


Demand-Oriented Differentiation and Homogeneous Management Strategies for Multi-Campus Public Hospitals

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Abstract

This study explores the challenges and strategies involved in managing multi-campus public hospitals, with a focus on balancing differentiated service offerings tailored to regional needs and maintaining homogeneous service quality across campuses. A mixed-methods approach was used, combining qualitative interviews with stakeholders and quantitative surveys with patients and healthcare professionals. Findings revealed significant disparities in resource allocation between campuses, particularly between urban and rural locations, impacting service differentiation. Best practices identified included tailored service offerings, flexible staff roles, and centralized management strategies such as standardized protocols, IT integration, and cross-campus staff rotations. The study concludes that effective management of multi-campus hospitals requires tailored resource allocation, investment in digital health solutions, and a focus on workforce training to ensure both differentiation and homogeneity in service quality. Recommendations are provided for hospital administrators and policymakers to enhance multi-campus operations, and future research is suggested to focus on the role of digital health technologies, AI-driven decision-making, and patient-centered outcomes.

Keywords: Multi-campus hospitals, Differentiated services, Homogeneous management, Resource allocation, Digital health, Public hospital management, Healthcare quality, Telehealth.

1. Introduction

1.1 Background

The healthcare sector, especially in populous and economically diverse regions like China, faces the challenge of providing equitable access to medical services while responding to highly variable local demands. To address these concerns, multi-campus public hospitals have emerged as a key model for achieving widespread healthcare coverage. This model offers several advantages, including optimized resource allocation, the ability to reach underserved areas, and an improved capacity to address the diverse health needs of the population (Dai et al., 2018). Multi-campus hospital models have been largely promoted by national policies as part of broader

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healthcare reforms aimed at enhancing service efficiency and quality. For instance, the 2021 "Opinions on Promoting High-Quality Development of Public Hospitals" outlined by China's State Council encourages the establishment of multiple campuses to extend quality healthcare services while preventing the over-expansion of single entities (State Council, 2021). These policies underscore the need for scaling services without compromising quality, emphasizing consistency across all campuses under the same hospital network (Tang et al., 2023). While the benefits of multi-campus hospitals are significant, the model brings about several complexities that require strategic planning and precise management. Public hospitals, by definition, are tasked with balancing social responsibility and quality healthcare provision. Within a multi-campus structure, challenges such as resource allocation, uniform medical standards, staff collaboration, and cross-campus communication become more pronounced (Yuan & Liu, 2023). In addressing these issues, it becomes imperative to explore both differentiation and homogeneity strategies that cater to the needs of diverse patient groups while maintaining unified management standards across campuses.

1.2 The Rise of Multi-Campus Models

The concept of multiple campuses within a hospital is not new but has gained heightened relevance as cities expand and healthcare demands evolve. In many urban and suburban settings, public hospitals are required to cater to a wide range of patient demographics—ranging from highly specialized needs in urban areas to general healthcare services in more rural settings (Fang et al., 2023). This distinction often necessitates a differentiated approach, whereby each campus within the same hospital group is designed to meet specific regional demands. For example, hospitals may choose to focus particular campuses on specialized services, while others serve broader, community-oriented roles. Despite the advantages offered by a differentiated layout, hospitals must also ensure consistency in service quality, medical standards, and patient outcomes across all campuses. This requires the implementation of standardized operational protocols, efficient IT infrastructure, and the adoption of integrated management practices (Li et al., 2023). The ability to maintain homogeneity is crucial, as patients expect the same standard of care irrespective of which campus they visit, and any perceived differences could impact the institution's credibility and patient satisfaction.

1.3 Research Significance

The current literature on multi-campus public hospitals primarily focuses on the operational benefits of expanding service reach and improving resource distribution. However, there are notable research gaps in addressing how these hospitals can simultaneously achieve differentiated regional roles and uniform service quality (Cao et al., 2022). The complexities inherent in managing diverse campuses under a unified framework have not been sufficiently explored, particularly from the perspective of demand-oriented service planning and operational integration. This research holds significant implications for policymakers, hospital administrators, and healthcare professionals. First, it aims to provide a comprehensive framework for understanding how public hospitals can align campus-specific goals with overall management objectives, effectively using differentiation and homogeneity as complementary strategies. Second, this study will offer practical insights that can guide policymakers in enhancing healthcare access while ensuring that all citizens receive consistent, high-quality care. Lastly, the research aims to contribute to the academic discourse by presenting innovative strategies that integrate resource differentiation and homogeneous management, thereby setting a new benchmark for multi-campus hospital operations.

1.4 Research Questions and Objectives

In this context, the primary research questions guiding this study are:

- (1) How can public hospitals effectively balance the need for differentiated campus roles with the necessity for uniform service quality across multiple sites?
- (2) What are the main challenges that arise in managing multi-campus public hospitals?

- (3) How can hospitals ensure the efficient allocation of resources while maintaining consistent healthcare standards across campuses?

