International Journal of
Health Sciences
(IJHS)

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CARI Journals

International Journal of Health Sciences

ISSN: 2710-2564 (Online)

Vol. 7, Issue No. 5 , pp. 1 - 14, 2024

www.carijournal.org

Assessing the Efficacy of Various Differentiated Service Delivery (DSD) Models in Chosen Healthcare Centers within Masaiti District.

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Accepted 12th June 2024 Received in Revised Form: 26th June 2024 Published: 10th July2024

ABSTRACT

Purpose: This study delves into the assessment of Differentiated Service Delivery (DSD) models within the healthcare framework of Masaiti District, focusing on their effectiveness, components, and implementation challenges.

Methodology: Using a mixed method approach with explanatory embedded design, the study objectives encompass a multi-faceted exploration. These include an analysis of the specific components integrated into each DSD model adopted in Masaiti, an investigation into the interplay between facility level and individual stage participation in differentiated care, and an identification of the implementation difficulties faced in public health facilities.

Findings: The study reveals a statistically significant connection ($p < 0.05$) between facility stage participation and individual stage engagement in differentiated care, with a Cramer's V coefficient of 0.131 indicating a small effect size. This suggests a feasible relationship between the degree of individual participation in differentiated care and the facility's capacity to encourage and facilitate such participation.

Unique contribution to theory, practice, and policy (recommendations): This research provides valuable insights for healthcare policymakers, practitioners, and stakeholders involved in the design, implementation, and improvement of DSD models. It highlights the distinctive features and methodologies of each DSD model in Masaiti District, the influence of healthcare facility hierarchies on DSD model effectiveness, and the challenges encountered during implementation. By addressing these aspects, the study offers recommendations to enhance the efficacy and sustainability of DSD initiatives within the Masaiti healthcare context.

KEY WORDS: *Dsd Models, Hiv/Aids, Usaid, Art, Lftu, Policy.*

Background of the Study

In the global healthcare landscape, the burden of infectious and chronic diseases necessitates innovative approaches to service delivery (UNAID, 2020). Differentiated Service Delivery (DSD) models have emerged to optimize healthcare access, quality, and outcomes, especially in resource-limited settings. DSD models tailor healthcare services to individual patient needs, improving satisfaction, adherence, and health outcomes (Ware et al., 2016). These strategies include task-shifting, decentralization, and community-based care, designed to streamline service delivery while maintaining high standards of care (Davies et al., 2018).

Sub-Saharan Africa faces unique healthcare challenges such as high disease prevalence and limited resources. DSD models in this region have expanded access to HIV/AIDS treatment and other essential healthcare interventions, improving patient retention, reducing costs, and enhancing outcomes (Brennan et al., 2016; Grimsrud et al., 2016). However, challenges like healthcare worker shortages and infrastructure limitations hinder widespread adoption and effective implementation.

In Zambia, progress has been made in combating HIV/AIDS and improving maternal and child health through various initiatives (Zambia Ministry of Health, 2020). DSD models have been integrated into the healthcare system to enhance service accessibility and quality, particularly for chronic disease management and prevention (Zambia Ministry of Health, 2018). However, evaluating the effectiveness of these models in specific districts, such as Masaiti, remains essential to understand their impact on patient outcomes, healthcare provider satisfaction, and health system performance.

This study examines the effectiveness, components, and implementation challenges of DSD models in Masaiti District. By providing insights into these aspects, the research aims to inform evidence-based decision-making, improve healthcare delivery strategies, and enhance health outcomes for the local population.

Statement of the Problem

The implementation of Differentiated Service Delivery (DSD) models in healthcare aims to optimize patient care by tailoring services to individual needs. However, their effectiveness, particularly in resource-constrained settings like Masaiti District, Zambia, is not well understood. This study evaluates the impact and effectiveness of DSD models in improving healthcare delivery and patient outcomes within selected health facilities in Masaiti District.

Existing literature highlights the benefits of DSD models, such as improved patient adherence, reduced healthcare costs, and enhanced quality of care (Ware et al., 2016; Grimsrud et al., 2017). While DSD integration in Zambia's healthcare system shows promise, specific evaluations within districts like Masaiti are limited.

Key aspects regarding the implementation and effectiveness of DSD models in Masaiti District remain unknown. These include the specific components of DSD models adopted in the district, the relationship between facility level and individual stage participation in differentiated care, and the challenges faced during DSD implementation in public health settings.

