

Implementation of Design Thinking Method in Pediatric Specialist Clinic Service Innovation: Case Study of SPC Pediatric Clinic

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ABSTRACT

Keywords:

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This research aims to evaluate the implementation of the Design Thinking method in service innovation at SPC Pediatric Clinic. This method is applied to improve service quality and efficiency through five stages: Empathize, Define, Ideate, Prototype, and Test. Data were collected through interviews, observation, documentation, and questionnaires, then analysed using the Miles and Huberman model. The results showed that innovations such as online registration, home care services, health education, service specialisation, and partnerships with schools successfully improved patient satisfaction. Technical, coordination, and adaptation constraints were also identified but were overcome with gradual improvements. The overall implementation of these innovations had a positive impact on patient comfort and trust.



Introduction

Health is an important asset for one's future that is influential from childhood (Maulidiyanti et al., 2022). Child health includes physical, mental and spiritual conditions as well as social health (Wahyuni, 2022). Good health conditions can encourage good development and growth of children. Maintaining children's health from an early age is very important because it is a period in the development of the child's body as a whole (Maulidiyanti et al., 2022).

The level of health, especially in children, is influenced over time during the development period so that it will produce a certain level of health (BPS, 2023). Healthy children today are the capital to form quality human resources in the future (Maulidiyanti et al., 2022). Therefore, focusing attention on child health is an investment for a country to reduce the consequences of losses due to low-quality human resources in the future (BPS, 2023).

Nowadays, child health services are experiencing competition due to the influence of globalisation, which is now a trend Alfarizi and Zalika (2023). This has influenced many organisations, including child health services, to innovate when providing services. Service reform in the child health sector has now become a necessity to facilitate, reduce, and make affordable and equitable provision of health services for children (Riva, 2021).

Renewal is important for public services to provide the latest innovations that can improve the quality of their services (Riva, 2021). Until now, the importance of a breakthrough to create services that have quality in the health sector without excluding basic health services at the SPC Pediatric Clinic is increasingly apparent (Alfarizi & Zalika, 2023).

SPC Pediatric Clinic is one of the many health facilities that focus on serving children's health. SPC Pediatric Clinic provides specialised pediatric services in Medan City with professional paediatricians who are experienced in helping treat children's health problems. Every parent can use the pediatric healthcare facilities at SPC clinic to ensure the growth and development of their children at SPC pediatric clinic.

Judging from the research of Altman et al. (2018), innovation in pediatric health services at the SPC pediatric clinic can be carried out using the design thinking method. This innovation method is a way of design that has a fulcrum in finding solutions to describe complex problems that cannot be clearly defined or for which the best solution is unknown. It uses a way to understand related human needs, realising many ideas during brainstorming sessions and carrying out a direct approach through prototype creation and direct testing.

Research by Yulius and Pratama (2021) conducted a study on the impact of using the Design Thinking Method in Designing Health Promotion Media based on visual communication design science, with the result that by understanding the design thinking method, health promotion media designers can better understand the characteristics and process of making health promotion media that has quality, is innovative, objective, and accepted by the target audience.

Through the implementation of this study, researchers intend to find out the results of the design thinking method applied to pediatric health facilities, namely the SPC pediatric clinic. Armed with several previous studies, the researcher seeks to find facts about whether the design thinking method can provide changes and improvements that lead to the innovation of pediatric specialist clinic services at the SPC pediatric clinic.

Based on the explanation described above, the title of the research topic proposed by the researcher is "Implementation of the Design Thinking Method in Pediatric Specialist Clinic Service Innovation: Case Study of SPC Pediatric Clinic".

Method

Some of the stages that will be carried out in this proposed research are:

Study Literature

This stage involves studying relevant literature to gain a deeper understanding of the concept of implementing design thinking methods, service innovation, and patient satisfaction. This literature study was conducted using books, journals, theses, or articles on the Internet.

Concept Design Initial

Analysing the implementation of the design thinking method in service innovation at the SPC Pediatric Clinic, a clinic that provides health services for children. The concept built at the beginning describes the implementation of the design thinking method in service innovation at the SPC Pediatric Clinic.

User Requirement Analysis

At this stage, the required data was collected through four techniques: interviews, observation, documentation and questionnaires. Structured interviews were conducted with pre-prepared questions for informants, namely clinic managers and patient parents. Observations were conducted individually at the research site to observe the implementation of the *design thinking* method in pediatric clinic service innovation. The documentation technique involved literature review from relevant sources such as books, journals, and previous research. Finally, a Likert-scale questionnaire was administered to clinic management and consumers to measure the level of implementation of *design thinking* in SPC pediatric clinic service innovation. These four techniques aim to provide an overview of clinic service innovations produced through the *design thinking* method.