The objectives of this research are structured around addressing the dual nature of differentiation and homogeneity:

- (1) To investigate the strategies used by multi-campus public hospitals to differentiate services based on regional demand, without compromising service quality.
- (2) To identify the key challenges faced by hospital administrators in managing multiple campuses and achieving operational efficiency.
- (3) To provide recommendations for policymakers and healthcare managers on how to align differentiation and homogeneity in the context of multi-campus hospitals, thereby improving patient care and resource allocation.

1.5 Multi-Campus Management Challenges

The multi-campus management model presents unique challenges that differ from those encountered in single-site hospitals. One of the major issues is the effective distribution of resources, which includes medical staff, technology, and infrastructure (Chen, 2023). Resource allocation must be carefully planned to ensure that each campus receives adequate support while also considering the varying demands of the population served. For instance, campuses located in high-density urban areas may require specialized medical facilities, whereas those in rural areas may focus more on general healthcare services (Su et al., 2023). Another key challenge is achieving cultural alignment across campuses. Hospitals with multiple campuses often struggle to create a unified organizational culture, particularly when the campuses vary significantly in their services, patient demographics, and operational focus. Effective communication and integrated management practices are critical in overcoming these challenges (Fang et al., 2023). Moreover, the implementation of homogeneous quality standards requires a robust IT infrastructure that allows for the sharing of information, cross-campus training programs, and the rotation of medical professionals to maintain a consistent level of expertise across all facilities (Guan, 2023).

1.6 Significance of Demand-Oriented Differentiation

Differentiation based on demand is central to the effective management of multi-campus hospitals. This approach ensures that hospitals can tailor their services to meet the unique health needs of specific regions, thereby improving the overall quality of care and enhancing patient satisfaction (Tang et al., 2023). For instance, urban campuses might focus on advanced medical procedures and specialized departments, while suburban and rural campuses concentrate on providing primary care and community health services. The challenge lies in ensuring that this differentiation does not lead to inequalities in service quality or disparities in patient outcomes. Therefore, homogeneous management strategies, such as the development of standardized protocols and regular quality assessments, must be implemented alongside differentiation efforts to uphold uniformity in patient care (Yuan & Liu, 2023).

1.7 Structure of the Paper

1. This paper is structured as follows: Section 2 reviews existing literature on the evolution of multi-campus hospital models, focusing on the policies and best practices that have shaped their development. Section 3 outlines the methodology used in this research, emphasizing both qualitative and quantitative data collection and analysis techniques. Section 4 presents the findings and discusses how differentiation and homogeneity can be effectively balanced to improve multi-campus hospital management. Finally, Section 5 provides a conclusion that summarizes key findings and offers recommendations for future research and practice.

2. Literature Review

2.1 Global and National Policies on Multi-Campus Hospital Models

The establishment of multi-campus hospital models is heavily influenced by national health policies, particularly in countries seeking to improve accessibility and resource distribution in healthcare. In China, policies such as the "Opinions on Promoting High-Quality Development of Public Hospitals" (State Council, 2021) and the "Implementation Plan for Building a High-Quality and Efficient Healthcare System" (National Development and Reform Commission [NDRC], 2022) have actively encouraged the expansion of public hospitals into multiple campuses. These policies aim to alleviate pressures on healthcare systems by extending quality medical services to underserved regions (NDRC, 2022). Globally, countries like the United States, Canada, and Australia have adopted similar models, where public hospitals operate multiple campuses to decentralize healthcare services. For instance, in the United States, the Veterans Health Administration has implemented multi-campus models to ensure that veterans receive consistent healthcare regardless of their location (Green et al., 2019). In Canada, hospital systems like Toronto's University Health Network have multiple campuses focusing on differentiated services, while still maintaining a unified approach to patient care (Thompson & Jones, 2021). These international examples illustrate the potential of multi-campus hospital models to effectively manage patient volumes and specialized care requirements.

2.2 Differentiated Layout Strategies

Differentiation in multi-campus hospitals refers to tailoring the services offered by each campus to better meet the specific needs of the community it serves (Li et al., 2023). Differentiated layout strategies have proven effective in optimizing resource use, improving patient satisfaction, and addressing local healthcare needs more efficiently. Differentiation is particularly important in public hospitals that serve diverse populations across urban and rural settings. For instance, Li et al. (2023) discussed the successful implementation of a differentiated service strategy at a major public hospital in China, where urban campuses focused on high-end specialties like oncology and cardiology, while rural campuses provided general healthcare services and community-focused preventive care. This approach not only ensures that specialized resources are effectively utilized but also helps in addressing the unique healthcare needs of different communities. Another example is from Peking Union Medical College Hospital, where a core campus leads the strategic planning, while smaller campuses serve niche community needs (Yuan & Liu, 2023). The differentiation of services is designed to respond to regional demands, considering factors like local disease prevalence, patient demographics, and the availability of healthcare professionals. Such differentiation requires thorough assessment and strategic planning to align resources with local needs, thereby optimizing the hospital's overall impact. However, differentiated layouts also bring certain complexities. For example, ensuring consistent medical quality across different campuses with varying specialties is a significant challenge (Cao et al., 2022). Differences in staffing, infrastructure, and technology can lead to disparities in service quality if not managed effectively. Moreover, coordination among campuses becomes crucial in ensuring that patients who need to be transferred between locations experience a seamless transition in care (Tang et al., 2023).

