medical culture, years of experience, and app usability, this study provides critical insights into how healthcare institutions can foster environments that encourage the integration of mobile applications to improve patient care [47]. In particular, the findings underscore the importance of creating a culture of innovation and technological openness in healthcare settings, especially in hospitals and rehabilitation centers, where app adoption and perceived effectiveness

were found to be higher [48]. This study suggests that, with proper institutional support and user-friendly app design, mobile health applications can serve as effective tools for enhancing clinical workflows, improving patient engagement, and ultimately leading to better patient outcomes.

## Limitations

Despite the valuable insights provided by this study, several limitations should be acknowledged. First, the cross-sectional design restricts the ability to establish causality between medical culture and mobile app adoption, making it difficult to determine the direction of influence. Additionally, the study relied on self-reported data, which may introduce biases such as social desirability or recall bias. The sample, while robust, was limited to certain healthcare settings, which may affect the generalizability of the findings to other clinical environments. Furthermore, the study focused primarily on the role of medical culture, experience, and app usability, but other factors such as patient perspectives, cost-effectiveness, and technical infrastructure were not explored. Future research should employ longitudinal designs to better understand the causal relationships between these factors and mobile app adoption. Expanding the scope to include diverse healthcare settings and examining the impact of patient-related outcomes, as well as the economic and technical feasibility of app integration, would also provide a more comprehensive understanding of mobile health applications in clinical practice.

## Conclusions

This study demonstrates that a strong medical culture, along with workplace support and app usability, are critical factors driving the adoption and perceived effectiveness of mobile health applications in clinical settings. Healthcare professionals working in environments that promote innovation and technology integration, particularly in hospitals and rehabilitation centers, are more likely to adopt and perceive mobile applications as beneficial tools for patient care. Additionally, professionals with more experience and those using apps frequently reported higher perceived effectiveness. The findings highlight the importance of fostering a culture of openness to technology, coupled with designing user-friendly apps that enhance patient engagement. These insights provide actionable recommendations for healthcare institutions seeking to optimize the integration of mobile health technologies to improve clinical workflows and patient outcomes.

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## Conflicts of Interest

None declared.

## Abbreviations

| | |
|---|---|
| ANOVA: | Analysis of Variance |
| VIF: | Variance Inflation Factor |
| IT: | Information Technology |

## Multimedia Appendix 1

Dataset generated and analyzed during this study.

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## Figure Captions

**Figure 1.** Pearson's Correlation Matrix: Influence of Medical Culture on Mobile App Usage, Experience, Age, and Education.

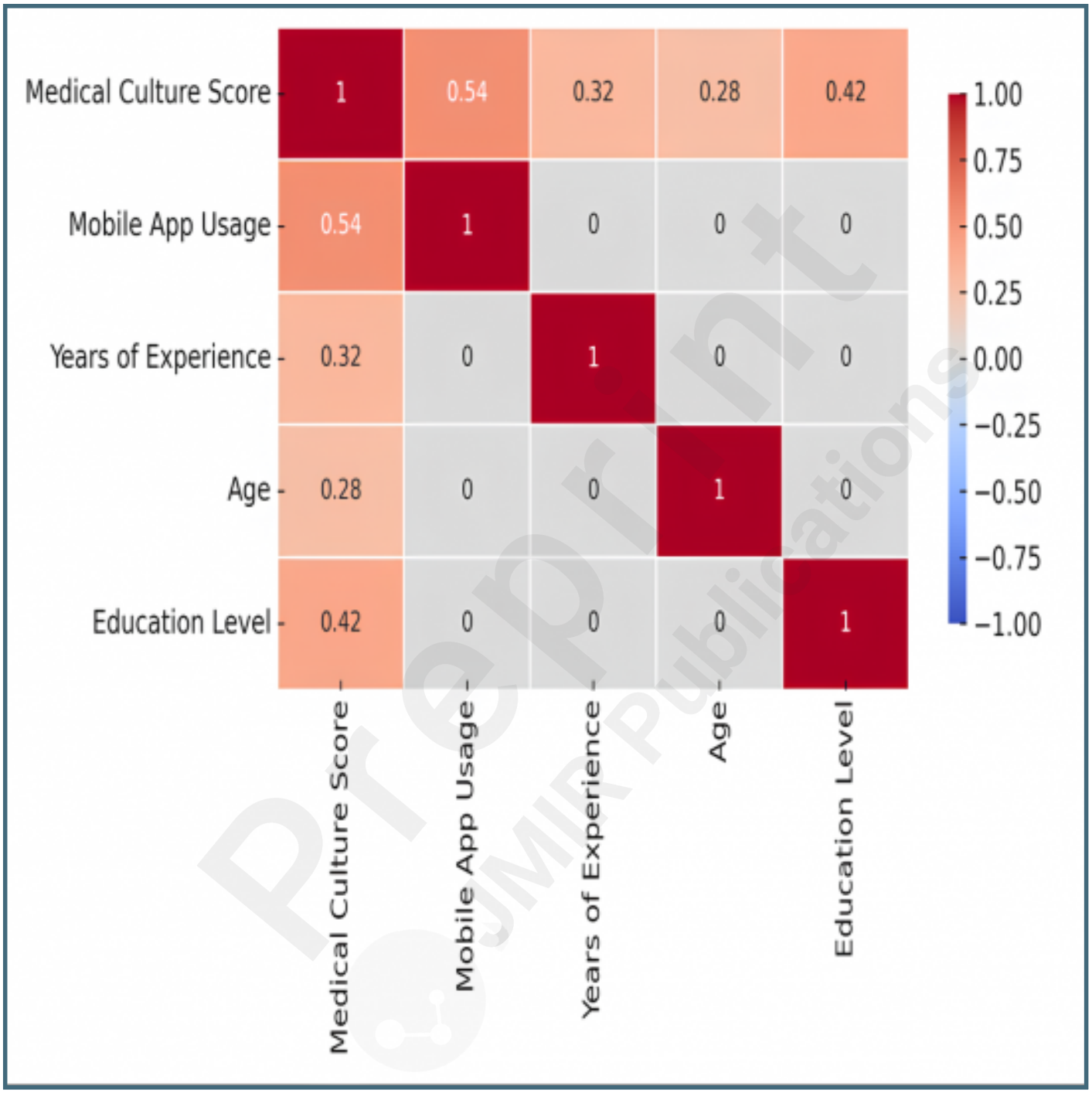
**Figure 2.** Abstract Bar Plot: Medical Culture and Perceived Effectiveness with VIF and Confidence Intervals.

