# CHAPTER V CONCLUSION AND RECOMENDATION

## A. Conclusion

Based on the results of this study, it can be concluded that the process of making this prototype SPARK as follows:

1. The SPARK prototype was designed to address the problem of preschool children's reaction during intravenous (IV) insertion in hospitals, using interactive elements such as music to reduce anxiety and increase cooperation. Based on interviews with nurses, this approach is expected to create a child-friendly environment and make it easier for nurses to perform medical procedures. The SPARK prototype involves various electronic components with a total cost of approximately IDR 214,400, which supports the functionality of the tool in improving the effectiveness of IV insertion.
2. The SPARK prototype for pre-school children was designed with dimensions of 11.5 cm in length, 5.5 cm in width, and 3.5 cm in height, weighing 95 grams. These dimensions were based on existing infusion spalks and research by Yunesti et al. (2021). The production cost amounted to IDR 214,400. The design aims to ensure comfort and effectiveness during intravenous procedures for children aged 4-6 years.
3. Expert validation for prototype showed high content validity with an I-CVI of 1, and inter-rater reliability was moderate (ICC = 0.64). Experts highlighted strengths such as innovation potential but pointed out issues with sound clarity, ergonomics, sterilization, safety, and cost. Recommendations for improvement included refining features, reducing dimensions for better usability, ensuring sterilization, lowering production costs, and addressing safety concerns. These adjustments are essential for future prototype development and clinical implementation.
4. In the implementation phase, the SPARK prototype was tested through simulated use on preschoolers and nursing students for objective assessment, and small group testing was conducted for subjective assessment from nurses. The evaluation results showed that the initial user response to the SPARK prototype was very positive, with the majority

responding that the prototype was attractive and innovative. However, on the comfort dimension, there was a shortcoming in the thickness of the prototype which affected patient mobilization. Nonetheless, the attractiveness dimension and audiovisual appeal, such as music, provided positive responses in reducing patient anxiety. The results of the small group test with the USE questionnaire showed a need for further explanation so that nurses can provide more in-depth feedback. This evaluation forms the basis for further development so that the prototype can be more effectively accepted and used by nurses in hospitals.

5. Evaluation of the SPARK prototype showed good results with an overall score of 86.25% in the laboratory test, especially in the Ease of Use dimension, which scored 96%. However, the Satisfaction dimension still has room for improvement, with a score of 85%. Results from the small group test in Aster Ward showed that the prototype was very useful, with a Usefulness score of 92%, but the Ease of Use and Ease of Learning dimensions still need to be simplified. Despite the good performance, interface and design improvements are needed to increase user comfort and satisfaction.

## B. Recommendations

Recommendations that can be given based on the results of the study are addressed to health students, health institutions, and further researchers.

1. For Health Sciences Students

   The results of this study can be used as evaluation material related to innovations in the SPARK prototype. It is hoped that students can develop other innovations in prototyping related to nursing, so that technological developments in the health sector can continue to grow and provide wider benefits.

2. For Health Institutions

   The results of this study are expected to be a cornerstone material in collaboration to be developed and adapted to clinical needs such as clinical trials and certification as well as direct evaluation of use in the field.

3. For Further Researchers

   Researchers hope that this research can provide insight into other innovations in developing more ergonomic designs by looking at aspects of patient safety, broader clinical trials so that the data obtained is more representative, then can provide additional technology integration such as physiological sensors, IoT connections, and collaboration with other innovations.