Concept Validation with Users

Validating service innovations provided by SPC Pediatric Clinic to its patients by gathering information from parents of patients who have used service innovations obtained from the implementation of the *design thinking* model. This stage will be carried out through interviews and questionnaires to parents of patients with the orientation of obtaining information about patient satisfaction. At this stage, categorisation of information obtained from conducting interviews is also carried out with the aim of reducing the burden at the next stage.

Processing and Analysis

After the data collection stage, the data were processed and analysed to understand the implementation of the *design thinking* method in service innovation at SPC Pediatric Clinic. The analysis technique used refers to the Miles and Huberman (1992) model, which includes data reduction, data presentation, and conclusion drawing. Data reduction filters information to make it more focused, data presentation displays information systematically to facilitate concluding, and conclusions are drawn as the final result of the analysis. The data were then tested for credibility through source triangulation, which is a cross-check between the results of observations, interviews, and questionnaires, to ensure the quality of the implementation of the *design thinking* method in clinical service innovation.

Implementation of Innovation Evaluation Service

This stage will be filled with evaluation activities from the implementation of service innovation through the *design thinking* method carried out by the SPC Clinic. The evaluation is carried out in order to obtain an overview of the effectiveness of service innovations carried out by the SPC Pediatric Clinic through the *design thinking* method.

Interpretation Results

This stage will analyse and interpret the research results to draw relevant conclusions regarding the implementation of the *design thinking* method in the innovation of pediatric specialist clinic services at the SPC Pediatric Clinic.

Results and Discussion

Innovations in Pediatric Specialty Clinic Services at the Pediatric Clinic SPC

Innovation in the healthcare sector is carried out to provide better health services. These innovations must be sustainable so that they can make the latest breakthroughs related to health services and are expected to adapt to the times and culture of the community. Health service program innovations can provide and produce much better service updates.

Some of the innovations made by the Pediatric Specialty Clinic at the SPC Pediatric Clinic in the health services provided include:

- a. the use of an online registration service system that aims to facilitate the registration process.

"Innovation in the Online Registration System aims to facilitate the registration and consultation process without having to come directly to the clinic, especially for parents who have limited time or location."

This innovation benefits parents by reducing waiting time in queues. The clinic also benefits from increased accessibility of health services.

- b. offers homecare services for immunisation and baby massage. This innovation is beneficial for parents and children who are more comfortable in undergoing personalised care. In addition, this service also reduces the potential for children to be exposed to infectious diseases at the clinic.

"Homecare Service for Immunization and Baby Massage. Aims to provide home health services for children who need immunisation and baby massage. The benefits Reduce the discomfort of children and parents, provide more personalised and comfortable care, and reduce the risk of disease transmission in the clinic."

- c. Health Education Program for parents, in the form of seminars, online materials or workshops containing material on child care, nutrition and child development.

"The Health Education Program for Parents aims to provide health education through seminars, workshops, and online materials on child care, nutrition, and child development..."

This program benefits first-time parents in improving their knowledge and skills in caring for their children, preventing illness and supporting optimal child development.

- d. The more specialised services offered by SPC Pediatric Clinic are one innovation made in improving the clinic's competitiveness. The service aims to provide specialised services based on the specific needs and interests of patients in growth and immunisation.
- e. provides a partnership program with schools that aim to improve access to health. This is done by conducting routine check-ups and health education in schools. Schools that partner with SPC Pediatric Clinic detect health problems in

schoolchildren early on and increase awareness of the importance of health among students and teachers. The clinic obtains benefits from good relationships with partnering schools.

Service innovation at SPC Pediatric Clinic refers to several key innovation principles. Relative advantage is seen in the ease of access and efficiency of the online registration process and the convenience and flexibility of homecare services. Health education programs provide accessible and interactive information for parents, while speciality services and partnership programs expand access and improve the quality of care. Compatibility was also considered, where innovations aligned with previous services, thereby improving the quality of care. Although these innovations add complexity to operations, the resulting benefits in efficiency and patient satisfaction are worth it. Triability allowed patients to follow the innovation's procedures easily, as evidenced by the increase in registrations and positive feedback. Lastly, observability is evident from the significant perceived benefits in efficiency, service quality, and patient satisfaction, which continue to be supported with adjustments and improvements by the clinic.

Implementation of *Design Thinking* Method in Pediatric Specialist Clinic Service Innovation at SPC Pediatric Clinic

The implementation of the *Design Thinking* method in innovating pediatric specialist clinic services at the SPC Pediatric Clinic is carried out in several stages. The stages in the *design thinking* method are *Empathize*, *Define*, *Ideate*, *Prototype*, and *Test*.

