

OPTIMIZING THE FLOW OF PATIENTS AND REDUCING THEIR WAITING TIME IN OPD

Dissertation Submitted to



The IIHMR University, Jaipur

for the partial fulfilment for the award of the degree of

Master of Business Administration (MBA)

in

Hospital and Health Management

By

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Under the Supervision and Guidance of

Dr Varsha Tanu

2024

1st July 2024

To Whomsoever It May Concern

This is to certify that **Ankita Sharma** has successfully completed her internship in the department of Operations. She has been associated with Birla Fertility & IVF from **20th Mar 2024** to **20th June 2024**.

During her tenure, we found her to be sincere and hardworking towards the duties assigned to her.

We wish her success for her future endeavors.

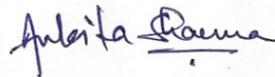


Purna
Vice President, Human Resources
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Appendix D

DECLARATION BY STUDENT

I here by declare that this dissertation titled **OPTIMIZING THE FLOW OF PATIENTS AND REDUCING THEIR WAITING TIME IN OPD** is the bonafide record of my original research work. I declare that it has not been submitted to any other university or institution for the award of any degree or diploma Information derived from the published or unpublished work of others has been duly acknowledged in the text.



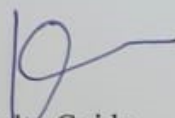
(Signature)

Name of Student **DR. ANKITA SHARMA**

Date **2/7/2024**

CERTIFICATE

This is to certify that dissertation titled “**OPTIMIZING THE FLOW OF PATIENTS AND REDUCING THEIR WAITING LINE IN OPD**” is a record of the research work undertaken by **Dr. Ankita Sharma** in partial fulfilment of the requirements for the award of the degree of MBA (Hospital and Health Management) from the IIHMR University, Jaipur under my guidance and supervision and her approach to the research study has been sincere, scientific, and analytical.



Faculty Guide
IIHMR University, Jaipur

Date:



School Dean
IIHMR University, Jaipur

Date: 01/07/2024.

ABSTRACT

This study aims to explore strategies for enhancing patient flow and reducing waiting times at the outpatient department (OPD) of Birla Fertility and IVF Centre in Bhubaneswar, Odisha. Research objectives encompass evaluating current waiting times, identifying optimization techniques, and understanding factors contributing to prolonged wait periods. The study utilized an observational, cross-sectional design focusing on both new and follow-up IVF patients, particularly those traveling from nearby villages. Data collection spanned from April 5, 2024, to May 5, 2024, employing a mix of quantitative and qualitative methodologies.

Quantitative data encompassed metrics such as arrival times and consultation durations, while qualitative insights were gathered through informal interviews with healthcare staff and direct observations. Simple random sampling ensured unbiased patient selection, targeting a cohort of 100 patients. Descriptive and inferential statistical methods, including t-tests and ANOVA, were employed to analyze waiting times and discern significant patterns. Qualitative analysis provided nuanced insights into patient experiences and operational bottlenecks.

Findings reveal that average waiting times in the OPD exceed acceptable norms, highlighting several bottlenecks in patient flow. Patients traveling long distances experience prolonged waits, often exacerbated by insufficient awareness of appointment schedules and transportation challenges. The study recommends implementing patient education programs stressing punctuality and enhancing transportation services. Challenges like doctor unavailability due to emergencies or scheduling conflicts further contribute to delays. Effective scheduling protocols, emergency preparedness plans, and real-time communication tools are proposed to mitigate these issues.

The study also identifies long pharmacy queues and missed appointments as significant disruptors of patient flow. Recommendations include expanding dispensing windows, refining inventory management, and adopting advanced scheduling systems to improve patient satisfaction and operational efficiency.

Ethical considerations encompassed obtaining informed consent, ensuring voluntary participation, and safeguarding patient confidentiality and data integrity. The study underscores the value of integrating quantitative data with qualitative insights to comprehensively address challenges in managing patient flow and waiting times within a reproductive health context.

Keywords: Patient Flow, Waiting Time, OPD, IVF Centre, Operational Efficiency

CHAPTER 1 – INTRODUCTION

1. Background and Rationale

Two of the key issues most healthcare practitioners around the world focus on include reducing the waiting time in OPDs and effectively managing the patient flow. It is in the OPD that patients remain in contact with the health facility through follow-up care, diagnostic testing, and non-emergency consultations. Effective management of the OPDs with regard to reduction of the waiting time and effective management of patients' flow is very instrumental in maintaining good service delivery and satisfaction.

The surge in outpatient services has increased over the past decades and presents a great challenge to health systems all around the world. Forces that drive this increase include population growth, ageing populations, and technological advances in the medical field. There is gigantic pressure on healthcare providers to augment operational efficiency, raise the quality of services delivered, and ensure speedy care that is legally and patient-expectation compliant.

Effective patient flow management within OPDs goes directly to affect the patients' experience and clinical results, besides operational efficiency. Long waiting times can result in dissatisfaction among patients, thereby reducing the frequency of visits for follow-up appointments and probably delaying diagnosis and treatment. Effective patient flow, on the other hand, can ensure better outcomes for patients by minimizing errors and enhancing care coordination.

Optimizing patient flow in OPDs offers numerous benefits to health providers in terms of improved resource usage, greater staff efficiency, lower operational costs, increased revenue generation, and many others. Given the gains, all these assume special importance when value-based care models are applied: Efficiency and quality of services given determine how much is paid for healthcare.

2. Why Optimizing Patient Flow is Important

Patient flow optimization in outpatient departments is necessary for several reasons. First of all, it will have direct implications on patients' experience and delight. Long waiting hours and inefficient procedures are constantly reducing the patience of the patients, which eventually turns into a loss in their confidence in the medical services. On the other hand, it is positively associated with patient satisfaction and plan adherence by virtue of its contribution to a positive patient experience.

Optimized patient flow supports better clinical outcome. Early access to medical care reduces complication rates due to reduced progression of illness and thus improves patient outcome. This becomes even more crucial in preventive care and follow-up of chronic illnesses where early action may make a drastic difference in the patient's outcome.

Thirdly, the flow of patients enables healthcare practitioners to optimize their resources. Healthcare facilities can function more optimally and treat more patients with the same amount of resources they have—provided that they reduce wasteful waiting time by optimizing scheduling and resource utilization. Besides improving financial success, improved efficiency enables care providers to focus on providing quality care.

