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Pedodontia oral health model in cases of pulp necrosis

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Abstract
Background: Endodontic treatment of pediatric pulp necrosis cases is performed by pedodontia specialists in collaboration with dental and oral therapists. During treatment requires repeated visit compliance, which tends to cause children to feel anxious. The development of an oral health care model is a solution in increasing compliance and parent satisfaction.
Purpose: Produce an oral health care service model for pedodontia patients with endodontic treatment
Methods: The method used was RnD with a quasy experiment pretest-posttest non-equivalent control group design. The sample was divided into 2 groups, the oral health care model for pediatric patients with endodontic treatment in the intervention group and the oral health care model of Kepmenkes No.284 of 2006 in the control group. Patients were given an intervention with an oral health care service approach and were provided with a pocket book before treatment. Data were tested using: Normality, Homogeneity, Paired t-test, Independent t-test, Linear regression.
Results: The expert validation test of the oral health care model and pocket book media obtained p-values of 0.011 and 0.030, respectively, indicating feasibility. The results of the effectiveness test showed that the application of the model was effective in increasing knowledge (p-value 0.016increasing compliance (p-value 0.001), and enhancing satisfaction (p-value 0.000).
Conclusion: The oral health care service model is effective in improving the knowledge, attitudes, and skills of dental and oral therapists, while also reducing anxiety in pediatric patients, increasing compliance, and enhancing parent satisfaction.

Keywords: Oral health care model, pedodontia specialist, satisfaction

Introduction
Dental caries occurs when bacteria on the tooth surface interact with plaque or biofilm, causing demineralization of the hard tissues of the tooth. This process takes a considerable amount of time to occur [1, 2]. The progressive demineralization process can cause complaints and bacteria to enter the exposed pulp so that it can cause pain when exposed to cold or sweet food or drinks, this is one indication of irreversible pulpitis which if left untreated can progress to pulp necrosis, [3, 4] although emergencies are rare, immediate treatment is required for patients with cases of pulp necrosis as the condition can become acute and more severe. Findings occur through finger palpation examination when there is swelling or distension of the periapical tissues, which can affect patients, including pediatric patients [5].
The characteristics of children who are not yet emotionally stable and lack knowledge can differ, so they need services that are specifically tailored to their abilities and needs. In addition, the role of parents and caregivers is very important in providing support and knowledge to children, so that the service process can run well and children can achieve the desired independence [6]. The services needed are endodontic treatment, with the characteristics of uncooperative children, treatment can be carried out by a pediatrician or Pedodontia Specialist [7]. A Pedodontist is a dentist who specializes in treating pediatric patients with an age range of 0-18 years. The professionalism of a Pedodontia dentist involves certain strategies in providing care to pediatric patients, such as relationship building, interaction, and interpersonal communication. This is important in providing restorative treatment to uncooperative children, so that they can receive treatment effectively.

This approach is based on accelerating the healing process and creating a sense of comfort for pediatric patients from the very first visit [8, 9].

Endodontic treatment includes the removal of infected material in the root canal, root canal formation, root canal disinfection, and the use of materials to fill the root canal.[10] The goal is to reduce pain, control inflammation, and promote healing of the lesion, thereby allowing natural tooth replacement and guiding the normal eruption of permanent teeth during treatment, the concept adopted in endodontic cases is that the body's defenses are expected to heal themselves by closing the root canal so that the entry of bacteria and fluids into the root canal is closed as well as the entire root canal system, as well as side canals and accessory canals [10, 11].

According to Minister of Health Regulation No. 20/2016, dental and oral therapists have the main task of providing Dental and Oral Health Care Services. This includes limited promotive, preventive, and curative measures, with a focus on improving optimal oral health at the individual, group, and community levels [12, 13]. In Indonesia, the implementation of oral health services follows the principles of interprofessional collaboration, especially when performing specialized dental procedures, as well as collaboration with other health workers, [14] as outlined in the Decree of the Minister of Health of the Republic of Indonesia Number HK.01.07/MENKES/1513/2022 on the competency standards of dental and oral therapists, these professionals collaborate to perform specialized medical procedures in the field of dentistry within a health facility. The process includes identifying needs, preparing necessary equipment and supplies, preparing patients, performing collaborative procedures, and completing post-action tasks such as giving instructions, making activity reports, and applying infection prevention and control measures to equipment and materials [15]. Collaboration with the dental profession, dental and oral therapists can organize oral health care services according to their fields, namely through the stages of: assessment, diagnosis, planning, implementation and evaluation. The standard of oral health care services that should be applied by the Dental and Oral Hospital is based on SOAPIER (Subjective, Objective, Assessment, Planning, Intervention, Evaluation and Reassessment), namely: 1) assessment (subjective-objective), including the collection of subjective and objective data about what the patient feels; 2) diagnosis of dental health care (assessment), including the determination of diagnoses based on the results of the assessment; 3) planning (planning), including implementation planning both independently and collaboratively; 4) implementation (intervention), including chair side assistant and independent actions; 5) evaluation (evaluation), including evaluation actions after implementation; and 6) reassessment, including reassessment of the action plan after the evaluation results are known [13, 16].