- a. Problems at the empathise stage are the reason for innovating at the SPC Pediatric Clinic.
- b. This stage in the *design thinking* method is the *define stage*, which is where users identify their actual problems.
- c. In the next stage, *ideate* is the stage of collecting ideas for the problems found in the next stage.
- d. *The prototype* stage in implementing service innovations at SPC Pediatric Clinic is carried out after the development and testing of innovative solutions at the *ideate* stage.
- e. At the *test* stage, the implementation of service innovations at the SPC Pediatric Clinic has been running as desired and expected, although there are still obstacles in its implementation. These constraints are technical constraints, patient awareness and adaptation, logistics and schedules, operational costs, safety and health protocols, content accessibility, content quality and relevance, parent participation, staff training, scheduling service flow, limited resources, team recruitment, coordination with schools, logistical constraints and communication and socialisation.

The implementation of service innovation at the SPC Pediatric Clinic has proven its success. This success is seen from the results of a survey conducted by giving

questionnaires to patients related to patient satisfaction adjusted to satisfaction indicators. The satisfaction indicators are tangible, responsiveness, assurance, empathy, and reliability. Further explanation of the survey results is explained below:

1. Physical evidence (tangible)

The survey results show that the facilities and infrastructure provided by the SPC Pediatric Clinic are complete. Evidenced by the following survey results:

Table 1. Results of the Complete Facilities Questionnaire

Physical Evidence (Tangible)	
Answer	Percentage
Strongly Agree	5%
Agree	45%
Neutral	42,5%
Disagree	7,5%
Strongly Disagree	0

Source: Data processed, 2024

Table 2. Completed Infrastructure Questionnaire Results

Physical Evidence (Tangible)	
Answer	Percentage
Strongly Agree	12,5%
Agree	37,5%
Neutral	42,5%
Disagree	7,5%
Strongly Disagree	0

Source: Data processed, 2024

The questionnaire results showed that the majority of patients agreed that the facilities at the SPC Pediatric Clinic were complete. The interviews also reflected parents' satisfaction with service innovations, especially physical aspects such as modern design, cleanliness, warm environment, and professionalism of the facilities. The medical team and staff were also praised for their neat appearance, appropriate uniforms, and modern medical equipment, giving a professional and trustworthy impression.

2. Responsiveness

The responsiveness provided by the SPC Pediatric Clinic during health services is in accordance with the SOP and fast. The survey results can be seen in the following table:

Table 3. Rapid Response Questionnaire Results

Responsiveness	
Answer	Percentage
Strongly Agree	30%
Agree	47,5%

Neutral	17,5%
Disagree	5%
Strongly Disagree	0

Source: Data processed, 2024

Table 4. Results of the Responsiveness Questionnaire in accordance with SOPs

Responsiveness	
Answer	Percentage
Strongly Agree	35%
Agree	50%
Neutral	12,5%
Disagree	2,5%
Strongly Disagree	0

Source: Data processed, 2024

Based on the survey results, the majority of patients agreed that SPC Pediatric Clinic's responsiveness was fast and in accordance with SOPs. Parents were impressed with the responsiveness of health workers in services such as online registration, homecare, or in-clinic consultations. They appreciated the friendliness, professionalism, and efficiency of the services, which provided a sense of comfort and confidence in the best care for their children.

3. Assurance

The guarantee provided by the SPC Pediatric Clinic is in the form of qualified health workers and appropriate health worker backgrounds. The following survey results evidence this:

Table 5. Results of the Qualified Health Worker Assurance Questionnaire

Assurance	
Answer	Percentage
Strongly Agree	42,5%
Agree	47,5%
Neutral	10%
Disagree	0
Strongly Disagree	0

Source: Data processed, 2024

Table 6. Results of the Questionnaire on Appropriate Health Worker Background Assurance

Assurance	
Answer	Percentage

Strongly Agree	47,5%
Agree	42,5%
Neutral	12,5%
Disagree	0
Strongly Disagree	0

Source: Data processed, 2024

Surveys show that the majority of patients agree that the SPC Pediatric Clinic has qualified medical personnel with appropriate backgrounds. Interviews with patients' parents also corroborated this; they rated the medical personnel as highly competent, well-trained and experienced in dealing with various pediatric health issues, both in homecare and specialist services.