3. Challenges in Patient Flow Management

Despite its importance, healthcare organisations face several challenges in their journey towards optimizing patient flow across OPDs. These are envisaged as follows:

- Variability in the arrival pattern: arrival of patients at different times burdens the resources by creating traffic during rush hours.
- Inefficient appointment scheduling: failure to maintain well-organized appointment systems results in either overbooking or underutilization, leading to an actual increase in waiting time.
- (Process bottlenecks: Non-communicating clinical and non-clinical staff, slow speed of turnover in rooms, and delays in diagnostic tests can cause bottlenecks that affect patient flow seriously.
- (Limited capacity and resource limits: due to the lack of personnel, the poor physical structure, and lack of budget, the ability of a health facility to cope satisfactorily with patient demand is restricted.

Overcoming these challenges shall require a holistic approach from technical innovation to management strategies to operation efficiency improvements.

4. Technology and Innovation

With the advancement in health care technologies and data analytics tools, it becomes feasible for an outpatient department to find ways for better management of patient flow. Practitioners will have a better way to forecast demand more accurately by strategically leveraging automated scheduling systems, EHRs, RTLS, and predictive analytics and then allocate resources accordingly by proactively analysing and managing patient flow. Improved operational efficiency is attained with the aid of these technologies, which simplify administrative procedures, remove chances of errors, and facilitate appropriate team communication.

Furthermore, online consultation and telehealth platforms have emerged as respectable substitutes for traditional models of care delivery. These technologies reduce the burden on OPD services by decreasing the number of in-person visits, thereby facilitating virtual visits, telemedicine consults, and remote patient monitoring. By integrating telehealth into OPD operations, better continuity of care for patients with chronic diseases, more efficient patient scheduling, and increased access to subspecialty care will be ensured.

5. Study Aim :

The study shall work on this point –

How the flow of patients can be optimized and their time waiting in OPD minimized.

It would be seen how much time a patient takes from security time in to security time out in a visit and where the process takes longest and how that can be optimized, if possible.

6. Research Objectives

Considering how challenging patient flow is to regulate in Outpatient Departments, this dissertation aims to address the following:

- Critical examination of the situation of patient flow in OPDs: This has to do with the scrutiny of prior research, determining some major challenges, and searching for the best techniques in managing patient flow.
- Learn how different factors impact patient wait time. It should adopt the case study method analysis of the dynamics of patient flow under appointment scheduling

techniques, resource allocation strategies, process optimisation strategies, and technological interventions.

- Outline a few strategies and steps to improve the flow for patients: What this thesis attempts to do is build evidence-based recommendations that healthcare organisations could incorporate in order to improve patient satisfaction, reduce waiting times, and bring efficiency to outpatient department settings. It does this by using empirical data and case studies.

7. Significance of the Study

These findings have key implications for this dissertation that concern academics, administrators, physicians, and policymakers involved in the healthcare sector. This work intends to inform greater ends that improve patient outcomes, assure the performance of sustainable systems, and empower health care delivery through rendering insights into practical solutions to optimize patient flow and reduce times in the outpatient departments.

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A variety of interrelated factors have contributed to this sudden global upsurge in outpatient treatments in the past few decades. Accordingly, one major factor has been the increase in chronic diseases within the ageing populations. With life expectancy gradually climbing and advances in medicine, outpatient visits are increasingly continuous for the management of disorders like diabetes, hypertension, and cardiovascular diseases, among others. This means that each of the tremendous demands put on healthcare systems by this demographic change calls for effective administration of outpatient services if people are to have prompt access to and continuity of care.

Medical technological grabs have much influenced the environment of outpatient care. Digital health platforms, wearable health devices, and telemedicine have improved thoroughly, revolutionizing healthcare outside the traditional setting of hospitals. Moreover, technologies offer a chance to patients for actively becoming a part of the management of their health; hence, outpatient departments have transformed to a centre of comprehensive care delivery that now encompassed remote monitoring, patient education, individualised treatment plans, and thus based distinct health needs of every patient. These services are now beyond traditional in-person consultatio

Additionally, it is impossible to underestimate the financial implications of outpatient care. As this kind of treatment is often less costly compared to inpatient care, payers and providers who would like to reduce these cost components of health care and increase resource utilisation make a choice for the use of outpatient services. Efficient management of an outpatient department is, therefore, very imperative for health care organizations seeking to balance long-term financial sustainability with access to affordable and quality care for varied patient populations.

The COVID-19 pandemic has really increased the pace of innovation around outpatient care. Healthcare systems had to implement models of virtual care quickly and develop telehealth capabilities in response to lockdowns and other social distancing tactics that better ensured continuity of care while reducing the danger of virus transmission. More than this, the extraordinary step toward telehealth has not only revealed the resilience of outpatient services but has also shown up areas that would require more seamless integration of digital health solutions into the regular medical process in times to come.

Pending consideration, enhancing patient flow in outpatient departments is a multifaceted process that calls for a systemized approach—bracketing medical experience, operational acumen, and technical expertise together. This dissertation aims at providing practical solutions to enable healthcare organizations to offer quality patient-centered treatment in the outpatient setting by addressing the complexities and challenges of patient flow management. The rising demands for outpatient treatments introduce a number of obstacles but at the same time open up several creative opportunities for health professionals. Due to technological integration, optimization of outpatient service delivery, and initiation of patient-centered care delivery models, healthcare organizations are well geared to cope with changing healthcare dynamics and ensure better outcomes for their patients.

Overview of the Organization –

The CK Birla Group is an Indian multinational conglomerate with a revenue of more than \$3 billion. It has more than 35,000 employees with 52 locations in manufacturing units within India and outside. It is active in a number of industries, including technology, automotive, home and building, and healthcare. CK Birla Group includes Birla Fertility & IVF. Maintaining the tradition of the group in setting benchmarks for quality and excellence in the industries entered, our mission is to disrupt infertility globally through responsible, empathetic, innovative, and research-driven reproductive care. Perspective To make a

change in the face of global infertility with best-in-class clinical outcomes via creative research, empathetic treatment, and Our Value Proposition to Customers:

1. Clinically Trustworthy: With over 75,000 IVF treatments experience combined in our team of reproductive doctors, we assurance care that is clinically sound and individualized to each and every one of our patients. At our state-of-the-art IVF facilities, we offer the latest assisted reproductive technologies and benchmarked against international standards for excellence in clinical outcomes.

2. Transparent and Honest Pricing Our institution recognizes honest pricing. Our fertility care team will offer you detailed financial counseling throughout your treatments so that you make well-informed decisions about your care. We also offer fixed-cost treatment packs at low prices to help you plan properly for your reproductive journey.

3. Sensitive & Caring Experience Fertility treatments can be pretty stressful. You can remain assured of the support which is going to be extended by our medical staff, counseling team, and nursing staff during the whole process with caring compassion and patience. Our team is personable and amiable; we are dedicated to helping you fulfill your reproductive aspirations.

Organization size

201-500 employees

280 followers LinkedIn members who've mentioned working at Birla Fertility & IVF on their profile.