This study addresses these knowledge gaps through a comprehensive evaluation of DSD models in Masaiti District. It analyses the components of each DSD model, investigates the relationship between facility level and individual stage participation in differentiated care, and explores the challenges encountered during DSD model implementation. The findings provide valuable insights for healthcare policymakers, practitioners, and stakeholders, informing evidence-based decision-making, improving DSD model design and implementation strategies, and ultimately enhancing healthcare delivery and patient outcomes in Masaiti District.

Specific Objectives

1. To describe the specific elements in each DSD model, coverage as implemented in Masaiti district.
2. To investigate the relationship between (i) facility level and (ii) individual stage participation in differentiated care.
3. To identify the difficulties that come with using model implementation techniques in public health facilities.

LITERATURE REVIEW

Empirical Review

The empirical reviews studies conducted at global, Sub-Saharan, and Zambia level perspective to provide a substantial understanding of the phenomenon around the DSD model in Masaiti District.

Differentiated Service Delivery (DSD) Evolution

Delivering services is crucial in any sector. Over time, service provision has evolved, leading to Differentiated Service Delivery (DSD), which tailor's services to individual clients' needs, preferences, and expectations. This study examines the development and impact of DSD on ART services. The evolution of DSD models addresses healthcare challenges, especially in resource-limited settings. The World Health Organization (WHO) supports differentiated care to improve access and quality, focusing on HIV/AIDS treatment (WHO, 2016). Studies by Grimsrud et al. (2016) highlight key DSD components like task-shifting and decentralisation, demonstrating their potential to enhance service delivery.

The international response to HIV/AIDS has significantly improved patient access to care and treatment. However, as the HIV epidemic evolves, service delivery models must adapt to the unique needs and challenges of different populations. Differentiated service delivery (DSD) aims to optimise healthcare resources, improve patient outcomes, and increase retention in care. This approach tailors' services to the requirements, preferences, and circumstances of patients, employing various strategies to enhance healthcare delivery. In Asia, countries like Cambodia have adopted multi-month scripting (MMS) for antiretroviral therapy (ART), allowing stable patients to obtain up to six months of medication at once (Mody et al., 2018). Similarly, community health workers in Nepal and Thailand deliver ART in remote areas, increasing patient satisfaction and reducing healthcare facility workloads (Roy et al., 2019; Murphy et al., 2021; Lujintanon et al., 2021; Belay et al., 2022). Challenges to DSD implementation include resource limitations, logistical hurdles, and healthcare worker shortages. However, successful adoption has been facilitated by strong leadership, community involvement, and partnerships with civil society organisations (Roy et al., 2019). Research indicates that DSD models improve adherence to ART,

retention in therapy, and overall patient satisfaction, enhancing the quality of care (Ford et al., 2020).

Numerous countries have adopted Differentiated Service Delivery (DSD) models, including community-based antiretroviral groups, facility-based adherence clubs, community drug pickups, fast-track visits, and outreach programs, as noted in Reidly's 2016 study for the Swaziland Ministry of Health. Providers determine clients' eligibility for DSD based on national criteria, crucial for effective DSD scaling. Analysis has shown increased patient retention, highlighting DSD's positive impact. A 2021 study in Nigeria by Sanwo et al. compared patients receiving ART through DSD models with those in conventional care. It found that patients on DSD had higher retention and viral suppression rates. During the COVID-19 pandemic, expanding DSD models in Nigeria ensured continuous ART access for people living with HIV (PLHIV), underscoring the importance of scaling up DSD to improve clinical outcomes and reduce healthcare facility congestion. Real-world data from DSD programs provide valuable insights for tailoring and enhancing these models to meet specific needs and optimise healthcare resources.