4. Empathy

The empathy felt by patients and parents is a measure of satisfaction with service innovation at the SPC Pediatric Clinic. They feel patient and friendly attitudes from health workers, as evidenced by the following survey results:

Table 7. Results of the Health Worker Patient Attitude Questionnaire

Empathy	
Answer	Percentage
Strongly Agree	35%
Agree	37,5%
Neutral	25%
Disagree	2,5%
Strongly Disagree	0

Source: Data processed, 2024

Table 8. Results of the Health Worker-Friendly Attitude Questionnaire

Empathy	
Answer	Percentage
Strongly Agree	37,5%
Agree	35%
Neutral	17,5%
Disagree	10%
Strongly Disagree	0

Source: Data processed, 2024

Based on survey results, the majority of patients strongly agreed that health workers at SPC Pediatric Clinic are friendly and patient. Interviews with patients' parents corroborated this; they rated the health workers as empathetic, caring and patient, both in the clinic and homecare services, so that the child felt calm and comfortable.

5. Reliability

The SPC Pediatric Clinic was found to have simple service procedures and meticulous health workers, as evidenced by the following survey results:

Table 9. Service Procedure Questionnaire Results

Reliability	
Answer	Percentage
Strongly Agree	45%
Agree	40%
Neutral	12,5%
Disagree	2,5%
Strongly Disagree	0

Source: Data processed, 2024

Table 10. Health worker examination questionnaire results

Reliability	
Answer	Percentage
Strongly Agree	52,5%
Agree	30%
Neutral	15%
Disagree	2,5%
Strongly Disagree	0

Source: Data processed, 2024

Survey results show that the majority of patients agree that procedures at SPC Pediatric Clinic are easy and that the health workers perform examinations thoroughly. Interviews with patients' parents reinforced this; they rated the health workers as very knowledgeable, informed, and up-to-date with the latest medical developments, and they were able to explain procedures and answer questions in depth.

Discussion

Innovation Analysis of Pediatric Specialty Clinic Services at Children's Clinic S PC

Innovation is basically related to the element of novelty and the use of information technology in groups and organisations (Solong & Muliadi, 2021). Innovation has a definition not limited to building and reforming but can also be interpreted broadly, utilising new ideas and realising products, processes, and services (Puspitasari & Pratiwi, 2021). Innovation in the healthcare sector is providing services and practising better health (Nurkhalisa et al., 2021). Innovation needs to be sustainable which makes breakthroughs related to health services can change according to the needs and development of the community (Solong & Muliadi, 2021). Health service program innovations can provide and produce much better service updates.

SPC Pediatric Clinic has made innovations in using information technology to provide health services for patients. These innovations include:

a. Use of an internet-based registration system (Online)

SPC Pediatric Clinic adopted an online registration system to make it easier for patients to register and consult without having to come in person. The system helps parents save time and provides flexibility, while the clinic benefits from increased flexibility of healthcare services.

b. Home Care service for immunisation and baby massage

SPC Pediatric Clinic provides home care services for immunisations and baby massage, allowing children to receive treatment at home in a more comfortable and personalised manner. These services also help prevent disease transmission at the clinic and make it easier for time-constrained parents to get healthcare for their children.

c. Health Education Program for Parents

SPC Pediatric Clinic presents health education programs for parents through seminars, workshops, and online materials on child care, nutrition, and development. The program aims to improve parents' knowledge and skills, support children's optimal health and development, and assist new parents in caring for their children.

d. More realised services

SPC Pediatric Clinic offers more specialised services with the aim of providing specialty services such as growth and development, and immunisations based on the specific needs and interests of patients. The benefits of this service are to provide more focused and personalised services, improving the effectiveness of care by tailoring to the individual needs of the patient. This service helps parents who are still unaware of their child's needs to get appropriate care and avoid mistakes in providing care.

e. Partnership Program with Schools

SPC Pediatric Clinic offers a partnership program with schools with the aim of improving access to healthcare by conducting routine check-ups and health education in schools. The program benefits schools by detecting health problems in school children early, raising awareness of the importance of health among children and teachers, and strengthening the relationship between the clinic and the community.

The service innovations implemented by the SPC Pediatric Clinic are adjusted to the principles of innovation. This is because innovation development cannot be fixed in a fixed situation (Alrazi & Rachman, 2021). According to Solong and Muliadi (2020), the principles of innovation consist of relative advantage, compatibility, complexity, trialability, and observability.

The first principle, namely relative advantage, stipulates that innovation must have an advantage and more value than previous innovations. The novelty value inherent in innovation must always be there as a characteristic in providing differences from other innovations (Syafuddin et al., 2021). In implementing service innovations at the SPC Pediatric Clinic, there are advantages to each innovation implemented, namely:

- 1) Online registration at SPC Pediatric Clinic makes it easy for patients to book appointments at any time without having to come in person, reducing waiting times and queues. The system also improves efficiency by automating administration and schedule management.
- 2) Homecare services for immunisation and baby massage at SPC Pediatric Clinic offer the convenience and safety of in-home services, reduce the risk of disease transmission, and are flexible with family schedules. This service allows for more specific and personalised attention for the child.
- 3) The health education program for parents at SPC Pediatric Clinic makes it easy to access materials through digital platforms at any time. The program improves parents' knowledge and skills in caring for their children with interactive materials, including gamification, videos, and live Q&A sessions.
- 4) The more specialised services at SPC Pediatric Clinic offer in-depth expertise in growth and development, nutrition, and immunisation, supported by experienced medical staff. These services allow for a personalised approach to patient-specific needs, enhancing the quality of care that is more focused and suited to each child's unique needs.
- 5) The partnership program with schools expands access to healthcare, enables early detection of health problems and increases awareness of the importance of health. The program provides routine check-ups and education without the need to leave school, strengthening the link between clinics, communities and schools and creating a healthier environment for children.

The next principle is compatibility. In this principle, the innovation must be compatible with the previous innovation that it replaces so that the old innovation is still used and not discarded. The reason is not only because the costs incurred are not small but also because the old innovation is part of the transition process to the latest innovation. In addition, it can also facilitate the adaptation process and the learning process for innovation more quickly (Solong & Muliadi, 2020). Compatibility in service innovation with previous services at the SPC Pediatric Clinic has been implemented. Service innovation and previous services are appropriate and can improve service quality.

Implementing service innovations and transitioning from previous services cannot be separated from complexity. The complexity of the innovation should not be higher than the previous innovation. However, because an innovation offers a newer and better way, this level of complexity is generally not an important issue (Syafuruddin et al., 2021). The complexity of innovating services at the SPC Pediatric Clinic has indeed increased slightly compared to previous services, but this is proportional to the benefits obtained by the clinic. These benefits include increased efficiency, quality of service, and patient satisfaction. This complexity can be handled with good management, continuous training, and the use of appropriate technology. By doing so, success in the implementation of service innovation can be ensured.

Innovation, in principle, can only be accepted after it has been tested and proven to have greater benefits or value compared to previous innovations, so an innovation product must go through a public testing phase, where each individual or party has the opportunity to test the quality of innovation (Solong & Muliadi, 2020). Service innovations implemented at SPC Pediatric Clinic have been tested and proven successful. Evidence of this success is as follows:

- 1) Online registration: This service innovation has evidence of success in the form of an increase in the number of registrations. The data shows a significant increase in the number of online registrations, thus reducing the administrative burden at the clinic. Success is also seen in terms of drastically reduced waiting times, resulting in increased patient satisfaction. In addition, positive feedback from patients showed that they appreciated the ease and convenience of the online registration system.
- 2) Homecare services for immunization and baby massage. This innovation has proven successful in increasing the accessibility of patients who have limited mobility or distance. The success of this service is also evidenced by the higher patient satisfaction seen from the survey results of parents or patients who have used it. Most of them stated that this service is very convenient and effective.
- 3) Health education program for parents: the success of this program is proven by the increase in parents' knowledge by conducting evaluations before and after the program is carried out. The evaluation results showed a significant increase in parents' knowledge and skills related to children's health. In addition, active participation from parents in participating in webinars, workshops and online materials is very high. This shows that parents' interest in engaging with the program is high. Parents gave positive testimonials that they were greatly helped in taking better care of their children by participating in this program.
- 4) More specialised services: This service innovation has proven its success by seeing better clinical outcomes from patients who receive specialized services. They feel that their child's health and development have improved. This has led to higher patient satisfaction with receiving specialised services, resulting in more patients returning for follow-up services.
- 5) A partnership program with schools: this innovation has been successful and is evidenced by the increased outreach in terms of more children getting regular check-ups in schools. The program also actively assists children in detecting health issues early, allowing for faster and more effective interventions. Success is also seen in the stronger collaboration between clinics, communities and schools and increased awareness of the importance of health.

The last principle in innovation is observability. A breakthrough needs to be observable in terms of how the breakthrough works and provides better results (Syafuruddin et al., 2021). In implementing service innovations at the SPC Pediatric Clinic, observations continue to be made to show good results. Overall, service innovation has

been running well at the SPC Pediatric Clinic and provides significant benefits in terms of efficiency, service quality and patient satisfaction.