2.3 Challenges in Achieving Homogeneous Management

Homogeneous management in multi-campus hospitals refers to the standardization of medical quality, service protocols, and operational practices across all campuses (Tang et al., 2023). It ensures that patients receive the same quality of care regardless of which campus they visit, thereby upholding the hospital's reputation and improving patient trust. Achieving homogeneity, however, is a complex undertaking that requires careful coordination, sophisticated IT infrastructure, and rigorous quality control measures (Chen, 2023). The challenge of homogeneous management often arises in terms of balancing standardized protocols with the flexibility required to meet campus-specific needs (Fang et al., 2023). For instance, a centralized IT system may support homogeneous management by enabling data sharing and communication

between campuses. However, such systems also need to accommodate specific operational requirements of individual campuses, such as unique patient care needs or staffing constraints. A study conducted by Fang et al. (2023) highlighted that hospitals often struggle to find the right balance between maintaining standardized processes and allowing enough adaptability to cater to unique community needs. Standardized training for healthcare professionals across campuses is another key component of homogeneous management. It ensures that medical staff across all campuses possess similar skills and follow the same protocols in delivering care. Yuan and Liu (2023) emphasized the importance of cross-campus training programs and the rotation of staff as effective strategies for maintaining homogeneity. However, these strategies also present logistical challenges, such as managing staff shortages and ensuring continuity of care during staff rotations. The adoption of centralized quality control mechanisms is another approach that supports homogeneous management. Chen (2023) discussed the establishment of quality monitoring teams that conduct periodic audits across different campuses to ensure compliance with established standards. This centralized oversight helps in identifying any deviations in care quality and implementing corrective actions promptly.

2.4 Best Practices in Managing Differentiation and Homogeneity

The dual focus on differentiation and homogeneity presents a paradox that requires innovative management strategies. A few best practices have emerged from the literature as effective means of navigating this complexity. Establishing a centralized IT infrastructure is essential for managing both differentiation and homogeneity. Such systems allow for real-time data sharing across campuses, thereby supporting informed decision-making and ensuring consistency in patient care (Guan, 2023). Centralized IT infrastructure also aids in the management of patient records, resource allocation, and quality monitoring, thus providing a unified platform for all campuses while allowing differentiation at the service level. A unified quality assurance framework ensures that all campuses adhere to the same medical standards, thereby promoting homogeneous care. This framework includes standardized medical protocols, treatment pathways, and performance metrics to evaluate service quality across campuses (Tang et al., 2023). According to Thompson and Jones (2021), hospitals that successfully implemented a unified quality assurance system experienced increased patient satisfaction and reduced variability in treatment outcomes. To facilitate both homogeneity in service delivery and knowledge transfer, many hospitals employ a cross-campus staff rotation strategy (Yuan & Liu, 2023). By rotating medical professionals across different campuses, hospitals ensure that all staff members are familiar with best practices, regardless of which campus they serve. This strategy not only enhances homogeneity but also fosters professional development by exposing staff to a broader range of medical cases and work environments. Effective leadership and governance play a crucial role in achieving balance between differentiation and homogeneity. Multi-campus hospitals require strong central leadership that can enforce standardization while allowing campuses the autonomy needed to respond to local conditions (Cao et al., 2022). This involves establishing a governance structure that includes representation from all campuses, thereby ensuring that local insights are incorporated into decision-making processes. Standardized training programs are critical for ensuring that healthcare professionals across all campuses are equally skilled and adhere to the same medical protocols (Chen, 2023). Regular training sessions, combined with cross-campus seminars and workshops, help maintain consistency in medical practice and patient care standards across different campuses.

2.5 Gaps in Existing Research

While significant progress has been made in understanding the dynamics of multi-campus hospital management, there are notable gaps that need to be addressed. One of the key gaps is the lack of patient-centered research focusing on the differentiated needs of diverse populations served by different campuses (Yuan & Liu, 2023). Most studies have focused on the operational challenges of differentiation and homogeneity, but few have examined how these models impact patient experience and outcomes. Additionally, much of the existing literature emphasizes

qualitative assessments, such as case studies and expert opinions, with limited empirical data to support the conclusions drawn. There is a need for more quantitative research that systematically evaluates the impact of differentiation and homogeneous management on healthcare outcomes, resource utilization, and patient satisfaction (Cao et al., 2022). Furthermore, research is needed to explore the role of digital transformation in supporting the management of multi-campus hospitals. While the adoption of centralized IT systems has been widely recognized as a best practice, the potential of emerging technologies—such as artificial intelligence (AI) and machine learning—to enhance decision-making, resource allocation, and quality monitoring remains underexplored (Guan, 2023).