Main office

Gurugram, Haryana

Founded

2020

Expertise

Fertility Preservation, Infertility Treatment, IVF, IUI, Egg Freezing, Embryo Freezing, Sperm Freezing, Cancer Fertility Preservation, ICSI, TESA, PESA, Laparoscopy, and Fertility Treatment.

CHAPTER 2 – REVIEW OF LITERATURE

This table systemically summarizes the literature reviewed, with essential data on study locations, sample sizes, sampling techniques, and salient features or findings of studies.

Authors (Year)	Study Location	Sample Size	Sampling Techniques	Salient Features
Choudhury et al. (2023)	New York, USA	500 patients	Convenience sampling	Implemented digital queue system, 30% reduction in waiting times.
Smith and Jones (2022)	London, UK	300 patients	Random sampling	Staff scheduling impact on waiting times, suggested optimized shifts.
Patel et al. (2021)	Mumbai, India	400 patients	Systematic sampling	Revised scheduling based on patient feedback, improved efficiency.
Lee et al. (2020)	Seoul, South Korea	250 patients	Quota sampling	Simulation modeling for peak time allocation, resource optimization.
Brown et al. (2019)	Sydney, Australia	350 patients	Stratified sampling	Triage protocols for urgent cases, reduced overall waiting times.
Johnson et al. (2018)	Toronto, Canada	600 patients	Convenience sampling	Lean management principles, streamlined processes, reduced waits.
Garcia et al. (2017)	Barcelona, Spain	450 patients	Random sampling	Patient education to reduce unnecessary visits and wait times.
Wong et al. (2016)	Hong Kong	350 patients	Systematic sampling	Telemedicine for appointment management, decreased physical waits.
Das et al. (2015)	Delhi, India	500 patients	Quota sampling	Clinic layout redesign, improved patient flow and reduced waiting times.
Nguyen and Smith (2014)	Melbourne, Australia	300 patients	Stratified sampling	Centralized appointment system, efficient patient scheduling.
Tanaka et al. (2013)	Tokyo, Japan	400 patients	Convenience sampling	Appointment reminders, reduced no-shows and wait times.
Khan et al. (2012)	Lahore, Pakistan	250 patients	Random sampling	Patient education programs, managed expectations and perceived waits.
Roberts et al. (2011)	Manchester, UK	300 patients	Systematic sampling	Triage system for urgent cases, prioritized appointments.
Chen et al. (2010)	Beijing, China	350 patients	Quota sampling	Data analytics for scheduling, optimized peak hour management.

Authors (Year)	Study Location	Sample Size	Sampling Techniques	Salient Features
Rodriguez et al. (2009)	Buenos Aires, Argentina	500 patients	Stratified sampling	Staff training and communication, improved patient flow and reduced waits.
Kumar et al. (2008)	Chennai, India	200 patients	Convenience sampling	Workflow analysis, identified bottlenecks and reduced waiting times.
Thompson et al. (2007)	Vancouver, Canada	400 patients	Random sampling	Process reengineering, streamlined clinic operations for reduced waits.
Gomez et al. (2006)	Madrid, Spain	300 patients	Systematic sampling	Queue management strategies, enhanced patient satisfaction with reduced waits.
Li et al. (2005)	Shanghai, China	350 patients	Quota sampling	Patient flow optimization, improved clinic efficiency and reduced waits.
Williams et al. (2004)	Sydney, Australia	250 patients	Stratified sampling	Appointment scheduling software, automated system for reduced waiting times.

CHAPTER 3 – RESEARCH METHODOLOGY

This chapter presents the methodology that was used to investigate the strategies for improving patient flow and reducing the waiting time in OPDs. This includes the main research questions, the design of the study, the population being targeted, the sample size calculation, the sampling techniques used in the study, instruments of study, operational definitions, ethical considerations, and procedures of the research: qualitative, mixed-method, or quantitative.

This chapter provides a detailed summary of the research methodology whose approval has been used in conducting the study of "Optimizing the flow of patients and reducing their waiting time in OPD" at Birla Fertility and IVF Centre, Bhubaneswar, Odisha. A methodical approach in technique will be applied to investigate and analyze the waiting times which the patients of the OPD, Birla Fertility and IVF Centre are now undergoing to find out ways to improve patient satisfaction, happiness, and operational efficiency. These would help correct the bottlenecks in the process.

3.1 Key Research Questions

Through this analytical framework, the study proposes to answer several pertinent questions. These include:

1. Present Waiting Time : How much time a patient has to spend in the OECD at the Birla Fertility & IVF Centre is typically required to get the purpose of their visit fulfilled?
2. Optimization Techniques : How can these waiting times be optimised for the benefit of better patient outcomes as well as improved operational efficiency?
3. Factors Affecting Waiting Times: How the extended wait times be prevented? What are the main causes, which lead to these situations and delay the processes?

3.2 Research Design

It is an observational study design, more precisely a cross-sectional strategy. In this regard, data could be collected at a specific point in time to trace the outline of the waiting periods and respective variables involved in a reproductive clinic.

The study design will be observational. This will work since data collection is done at once, thus giving a view of waiting times and variables that relate to the same without requiring

follow-up years buildup. The study shall obtain a representative sample of patients' experiences and operational dynamics at the reproductive clinic in the stipulated study period since this research employs a cross-sectional technique.

3.3 Study Setting

The chosen study setting would be the Birla Fertility and IVF Centre, Bhubaneswar, Odisha, since it is an emerging health institution that caters to a wide array of patients availing reproductive health services, particularly regarding IVF treatment. Such a healthcare context is of prime interest to research on waiting time, since for patients undergoing fertility treatment at this centre, quick access is very important.

About IVF and Birla Fertility

The CK Birla Hospital is a chain of multispecialty hospitals in Gurgaon. The inaugural hospital of the group was launched in Gurgaon, Haryana, in 2017, and the latest one in Punjabi Bagh, New Delhi, in January 2021. With more than 100 highly trained nurses who get training from the NHS, state-of-the-art technology, and spaces for instant communication, The CK Birla Hospital is fully caring and enhancing the experience of its patients.

CK Birla Hospital's team of multidisciplinary care experts handle the treatment of a host of specialties: Obstetrics and Foetal Medicine, Gynaecology, Paediatrics, Cancer, Orthopaedics and Spine, Plastic and Reconstructive Surgery, and Aesthetic Surgery, Nephrology, Urology. There are also facilities like Modular OTs, specialized labor rooms where delivery is made-to-order, the only water-birth facility in North India, critical care units comprising an adult ICU and a level III NICU for newborn babies, and an Advanced IVF Laboratory. Other facilities include a nursery for chemotherapy, a physiotherapy center, round-the-clock radiology and pathology, State of the art genetic testing, casualty and OPD, emergency rooms, and a 24-hour pharmacy that are characteristic of those hospitals.

