

**DEVELOPMENT OF AN ELECTRONIC SYRINGE PUMP:
MEDICAL DEVICE TO IMPROVE DRUG DELIVERY EFFECTIVENESS**

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STATEMENT BY THE AUTHOR

I hereby declare that this submission is my own work and to the best of my knowledge, it contains no material previously published or written by another person, nor material which to a substantial extent has been accepted for the award of any other degree or diploma at any educational institution, except where due acknowledgement is made in the thesis.

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ABSTRACT

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One of the automated drug delivery system is a syringe pump or syringe driver. Syringe pump is typically used to administer drugs in a small amount and is also specifically used in drug therapy and palliative care. However, this device has not been commonly used in Indonesia because of its high cost and rarity. The purpose of this thesis is to develop a working model of an electronic syringe pump that can be implemented in Indonesia. The methodology in developing the system consist of 3 major parts which are mechanical design, electrical design and control software modules. The mechanical design is concern with the physical structure on which the system relies on. The electrical design supplies the power and provide electrical drive to the system. The software modules are where the actual control algorithm are implemented and run by microcontroller. The working model developed in this stage is able to fulfill its functionality with inaccuracy less than 2.5% after mechanical improvement to the initial design. This inaccuracy is mainly due to mechanical imperfection. The working model developed in this thesis still need many improvement and modification before the system can be adopted in the medical field. The overall objective of building the device to improve delivery effectiveness of manual drug delivery is achieved, thus relieving the nurse time required for frequent intervention in the case of manual drug delivery.

Keywords: Automated Drug Delivery, Electronic Syringe Pump, Palliative care.

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DEDICATION

I dedicate this work for the improvement of healthcare technology
in my beloved country, Indonesia.

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The author realizes this thesis was not yet perfect thus any critics and comments are welcomed for the improvement of this thesis. The author wishes that this thesis will give contributions if any to the academic purpose, healthcare technology and general public.

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