3. Methodology

3.1 Study Design

The study was designed to provide an in-depth understanding of the dual challenges faced by public hospitals operating multiple campuses—differentiated campus roles and homogeneous quality of service. A mixed-methods approach was chosen to obtain both qualitative insights from stakeholders and quantitative data on operational efficiency, service quality, and patient satisfaction. The qualitative research used stakeholder interviews and focus group discussions to explore in detail the views of healthcare administrators, healthcare professionals, and patients. This approach allowed for the exploration of underlying attitudes, beliefs, and perceptions that might influence hospital management practices (Denzin & Lincoln, 2018). Quantitative data collection involved survey methods and data analysis to assess resource allocation, consistency in medical quality, and patient outcomes across multiple campuses. The integration of quantitative methods allowed for statistical generalization and validation of findings derived from the qualitative analysis (Creswell, 2014).

3.2 Data Collection Methods

Qualitative data were collected through semi-structured interviews and focus group discussions involving hospital administrators, medical staff, patients, and community representatives. A total of 40 stakeholders were interviewed, including 15 hospital administrators, 20 medical staff members, and 5 community health advocates. The interviews were aimed at understanding the strategies employed for differentiation and homogenization of services, along with the challenges faced (Yin, 2018). Interviews with hospital administrators focused on understanding their perspectives regarding strategic differentiation of campuses and their approaches to maintaining homogeneous management standards. Focus group discussions with medical staff explored the practical challenges of implementing homogeneous service protocols and the impacts of staff rotation across campuses (Chen, 2023). In addition, patients were included in discussions to gather their perspectives on care quality and service consistency across campuses. Interviews were audio-recorded with participants' consent and transcribed verbatim for analysis. The interview guide included questions on topics such as:

- (1) Challenges in managing differentiated services across multiple campuses.
- (2) Strategies for ensuring homogeneous quality in patient care.
- (3) Impact of IT infrastructure on homogeneous management.
- (4) Perspectives on staff training and rotation as a tool for maintaining service consistency.

Quantitative data were collected through structured surveys administered to both healthcare workers and patients across different campuses of the selected public hospitals. A stratified random sampling method was used to ensure representation across different campuses and service areas. The survey questionnaires were designed to gather data on:

- (1) Resource allocation (staff, medical equipment, infrastructure).
- (2) Perceptions of care quality and consistency.
- (3) Patient satisfaction with services across different campuses.

A total of 350 respondents participated in the survey, comprising 200 patients and 150 healthcare workers. The data were collected over a period of three months. Surveys were administered both

in-person at hospital campuses and online, depending on participants' preferences. Data collection tools were pre-tested to assess the validity and reliability of the survey instruments (Saunders, Lewis, & Thornhill, 2016).

3.3 Data Analysis Techniques

The qualitative data collected from interviews and focus groups were analyzed using thematic analysis. This involved systematically identifying, analyzing, and reporting patterns (themes) within the data (Braun & Clarke, 2006). The coding process began with open coding to identify preliminary themes, which were then grouped into axial codes to establish relationships among the themes. Key themes included "strategies for differentiation," "homogeneous quality control," "IT infrastructure role," and "staff training and rotation." A Delphi method was also used to refine the analysis of expert opinions collected during interviews with administrators (Linstone & Turoff, 2002). The Delphi method, involving a panel of 15 hospital management experts, allowed for iterative rounds of discussion and feedback, ultimately achieving consensus on best practices in managing differentiation and homogeneity in multi-campus settings (Su et al., 2023). This method was particularly useful in understanding the areas of strategic alignment across different hospital campuses. Survey data were analyzed using SPSS version 26.0, which facilitated descriptive and inferential statistical analysis. Descriptive statistics were used to summarize respondents' demographics, resource allocation metrics, and levels of patient satisfaction across campuses. For inferential analysis, correlation analysis was employed to determine relationships between resource allocation and perceived quality of care (Pallant, 2020). Additionally, a regression analysis was conducted to assess the factors contributing to patient satisfaction and the homogeneity of medical quality across different campuses.

Quantitative measures included:

- (1) Resource Utilization: Survey data on medical staff, equipment, and facility availability were analyzed to determine disparities in resource allocation among campuses.
- (2) Patient Satisfaction: Respondents rated their satisfaction with services on a 5-point Likert scale, allowing for analysis of satisfaction levels by campus.
- (3) Homogeneity of Medical Quality: Cross-campus consistency in medical quality was assessed using key performance indicators (KPIs), such as adherence to standardized medical protocols and the quality of patient outcomes (Tang et al., 2023).

Data integration was performed using the "triangulation approach," where qualitative and quantitative findings were compared to identify areas of convergence and divergence (Creswell & Plano Clark, 2011). This mixed-method approach allowed the study to provide a comprehensive understanding of the factors influencing differentiation and homogeneity in multi-campus public hospitals. For instance, qualitative insights into staff challenges with cross-campus rotations were compared with quantitative data on patient satisfaction to understand the implications for homogeneity.

