Chapter 1

Introduction

1.1. Background

Along with physiological changes during pregnancy, mothers often experience the symptoms of nausea and vomiting during the early stage of pregnancy. This is a common experience that affects up to eighty percent of pregnant women and they are usually referred to as nausea and vomiting during pregnancy (NVP) (Tinti et al., 2023). As an attempt to help expectant mothers who experience NVP, new information on the methods to alleviate NVP continue to emerge. For instance, supplementations of vitamin B6 or pyridoxine showed beneficial effects for women who experience NVP (Jayawardena et al., 2023).

In 2009, the Institute of Medicine (IOM) released a guideline for gestational weight gain (GWG) based on the women's pre-pregnancy body mass index (BMI). IOM recommended pregnant women to gain weight no more than five pounds or approximately two kilograms (Rasmussen, 2009). According to the American College of Obstetricians and Gynecologists, pregnant women might only gain one to five pounds, or even no weight at all during the first trimester (ACOG, 2021). Therefore, gestational weight gain is not necessary during this stage of pregnancy. Additionally, a research conducted by Josefson et al. (2016) stated that preventing excessive weight gain during the first trimester can prevent excessive neonatal adiposity.

Despite the lack of weight gain during the first trimester, nutrient intake of pregnant mothers should still be a priority. Protein is a crucial macronutrient for the process of pregnancy due

to its major role for fetal development (Yang et al., 2022). A research conducted by Hadi and Irwanti (2020) on 155 pregnant women in Eastern Indonesia stated that the average protein intake only reached around fifty seven percent of the Indonesian requirement of protein intake for pregnant women. Additionally, Bela and Mollet (2024) found that the majority of pregnant women in Indonesia have low protein source diversity. On the other hand, pregnant women with adequate protein intake commonly use tofu, tempe, poultry, beef, eggs, and many others as their protein sources. A significant portion of respondents in the study also exhibited a low intake of animal proteins as they deem it as insignificant. This might raise further concerns as there are inherent differences between animal and plant protein sources, such as the fact that animal proteins can supply essential amino acids more effectively compared to plant proteins and the lower digestibility of plant proteins, which may lead to deficiencies in vulnerable populations such as infants and young children (Day et al., 2022). These matters highlight the importance and urgency of ensuring sufficient protein intake for pregnant women, including raising awareness of mothers and relevant individuals, considering protein's major role in maintaining a healthy pregnancy.

Taking gestational weight gain into account, there have been multiple studies that explored the association between protein intake and GWG. One of them stated that a protein-based diet during pregnancy exhibits a protective effect for excessive GWG (Rugină et al., 2020). However, other studies could show contradictory results as it was concluded that there was no association between total protein intake and GWG (Shin et al., 2014). In contrast, another study found that GWG increased along with increasing protein intake (Lagiou et al., 2004). Taking into account all the discussed circumstances, consequently, this study aims to

investigate the association between different treatment approaches in alleviating NVP, including FMM, as well as exploring protein diversity and intake towards GWG.

1.2. Objective

This study aimed to investigate the association of NVP to different treatment approaches and gestational weight gain among Indonesian pregnant women who were in their first to fifth month of gestation. The pregnant women's protein intake and diversity were also studied, in which their correlation and association, respectively, with gestational weight gain were examined.

1.3. Hypothesis

The hypotheses for this study include:

H_0:

1. There is no association between NVP severity and different treatment approaches.
2. There is no significant relationship between protein diversity, intake, and NVP, with gestational weight gain.

H_1:

1. There is an association between NVP severity and different treatment approaches.
2. There is a significant relationship between protein diversity, intake, and NVP, with GWG.