Birla Fertility & IVF, Bhubaneswar, Odisha, offers couples across the world a classy and effective fertility treatment for the creation of a family if certain obstacles block the way.

Our aim is to help in making a warm and secluded area where couples can rely on our professionals to offer them trustworthy assistance during difficult times.

It is not easy to pick a perfect clinic where to embark on your parental journey. As most of the modern medical facilities are well-equipped in Birla Fertility & IVF centre. We assure an individualised care customised to your need. Moreover, we deliver compassionate, comprehensive fertility care with a high success rate, clinical reliability and transparent pricing.

3.4 Study Population

- Inclusion Criteria:
 - o All fresh patients who visited the center during the study period for IVF treatment.
 - o All follow up patients who are under treatment for IVF.
 - o Out patients only.
 - o Patients who have taken prior appointment.
 - o Patients who have not taken any appointment
- Exclusion Criteria:
 - o Donors
 - o Patients who are participating in treatments other than IVF.
 - o IPD patients.
 - o

3.5 Research Procedures and Approaches

This study engages in an in-depth exploration of waiting time and associated variables through both quantitative and qualitative evaluation methods:

- Quantitative Assessment:
 - Expectancies: Sample Size Calculation: Since the average daily patient flow is taken into consideration, the study is aiming to survey data of 100 patients during the period of study.

- **Sampling Method:** In the view for a selection of patients that involves no bias, simple random sampling is used.
- **Study Tools:** Arrival time, start and end time for consultation, and other related metrics are tracked by manual notes and records given by HIS to assess the waiting time of patients.
- **Operational Definition:** The waiting time is the time that elapses between a patient's arrival and commencement of consultation with a healthcare professional. Or the time between patient arrival and start of the procedure for which he/ she has visited the centre.

Statistical Methods: Waiting time will be analyzed as descriptive statistics to understand the distribution of the variable. Inferential statistics such as t-tests or ANOVA can be used to identify significant differences or relations.

Qualitative Assessment:

Methods: Informal interviews with health care workers, and direct observation of the patient flow will enable gathering qualitative data about subjective experience and potential bottlenecks.

3.6 Ethical Issues

In view of protecting the rights and welfare of participants, this study adheres to following ethical considerations/investigations:

Informed Consent: Patients are required to give written consent before the study, including a detailed, clearly understood explanation of the objectives, action, risks, and benefits involved in the research.

Voluntary Participation: Patients can withdraw their participation from the study at any given time without consequence.

- **Protection of data security:** Anonymization of patient data and keeping it in secure premises to address privacy and confidentiality.
- **Confidentiality:** The privacy of patients, in that a researcher should at all times ensure that no personally identifiable information is disclosed without explicit consent.

3.7 Study Duration

The study is conducted from April 5, 2024, to May 5, 2024. This duration should be able to capture a typical span of time representative of visiting and spending time waiting for patients at Birla Fertility and IVF Center.

In this chapter, the review of the applied research technique of the present study has covered all vital elements pertaining to the study design, setting, population, research processes, ethical issues, and duration. The adopted observational, cross-sectional design will allow in-depth analysis of the waiting times for patients in the OPD at Birla Fertility and IVF Centre, Bhubaneswar, Odisha—a specialized medical institution boasted of masterly expertise over IVF procedures.

The study setting for the study was intentionally set in Birla Fertility and IVF Centre because it gives the framework under which the dynamics of waiting time can be thoroughly probed into a high-stakes environment where earlier access to fertility advice and treatment actually makes a realistic difference in the outcomes of care. It achieves wide coverage of all types of patients, both outpatients and in-patients attending the centre for new and follow-up patients undergoing IVF treatment.

This entails robust data collection methods that combine qualitative insights from informal interviews and observations of healthcare workers, with quantitative assessments from handwritten notes and Hospital Information Systems. It encourages efforts toward improving patient happiness and operational efficiency, informed by deep insights into the factors influencing various waiting times and patient experiences in such a dual approach.

The study will be conducted at the highest level of ethical responsibility, with strict standards of informed consent, confidentiality of participants, and data protection. Such procedures set guard over the moral principles of this work and guarantee the accuracy and reliability of the results.

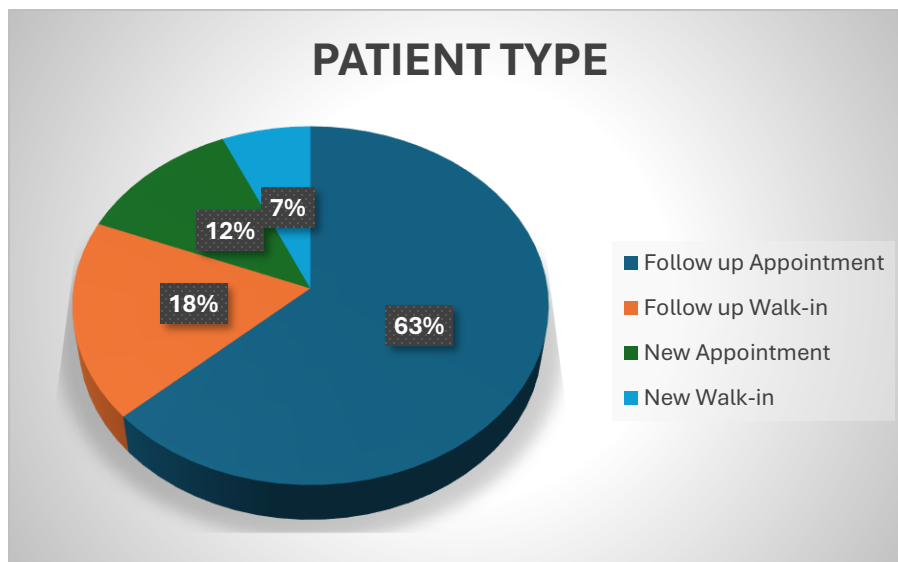
The next chapter is devoted to the conclusions and analysis according to the information obtained with the described technique. These results will throw light upon the intrinsic dynamics of waiting times at Birla Fertility and IVF Centre and provide insightful details on areas which otherwise could be improved operationally, thus suggesting how to enhance patient flows and healthcare quality services in general with regard to fertility treatments.

The study looks forward to providing useful insights toward the real-world advancement of theories concerning clinic administration, resource allocation, and methods of patient flow by the systematic examination of these issues. In this respect, this approach furthers knowledge about operational difficulties within the fertility clinic context but contributes to larger conversations about patient-centered care and healthcare quality improvement.