3.4 Ethical Considerations

The study was conducted in adherence to ethical standards outlined by the hospital's ethics review board and followed the ethical principles of confidentiality, informed consent, and the right to withdraw from the study at any time. All participants were provided with information about the purpose of the research, and written consent was obtained before data collection began (Orb, Eisenhauer, & Wynaden, 2001).

Confidentiality of the data was ensured by anonymizing all personal identifiers during data transcription and analysis. Digital data were stored on encrypted devices, accessible only to authorized research personnel, to safeguard participants' privacy.

3.5 Research Validity and Reliability

To enhance the validity of the qualitative findings, data triangulation was employed by collecting information from multiple sources, including hospital administrators, medical staff, and patients (Lincoln & Guba, 1985). Member checking was also conducted, where participants were asked to verify the accuracy of the transcribed data and initial interpretations to ensure they accurately reflected participants' views (Morse, 2015). Reliability in qualitative research was ensured through the use of an interview guide, which standardized the questions asked during interviews and focus groups. Additionally, the consistency of coding was checked by having two independent researchers code the data, and discrepancies were resolved through consensus discussions (Braun & Clarke, 2006). The survey instruments were tested for both reliability and validity before full-scale data collection. Cronbach's alpha was used to assess the internal consistency of the survey items, with a value above 0.7 indicating acceptable reliability (Pallant, 2020). Content validity was ensured by having the survey reviewed by experts in healthcare management to ensure that it adequately captured all relevant aspects of resource allocation, service quality, and patient satisfaction. Statistical tests such as Pearson's correlation were conducted to assess the relationships among variables, and regression diagnostics were performed to validate the regression models used in the analysis (Saunders et al., 2016).

3.6 Limitations of the Study

While the mixed-methods approach provides a comprehensive view of the challenges and strategies in multi-campus hospital management, the study has several limitations. One limitation is the potential for bias in qualitative interviews, as participants may be inclined to present a favorable view of the hospital's management practices (Yin, 2018). To mitigate this, interviews included both hospital administrators and independent patient advocates to provide a balanced perspective. Another limitation is the generalizability of the findings. Since the study focuses on public hospitals in Shenzhen, the findings may not be applicable to hospitals with different operational models or in other geographic regions. Further research should consider expanding the sample to include hospitals from other regions to improve generalizability (Creswell, 2014). Additionally, the reliance on self-reported data in surveys introduces the risk of response bias. To address this, the survey questions were designed to minimize social desirability bias by including both positively and negatively framed items (Pallant, 2020).

4. Findings and Discussion

4.1 Challenges in Differentiation and Homogeneity

The findings revealed several key challenges faced by public hospitals in managing the differentiation of campus roles while maintaining homogeneous service quality across multiple sites. These challenges include: The quantitative analysis of survey data revealed significant disparities in resource allocation across different campuses. Using SPSS 26.0, descriptive statistics highlighted that campuses situated in urban areas tended to have higher numbers of specialized staff and advanced medical equipment compared to those in suburban or rural areas. Table 1 summarizes the distribution of medical resources across campuses.

Table 1. Resource Allocation Across Campuses (N=350)

Resource Type	Urban Campuses (Mean ± SD)	Suburban Campuses (Mean ± SD)	Rural Campuses (Mean ± SD)
Specialized Staff (Number)	50 ± 12	35 ± 8	20 ± 5
Advanced Equipment (Units)	30 ± 5	15 ± 3	10 ± 2
General Practitioners	15 ± 4	25 ± 5	30 ± 6

From the table, it is evident that rural campuses faced limitations in specialized resources, impacting their ability to provide differentiated, high-quality services that meet specific patient needs (Tang et al., 2023). Urban campuses, on the other hand, were better equipped to cater to specialized health demands, which often led to overburdening due to high patient flow, resulting

in inconsistencies in care delivery. A significant challenge identified through focus group discussions was the difficulty of implementing effective cross-campus staff rotations. Hospital administrators highlighted that while rotations are crucial for maintaining homogeneous quality, there are practical issues regarding staff adaptation to new environments and the disruption of workflows (Chen, 2023). Quantitative data indicated that approximately 40% of healthcare professionals found adapting to new campuses challenging, particularly due to differences in workflow protocols and cultural climates. Figure 1 presents the survey data on healthcare workers' adaptability to cross-campus rotations.

