

Create a Friendly Environment for Pediatric Cancer Patient on Proton Therapy

Mei-Ling Chen^{1,2}, Nai-Yi Yang^{1,2}, Chia-Chun Kuo^{1,2}, Hsin-Lun Lee^{1,2} and Angelina Ying Chui^{1,2}
1 TMU Proton Center, Taipei Medical University Hospital, Taipei, Taiwan
2 Department of Radiation Oncology, Taipei Medical University Hospital, Taipei, Taiwan

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INTRODUCTION

In Taiwan, more than 400 children are diagnosed with cancer every year, and about 30% of them require radiation therapy.

- Due to their young age and limited understanding, anesthesia is often used (see Fig.1 and 2).
- We hope to use child-friendly strategies to reduce the use of anesthesia and provide comprehensive support, enabling children and their families to face treatment more easily and actively.

AIM

Create a supportive and positive treatment environment to enhance the psychological resilience and coping abilities of children with cancer (see Fig. 3).

METHOD

Develop an implementation plan based on the strategies of behaviorist psychology:

- **Scenario Projection System (Cognition)**: Install a situational projection system to provide 8 kinds of short films to divert children's attention (see Fig. 4).
- **Cartoon Education Videos (Desensitization)**: Produce a cartoon style health education video on radiotherapy (see Fig. 5).
- **Treatment Record Cards with Rewards (Token)**: Design a radiotherapy record card for the Star Hero's adventure in the universe (see Fig. 6).
- **Music Therapy (Recreation)**: Play a playlist of children's choice to help relax (see Fig. 7).
- **Art Therapy (Recreation)**: Conduct a mask painting role play activity (see Fig. 8).
- **Holistic Care for Families (Reinforcement)**: Provide psychological support and education to family members (see Fig. 9).
- **Peer Imitation of sick children (Peer-imitation)**: Build connections with children who have completed treatment and share positive experiences.



Fig. 1: Due to their young age and limited understanding, anesthesia is often used.



Fig. 2: Frequent anesthesia use raises concerns among families about potential long-term negative effects.



Fig. 3: Creating a supportive and positive treatment environment to enhance the psychological resilience and coping abilities of children with cancer.

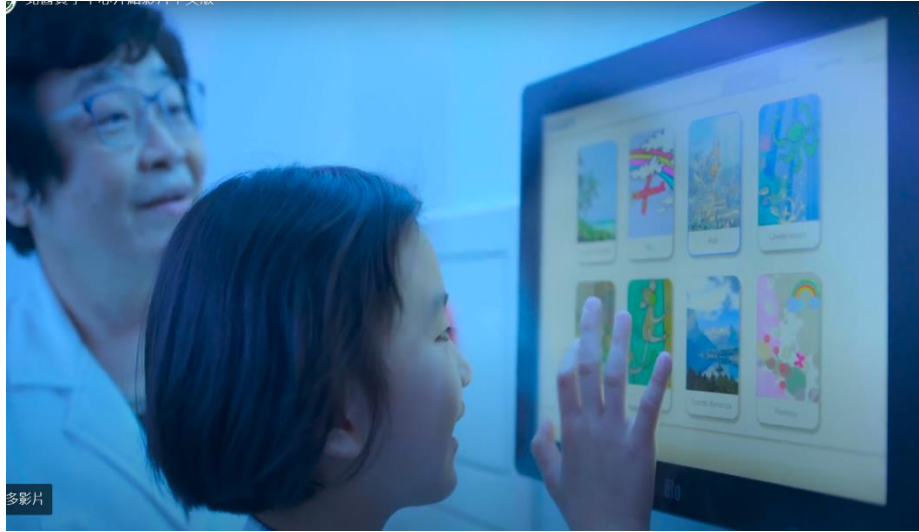


Fig. 4: Scenario Projection System : Install a situational projection system to provide 8 kinds of short films to divert children's attention.