The 2020 ICAP research highlighted Zambia's successful implementation of Differentiated Service Delivery (DSD) through a Coordinated Strategy to Increase Coverage, featuring nine major DSD models for Antiretroviral Therapy (ART). These include three facility-based models: Fast-Track, Multi-Month Scripting, and Urban/Rural Adherence Groups (UAG); four community-based models: Community Adherence Groups/Clubs (CAG), Chronic Centralized Medicines Dispensing & Distribution (CCMDD), Community (Retail) Pharmacy, and Health Post (HP) Model Dispensation; and two outreach models: Mobile ART Distribution and Home ART Delivery. Additionally, Zambia offers the Scholars (Adolescent) model for teenagers and young adults. These models have improved service delivery, increasing accessibility, retention, and adherence among people living with HIV. Chimbwandira et al. (2018) noted that DSD models promote lifelong adherence and reduce healthcare facility congestion, addressing gaps in epidemic control. Challenges include limited understanding of DSD models among clients and healthcare workers, high treatment default rates in CAGs, and slow viral load testing turnaround times. Varying uptake of models, such as Chronic Adherence Response Groups (CARGs), due to fears of HIV status disclosure, also presents difficulties. Prioritising research on DSD model acceptance, patient satisfaction, and cost-benefit evaluations is crucial to improving and scaling up these initiatives, enhancing HIV care and outcomes.

The Historical review perspective of Different DSD models

Historically, service providers used a one-size-fits-all approach, often failing to meet diverse customer needs. Recognising the importance of customisation, Differentiated Service Delivery (DSD) emerged in the late 20th century as companies sought to stand out from competitors. With advancements in technology and data insights, DSD gained momentum as service providers began using customer data to understand preferences, interests, and behaviours. This data-driven approach allowed companies to tailor services more effectively to individual needs. The internet played a crucial role in advancing DSD. Online platforms and applications enabled remote, convenient service access, breaking down regional barriers and expanding customer reach. E-commerce, for instance, revolutionized retail by allowing purchases anytime, anywhere. Data analytics further propelled DSD by enabling businesses to analyse vast amounts of customer

behaviour data. This led to customer segmentation and personalised service offerings, enhancing customer satisfaction and service effectiveness.

Theoretical Framework

The strength theory focuses on how individuals process emotions, fostering open communication and empowering health workers to recognise and harness their strengths. Emphasising positive attributes and goal setting, it encourages resilience and growth. Applying this theory in healthcare settings can enhance performance, motivation, and well-being.

Conceptual Framework

The conceptual framework of the study

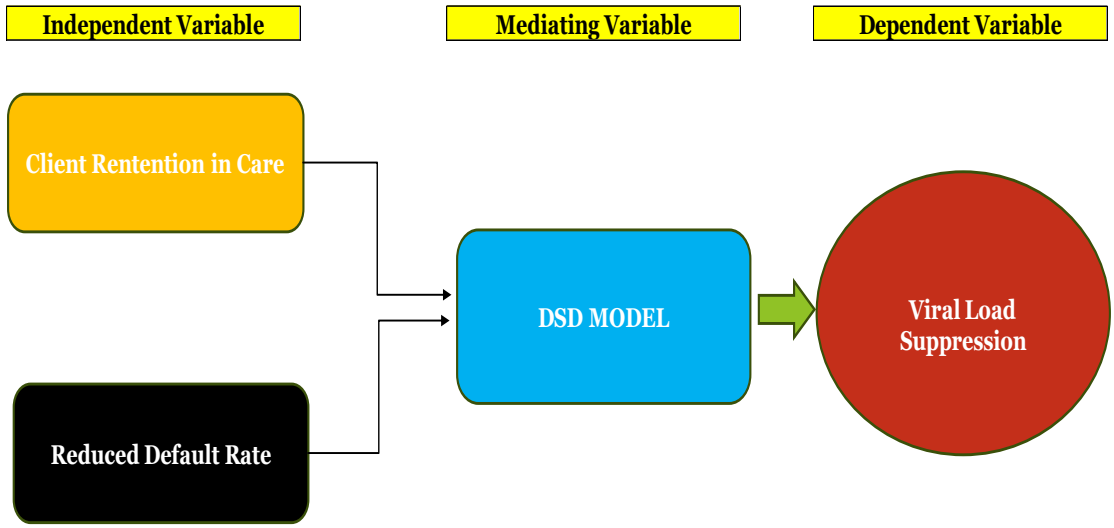

Figure 1*: The relationship between dependent variable and the independent variables*

RESEARCH METHODOLOGY

3.1 Research Design and Approach

The study used an explanatory embedded design and a mixed-method approach, combining qualitative and quantitative research. Quantitative research quantifies characteristics, while qualitative research analyses data from a few cases. This mixed strategy incorporated both, with a focus on quantitative methods, specifically employing statistical descriptive techniques (Eustachio, 2020).