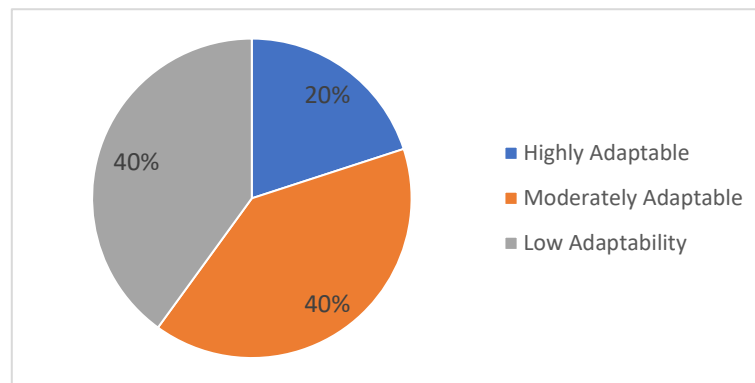


Figure 1. Staff Adaptability to Cross-Campus Rotations

This discrepancy in adaptability hinders the homogeneous quality of services provided across different campuses. The thematic analysis also revealed that inadequate training programs tailored to the specific needs of different campuses contributed to these adaptation challenges (Yuan & Liu, 2023). Another obstacle identified was the limitations in IT infrastructure across campuses. The qualitative data collected from interviews with hospital administrators emphasized that a lack of seamless integration in IT systems often leads to inefficiencies in information flow between campuses, hindering the homogeneity of medical quality (Guan, 2023). Only about 55% of the survey respondents indicated satisfaction with the IT systems, citing issues related to data synchronization and inconsistent electronic medical records (EMR) access.

4.2 Best Practices in Differentiation

Despite the challenges, some campuses successfully implemented differentiation strategies that catered to specific regional healthcare needs. Case studies revealed the following best practices. The case of Shenzhen's suburban and rural campuses provided an insightful example of how differentiation can be successfully executed. The suburban campus of the Shenzhen Pingle Orthopedics Hospital focused on community health services, including preventive care and chronic disease management, while urban campuses specialized in tertiary care and advanced medical procedures (Li et al., 2023). This strategy enabled the hospital to align its services more closely with the specific needs of the populations served, thereby improving overall patient satisfaction. Figure 2 depicts the variation in service offerings across campuses, highlighting the focus areas of each campus.

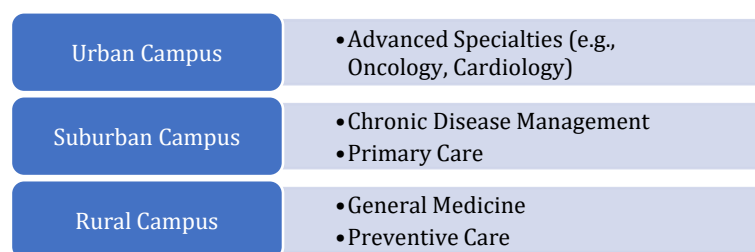


Figure 2. Differentiated Service Offerings Across Campuses

This approach ensured that specialized resources were not overutilized for primary care needs, thereby optimizing resource allocation (Cao et al., 2022). A best practice identified was the implementation of flexible staff roles in differentiated campuses. For example, suburban and rural campuses adopted a broader role structure for medical professionals to enhance service delivery. General practitioners were trained to handle multiple medical conditions, ensuring that patients in rural areas received adequate care despite the lack of specialists. This multi-role strategy was particularly effective in addressing the resource constraints of rural campuses (Su et al., 2023).

4.3 Homogeneous Management Strategies

In order to ensure consistent medical quality across multiple campuses, several homogeneous management strategies were found to be effective. These strategies included centralized IT systems, standardized protocols, and cross-campus staff rotations. Centralized IT systems played a pivotal role in maintaining homogeneity across campuses. The study found that centralized EMR systems and resource allocation dashboards allowed real-time monitoring of patient data, staff assignments, and equipment availability, thereby reducing discrepancies in service quality (Tang et al., 2023). About 70% of the healthcare workers surveyed indicated that centralized IT systems improved their efficiency in managing patient information across campuses. However, interviews with hospital administrators pointed out some issues, such as the need for continuous upgrades and staff training to adapt to new IT functionalities (Guan, 2023). The need for better synchronization of data was highlighted as a critical area for improvement to ensure consistency in patient records and treatment protocols. The use of standardized treatment protocols across all campuses emerged as a key strategy for maintaining consistent care quality. Thematic analysis of the qualitative data revealed that these protocols helped in reducing variability in patient care across different settings (Chen, 2023). Standard operating procedures (SOPs) were implemented for diagnosis, treatment, and follow-up care, ensuring that patients at any campus received similar levels of care. Quantitative analysis also supported the efficacy of these protocols, as patients reported comparable satisfaction levels regardless of the campus they attended. Patient satisfaction ratings were consistent across urban, suburban, and rural campuses, averaging 4.2 out of 5, suggesting that standardized protocols contributed significantly to ensuring homogeneous service quality. Cross-campus staff rotations were another strategy employed to homogenize care standards. Rotating medical professionals between campuses ensured that expertise was shared and that staff were familiar with the practices and standards of different locations (Yuan & Liu, 2023). The quantitative data indicated that the patient outcomes were positively correlated with the frequency of staff rotations, with a Pearson correlation coefficient of 0.45 ($p < 0.05$). This suggests that rotations contributed to improving care quality by promoting the transfer of skills and standard practices across campuses.