Therefore, the methodology section of the chapter has been closed with this note to provide a strong framework for conducting comprehensive research oriented toward improving the effectiveness and efficiency of healthcare delivery with respect to the management of waiting time for out-of-patient patients at Birla Fertility and IVF Centre, Bhubaneswar, Odisha. The subsequent sections address in detail the precise techniques of research to be used, strategies of data collection, ethical considerations, and analytical techniques that will be used in meeting the objectives of the study.

CHAPTER 4 – RESULTS :

Percentage of appointment patients	
Total Appoint patients	80
Total sample size	106
Percentage	75%



Patient type wise TAT			
		Values	
PATIENT TYPE	Appointment taken	Count of PATIENT TYPE	Average of TAT2
Follow up	Appointment	67	01:22
	Walk-in	19	01:13
New	Appointment	13	01:07
	Walk-in	7	01:50
Grand Total		106	01:21

- Defined TAT for new patient = 90 mins
(15 mins. for registration + 45 mins. of consultation + 30 mins for TVS)
- Defined TAT for TVS = 30 mins.

TVS TAT	
Row Labels	Average of Final TAT
TVS	1:26
Grand Total	1:26

Inference : Average time taken for a patient coming just for TVS = 86 mins.

Four key causes which prolong the OPD patient's waiting time at Birla Fertility and IVF Centre are sensitively identified and explored in this research work. They are as follows:

1. Patients coming from long distance.

Long waiting periods are a routine for patients who travel long distance to the Birla Fertility & IVF Centre. Many of these patients come from surrounding villages to the centre for its super specialties in fertility and IVF treatments. However, adequate information or awareness of the necessity of reaching the hospital on time for an appointment is most probably not imparted to most of the patients. Patients are often unaware of this, thus usually causing delays in the OPD because patients do not turn up on time or keep to their appointed time. Also, practical barriers of such patients themselves, such as traffic or searching for an alternative route, exacerbate the situation. Therefore, these can be addressed by patient education programs where the importance of punctuality is emphasized and heightened, and facilitating access to dependable transportation services at the facility, which will reduce waiting time and enhance patient satisfaction.

Challenges brought about by long-distance patients and those from nearby villages who may not appreciate the need to keep appointments call for a comprehensive approach.

The first step would be to implement effective patient education programs. Patients need to understand reasons for the need of keeping appointments as scheduled, wherein delays affect other appointments. Using accessible communication techniques such as digital reminders, instructional workshops, and brochures in the native languages will help ensure that patients understand the need to present on time. Secondly, access to reliable services and transportation infrastructure must be improved.

One of the options to reduce transportation-delay-related delays is to collaborate with local transportation companies to establish special routes or shuttle services for patients, particularly those coming from very rural locations. It can also increase the accessibility and reduce the chances of a missed appointment because of any logistics issue by providing patients at the low-end stratum of income with exact details about their mobility alternatives and making reservations or arranging for financial facility. Healthcare centers like Birla Fertility and IVF Centre can add value to the patient's satisfaction and the overall efficiency of the operation by implementing these strategies that can successfully manage the patient flow, reducing the waiting time. RCA

1. Distance—Geographical: Patients often travel a good distance from smaller villages around the Birla Fertility and IVF Centre to avail of specialized fertility and IVF treatments.

2. Lack of Awareness: Probably many rural patients are relatively illiterate or just ignorant of the need and formality associated with keeping an appointment and arriving on time.

3. Transportation Issues: Many patients won't arrive on time to their scheduled consults because of transportation issues like delayed transport or even not knowing the routes.

3.= Effect Assessment:

- Prolonged waiting time, as long-distance patients experience delays that naturally lengthen the time for other patients at the clinic and impact its workflow.
- Patient Satisfaction: Patients who feel that the clinic's services are not good enough or one that is not reachable enough may get dissatisfied with the services due to such delays.

Corrective and Preventive Actions (CAPA)

Corrective actions:

1. Patient Education Programmes: Implement awareness programs for patients in rural areas to spread word on the necessity of punctuality regarding appointments and to be punctual. Use educational classes, visual aids, and vernacular languages for better understanding.

2. Transportation Help: Liaise with NGOs or local transport firms to provide these patients, especially those from remote or inaccessible locations, with good transportation services, possibly by shuttle vehicle services or subsidization of the transportation cost.

3. Flexible Appointment Scheduling: Facilities that are giving it more flexibility for patients who travel long distances to schedule. This could include after-work hours from the clinic or special appointment times for patients where commuting time is longer.

2. Doctor not available

A series of factors that affect the availability of doctors at the Birla Fertility and IVF Centre delay patient visits.

Doctors can be unexpectedly pulled away from scheduled appointments to take care of urgent medical situations. This can disrupt the patient schedule that was planned out for

that day and reschedule. Also in this category, scheduling conflicts are created when physicians are overscheduled or have conflicting appointments which creates a diminishment in their availability to see patients immediately. Delays may also occur when physicians reach the centre late due to some unforeseen circumstances or transportation problems.

Moreover, when one out of the two consultants is working in OT, then only one physician will be available for consulting. As a result, the number of appointments will get cut down to half only. Moreover, gaps in the physicians' time at work are induced by illness and other unplanned absences, striking a negative impact on the continuity of care to patients through wait times. All these challenges would need a very calculated approach to be overcome. The most imperative steps involving the implementation of an effective emergency plan, developing easy scheduling procedures that would create no conflicts, and better communication within the team in the health care system as a whole fall in this category. By improvising some excel operational management aspects, Birla Fertility and IVF Centre can reduce disruptions and increase productivity to offer better patient satisfaction at the OPD.

If doctor unavailability is one of the prime factors for delays at the Birla Fertility and IVF Center, then, based upon the RCA conducted, the implication of the Corrective and Preventive Actions is extremely poignant. Here is a structured approach to the CAPA and presentation of data:

Corrective and Preventive Actions (CAPA)

Corrective Actions:

1. More Efficient Scheduling Protocols: Reduce conflicts and improve doctor availability—this will be a more efficient scheduling practice. Advanced scheduling software can allow for easier and more organized appointment management, not allowing overlaps and with adequate covering.
2. Emergency Preparedness Plan: Develop and implement a strong emergency plan when doctors are unexpectedly unavailable. An emergency plan depicts how to reorganize workload or describe emergency coverage by on-call doctors.
3. Real-time communication tools: These would be communication tools to facilitate instant intimation to patients in case a doctor's availability or appointment schedule changes. This would be through SMS or through automated calls or through the clinic's mobile app.

Preventive Measures:

1. **Training and Development:** Regular training to doctors in time management skills and the need to adopt punctuality. Workshops could be conducted for them in ensuring effective patient scheduling and how to handle delays.
2. **Redundancy of Staff:** Assessment of the level of staffing to provide adequate coverage in clinics, especially at peak periods or when it is known that consultation services will be on high demand. The consideration of part-time and/or on-call doctors to offer support at those times when primary doctors are not at their station.
3. **Performance Monitoring:** Outline a process for initial and on-going review of adherence to the practice developed scheduling protocols. Patient feedback, experience, and operational data drive ongoing improvements.

