CHAPTER I

INTRODUCTION

1.1 An Overview

Nutrition can be defined as the process of ingesting food and utilizing it for the purposes of development, metabolism, and repair. It refers to how an organism consumes, absorbs, transports, uses, and excretes dietary substances (Lagua and Claudio, 1996). Nutrition is the study of the nutritional content of various foods, as well as the amount of nutrients required for optimal growth and function, and how this varies for different people. A living organism's ability to grow, maintain, and reproduce is aided by the process of nourishment. Human nutrition research is multidisciplinary, encompassing not only biochemistry, physiology, and molecular biology, but also psychology and anthropology, which investigate the impact of attitudes, beliefs, preferences, and cultural tradition on food consumption. It may be further connect with economics and political science as the world responds to the suffering and death caused by malnutrition. As a result, nutritional science has a considerably broader research field with new technology and social change, which provide new opportunities (Pelletier et al., 2013). One of the most essential variables impacting the quality of human life is nutrition. Nutritional science aims to promote optimal health by lowering the risk of chronic diseases (such as cancer and cardiovascular disease) and preventing nutritional deficient diseases (such as kwashiorkor and pellagra).

Human body needs a good nutrition through a well balanced diet to fulfill body requirements and to maintain body functions. A poor diet can result in a lack of essential nutrients (Causes malnutrition) or excessive calorie consumption (overeating) (Causes overnutrition). Undernutrition and overnutrition are currently two of the main causes of death worldwide. For developing countries like India, both undernutrition and overnutrition are important health issues. Double burden of malnutrition causes nutrition related complications and different diseases with decreasing the power of immunity. Undernutrition impairs physiological function, resulting in low weight, growth retardation, a weakened immune system, which leads to an increase in infections, the emergence of chronic diseases (such as diabetes mellitus, hypertension, and coronary heart disease), and mental health problems (Hoet JJ, 1997; Martins et al., 2002 and Muller and Krawinkle, 2004). Whereas overnutrition (obesity and overweight) is linked to a number of non-communicable diseases, including hypertension, diabetes, cancer, and cardiovascular disease (Ni Mhurchu et al., 2004; Berrington et al., 2010; Zheng et al., 2012). Females are more likely to be underweight, overweight, or obese than their male partners due to biological and behavioral differences. Women with insufficient nutrients suffer from infertility, abortion, preterm birth and neonatal mortality.

1.2 Women Nutrition

Woman plays an important role in the society. They form a major part of our society. As per 2011 census, the total population of India is 1.2 billion out of which 655.8 million are males and 614.4 millions are females and out of that West Bengal state contents 54 million women population. As women constitute half of its population and play crucial role in different field of society like agriculture and livestock production, household economy and reproductive functions. In view of all these India's first Prime Minister rightly said that "You can tell the condition of a nation by looking at the status of women."

Indian women have high mortality rates during their childhood and in reproductive years. From a global perspective, NFHS-3 data, India accounts for 19% off all live birth and 27% of all maternal deaths. India has highest proportion of malnourished women compared to other developing countries. A recent estimate suggests that about 70% of non pregnant women and

75% of pregnant women aged 15-49 years were anemic (Masson et al., 2005). Researchers discovered that Indian women's contributions to society are usually underestimated because they are viewed as economic burden. There is a great desire in Indian society for sons over daughters. Daughters are mistreated as a result of this son preference and exorbitant dowry cost.

Assessment of nutritional status of women still remains a low priority in the public health agenda of most developing countries. Maternal nutritional status is important for a host of reasons. These reasons include: a) For the woman herself b) For her capacity to reproduce c) For the development of her children, with implications for the health and reproductive capacity of the next generation's mothers.

However, for decades, issues in women's nutrition have focussed on nutritional assessment during pregnancy and lactation. The health and well-being of the children has thus been a major source of worry. Women's dietary difficulties have rarely been investigated, and there are few nutritional data available from non-pregnant women. India has developed a framework of programmes to combat undernutrition in recent decades, including a Public Distribution System (PDS), an Integrated Child Development Services (ICDS) programme, a National Mid-day Meals Program (NMMP), and several employment schemes that provide food in exchange for work. Despite these efforts, India continues to suffer from undernutrition, with a high prevalence of chronic energy deficiency (CED) and anaemia among mothers, as well as a growing number of severely malnourished children.

Women's poor nutritional status, both before and during pregnancy, is the leading contributor to impairment of fetal development and also contributes to low birth weight (LBW) and in turn leads to high rates of stunting or low-height-for-age (Vir, 2016). The percentage of women in South Asia with a low BMI, indicating malnutrition, ranging from 7.5% in the Maldives and one third of women (36%) in India (Vir, 2016). In fact, studies in India have found a significant percentage of women with low BMI, as well as a high percentage of LBW and stunted children (UNICEF, 2014). Studies have consistently found that the link between maternal malnutrition and LBW is a key source of concern (Kader and Perera, 2014; Borah and Agarwalla, 2016; Roy et al., 2016). A global review of region-by-region data from the 1980s to the 2000s, which includes South Asia, finds that an increase in BMI of women aged 15 to 49 years corresponds to a decrease in the rate of LBW (Masson et al., 2012). Women have an impact on their children's nutritional health via influencing pregnancy outcomes as well as child care habits. Poor food intake and availability of nutrients consumed as a result of illness are well-known immediate and direct causes of undernutrition in women, and they play a significant role in undernutrition in children. A multitude of underlying socio-economic factors influence these direct causes, including purchasing power, gender inequality, women's decision-making power at the household level, and investment in nutrition care for self, children, and family.