In its implementation, some challenges may be faced, so adjustments and improvements are continuously made to ensure that service innovations can provide optimal and sustainable results. Service innovations at SPC Pediatric Clinic have achieved their goals and provide real added value to patients by looking at positive indicators of success. The following is a description of the ease with which service innovations can work well:

- 1) Online registration has shown success, significantly reducing waiting times and clinic queues. Patients can also easily book appointments and get instant confirmations. Patients also gave very positive feedback, stating that the online registration system was very convenient and saved them time. In the implementation, there is a challenge in the speed of admin response due to the registration system's service through WA.
- 2) Homecare services for immunisation and baby massage: Evaluation results show that the success of this service is seen from the increased accessibility for patients who have difficulty coming to the clinic. The quality of service was well maintained according to clinic standards, and health protocols were also strictly followed. Meanwhile, challenges in implementing this service innovation, such as logistics and schedule coordination, still need improvement, but the homecare team has shown good adaptability in overcoming these obstacles.
- 3) Health education program for parents, the evaluation of this program shows the level of success in its implementation by looking at the evaluation results before and after the implementation of the program and the participation of parents. The challenge of this program is the difficulty for some parents in accessing due to technological limitations, but offline education in handling this challenge.
- 4) More specialised services and evaluation results show success in terms of improved clinical outcomes and increased patient satisfaction. Appropriate care and in-depth attention from patients are evidence of the program's success. Challenges in the program include schedule adjustments and service flow, which still require improvement to optimise efficiency.
- 5) The partnership program with schools showed evaluation results in the form of program success, namely increasing the reach of health and education services for children. Challenges that arise in the implementation of this program are coordination and logistics between schools that still need improvement to ensure that all schedules and activities can run smoothly.

Implementation of Design Thinking Method in Pediatric Specialist Clinic Service Innovation at SPC Pediatric Clinic

Design thinking is a design model based on problem-solving. Design thinking can be a suitable tool during breakthrough development and can be used as a method for

breakthrough development. Design thinking has the most popular stages proposed by the Hasso-Plattner Institute of Design at Stanford (Stanford D.School), namely Empathize, Define, Ideate, Prototype, and Test. The implementation of the design thinking method in the innovation of pediatric specialist clinic services at SPC Pediatric Clinic is described in the following research results:

a. Emphasize

This stage is the basic stage in creating a strategy by categorising subjective points of view. Emphasising emotions can empathise with the perspective of the user's thinking as well as an effort to understand the way users do things and the reasons behind it, the physical and emotional needs of users, the way users think about things, and what is meaningful to users Alrazi and Rachman (2021). In implementing service innovation at SPC Pediatric Clinic, several reasons underlie the implementation of service innovation. The following are the problems that underlie service innovation at the SPC Pediatric Clinic:

- 1) High competition in the pediatric healthcare industry. The increasing number of clinics and health facilities offering similar services has encouraged SPC Pediatric Clinic to innovate. The goal is for SPC Pediatric Clinic to remain competitive in the health segment and attract more patients. Innovation allows SPC Pediatric Clinic to offer unique services that are not offered and provided by other health facilities.
- 2) Changing patient needs and expectations
Patients and parents today have high expectations regarding the quality of health services provided by health facilities. They expect fast, accessible and high-quality services. These patient and parent expectations have led SPC Pediatric Clinic to innovate its services to meet and exceed these expectations.
- 3) Advances in health technology. The rapid development of health technology requires SPC Pediatric Clinic to keep up with these developments in order to provide efficient and up-to-date services. To keep up with these developments, SPC Pediatric Clinic integrates technology such as online registration, integrated medical record systems and homecare services.
- 4) The need to increase patient satisfaction and trust SPC Pediatric Clinic's top priority is patient satisfaction. As such, the introduction of service innovations is expected to improve the overall patient experience, which in turn can increase patient satisfaction and trust in SPC Pediatric Clinic.
- 5) Limited resources and operational efficiency. The limited resources available encourage SPC Pediatric Clinic to innovate services to help optimise the use of existing resources. For example, with an online registration system, SPC Pediatric Clinic can reduce queues and waiting times and increase the efficiency of existing staff.

b. Define

The *define* stage is the stage to identify what problems are actually owned by users. After obtaining information at the *empathise* stage, it will then be analysed and

synthesised to get the main problem. This *defined* stage will greatly determine the accuracy of solving the problem at hand (Alrazi & Rachman 2021). At this stage, the actions taken by the SPC Pediatric Clinic in dealing with the problems that cause service innovation are to analyse data derived from observations, interviews and patient feedback to identify the root cause of the problem.

SPC Pediatric Clinic also defined the main problem as the need for service differentiation that could improve patient experience and attract more customers. SPC Pediatric Clinic also conducted interviews and surveys related to patient satisfaction. The results of the interviews and surveys found that a slow registration process and long waiting times caused patient dissatisfaction. The problem was defined as the need to improve operational efficiency and patient convenience through better technology and processes. The interviews and satisfaction survey also found that the clinic needs to improve its responsive and personalised service. The problem was defined as the need to improve patient experience through more responsive and personalised services.

c. Ideate

This ideate stage is the stage of collecting ideas for problems that have been found at the define stage. The brainstorming process is needed at this stage to determine the best solution to solve problems or avoid problems that will occur (Alrazi & Rachman, 2021). In determining solutions to dealing with existing problems at the SPC Pediatric Clinic, it focuses on collecting and developing innovative ideas. The following is an explanation of the service innovation solutions determined by the SPC Pediatric Clinic for existing problems, namely:

1) The High Level of Competition in the Pediatric Healthcare Industry.