Fig. 5: Cartoon Education Videos (https://youtu.be/q49SG9PRjeU or scan the QR code): Produce a cartoon-style health education video on radiotherapy.



Fig. 6: Treatment Record Cards with Rewards : Design a radiotherapy record card for the Star Hero's adventure in the universe.

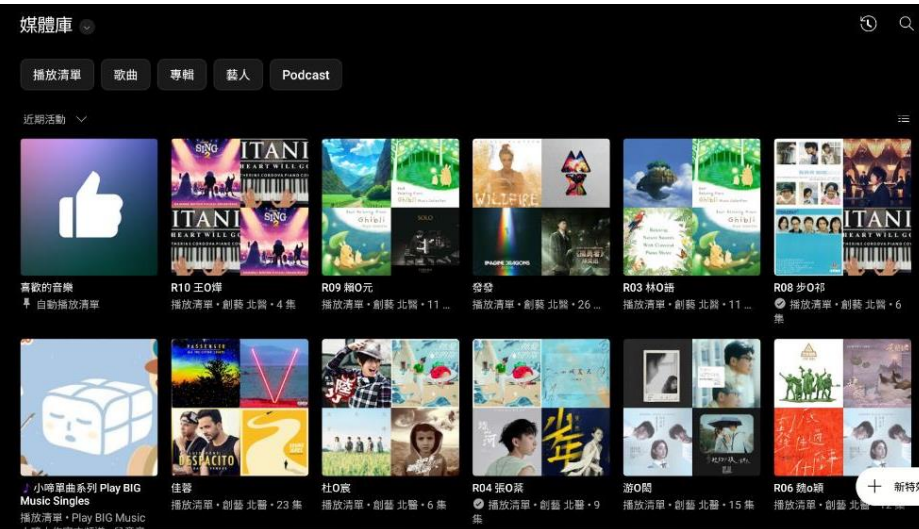


Fig. 7. Music Therapy : Play a playlist of children's choice to help relax.



Fig. 8. Art Therapy : Conduct a mask painting role play activity.



Fig. 9. Holistic Care for Families : Provide psychological support and education to family members.

RESULTS

Objective Evaluation : Comparing Anesthesia Utilization Rates in Ages 3-10 Years

- Taipei Medical University Hospital Proton Center treated 19 pediatric cancer cases. Among 8 patients aged 3-10, 3 cases required **anesthesia** during treatment (**37.5%**).
- Compared to the Helical Tomotherapy unit at Taipei Medical University Hospital, also used for pediatric cancer radiation treatment, the anesthesia usage rate is **41.7%**, which is significantly higher (see Fig. 10).

Subjective Evaluation : Satisfaction Surveys for Family Members and Children

- Overall satisfaction surveys showed 83% were very satisfied, and 83% reported reduced anxiety.
- The most helpful strategies were: **reward cards** (23%), **cartoon education videos** (18%), and **peer imitation** (16%) (see Fig. 11).
- Holistic care for families and peer play were also highly appreciated, indicating a need for psychological strengthening.

