**CHAPTER I**

**INTRODUCTION**

The World Health Organization recommends exclusively breastfeeding up to 6 months of age with continued breastfeeding along with appropriate complementary foods up to 2 years of age or beyond. However, 60% of mothers do not breastfeed for as long as they intend to. How long a mother breastfeeds her baby is influenced by many factors including issues with lactation and latching, concerns about infant nutrition and weight, mother’s concern about taking medications while breastfeeding, unsupportive work policies and lack of parental leave, cultural norms and/or lack of family support, and unsupportive hospital practices and policies.

Breast milk is the safest and healthiest food for the baby but some parents preferred to bottle-feed babies since it is more convenient in terms of availability of time and place. Bottles, lids, teats and other equipment used to prepare a feeding formula should always be thoroughly cleaned after each use because baby’s immune system is not yet fully developed, and babies are more susceptible to infection and illness than older child or adult. This kind of cleaning is important for getting rid of all the traces of milk or formula left inside the bottles, but it does not ensure that the feeding equipment is completely germ free. That is why most guardians do the sterilizing or boiling method after washing baby bottle.

In the process of sterilizing or boiling, any harmful germs that may be clinging to the surfaces of the bottles and other equipment will be washed away and make the bottle freed from bacteria. Although there are existing studies showed that baby bottle should only be sterilized before the first use, but in traditional way it is not a bad idea to sterilize the bottle for at least once daily to eliminate any traces and growth of bacterias that may otherwise taint child’s formula milk. Doing all those processes were really time consuming. Sometimes, guardians were unable to do it because of some instances, whether the guardian is not at home or tired to clean baby bottles at night.

**Background of the study**

Baby’s bottled milk only last for about two hours so the baby bottle should be cleaned after each use to prevent contamination of the milk inside the bottle. Based on the experience of one of the researchers, washing and sterilizing baby bottles is time –intensive. Sometimes, guardians are impotent to clean it mostly at night and when they are alone taking care of the child.

To find a way to deal with those problems, the researchers aims to develop a machine and create a program that will reduce the physical effort of guardians. In that way, guardians will have more time for their baby and they can assure the cleanliness of the bottle which is important for the baby’s health.

**Objectives of the study**

General Objectives

This study aims to create an automated machine that washes and sterilizes baby bottles. It also aims to reduce the physical effort of the guardian in washing and sterilizing baby bottles.

Specific Objectives

* To design a machine that automatically washes and sterilizes the baby bottles.
* To determine the pressure of water that will be used to clean the baby bottle.
* To determine the temperature to sterilize the baby bottle.
* To create a program that automatically washes and sterilizes the baby bottles.
* To evaluate and test the functionality and performance.

**Scope and Limitation**

This study will focus on washing and sterilizing baby bottles automatically by creating the automated baby bottle washer and sterilizer machine for common sizes of baby bottle. The bottles will be washed with water pressure and soap with water. In sterilizing the bottles steaming process is used. It will also have a display for the current status o the machine if it is washing or sterilizing. Although the researchers reach its aims there were some unavoidable limitations. First, placing the bottles, leads and teats in to the machine is manual. Second, the machine can hold six bottles only.

**Significance of the study**

This study will be very significant because the researchers will be able to create an automated baby bottle washer and sterilizer. In this regard, this will also be helpful to the following people:

**Guardians** will be more focused in baby-sitting or other household chores and it will reduce their physical effort in washing and sterilizing baby bottles.

**Researchers** will be able to apply the knowledge they acquired in their field of specialization in making the automated machine.