The solution idea set was Online Registration by developing an online registration system that makes it easier for patients to make appointments without having to come directly to the clinic. This innovation is beneficial in reducing waiting time, increasing patient convenience, and providing greater flexibility in arranging consultation schedules.

2) Changing Patient Needs and Expectations

The Solution Idea is to provide Homecare Services for Immunization and Baby Massage. These services would include immunisation and baby massage at the patient's home. The benefits are reducing the inconvenience and risk of disease transmission at the clinic and providing a more personalized and convenient service for patients and parents.

3) Advances in Health Technology

The Solution Idea set by SPC Pediatric Clinic is the Health Education Program for Parents, which provides health education programs through seminars, workshops, and online materials that focus on child care, nutrition, and child development. The benefit is to increase parents' knowledge and skills in caring for children, preventing disease, and supporting optimal child development.

- 4) The need to Increase Patient Satisfaction and Trust., The Solution Idea, determined to address the problem is More speciality services, such as nutrition, growth, and immunisation, tailored to the specific needs of the patient. The benefits are to provide more focused and personalised services, improve the effectiveness of care, and strengthen the relationship between doctors and patients.

- 5) Limited Resources and Operational Efficiency

The Solution Idea implemented is the Partnership Program with Schools by developing a partnership program with schools to conduct routine check-ups and health education in schools. The benefits are early detection of health problems in school children, increased awareness of the importance of health, and expanding the reach of clinic services without requiring significant additional resources.

d. Prototype

The *prototype* stage means creating the final update and adding new shapes or features to a product. This prototype is a description of a known solution (Alrazi & Rachman 2021). In the application of service innovations at the SPC Pediatric Clinic, the development and testing of innovative solutions that have been identified are carried out. The following is an application and description of the service innovations implemented at the SPC Pediatric Clinic:

- 1) Problem: High Competition in the Pediatric Healthcare Industry. The solution idea was online registration. The action taken was to launch a registration system through the website and Whatsapp base because Whatsapp media is still used, considering that it is much easier for patient parents.
- 2) Problem of Changing Patient Needs and Expectations. The solution idea in dealing with the problem is homecare services for immunisation and baby massage. The action taken by SPC Pediatric Clinic is for the Homecare Team to be required to form a specialised team trained to provide homecare services. Standard Operating Procedures were implemented by developing SOPs for homecare services, including schedules, required equipment, and safety protocols. Service trials are conducted by initiating service trials on a few selected patients to collect data and feedback. Service Adjustment by adjusting the service based on feedback and optimising the process before full launch.
- 3) Health Technology Advancement Problem. The solution idea was a health education program for parents. SPC Pediatric Clinic's action was to develop educational content that included videos, articles and infographics on child health, using digital platforms such as social media and websites to distribute the content. Then, it piloted the educational content with a small group of parents to obtain feedback. Once the pilot test was deemed successful, SPC Pediatric Clinic launched the program widely with regular scheduling of seminars and workshops both online and offline.
- 4) Problem of Need to Improve Patient Satisfaction and Trust. For this problem, the solution idea implemented is More Specialized Services. The action taken by SPC

Pediatric Clinic in its implementation is to identify the most needed specialisation needs such as nutrition, growth and development, and immunisation. In addition, Staff Training was conducted to train staff to meet these specialisation needs with additional courses and certifications. Recruitment of necessary experts such as growth and development consultants. Next, a pilot of the speciality services is conducted by testing these services with patients who have specific needs to get feedback. After obtaining positive feedback, optimisation and rollout are done by adjusting the service based on the feedback and launching the speciality service in full.

- 5) Problem of Limited Resources and Operational Efficiency. The solution idea implemented by SPC Pediatric Clinic is the Partnership Program with Schools. To implement the program, SPC Pediatric Clinic took action on Partnership with Schools by identifying and establishing partnerships with schools in the surrounding area. In addition, a Routine Check-up Program was also conducted to develop a routine health check-up and health education program that could be conducted in schools. Before launching, the program was piloted by conducting a trial run of the program in a few schools to collect data and feedback. Afterwards, adjustments and expansion were made by adjusting the program based on feedback and expanding the partnership to more schools.