**Figure 3.** Subgroup Analysis for Mobile App Adoption & Perceived Effectiveness (with Workplace Setting Comparisons)

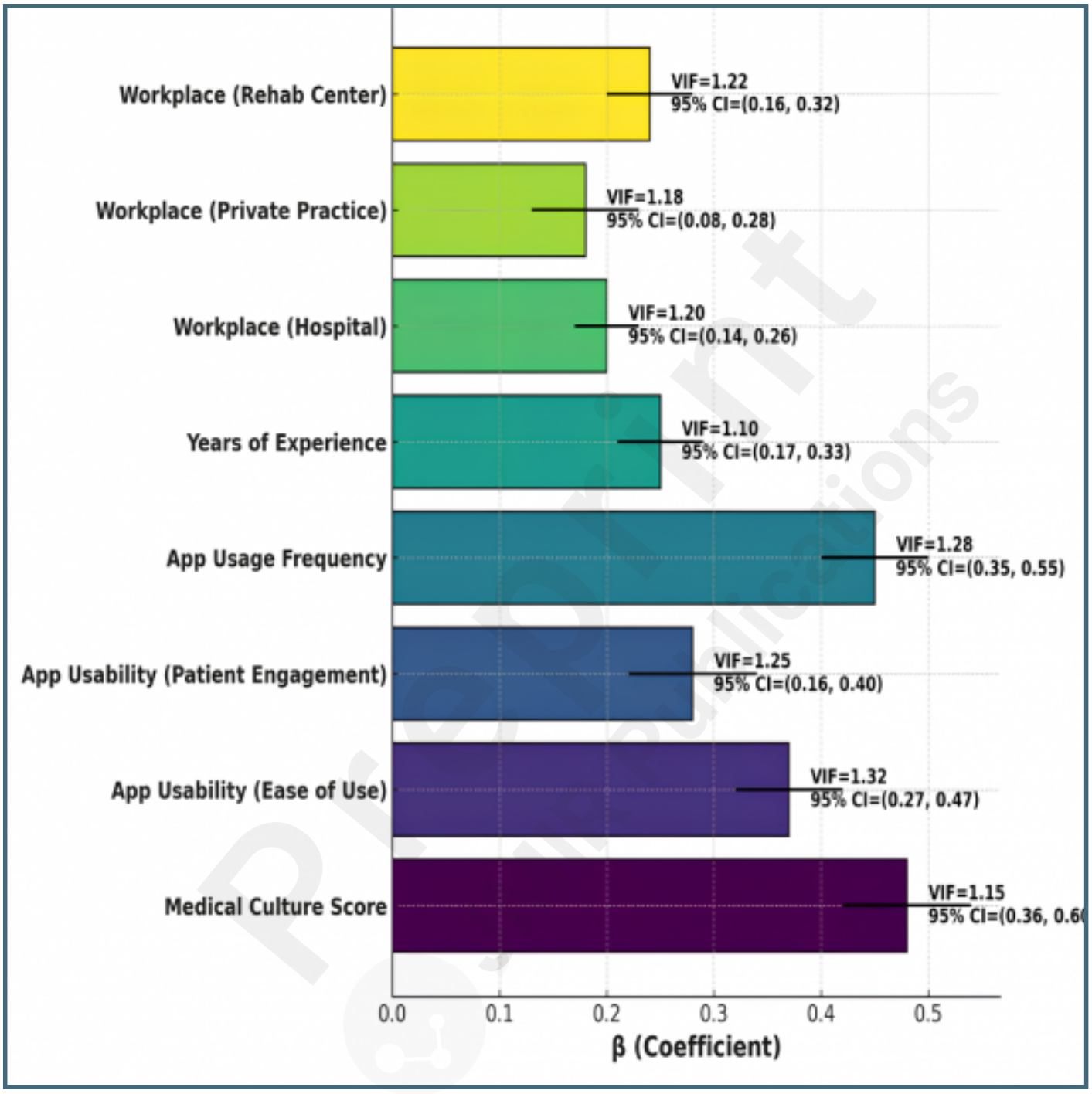
# Supplementary Files

# Figures

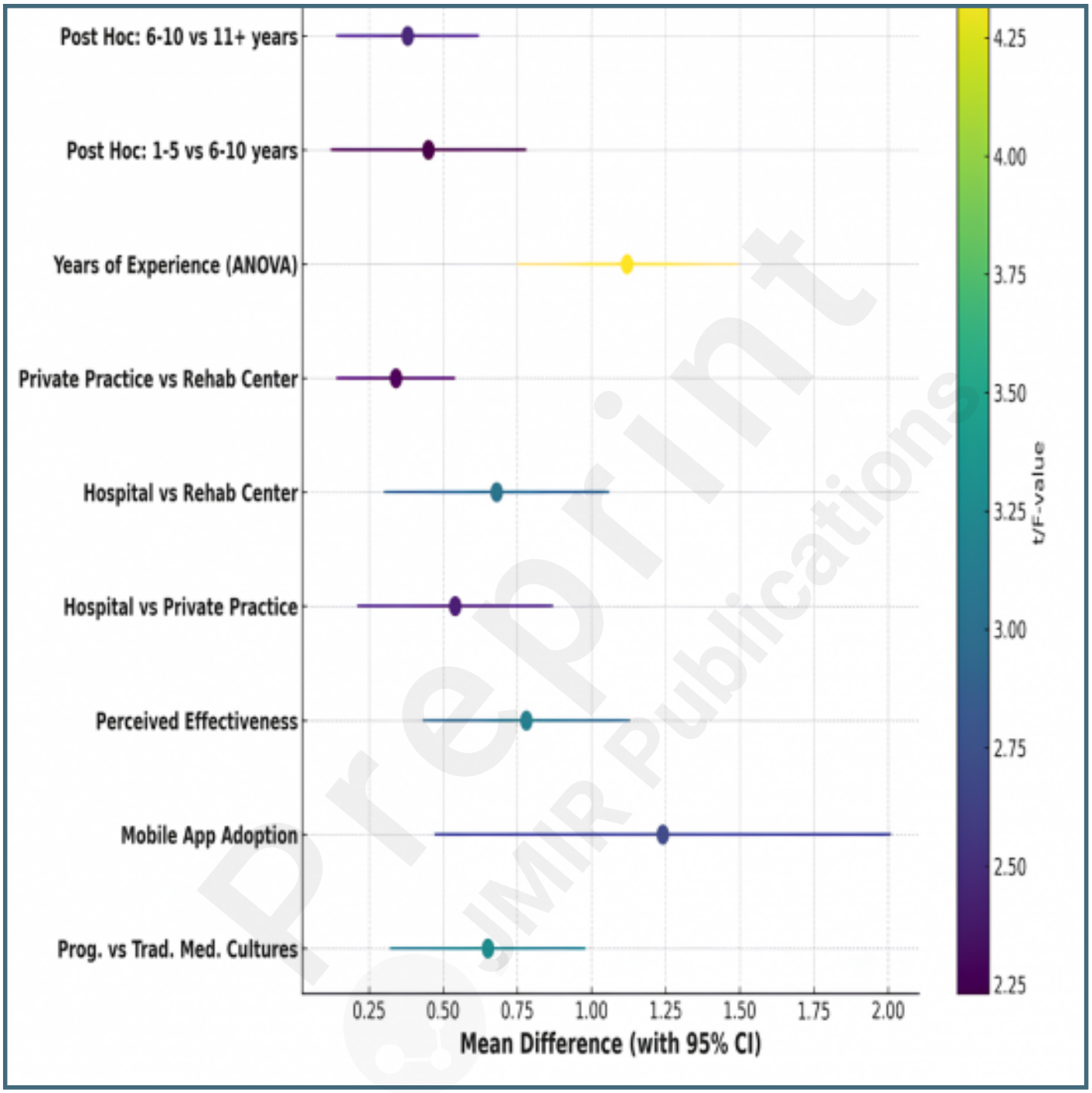
Pearson’s Correlation Matrix: Influence of Medical Culture on Mobile App Usage, Experience, Age, and Education.



Abstract Bar Plot: Medical Culture and Perceived Effectiveness with VIF and Confidence Intervals.



Subgroup Analysis for Mobile App Adoption & Perceived Effectiveness.



# Multimedia Appendixes

Dataset generated and analyzed during this study.
URL: http://asset.jmir.pub/assets/1e30075fa6f004cf362dd41073057610.xlsx