

CHAPTER I

INTRODUCTION

1.1 Background

Health and quality of children play a crucial role in the future of a nation. As the next generation, giving special attention to their health serves as a fundamental foundation in shaping superior human resources in the future. Children aged 7 to 11 years today tend to adopt a practical and modern lifestyle. Unconsciously, they tend to prefer instant solutions, such as purchasing packaged food and beverages. If this unhealthy lifestyle persists over a prolonged period, it can lead to various non-communicable diseases, one of which is Diabetes Mellitus (Wijayanti & Endrotomo, 2017).

Diabetes Mellitus is a disease characterized by hyperglycemia and metabolic disorders of carbohydrates, fats, and proteins, associated with an absolute or relative deficiency in the action and/or secretion of insulin (Restyana, 2015). According to the American Diabetes Association (2017), Diabetes Mellitus is classified into three types: type 1 diabetes caused by hereditary or genetic factors; type 2 diabetes resulting from lifestyle and dietary factors; and gestational diabetes that occurs during pregnancy. In children, more than 90% of diabetes cases are type 1, whereas in individuals over 30 years of age, diabetes more commonly manifests as type 2 (Pulungan et al., 2019).

Another cause of Diabetes Mellitus is obesity. Obesity constitutes a primary risk factor for the incidence of type 2 Diabetes Mellitus (Betteng, 2014). Obesity occurs due to an imbalance between energy intake and the energy expenditure required for various biological functions, such as growth, physical development, and health maintenance activities (Sartika, 2011). This is corroborated by a Ministry of Health article (2023), which reports a prevalence of overweight individuals at 13.5% and obesity at 15.4%, both of which represent major and increasing risk factors for Diabetes Mellitus.

Diabetes Mellitus is often referred to as the “silent killer” because it frequently goes unnoticed by those affected until complications, either acute or chronic, have developed (Dewi Prasetyani, 2017). According to a Ministry of Health report (2022), symptoms of diabetes in children are categorized into primary and additional symptoms. Primary symptoms include frequent urination, increased hunger, and excessive thirst, while additional symptoms consist of rapid weight loss, numbness, and easy fatigue. Prevention and management of diabetes

require lifestyle modifications involving healthy behaviors such as regulated diet, physical activity, pharmacological therapy, and blood glucose monitoring (Rahmawati et al., 2021).

Further discussion reveals that women have a higher risk of developing Diabetes Mellitus compared to men. Damayanti explains that women are at greater risk due to a higher likelihood of increased body mass index. Premenstrual syndrome and postmenopausal hormonal changes lead to fat redistribution and accumulation, thereby increasing women's susceptibility to type 2 diabetes (Wahyuni & Alkaff, 2012).

As stated in a Ministry of Health article (2021), diabetes does not only affect adults but also children and adolescents up to 19 years old, with the prevalence in this group increasing annually. In 2021, the Indonesian Pediatric Society (IDAI) recorded 1,645 children diagnosed with diabetes mellitus across 13 cities in Indonesia, namely Jakarta, Bandung, Surabaya, Malang, Semarang, Yogyakarta, Solo, Denpasar, Palembang, Padang, Medan, Makassar, and Manado. Nearly 60% of these patients were female. Among the affected children, the highest proportion (46.23%) was in the 10-14 years age group, followed by 31.05% aged 5-9 years, 19% aged 0-4 years, and 3% over 14 years of age. Furthermore, on February 1, 2023, a significant surge in pediatric diabetes cases was reported. In January 2023 alone, the number of diabetes cases in children increased by seventyfold compared to 2010. If left unaddressed, this condition could result in a high morbidity rate among the nation's future generation, negatively impacting the productivity level of Indonesia in the years to come.

As a case example reported in an article on news.republika.co.id, the Head of the Surabaya City Health Office, Nanik Sukristina, disclosed that throughout 2022, a total of 184 children, or 2.3 percent of the child population in the City of Heroes, were diagnosed with Diabetes Mellitus (DM). This figure represents a slight increase compared to the previous year, which recorded 176 cases or 2.2 percent of children in Surabaya affected by Diabetes Mellitus. This is corroborated by an article from [tvOnenews.com](https://tvonenews.com) reporting that in February 2023, as many as 320 children in Surabaya and its surroundings suffered from diabetes. These data were obtained from the number of pediatric patients treated at dr. Soetomo General Hospital, Surabaya. Additional evidence from research data and interviews with a general practitioner at Tenggilis Community Health Center indicates that on October 18, 2024, there were two cases of type 1 Diabetes Mellitus in 12-year-old children who were immediately referred to the nearest hospital.