e. Test

The Test stage is carried out after the prototyping is complete, and then testing and evaluation are carried out to users. This is done to determine whether the ideas generated are effective or not (Alrazi & Rachman, 2021). The implementation of innovations at the SPC Pediatric Clinic has been carried out as desired, but there are still several challenges that require adjustment. Therefore, in its implementation, there are still obstacles that need to be overcome in order to determine the success and efficiency of these service innovations. The following are the obstacles faced in each service innovation:

- 1) Online Registration

In implementing online registration innovations, there are two obstacles, namely technical problems and patient awareness and adaptation. In the technical problem constraints, some patients experience technical difficulties when using the online registration platform, such as slow access pages and difficulties in rearranging appointments. The patient's parents are also uncomfortable with the online registration system on the website and more comfortable if they directly do WhatsApp. The second obstacle is Patient Awareness and Adaptation, where some patients, especially those who are less familiar with technology, find it difficult to adapt to the new system.

- 2) Homecare Services for Immunization and Baby Massage

The constraints in this innovation solution are first, Logistics and Schedule, where coordinating logistics to ensure the homecare team can reach the patient location on time and schedule is still a challenge. Second, Operational Costs, where keeping operational costs low while providing high-quality services is a big challenge. Third, Ensuring all health protocols are strictly followed to prevent disease transmission during homecare services.

3) Health Education Program for Parents

The obstacles in implementing this program are that some parents have difficulty accessing educational content online due to limited internet access or lack of digital literacy. Providing content that is up-to-date and relevant to parents' needs requires continuous research and development efforts. Getting parents to participate in this educational program actively requires an effective communication strategy.

4) More Specialized Services

There are constraints in implementing this innovation; namely, the SPC Pediatric Clinic needs to ensure all medical staff receive adequate and continuous training to handle new speciality services. A further constraint is the need to develop an efficient schedule and flow of services to avoid long waiting times and ensure every patient receives the necessary attention. In addition, the Clinic also needs to allocate sufficient resources to each speciality area without compromising the quality of other services and recruit a team of experts, such as pediatric consultants, who are still hard to find for more specific specialities.

5) Partnership Program with Schools

Obstacles that arose during the implementation of this program include the fact that matching the health program schedule with the school schedule can be challenging, especially when there are sudden changes in the school. The clinic also needs to arrange transportation and medical equipment to various schools efficiently, and this requires careful planning. Another obstacle is communication where the clinic needs to communicate and make all parties in the school (teachers, students, and parents) understand and support the program. This requires effective communication and socialisation.

The obstacles that occur in the implementation of service innovation require SPC Pediatric Clinic to take action to address these obstacles. The SPC Pediatric Clinic took the following actions in dealing with obstacles, including:

- 1) Improve technology infrastructure by providing technical training for patients and staff, as well as improving technology infrastructure to ensure the online registration system runs smoothly. For this stage, the management only focuses on registration through WhatsApp.
- 2) Optimize homecare logistics by training the admin team to be able to adjust schedules to be more efficient
- 3) Educational Content Development involves making educational content more accessible and understanding parents' needs through surveys and feedback.

- 4) Ongoing Training is implemented by providing ongoing training for medical staff and implementing a more efficient scheduling system.
- 5) Effective Collaboration is implemented by improving coordination and communication with the school through regular meetings and effective use of communication technology.

The implementation of service innovation at the SPC Pediatric Clinic has shown its success. This is evidenced by the results of a survey that has been conducted using indicators to measure patient satisfaction. These indicators are tangible, responsiveness, assurance, empathy, and reliability. For the physical evidence indicator, the survey results show that the facilities and infrastructure provided by the SPC Pediatric Clinic are complete. Furthermore, the responsiveness provided by the SPC Pediatric Clinic during health services is in accordance with the SOP and fast. While on the guarantee indicator at the SPC Pediatric Clinic. The guarantee provided is in the form of qualified health workers and the appropriate background of health workers. Empathy indicators in patient satisfaction are seen from patient parents or patients who have felt that health workers at the SPC Pediatric Clinic have a patient and friendly attitude. Then, on the indicator of reliability, the SPC Pediatric Clinic has uncomplicated service procedures and services as well as health workers who are thorough and thorough in conducting examinations.

Conclusion

The conclusions of the analysis of service innovation at SPC Children's Clinic using the Design Thinking method are as follows: 1) SPC Pediatric Clinic improves efficiency and quality of services through online registration to facilitate patients, homecare services for immunisation and baby massage, health education programs for parents, speciality services such as growth and immunisation, and partnerships with schools for routine checks and health education. 2) The Design Thinking method is applied in five stages: *Empathize* to understand patient needs, *Define* to identify problems, *Ideate* to gather innovative solutions, *Prototype* to develop new solutions, and *Test* to test effectiveness. This innovation worked well despite challenges that required adjustments.

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