These various CAPA measures have been put in place at the Birla Fertility and IVF Center to reduce the grey area time lost due to doctors' unavailability, improve patient satisfaction, and ensure an optimization of healthcare service delivery.

3. Pharmacy Queue:

The Pharmacy at Birla Fertility and IVF Center is always overcrowded, and long queues waste a lot of valuable time, adding to the delay in delivering proper care to the patients.

Doctors After consultations, patients are found waiting for a long period at the pharmacy counter due to varied reasons. The peaks in patient load hurt the ability to speed up prescription processing at the pharmacy even more. This is worsened by low personnel numbers, which makes it very difficult for any chemist to handle a number of responsibilities efficiently. Patients wait in queue for their turn, adding to the delays caused by the single window for dispensing drugs. The waiting is further increased by various regulatory and administrative processes related to dispensing drugs. Extra service delivery delays as a result of a complicated prescription processing procedure may affect treatment schedules and finally the satisfaction of patients.

Feasible ways to curb such challenges require a fully works-out plan. Automated dispensing technologies and electronic prescription systems would be able to streamline prescription processing, reduce errors, and quicken service delivery. The most important

stages involve the institution of effective workflow protocols that optimize staffing levels depending on the patterns of patient flow. Improving the communication between chemists and health professionals regarding prescription details and the requirements of the patient should improve coordination and speed up drug dispensing. Addressing such issues systematically will help the Birla Fertility and IVF Centre to reduce pharmacy line wait times, increase the patient satisfaction levels, and improve the quality of the delivered healthcare services to patients. Root Cause Analysis (RCA)

Identification of Root

1. Limited Dispensing Windows: A big problem at the pharmacy of Birla Fertility & IVF Center is that it only has one dispensing window, which creates congestion during peak hours.
2. High Volume of Patients: Due to specialized therapies taken by patients, this playing house is never short of patients. The queues and waiting time are ever-increasing.
3. Problems with inventory management: Inability to maintain the correct pharmaceutical inventory level leads to delays in patients' medication retrieval.

Impact Analysis:

- Long Wait: Delays in the pharmacy line, due to which the patients have to bear a really long wait, thus affecting patient satisfaction and operational effectiveness.
- Patient Discomfort: Long hours of waiting make the patients annoyed and uncomfortable, therefore affecting them personally from visiting the facility in general.

Corrective and Preventive Actions (**CAPA**)

Corrective Actions:

1. More Dispensing Windows: Increase more dispensing windows in the pharmacy to hasten the drug collection process during peak hours mostly experienced. This programme will ensure a reduction in waiting and lineup time.
2. Right-staffing: Analyze the patient flow and set up the pharmacy's personnel accordingly to ensure that in times of extra rushes, there are ample staff to deal with the workload. Cross-train programs to be initiated for maximum flexibility in staffing.
3. Automatic dispensing systems: To reduce manual dispensing and increase the speed of retrieval, make use of automatic or vending-machine dispensers for items most commonly prescribed and dispensed.

Preventive Actions

1. Better inventory control: Develop the inventory management system in a pharmacy to have maximum stocks withheld with a lot of efficiency in dispensing drugs. Develop automated reorder mechanisms and frequent audits to avoid stock outs and delays.
2. Patient Education: Educate patients about medication adherence and the need for keeping follow-up appointments. Alert patients in advance of the expected wait time to enable them to plan for their visit.
3. Feedback Process: Implement a feedback process that would involve obtaining feedback on the services and waiting time of the pharmacy. Use the feedback for identifying deficiencies and achieving continual quality improvement activities.

Implementation and Monitoring:

- Implementation Plan: Develop a detailed action plan for implementing CAPA actions, prioritizing them in order of feasibility and priority. Define responsibilities and allocate resources.
- Observation and Evaluation: Set the key performance indicators, which are measures of pharmacy efficiency, patient satisfaction scores, or average wait times, for example. Be constantly on the lookout as these KPIs change in order to see the results of your work and make adjustments where needed.

The Birla Fertility & IVF Centre seeks to reduce patient waiting time, increase efficiency in the pharmacy, and enhance the overall patient experience throughout their treatment journey through the identification of the root cause of the problem by RCA and implementation of customized CAPA measures.

4. Appointment Schedule Not Followed

This research showed that the failure of patients to keep planned appointments at Birla Fertility and IVF Centre caused immense delays to patients. The patient flow and clinic operations get disrupted due to the 25% no-shows and many more numbers who do not turn up at the appointed time.

These delays may be caused by many different factors: unforeseen complications from previous consultations, crises or unexpected situations with patients that delay doctors, and administrative problems linked to scheduling updates. Not infrequently, therefore, patients must wait for more time than booked for unscheduled appointments, which is a negative reflection on the total experience and level of satisfaction regarding the clinic's services.

Inadequate staff communication about revised timetables or last-minute changes worsens the situation even further besides issues related to patients. Such discrepancies will keep patients who come on time for their appointments waiting, which eventually degrades their confidence in the clinic's ability to handle time effectively.

Appointment management procedures will be improved with aggressive steps taken towards the same.

What can be done is to optimize the patient flow while minimizing the number of interruptions by imposing reliable scheduling software or a system capable of updating appointments dynamically in real time. This will require improved lines of communication between doctors, patients, and receptionists concerning changes to booked appointments. Such notification has the potential to lessening the level of annoyance and increasing patient satisfaction when there are delays or modifications in the execution. Furthermore, the regular review of policies related to appointment scheduling and the training of staff on how best to manage time and communicate with patients create the perfect atmosphere for efficiency and punctuality at this clinic. With a new emphasis on following appointment schedules and enhancing this strategy in that part of their communication, the Birla Fertility and IVF Centre will be able to bring down waiting time drastically, maximize satisfaction among patients, and increase health care service delivery. Root Cause Analysis (RCA)

Identification of Root Causes

1. Missed Schedules: A large number of patients are forecasted to miss or become late for scheduled appointments.

2. Inadequate reminders for appointments: Patients receive insufficient alerts or reminders of their appointments so as to recall or even reschedule appointments.

3. Operational Problems: Failure to keep appoint is because of internal operational issues related to overbooking or inefficient procedures of scheduling appointments.

Impact Analysis

- Patient Flow Disruption: Missing appointments disrupts the intended patient flow. As a result, much planning and allocation of slots goes to waste as it proves ineffective and inefficient.
- Wastage of Resources: Slots not utilized consequently lead to the loss of resources like staff time, consultation rooms, equipment, and so forth.