In addition to data from the Ministry of Health and the Indonesian Pediatric Society (IDAI), cases of diabetes in primary school children in Indonesia have also been reported by several international organizations and health institutions. According to the International Diabetes Federation (IDF), Indonesia has the highest number of type 1 diabetes patients in Southeast Asia in the under-20 age group, totaling 41,800 individuals. Besides positioning Indonesia as the country with the largest number of diabetes patients in ASEAN, this phenomenon also places Indonesia at 34th globally out of 204 countries. The total number of type 1 Diabetes Mellitus patients aged below 20 years in Indonesia reaches 13,311 individuals. This indicates a high prevalence of diabetes among children in Indonesia, largely associated with high-sugar dietary patterns and insufficient physical activity.

As cited on the Ministry of Health (KEMENKES) website (2018), the Minister of Health affirmed Indonesia's commitment to preventing and controlling diabetes through community empowerment as part of the efforts to prevent and control Non-Communicable Diseases (NCDs). The Indonesian government has established Integrated Guidance Posts for NCDs (Posbindu PTM) as a frontline initiative for the prevention and control of NCDs. Accordingly, Indonesia has issued regulations requiring the packaged food and ready-to-eat food industries to disclose the content of sugar, salt, and fat in processed foods.

The age range of 6–12 years represents a transitional period from preschool to primary school. This phase is also recognized as the transition from early to late childhood, approaching the pre-pubertal stage. Generally, after reaching six years of age, children's physical and mental development begins to mature. Physical growth accelerates, and their health condition improves, indicating increased resilience against various factors that may adversely affect their health (Sabani, 2019). Indonesian Minister of Health Regulation Number 41 of 2014 concerning balanced nutrition guidelines states that children aged 6–9 years enter the school period and spend substantial time outside the home. At this stage, peer influence, school snacks, and increased activities can raise exposure to potential sources of disease. Snacks present significant risk factors affecting human resource quality through the nutritional substances they contain. At this age, children often consume school snacks indiscriminately without considering hygiene and health aspects of the food they ingest. The low quality of food and beverages can become a new source of disease for children (Wulandari et al., 2022).

Children aged 7–11 years are capable of easily comprehending information and immediately applying what they have learned based on their understanding (Perdana et al.,

2021). According to the book *Child Developmental Psychology* by Tisna Syafnita et al. (2023), early childhood development is a crucial foundation for subsequent developmental stages. During this period, children's learning abilities are highly flexible, and they are easily influenced by their surrounding environment. Furthermore, at ages 6–8 years, children's motor coordination skills develop further; they begin to engage in group play, become more independent from parents, and expand their interactions with the environment. They become increasingly aware of their surroundings, with shapes attracting more attention than colors, responsibility starts to develop, and peak enjoyment in play typically occurs at around eight years of age. Between ages 8–12 years, children's motor coordination continues to advance; they participate in structured and disciplined group play, with play becoming an activity performed after studying. They show interests in specific subjects, high curiosity, a willingness to explore and investigate, and increased activity levels. Children begin to distinguish between perception and logical actions and start understanding rules. Aristotle categorized child development phases as early childhood from birth to seven years, and middle childhood (learning or primary school age) from seven to fourteen years.

The majority of children are aware that Diabetes Mellitus is a disease caused by frequent consumption of sugary foods and beverages. Their knowledge regarding healthy lifestyle practices to prevent Diabetes Mellitus is considered adequate. This fact was obtained from a survey conducted on 25 fifth-grade students at SDN Baratajaya Surabaya, which revealed that 84% of the respondents had sufficient understanding that diabetes results from frequent intake of sweet foods and drinks coupled with a lack of physical exercise. However, daily activities indicate that 67% of these students regularly consume sugary foods and beverages such as iced tea, cotton candy, mini pancakes, crepes, and similar items. Therefore, the high risk of diabetes is not attributed to a lack of awareness about its causes and effects but rather to insufficient implementation of healthy lifestyle behaviors among the children.