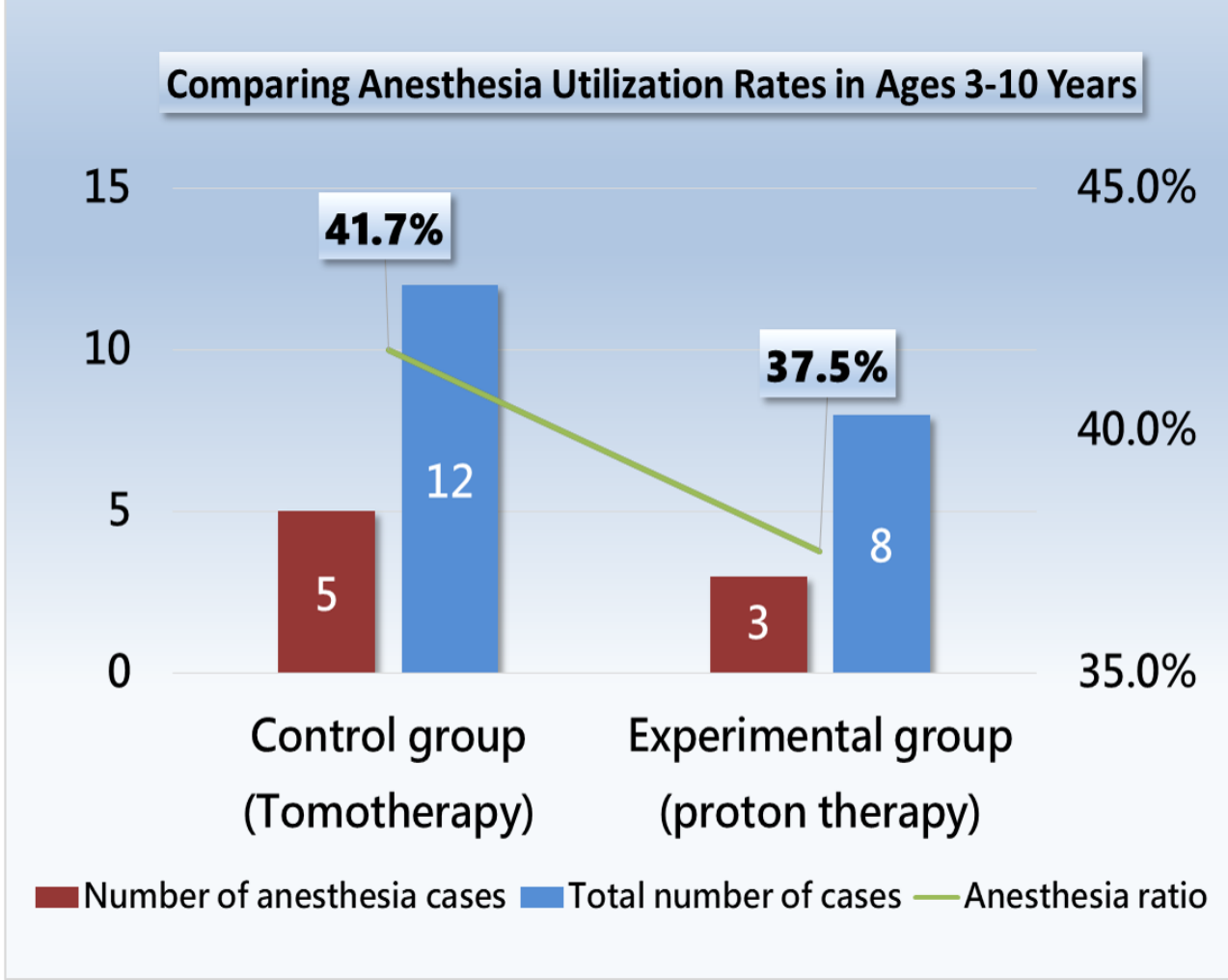


Fig. 10: Comparison of Anesthesia Utilization Rates in Children Aged 3-10 Years..