3.2 Target Population and Sample Size

The study included 50 healthcare providers in Masaiti District (clinicians, pharmacists, lab personnel, HIV nurse practitioners) handling DSD models and a few long-term ART patients

aware of the project's goals. According to Burns and Grove (2003), the population meets the testing requirements.

3.3 Sampling technique and Tools for Data collection

Sampling techniques included convenience sampling for the bank, purposive sampling for stakeholders, simple random sampling for employees, and stratified sampling for community members. These methods aimed to ensure a diverse and representative sample, considering unique group characteristics. The sample size for this investigation was calculated using Slovin's formula: n=N1+N(e)2n = \frac{N}{1 + N(e)^2}n=1+N(e)2N, where N is the population size, e is the error margin, and n is the sample size, resulting in n=44n = 44n=44.

3.4 Data analysis

The study used both qualitative and quantitative methods to evaluate DSD models in Masaiti District. Quantitative data from 44 healthcare providers were analysed statistically (Chi-square and Cramer's V Test), while qualitative data from ART patient interviews were thematically analysed. This mixed-method approach ensured a comprehensive evaluation of DSD models, considering both numerical data and personal experiences.

PRESENTATION AND ANALYSIS OF RESULTS

4.1 Demographics Information

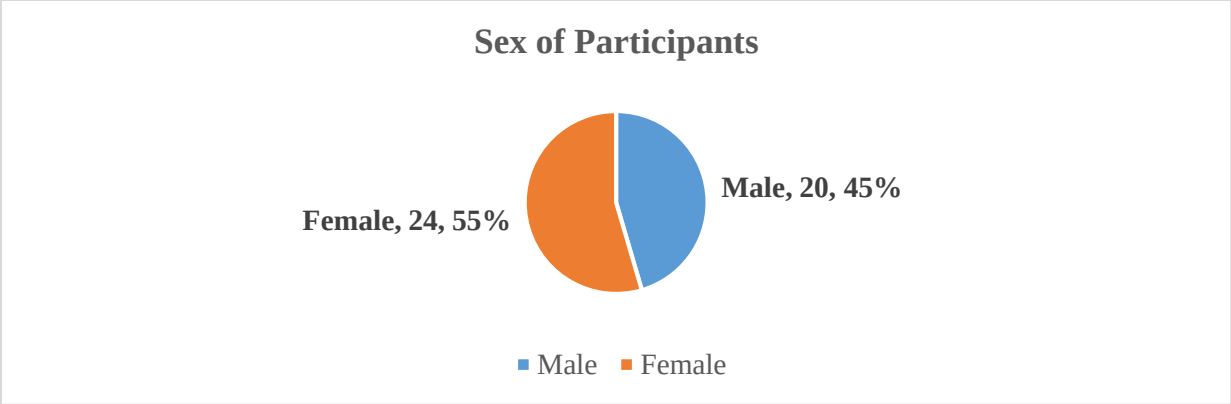

Figure 2: Gender Distribution

Table 1: Age Range for participants

Age Category	Frequency (%)
20-29 years	12 (27%)
30-39 years	12 (27%)
40-49 years	09 (20%)
50+ years	08 (18%)
40-50 years	02 (05%)
Over 46 years	01 (02%)

Table 2: Age Range for Community Members

Profession	Frequency (%)
Nurses and Midwives	34%
Pharmacy Staff (Pharmacists and Pharmacy Techs)	20%
Clinicians	18.2%
HIV Nurse Practitioners (HNPs)	13.6%
Other	13.2%