Social campaigns are initiatives aimed at delivering messages concerning social issues and are non-commercial in nature, with the purpose of raising public awareness regarding prevailing social phenomena (Solicitor et al., 2021). Awareness of the dangers posed by Diabetes Mellitus does not arise suddenly or spontaneously but is formed through repeated exposure to information, either through education or ambient media, particularly for children. The educational content must be engaging to ensure effective information delivery, the provision of education necessitates the use of appropriate instructional media as intermediaries

(Az-zahra & Kurniasari, 2022). Children aged 7 to 11 years are in the "concrete operational" stage of development, encompassing cognitive and linguistic growth. This development facilitates their interaction with the environment and enables easier assimilation of information, including health-related knowledge. A distinctive characteristic of children's behavior is imitation; therefore, the more frequently they are exposed to positive information, whether verbally or through role models, the greater their curiosity and motivation to apply such information (Wukirsawit, 2022). This is further elucidated in Child Developmental Psychology by Tisna Syafnita et al. (2023), which states that fostering healthy behaviors in children aged 6 to 13 years can be achieved by encouraging them to recognize and appreciate their self-identity and by building positive relationships with peers through cooperation, sharing attitudes, and the ability to understand others' perspectives as effective steps in supporting their development.

In this design, direct, interactive, and enjoyable education constitutes an innovation aimed at increasing children's interest in learning about healthy lifestyles. A review of online journals on the prevention of Diabetes Mellitus in children aged 7 to 11 years indicates that such interactive educational interventions are either scarce or nonexistent. Consequently, it is expected that children aged 7 to 11 will become aware of the dangers of Diabetes Mellitus and be able to implement healthy lifestyle practices for themselves through methods that are both interactive and enjoyable.

1.2 Problem Identification

Based on the foregoing exposition, the problems identified can be summarized as follows:

1. Indonesia ranks 34th out of a total of 204 countries globally, with the total number of type 1 Diabetes Mellitus patients under the age of 20 in Indonesia reaching 13,311 individuals.
2. In February 2023, a total of 320 children in Surabaya and its surrounding areas were diagnosed with diabetes. This data was obtained from the number of pediatric patients treated at dr. Soetomo General Hospital, Surabaya.
3. According to research data and interviews with a general practitioner at Tenggilis Community Health Center on October 18, 2024, there were two cases of type 1 Diabetes Mellitus in 11-year-old children who were immediately referred to Royal Hospital Surabaya.

4. Based on questionnaire data, 65% of students at SDN Baratajaya Surabaya consume foods and beverages with high sugar content daily, such as packaged drinks (soda, bottled tea), cotton candy, mini pancakes, ice cream, crepes, and similar items.

1.3 Problem Formulation

Based on the problem identification above, the research problem formulation is as follows:

How can a social campaign be designed to educate children aged 7 to 11 years about the dangers of Diabetes Mellitus in an engaging manner as an effort to promote their health in the future?

1.4 Scope and Limitations

Based on the problem identification and problem formulation presented above, it is necessary to establish the scope of the study. This is intended to facilitate a focused design process and to enhance the understanding of the issues involved.

1. This social campaign design aims to educate children aged 7 to 11 years about the dangers of Diabetes Mellitus and to encourage the adoption of healthy lifestyle practices.
2. The campaign will utilize print media, such as posters, brochures, and leaflets, distributed at SDN Baratajaya Surabaya. Print media is selected for its capacity to directly reach both children and their parents at SDN Baratajaya Surabaya.
3. The campaign messages will focus on diabetes prevention through education about the importance of consuming nutritious foods, avoiding high-sugar foods, and promoting physical activity. The materials will be tailored to be easily understood and engaging for children.
4. The campaign will involve collaboration with schools, community health centers (puskesmas), and parents through social media to ensure consistent message delivery and to support behavioral change both at home and at school.

1.5 Design Objectives

Based on the above review, the objectives of this design are as follows:

1. To develop an educational program targeting primary school-aged children to raise their awareness of the dangers associated with the consumption of foods and beverages high in sugar content.

2. To instill healthy lifestyle habits through engaging and interactive activities.
3. To educate the community via social media regarding the importance of regular health screenings for children, thereby enabling earlier detection and management of pediatric diabetes cases.
4. To reduce the consumption of sugary foods and beverages among children aged 7 to 11 years by informing them about the adverse health effects of excessive sugar intake, particularly as a risk factor for diabetes.

1.6 Expected Benefits of the Design Project

1.6.1 For Children Aged 7–11 Years:

- a) To enhance self-awareness regarding personal health.
- b) To provide information and activities that educate children about healthy lifestyles, thereby fostering healthy habits from an early age.
- c) To ensure that this campaign is not merely educational but also engaging and enjoyable, serving as an early preventive measure against Diabetes Mellitus.