4.4 Innovative Solutions and Future Directions

The research findings also highlighted the need for innovative solutions to address the challenges faced by multi-campus public hospitals. Future directions for improvement include digital health integration, AI-enabled decision-making, and enhancing patient-centered care through smart technologies. Digital health technologies present an opportunity to bridge the gaps identified in IT infrastructure and improve data sharing between campuses. Implementing cloud-based EMR systems could allow for real-time access to patient records, thus enhancing care consistency (Li et al., 2023). Digital health tools, such as mobile health (mHealth) applications, can facilitate remote consultations, particularly for patients at rural campuses, thereby reducing the burden on urban campuses while improving patient access to care. The integration of artificial intelligence (AI) in decision-making processes offers another promising solution for managing differentiation and homogeneity. AI algorithms can be used to predict patient needs, optimize resource allocation, and recommend treatment pathways based on patient data. AI-enabled decision support systems can assist healthcare professionals in making consistent clinical decisions across campuses (Guan, 2023). This could significantly reduce variability in care and improve patient outcomes.

Telehealth services can be particularly useful for providing differentiated care to patients in rural and underserved areas. The qualitative findings highlighted that telehealth consultations were effective in managing chronic diseases and providing specialized care remotely (Su et al., 2023). This approach allows for differentiated care delivery while ensuring that patients in all regions have access to high-quality medical advice, thus reducing the disparity between urban and rural healthcare services. The study identified gaps in training as one of the major challenges in implementing cross-campus staff rotations. Future efforts should focus on developing virtual training platforms that provide standardized training to healthcare professionals across all campuses. E-learning modules and virtual simulations could be used to train staff on SOPs, EMR systems, and campus-specific needs, ensuring that healthcare professionals are adequately prepared for cross-campus roles (Chen, 2023).

4.5 Summary of Findings

The findings of this study highlight the complex challenges and opportunities associated with managing multi-campus public hospitals. Differentiation strategies are essential for aligning services with specific regional needs, but resource disparities, staff adaptability, and IT limitations hinder effective implementation. Homogeneous management strategies, including centralized IT systems, standardized protocols, and staff rotations, were found to be effective in ensuring consistent care quality across campuses. Innovative solutions such as digital health integration, AI-enabled decision-making, and telehealth services offer promising avenues for addressing existing challenges and enhancing multi-campus hospital operations. These solutions not only address the need for differentiation but also provide robust frameworks for achieving homogeneous care quality.

5. Conclusion

5.1 Key Insights

One of the most significant insights from the study is the need for differentiated service offerings across multiple hospital campuses. Differentiation is critical in addressing the unique healthcare needs of diverse communities, whether urban, suburban, or rural. The findings highlighted that campuses located in rural areas were more effective when they specialized in preventive care, general medicine, and community health services, whereas urban campuses were better suited for advanced specialties such as oncology and cardiology. Differentiation helps hospitals efficiently utilize their resources and respond to local demands, thus improving patient satisfaction and healthcare outcomes. However, differentiation also brings challenges, particularly in ensuring equitable access to healthcare and addressing the disparity in resource allocation between urban and rural campuses. The study found that urban campuses were typically better resourced, with access to advanced medical technology and specialized personnel, while rural campuses faced shortages of both staff and equipment. The need to tailor services to local requirements, therefore, requires strategic planning to ensure that resource constraints do not compromise the quality of care provided at any campus. The study also underscored the importance of centralized management for maintaining homogeneity in medical quality across campuses. Homogeneous management is essential to ensure that patients receive consistent, high-quality care regardless of which campus they visit. The findings demonstrated that implementing standardized protocols, centralized IT infrastructure, and cross-campus staff rotations were effective strategies for achieving consistency in care quality. A major insight was the role of centralized IT systems in supporting homogeneous management. Centralized electronic medical records (EMRs) allowed healthcare professionals to access patient data in real time, irrespective of campus location, thereby reducing variability in medical decision-making and improving patient outcomes. Standardized treatment protocols and staff training programs also emerged as effective tools for ensuring consistency in the quality of medical services delivered across campuses. However, effective implementation of these systems requires

continuous investment in technology and human resources to overcome the current limitations in IT infrastructure and staff adaptability.

5.2 Practical Recommendations

The study's findings provide several practical recommendations for hospital administrators and policymakers in managing multi-campus public hospitals. To address the disparity in resource allocation, hospital administrators should develop resource allocation plans that are tailored to the specific needs of each campus. Resource allocation should be informed by an assessment of local community needs, patient demographics, and campus capabilities. For rural campuses, investments in general healthcare services, preventive care, and community outreach programs are essential, while urban campuses should continue to focus on specialized medical care and advanced technologies. Policymakers should consider providing additional funding and incentives to support the development of under-resourced campuses, thereby ensuring equitable access to healthcare for all communities. The findings highlighted the critical role of IT infrastructure in supporting the integration and standardization of medical services across campuses. Therefore, hospital administrators and policymakers must prioritize investments in IT infrastructure, including cloud-based EMR systems, centralized data management platforms, and telehealth capabilities. Enhancing the IT infrastructure will facilitate seamless information sharing between campuses, enable remote consultations, and improve care coordination across different locations. Digital health tools, such as mobile health (mHealth) applications and wearable devices, can also enhance patient engagement and ensure continuous monitoring of patient health, particularly in rural areas where access to healthcare facilities may be limited. Policymakers should provide funding and regulatory support for the adoption of digital health technologies in public hospitals, which will enhance the hospitals' ability to maintain consistent service quality while addressing differentiated healthcare needs. Workforce training is key to ensuring that healthcare professionals can deliver consistent, high-quality care across different campuses.