Materials and Methods

This research uses a combined type and design between descriptive and analytical research (mix method). The method used is Research and Development (R&D). The R&D method is a research method used to produce a new model/product output. The R&D research procedure consists of five main stages, namely: 1) Information gathering stage, with the deputy director of RSGM Unimus, drg Sp. Pedodontia and oral therapists in depth through interviews and supported by literature review 2) Product or model design 3) Expert validation and revision, by drg. Sp. Pedodontia, dental and oral health care service experts, practitioner experts, media communication and health promotion experts and information and multimedia experts 4) Product or model trials were tested on 2 groups, namely the intervention group and the control group 5) The results of the product or model are in the form of a dental health care service model in pediatric patients with endodontic treatment and pocketbook media. The method used in the product trial used a quasy experiment pretest-posttest non-equivalent control group design. This research was conducted in the dental clinic specializing in pedodontia at RSGM Unimus.

This process began with the identification of key informants, especially oral health specialists and pedodontists, who provided valuable inputs in the implementation of the program related to the oral health care service model and pocketbook media application. After interviews with the deputy director of RSGM Unimus, pedodontists, and dental and oral therapists, expert validation of the oral health care service model and pocketbook media was conducted. Sample selection was then conducted according to predetermined criteria under the guidance of the informants.

The research instruments consisted of questions and observation sheets. The researcher's understanding, expertise, and readiness to engage in the research domain served as validation for these instruments. Data were collected through interviews, knowledge questionnaires, and observation sheets, which were then documented and analyzed. During this process, systematic codes were assigned to identify patterns and themes in the data. Categories of information were then created to summarize the essence of the findings. The presentation of the results is narrative in nature, providing a cohesive and comprehensive explanation of the research results. Before conducting the study, the researchers had obtained approval from the Health Research Ethics Committee of the Health Polytechnic of the Ministry of Health Semarang as evidenced by Ethical Clearance (EC) No. 054/EA/KEPK/ 2024. In addition, a research permit with the number KH.03.01/5.9/26/2024 was also obtained from RSGM Unimus

Results

This study was conducted from February to March 2024. The intervention group consisted of 5 dental and oral therapists and 15 pediatric patients who were given the developed care model, while the control group consisted of 5 dental and oral therapists and 15 pediatric patients who were given the Kepmenkes 284 2006 care service model. The sample consisted of health workers and pediatric patients undergoing root canal treatment who were selected and willing to participate as respondents. Two aspects that were targeted for improvement in care/service through the development of an oral health care service model and pocket book intervention were parental satisfaction and compliance.

Oral nursing care services have undergone a significant transformation into oral healthcare services. This change signifies a shift from an individualized approach to a more holistic approach, emphasizing structured healthcare efforts aimed at specific groups over time [17]. These services are not only aimed at individuals but also extend their scope to groups and communities, thus creating a broader and sustainable impact in improving overall oral health. With this approach, oral health care services become an integral part in shaping communities that are more aware and proficient in maintaining their oral health [18]. The stages of dental and oral

health care based on Decree No. 671/2020 concerning Professional Standards for Dental and Oral Therapists consist of dental and oral health care service standards that should be applied by dental and oral hospitals based on SOAPIER (Subjective, Objective, Assessment, Planning, Intervention, Evaluation and Reassessment), namely: 1) assessment (subjective-objective), including the collection of subjective and objective data about what the patient feels; 2) diagnosis of dental health care (assessment), including the determination of diagnoses based on the results of the assessment; 3) planning (planning), including implementation planning both independently and collaboratively; 4) implementation (intervention), including chair side assistant and independent actions; 5) evaluation (evaluation), including evaluation actions after implementation; and 6) reassessment, including reassessment of the action plan after the evaluation results are known [13 , 16, 14, 19].

The implementation of oral health care aims to achieve the following objectives:

1. Increase patient knowledge, attitudes, and abilities in self-care efforts, so as to avoid oral and dental diseases.
2. Relieve complaints, pain, and discomfort in the oral cavity, so as to maintain the biological function of the patient's teeth and oral cavity effectively.
3. Increase the utilization of available dental health services according to individual needs [20].