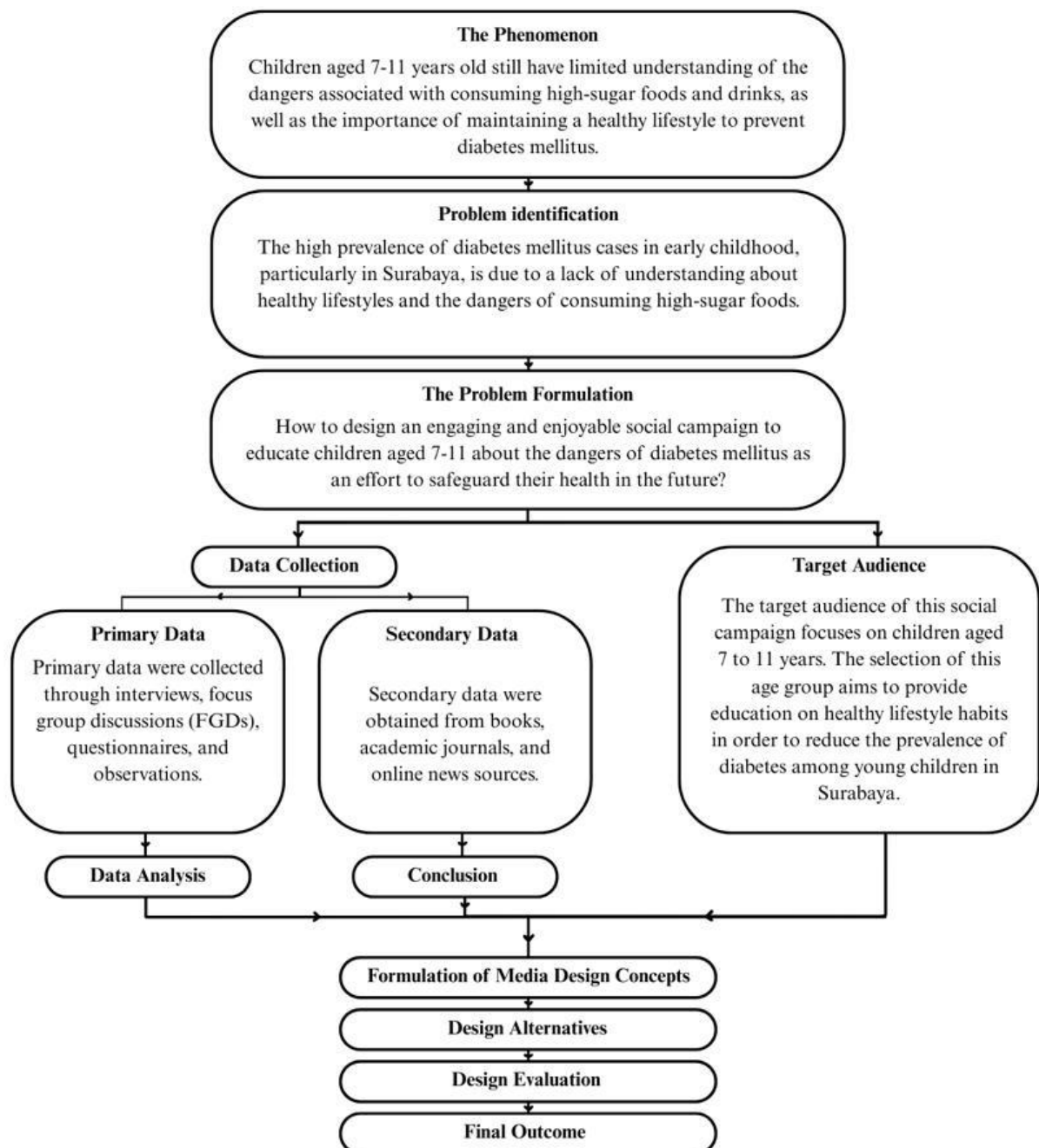
1.6.2 For Academics:

- a) To equip academics, particularly teachers and educational personnel, with knowledge and resources on how to recognize symptoms of diabetes in children.
- b) Academics can benefit from the data collected during the campaign to conduct further studies on the impact of diabetes prevention in children.

1.6.3 For the Community:

- a) To provide overall benefits to the community by enhancing understanding of the causes, symptoms, and prevention of diabetes, as well as ways to support children in adopting healthy lifestyles.
- b) This campaign has the potential to reduce the incidence of type 2 diabetes among children in the future

1.7 Design Framework



Picture 1. 1 Design Framework

(Source: Personal Data)