Nutrition is viewed from an evolutionary and comparative perspective in anthropology. Nutritional Anthropology is the study of food and nutrition from evolutionary, behavioral, social, and cultural perspectives, as well as how these factors interact to produce nutritional status of individuals and communities. Anthropological research on nutrition describing how particular social or cultural factors play people at a higher risk for nutritional diseases or identifying health problem related to nutrition. The study of the interaction between diet and culture, and their mutual influence on one another, is defined as nutritional anthropology (Freedman, 1976). The incorporation of nutritional anthropometry is defined by the application of five direct or indirect methods developed by D.B Jelliffe in 1966 for the evaluation of nutritional status.

Jelliffe (1966) presented five techniques for assessing nutritional status in his outstanding monograph. The available methods of assessing nutritional status have been divided into two categories by WHO (1996):

- Direct methods (e.g. Anthropometry, Biochemical, Clinical and Dietary evaluation method)
- Indirect methods (e.g. ecological variables, Economic factors, vital health statistics particularly infant and under 5 mortality and fertility index.)

Anthropometry is a unique or essential method for examining an individual's nutritional status in Biological Anthropology. Nutritional status is now widely acknowledged as a leading indication of a population's or individuals overall health. The ultimate goal of nutritional assessments, according to the World Health Organization (WHO), is to improve public health (Bogin, 1999).

Anthropometry method was utilized in this study to measure the nutritional status of Rajbanshi populations because it is the most widely used methodology for assessing nutritional status. Here's a brief summary of its development and many aspects:

1.3 Anthropometry

In biological anthropology, anthropometry is one of the most significant research tools. This technique is utilized in the anthropological classification and comparison of human body measurements. The measurements of the body's physical dimensions and underlying composition should allow us not only to accurately characterize our current health but also to give predictions about outcomes such as ability to reproduce and long term survival. Anthropometry has contributed to the investigation of human variation in terms of sex and bodily dimensions such as stature as a research tool. These study techniques have clarified the dimensions and morphological features that characterize sexual dimorphism, as well as the differences in human variation that may have resulted from societal or environmental causes, as well as natural selection. This method requires adherence to specific international rules, started from the International Congress held in Geneva in 1912 when the International Convention for the unification of anthropometric measurements in living was signed. It's been used to measure health and nutritional risk extensively and successfully. It is a good approach for determining a person's nutritional condition and body composition (WHO, 1995; Hamieda and Billot, 2002).

The present study was performed with the help of anthropometric technique. Anthropometry is the most widely applicable, low-cost, and non-invasive approach for determining the height, dimensions, and bone density of humans(Deurenberg et al., 2002; Santosh et al., 2004; Bose et al., 2006; Liu et al., 2010; Sen et al., 2011; Sen and Mondal, 2012; Little et al., 2016; Dutta et al., 2019; Rai et al., 2021). According to recent study, anthropometry is important throughout life, not only for individual assessments but also for reflecting the health and socioeconomic condition of human population (Gorstein and Akre, 1988; Steckel,1995; Komlos and Snowdon, 2005). Cross-sectional examination of the relation between obesity and disease risk will be possible using anthropometric measurements such as skin folds and circumferences, as well as bioelectrical impedance. Height, weight, BMI, body circumferences (waist, hip, and limbs), and skin fold thickness are the most important aspects of anthropometry. These anthropometric measurements are useful for determining an individual's nutritional status as well as their development and growth.

Advantages:

Anthropometric measurements have some advantages over other methods. This approach is easy, safe, affordable, and non-invasive, and it may be used on both big and small samples. The necessary equipment is both affordable and portable. The numerical and gradable readings of these measurements can be efficiently interpreted. This technique can be used to evaluate nutrition programmes as a parameter.

Although this methodology has certain drawbacks, such as being a somewhat insensitive method that cannot detect changes in nutritional status over short periods of time, it does have some advantages. It also contains some observer bias and procedural mistakes.

Anthropometry is used to determine the frequency of undernutrition, which is a significant source of concern in many developing nations where it is a serious public health issue (Corsi et al., 2011; Khambalia et al., 2012; Prasad et al., 2012; Akhter, 2016). The Indian subcontinent is no exception (Khor, 2003; Mukhopadhyay et al., 2009; Debnath and Bhattacharjee, 2016). According to reports, due to the country's vast population and extensive poverty, the majority of its citizens are malnourished and disadvantaged (Nandy et al., 2005; Kapil and Sachdev, 2012; Varadharajan et al., 2013; Bhutia, 2014). Women, both tribal and non-tribal populations, are one of the most nutritionally susceptible groups in the country.