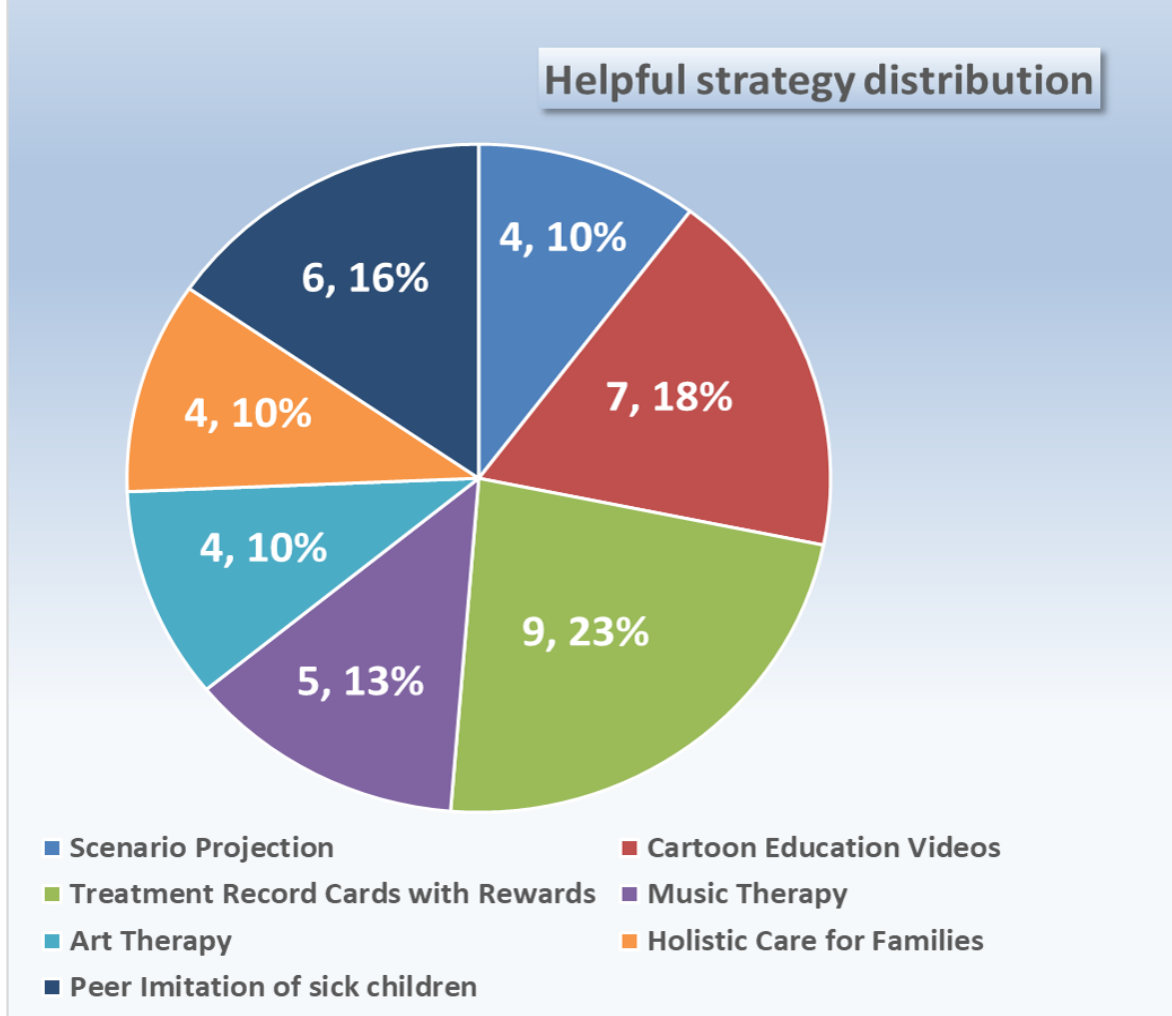


Fig. 11: Most Effective Strategies: Reward cards (23%), cartoon education videos (18%), and peer imitation (16%).

CONCLUSIONS

Positive feedback has been received after the implementation of the friendly strategy.

- In the future, it will be incorporated into the standard care process, and the execution plan will be further optimized.
- Continuously collect cases to improve the power of results.
- Consider the perspective of sick children and their families to enhance the adaptability of friendly strategies, benefiting more patients.

ACKNOWLEDGEMENT

There is a wall of positive energy in the Proton Center of Taipei Medical University Hospital, featuring the sentence "Think like a proton. Always positive." Think like a positively charged proton, because it is always full of positive energy (see Fig. 12).



Fig. 12: "Think like a positively charged proton, because it is always full of positive energy."

Thanks to the active participation of family members and the team, we will continue to optimize the child-friendly strategy and expand its clinical application to other children and even adults to promoting the long-term positive impact of the strategy.

CONTACT INFORMATION

E-mail:mei_ling0122@yahoo.com.tw