4.2 To describe the specific elements in each DSD model, coverage as implemented in Masaiti district.

4.2.1 Types of DSD Models

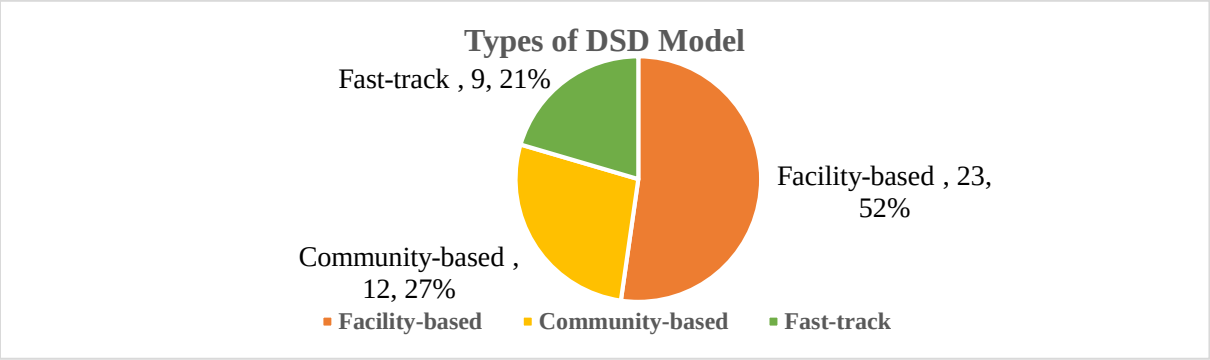

Figure 3: Types of DSD Models

This study aimed to describe the elements and coverage of Differentiated Service Delivery (DSD) models in Masaiti district. DSD models, tailored to patient needs, include facility-based (52.3%), community-based (27.3%), and fast-track (20.5%) models. Respondents demonstrated a high level of awareness of DSD requirements and multi-month ART scripting.

4.2.2 Focus Group Discussion on DSD Model in Masaiti District

Table 3: Facility-Based Model: Verbatim

| --- |---

| 1 | The facility-based model has really streamlined our visits. I only need to come in for check-ups every six months.

| 2 | I appreciate the fast-track services at the clinic. It saves me so much time.

Table 4: Community-Based Model: Verbatim

| --- |---

| 1 | Being part of the community adherence group has been a game-changer. I feel supported and it's easier to manage my treatment.

| 2 | The community drug pick-up point is very convenient. I don't have to travel far to get my medication.

Table 6: Fast-Track Model: Verbatim

| --- |---

| 1 | Fast-track visits are quick and efficient. I can pick up my medication without waiting long.

| 2 | The fast-track model allows me to maintain my daily routine with minimal disruption.

Table 7: Challenges and Benefits: Verbatim

| --- |---

| 1 | One challenge is the occasional delay in medication delivery, but overall, the system works well.

| 2 | DSD has greatly reduced the congestion at the clinics, making it easier for everyone to get the care they need.

Table 8: General Perception: Verbatim

| --- |---

| 1 | I feel more in control of my health with the DSD model.

| 2 | These different service delivery options cater to our specific needs and make managing our health much easier.

Table 9: Implementation Insights: Verbatim

| --- |---

| 1 | The transition to DSD was smooth, thanks to the thorough guidance from healthcare workers.

| 2 | Some of us were initially skeptical, but seeing the benefits first-hand has changed our perspective.

Table 10: Satisfaction and Recommendations: Verbatim

| --- |---

| 1 | I highly recommend the community-based model to others in similar situations. It's been very effective for me.

| 2 | It would be great if more people were educated about these options. They make a difference.

The principal investigator used data from five focus group discussions in Masaiti district health facilities, employing a semi-structured questionnaire. Participants discussed the effectiveness of Differentiated Service Delivery (DSD) freely, guided by the interviewer. Sessions were recorded with permission and notes were taken to compile results.

4.3 To investigate the relationship between (i) facility level and (ii) individual stage participation in differentiated care.

To answer the objective, Chi-square and Cramer's rule were performed with the corresponding chi-square value (χ^2), degrees of freedom (df), p-value, and Cramer's V.

Table 11: Chi-Square and Cramer's Rule Test

Test	χ^2	df	p	V	Note
Chi-square Test of Independence	4.532	1	0.033		Valid Association
Cramer's V				0.131	

The results show a statistically significant connection ($p < 0.05$) between these two variables, indicating that they are related. The 0.131 Cramer's V coefficient indicates a small effect size. These findings imply a feasible relationship between the degree to which an individual participates in differentiated care and the facility, suggesting that the capacity of various health facilities to encourage and facilitate high levels of differentiation care participation may differ.

4.4 To identify the difficulties that come with using DSD model implementation techniques in public health facilities of Masaiti District.