Booklet media is considered easier to make, effective and practical to carry to various places. Given that children are often easily bored, parents and teachers often use various props and games to attract their interest in learning [21, 22]. Booklet media has the advantage of facilitating self-learning, so that readers can understand the contents at a relaxed pace. The information in the booklet can be easily shared with family and friends. In addition, booklets are easy to make, reproduce and repair, and can be customized to suit specific needs. This media can be produced at a relatively low cost, has good durability, and can convey many messages effectively. The information content in booklet media can be produced and distributed economically an.,.d easily [23, 24].

Table 1: Effectiveness test result of pediatric patients in the intervention and control groups

Statistik						
Var.	**Group**	**Mean± SD Pre test**	**Mean± SD Post test**	**Delta± SD (Δ)**	**P-Value***	**P-Value****
Compliance	Intervention	25,53±3,52	28,60±1,68	3,07±1,84	0,001*	0,086
	control	27,47±3,06	27,47±1,80	0,00±1,26	0,006*	

*paired t-test **independent t-test

Table 2: Effectiveness test results of pediatric patient satisfaction of intervention and control groups

Statistik						
Var.	**Group**	**Mean ± SD, Pretest**	**Mean ± SD, Post test**	**Delta ± SD (Δ)**	**P-Value***	**P-Value****
Compla cency	Intervention	39,99±1,39	41,60±1,99	1,61±0,60	0,000*	0,028
	control	39,13±3,44	40,53±2,53	1,40±0,91	0,089*	

*paired t-test **independent t-test

Discussion

Based on table 1 the results of the paired data effectiveness test, the compliance variable in the pediatric patient intervention group showed a p-value of 0.001 ($p<0.05$). This indicates that the developed treatment model is effective in improving compliance of pediatric patients. Similarly, the p-value for compliance in the control group was 0.006 ($p<0.05$), indicating that the treatment model used in the control group was also effective in improving compliance.

Based on table 2, the results of the paired data effectiveness test for the satisfaction variable in the pediatric patient intervention group showed a p-value of 0.000 ($p<0.05$). This indicates that the developed caremodel is effective in improving the satisfaction of parents of pediatric patients. In contrast, the p-value for satisfaction in the control group was 0.089 ($p<0.05$), indicating that the care model used in the control group was also effective in increasing the satisfaction of parents of pediatric patients.

The results of the unpaired data effectiveness test resulted in a p-value of 0.028 (p>0.05), which indicated a significant increase in satisfaction in both the intervention and control groups. The difference value (Δ) was 1.61 for the intervention group and 1.40 for the control group.

The oral health care model for pediatric patients at Pedodontia Dental Clinic is a developmental model. The aim is to enable oral therapists to manage all stages of care effectively, ultimately improving compliance and satisfaction among parents of pediatric patients. In contrast, under the oral health care model outlined in Kepmenkes No.284 of 2006, oral therapists only perform basic assessments and act as assistants to dentists in specialized Pedodontia dental clinics [16]. This model was developed based on the oral health service model outlined in the Indonesian Minister of Health Decree No.HK.01.07/MENKES/1513/2022 and supported by oral health journals that focus on pediatric patients [15].

This model was developed based on the oral health care model outlined in Kepmenkes No.284 of 2006 and supported by journals focusing on oral health in pediatric patients. Previously, the implementation of oral health care referred to Kepmenkes No.284 of 2006, which was used for all specialist services and was not specifically tailored for pediatric patients. Modeling dental health care services for pediatric patients in a specialized pedodontia clinic aims to improve parental satisfaction and compliance

Compliance enhancement is defined as adherence, cooperation, mutual understanding and therapeutic communication in the relationship. Root canal treatment involves several stages and often requires more than one visit, thus requiring compliance control. Therefore, comprehensive and clear communication from the therapist or oral dentist is essential. This is in line with Nurkholifah's research (2024), which shows that effective therapeutic communication by health workers can significantly affect individual compliance in both routine examinations and treatments [25].

Pediatric parents' satisfaction can be measured through the quality of care or service. Increased satisfaction among

parents of pediatric patients is often due to positive changes in the behavior of oral therapists. Providing oral health care that conforms to the dimensions of service quality can increase patient satisfaction. For example, oral therapists who offer the opportunity to equalize perceptions before treatment may contribute to this. Consistent with research by Layli (2022) and Ramadhan (2018), the quality of care or health services directly affects patient satisfaction. Therefore, improving patient satisfaction can start with improving the quality of health services [26, 27].

Conclusion

1. Development of an oral health care service model for pediatric patients at a Pedodontia specialist dental clinic is effective in increasing parental compliance of pediatric patients
2. Development of a model of oral health services for pediatric patients in a Pedodontia specialist dental clinic that is effective in increasing the satisfaction of parents of pediatric patients

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Conflict of Interest

Not available

Financial Support

Not available

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