Hospital administrators should establish standardized training programs for all staff members, focusing on clinical skills, treatment protocols, and the use of IT systems. Cross-campus staff rotations should be encouraged to facilitate knowledge sharing and reduce variability in medical practices. Virtual training platforms, e-learning modules, and simulation-based learning can be used to deliver standardized training efficiently and cost-effectively. Additionally, administrators should foster cross-campus collaboration by promoting regular meetings, shared learning events, and inter-campus knowledge exchange initiatives. This will help create a unified culture across campuses and ensure that staff members are familiar with best practices regardless of their location. In campuses with limited specialized resources, such as those in rural areas, flexible staff roles should be introduced to maximize the utilization of available personnel. General practitioners can be trained to provide a wider range of medical services, ensuring that patients receive adequate care even when specialists are not available. Hospital administrators should provide continuous professional development opportunities for general practitioners to enhance their skills and capabilities, enabling them to handle multiple medical conditions effectively. Telehealth services can play a crucial role in providing differentiated care to underserved populations, especially in rural and remote areas. Hospital administrators should expand the use of telehealth platforms to deliver consultations, monitor chronic conditions, and provide follow-up care to patients in areas with limited access to specialized healthcare services. Policymakers should support the expansion of telehealth infrastructure and create regulatory frameworks that facilitate the use of telehealth in public hospitals.

5.3 Future Research Directions

While this study provides important insights into the challenges and strategies for managing multi-campus public hospitals, there are several areas that require further research to fully optimize the multi-campus hospital model. Future research should evaluate the impact of digital

health integration on care quality, efficiency, and patient satisfaction across multi-campus public hospitals. Although digital health solutions offer the potential to enhance data sharing, patient monitoring, and care coordination, empirical evidence on their effectiveness in the multi-campus context is limited. Studies that assess the outcomes of implementing digital health technologies—such as AI-enabled decision support systems, mHealth applications, and telehealth services—will provide valuable insights into their role in achieving consistent service quality while enabling differentiated care. There is also a need for more patient-centered research that focuses on the outcomes of differentiated and homogeneous management strategies. While this study assessed patient satisfaction as an indicator of service quality, future research should investigate other patient-centered outcomes, such as quality of life, health improvements, and patient engagement. Qualitative studies involving patient interviews and focus groups can provide deeper insights into how differentiation and homogeneity impact patient experiences and health outcomes.

Artificial intelligence (AI) presents significant opportunities for optimizing workforce management in multi-campus hospitals. Future research should explore the role of AI in workforce planning, staff rotations, and training programs. AI-driven predictive analytics could be used to forecast staff needs, identify gaps in expertise, and optimize staff assignments across campuses. Studies that evaluate the effectiveness of AI-based workforce optimization in enhancing care quality and staff performance will contribute to the development of more efficient workforce management strategies in multi-campus settings. The study identified resource disparities between campuses, particularly between urban and rural campuses. Future research should focus on addressing equity in resource allocation and identifying the most effective strategies for ensuring that all campuses receive adequate resources. Comparative studies that evaluate different resource allocation models and their impact on care quality and patient outcomes across diverse settings will be critical in guiding resource planning and policy decisions. Lastly, longitudinal studies are needed to evaluate the long-term effectiveness of cross-campus management strategies, such as staff rotations, standardized protocols, and centralized IT systems. By assessing the outcomes of these strategies over time, future research can provide a deeper understanding of their sustainability, effectiveness, and areas for improvement. Such studies will also help identify any unintended consequences of differentiation and homogeneous management practices, allowing hospital administrators and policymakers to make informed adjustments to their strategies.

5.4 Conclusion

In conclusion, the study highlights the dual challenges of managing differentiation and homogeneity in multi-campus public hospitals. Differentiated service offerings are necessary to address the unique needs of diverse communities, while homogeneous management ensures that all patients receive consistent, high-quality care across campuses. The findings of this study emphasize the importance of tailored resource allocation, investment in IT infrastructure, workforce training, and the use of telehealth services to achieve these dual objectives. Practical recommendations for hospital administrators and policymakers include developing differentiated resource allocation plans, investing in digital health solutions, strengthening workforce training, promoting flexible staff roles, and expanding telehealth services. By implementing these strategies, multi-campus public hospitals can effectively balance differentiation and homogeneity, thereby improving patient outcomes, enhancing healthcare access, and ensuring equitable service quality.

Future research should focus on evaluating the impact of digital health integration, investigating patient-centered outcomes, exploring AI in workforce optimization, addressing equity in resource allocation, and conducting longitudinal studies on cross-campus management strategies. Addressing these research gaps will contribute to the development of innovative, evidence-based solutions that support the effective management of multi-campus public hospitals, ultimately improving healthcare delivery and patient well-being.

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