Table 12: Difficulties with Model Implementation Methodologies

Challenges	Frequency	Percentage
Limited funding	12	27.27%
Lack of trained staff	10	22.73%
Resistance to change among healthcare staff	9	20.45%
Lack of infrastructure and resources	8	18.18%
Inadequate monitoring and evaluation	5	11.36%
Total	**44**	**100%**

4.4.1 Summary of Findings

The study identified several challenges in implementing Differentiated Service Delivery (DSD) models in public health facilities in Masaiti District. The primary difficulties included limited funding (27.27%), lack of trained staff (22.73%), resistance to change among healthcare staff (20.45%), lack of infrastructure and resources (18.18%), and inadequate monitoring and evaluation (11.36%). These issues were highlighted by participants in specialised care programs, who emphasised the need for better-equipped facilities and access to essential resources to ensure effective implementation.

Enhanced Interaction

Participants voiced concerns over the lack of necessary infrastructure and resources, emphasizing the importance of well-equipped facilities.

An administrator noted,

"*The right infrastructure, including enough room and tools, is lacking in our facilities so that the models can be used efficiently*."

Insufficient Observation and Assessment

The absence of robust monitoring and evaluation mechanisms was another critical issue.

One participant highlighted,

"*We would like an improved mechanism for tracking and assessing the models' progress and output. Without appropriate oversight, it is challenging*."

DISCUSSION OF FINDINGS

5.1 To describe the specific elements in each DSD model, coverage as implemented in Masaiti.

The pie chart reveals high awareness of Differentiated Service Delivery (DSD) models in Masaiti District, with facility-based models most recognised (52.3%), followed by community-based (27.3%) and fast-track models (20.5%). This aligns with literature, which highlights the importance of tailored healthcare services to meet diverse patient needs (Ware et al., 2016). Studies also emphasise the success of facility-based and community-based DSD models in improving patient retention and satisfaction (Brennan et al., 2016). The coverage and recognition of these models in Masaiti suggest effective implementation and a promising impact on healthcare delivery.

5.2 To investigate the relationship between (i) facility level and (ii) individual stage participation in differentiated care.

The chi-square test ($\chi^2 = 4.532$, $p = 0.033$) indicates a significant association between facility level and individual stage participation in differentiated care, though the effect size is small (Cramer's $V = 0.131$). This aligns with literature highlighting the influence of facility infrastructure and resources on patient engagement in DSD models (Ware et al., 2016). Studies suggest that well-equipped facilities enhance patient participation and adherence (Brennan et al., 2016). Thus, the findings affirm the literature's assertion that facility-level factors significantly impact individual participation in differentiated care, though other variables also play a role.

5.3 To determine the perceptions of local community members on Corporate Social Responsibility impact on Sustainable Community Development.

The table identifies several challenges (e.g., limited funding, lack of trained staff, resistance to change) in implementing DSD models in Masaiti District's public health facilities. These findings resonate with literature discussing barriers to DSD adoption, such as resource constraints and staff resistance (Ware et al., 2016; Brennan et al., 2016). The literature underscores the critical need for adequate funding, trained personnel, and organisational readiness to overcome these challenges effectively. Thus, the identified difficulties in Masaiti District align with broader research, highlighting common implementation hurdles that must be addressed to optimise the effectiveness and sustainability of DSD models in public health settings.

Conclusions

This study has provided a comprehensive examination of Differentiated Service Delivery (DSD) models within Masaiti District, illuminating their components, challenges in implementation, and their impact on healthcare provision. The findings underscore the critical role of tailored healthcare strategies in optimising service delivery amidst resource constraints.

6.2 Recommendations

The study provides the following recommendations:

1. **Enhance Funding and Resources**: Allocate increased financial resources and infrastructure support to bolster DSD model implementation. This includes securing funds for training, equipment, and facility upgrades to ensure sustainable service delivery.

2. **Continuous Training and Capacity-Building**: Implement ongoing training programmes for healthcare staff to enhance their skills in DSD model implementation. This includes workshops on new methodologies, patient engagement strategies, and the use of technology to improve healthcare outcomes.

3. **Promote Adaptability and Change Management**: Foster a culture of adaptability among healthcare providers to facilitate smooth adoption of DSD models. This involves proactive leadership, stakeholder engagement, and organisational support to navigate resistance and facilitate effective change management.

Further Research Studies

Conduct longitudinal research to assess the long-term sustainability and scalability of DSD models in various healthcare settings. This includes evaluating patient outcomes over extended periods and assessing the scalability of successful models to different contexts and regions. Such studies can provide insights into refining DSD strategies and integrating them more effectively into routine healthcare practices.

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