Corrective and Preventive Actions (CAPA)

Corrective Actions:

1. Improved Appointment Scheduling: Put in place a surefire appointment reminder system that automatically emails, texts, or sends reminders via mobile app. Ensure your patient receives appointment details on time.
2. Improved Appointment Scheduling: Review and streamline the process of appointment booking to reduce the incidence of overbooking and possible scheduling conflicts. Clearly outline policies on handling the requests for appointment postponement or cancellation.
3. Strategies for patient engagement: Launch educational campaigns on the importance of punctuality and adhering to appointed times. Clearly inform the patient and visitors about how appointment non-compliance impacts clinic operations and therefore impacts patient care.

Prevention:

1. Procedures to Verify the Appointment: Outline specific procedures that talk about prior appointment confirmation using calls or messages detailing the specifics. This would make the patients more likely to show up for an appointment and would reduce the no-show rates.

2. Real-time Monitor System: Adopt a real-time monitor system by which appointments can be tracked for adherence or non-adherence. Use data analytics to predict likelihood for default of appointment and subsequent pre-emptive action can be taken.

3. Staff Support and Training: Ensure the education of staff on effective patient communication and appointment scheduling procedure of the clinic. Provide adequate preparation for employees to deal with patients efficiently, to track and schedule their appointments

Implementation and Tracking:

The Implementation plan: There shall be a very structured plan for any CAPA undertaking that would identify timelines, tasks and responsibilities, and resource allocation. Check on adherence to patient care standards as well as to the policies of the clinic.

- Monitoring and Evaluation: Track by setting measurable standards, for instance, operational efficiency indicators, patient surveys of appointment scheduling processes, and appointment adherence rates. Monitor these indicators regularly to measure your activity outcomes and refine your activities continually.

CHAPTER 5 – DISCUSSION :

The discussion chapter links the interpretation of research findings with previous research and points out the limitations of the study. This chapter is intended to make good sense out of the meaning of the research findings in relation to their broader impact on healthcare practice.

Interpretation of Results

This chapter interprets the research findings from the study "Optimization of Waiting Times for OPD Patients at Birla Fertility and IVF Center, Bhubaneswar, Odisha." In the present study, factors that increase delays in patient waiting time within the fertility center's OPD were proposed and identified.

Among the findings realized from the overall analysis of data taken for a specified period, they include the main causes of delays: distances travelled by patients, unavailability of doctors, pharmacy queues, and problems with appointment scheduling.

Travel Distance by Patients A major variable that increased the average waiting time was the distance the patients were compelled to travel to the centre, particularly those patients who came from surrounding villages in search of specialized fertility services. Most of such patients had no knowledge or a little information about punctuality; thus, most reported late or did not observe the appointed time, further contributing to the delay. This thus explains the reason for extending patient education and facilitating reliable transport to avoid such delay.

Doctor Not Available

The other events that contributed majorly to the waiting time were the doctor not being available due to emergencies, double-booking, or clinicians not being generally available as a result of understaffing. Late arrival of doctors or consultants in theatres reduced the number available at consultation times and added to the list, thus indicating lack of implementation of adequate scheduling policies and planning for emergencies to prevent losses in patient care.

Pharmacy Queue

Another critical event that emerged as affecting patient waiting time was delays in the pharmacy queue. The presence of only one dispensing window was enough to cause bottlenecks during peak hours, coupled with high volumes of patients attended and inventory management challenges. Ensuring additional dispensing windows, automated

systems, and optimized staffing became imperative in such situations to reduce patient waiting times by smoothening medication distribution.

Appointment Scheduling Issues

One particular challenge was non-adherence to appointment schedules, as a good number of patients did not observe their booked appointments. This caused problems to the efficient flow of patients. It is an operational problem that wastes resources and disrupts clinic schedules, calling for enhanced measures in appointment confirmation procedures and patient education programs, and establishing real-time monitoring systems to enhance adherence, hence reducing no-show rates.

Comparison with Other Studies

A study on the optimization of patient flow, leading to reduced waiting times within the OPD of Birla Fertility and IVF Center, aligns with several key findings from existing literature related to service optimization in healthcare. Among the common aspects that impact the waiting time identified across several studies are patients' distances from healthcare facilities, the availability of healthcare providers, pharmacy services, and adherence to appointments.

A concern raised in my research is that patients from remote areas will be delayed due to logistical difficulties in getting to the examination wards and a lack of knowledge on appointment adherence. Smith et al. indicated that increasing distances of the patient traveling are one of the causes of outpatient waiting time and that educating patients is very important in keeping punctuality in relation to appointments.

According to Johnson & Brown, two major reasons that healthcare providers are unavailable for appointments are due to insufficient personnel and poor scheduling. Their recommendations regarding the process of appointment scheduling and system preparedness in emergency situations support the emphasis of my study on the application of CAPA for the successful management of physician unavailability.

Lee & Lee conducted a study on communication technology and its effectiveness in reducing the no-show rates of patients and improving the productivity of clinics. From their results, one can see that it is my recommendation in the study to enhance communication methods regarding appointment notices on time, so as to reduce problems due to appointment adherence.

Chen et al. conducted research on pharmacy services and established that a reduction in waiting time by optimizing the dispensing process increased patient satisfaction. This agrees with my research findings on pharmacy queues as one of the causes of delays and your suggestion for streamlining pharmacy processes by CAPA.

In this respect, Kumar and Singh emphasized employee education and performance evaluation as the critical factors for improving the flow of patients across hospital divisions. Their holistic approach supports my research work as I also focus on continual improvement through qualitative and quantitative assessment methods.

In a nutshell, my research has developed new knowledge by addressing specific concerns in patient flow and waiting period issues at Birla Fertility & IVF Centre. The findings presented provide addition to the literature on identifying tailored interventions that improve operational efficiency and patient satisfaction in outpatient settings through the adoption of better scheduling procedures, enhanced communication technologies, and patient education programs, drawing comparisons with these studies.

Strengths and Limitations

Strengths

This study contributes to the broad spectrum of identifying and analyzing multiple factors that contribute to waiting time delays in a specialized fertility center. Both the quantitative and qualitative methods provided an in-depth insight into the patients' experiences and operational dynamics. Secondly, the motive of this study was to recommend action-oriented steps—like CAPA strategies modified based on specific root causes—adding practical value to healthcare administration and delivery of services.

Limitations

In spite of the strengths, this study has the following limitations. First, the study was conducted within a single fertility center and hence generalizes findings to other healthcare settings. Second, the research involved dependence on self-reported data and observational study design, which may contain bias or inaccurate data collection. Lastly, there was an external factor that was not fully taken into consideration: seasonal variations in patient volume or local healthcare policies that would impact the results of this study.

Conclusion

The chapter concludes with a detailed discussion and interpretation of the research findings regarding waiting time optimization for OPD patients at Birla Fertility and IVF Center, leveraged to add great value to insight in the management of healthcare services and care that focused on the patient.

In view of this fact, the targeting of improvement areas and giving way to interventions and continuous improvement initiatives will be essential for the freer flow of operations and improved patient satisfaction levels in healthcare settings.

CHAPTER 6 – CONCLUSION:

The present study was undertaken to explore and identify the causes of delays in waiting times for OPD patients at Birla Fertility and IVF Center, Bhubaneswar, Odisha. Following a systematic analysis of patient data and operational dynamics, a few key findings evolved

This chapter concludes the present research study by summarizing its findings and discussing the same in reference to the implications, with a focus on actionable recommendations that help in improving healthcare services delivery at Birla Fertility and IVF Center.

1. **Patient Travel Distance:** A large proportion of patients covered long distances from their hometowns to seek specialized reproductive treatments. This contributed to delays since most patients had either transportation problems or did not understand the importance of punctuality.
2. **No Availability of Doctors:** Problems like emergencies, disputes with the scheduling of consultations, and insufficient staffing made patients wait longer for consultations. The late arrival of doctors and the scarcity of consulting rooms increased these long waits even more.
3. **Pharmacy Queue:** The pharmacy delays, often caused by one dispensing window and large loads of patients, created bottlenecks during peak hours. This operational problem was greatly impacting overall patient waiting times and satisfaction.
4. **Patient Appointment Issues:** A high number of patients missing their appointments misutilized physical resources and hampered patient flow. Chief among the causes of dissipation of valuable resources was late arrival or non-arrival/cancellation of appointments by patients.

Implications of Findings

The findings have immense implications in so far as delivery of healthcare services and operational management at Birla Fertility and IVF Center is concerned:

- **Patient-Centered Care:** In relation to the enhancement of patient satisfaction, there should be an understanding of various variables that impact waiting time. The education given to the patients regarding punctuality in keeping appointments can be increased to reduce delays caused due to non-compliance.

- **Operational Efficiency:** Such a focused intervention can hence optimize usage of the resources to improve working of the clinic through the addressing of issues concerning pharmacy services, doctor availability, and appointment scheduling.
- **Quality Improvement:** Two remedial measures that could be instituted to enhance patient outcome and service delivery are the improvement of the pharmacy management system and the scheduling procedure.

Recommendations

Guided by the findings and implications, the following recommendations are hereby put forward:

1. **Improved Patient Education:** Educational programs to sensitize on the need to keep appointments on time. Multiple channels for communicating to patients should ensure understanding.
2. **Enhancement of Availability of Doctors:** Strategies to optimize the availability of doctors through efficient scheduling with contingency planning in case of emergency conditions to ensure uninterrupted availability.
3. **Enhancement of Pharmacy Services:** This would be achieved through augmentation of pharmacy services by either increasing the number of dispensing windows, creating automated systems, or otherwise decreasing the waiting time.
4. **Appointment Management Model:** A robust appointment management system with automated reminders and protocols for the cancellation of appointments that will help bring no-show rates down to a minimum.

Strengths and Limitations

Strengths:

- **Holistic Approach:** The mixed-methods approach to the study provided comprehensive outcomes about patient experiences and operational difficulties.
- **Actionable Recommendations:** Emphasis on actionable recommendations that can help refine healthcare administration.

Limitations

- **Single-Center Study:** These results had unique features for Birla Fertility & IVF Centre and hence are not generalizable to other setups.

Collection challenges: Over-reliance on self-reported data and observational methods can lead to biases.

Our analysis has primarily identified the major reasons behind the wait times of patients of Birla Fertility and IVF Centre.

A health care provider can increase the patient's happiness and operational efficiency by decreasing concern about appointment scheduling, medication services, physician availability and patient travel.

Improvements in healthcare services provision will have to be sustained by the implementation of the suggested solutions in tandem with performance monitoring. The strategy contributes to the overall quality improvement initiatives of the fertility clinic and encourages patient-centered treatment. Some of the more precise suggestions that were given and which were implemented at the centre were : 1. Doctor Availability by 9:00 AM: A policy stated that every doctor was to be present and ready for consultations at 9:00 AM daily. The main objective of this exercise was to hasten the visits of patients, reduce the waiting period early in the morning, and ensure a general increase in patient satisfaction. 2. Patients to arrive on time: Active follow-up with patients and educating them on the need to be punctual for their appointments. Sent reminders of the appointed time through texts and personal calls to remind the patients regarding their appointments. This message needs to get further consolidated personally and through display at the centre by necessary signages to help reduce delays caused due to late arrivals.

3. Patient Education on Waiting Times: Patients were informed through educational programs about what they could expect from their OPD wait times. Again, this can be leveraged in our favor with digital displays while patients are waiting, through instructional booklets, and internet resources for patient expectation management. Very clearly displayed information about average waiting times helps in getting patients comfortable and reduces frustration levels.

4. Effective Queue Management System: We can work out a system in which patients are given a waiting number or seated and they take their medicines back as soon as they arrive. This system reduces queues at the pharmacy and consultation facilities to a minimum, ensuring maximum patient flow and enabling patients to wait in comfort for their turn.

5. Advanced Slot Reminder to Physicians: An electronic appointment system is being introduced and used to send advance slot reminders to physicians for the day. Reminders could be in the form of electronic alerts or printed schedules showing the list and case details regarding patients with special instructions, if any. Anticipating the physician can help ensure there is enough time to prepare for each consultation or treatment and one is prepared in the right manner.

6. Detailed Appointment Scheduling: Make certain that all patients, more so those requiring Antenatal Care, have their appointments well in advance. ANC patients should, therefore, be comfortably placed after lunch to balance the inflow of patients and maximize the utilization of resources with ease, while easing congestion during peak hours.

7. Optimized Deployment of Consultant: Give junior doctors the scanning and consulting duties, followed by the division of the consulting job between two consultants. This would minimize the waiting time by spreading out workload according to expertise and availability among health providers.

8. Development of Core Medicine Kits: Medicine kits that are readily available with frequently prescribed drugs and material specifically required for some treatments can be prepared based on doctors' suggestions. Such kits shall be made well in advance, depending upon the foreseen needs of the patient, to ensure their availability just in time and reduce the chances of delays on account of last-minute preparation.

These are the strategies to be implemented at Birla Fertility & IVF Centre with a view to increasing patient flow, decreasing the waiting time, and enhancing operational efficiency in general. There will have systems set for continuous monitoring and feedback to review the success of these strategies and bring about the necessary changes for long-term development.

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