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Mothers' Knowledge, Attitudes and Practices about Childhood Obesity in the Gaza Strip

Hazem Mahmoud Yousef Parghout

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Prepared By**:**
Hazem Mahmoud Yousef Parghout

Bachelor of Pharmacy- Al-Azhar University-Gaza

Supervisor: Dr. Ihab A. Naser

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Prepared by: Hazem Mahmoud Yousef Parghout
Registration No.: 21812429

Supervisor: Dr. Ihab A. Naser

Master thesis submitted and accepted. Date: 20/12/2021
The names of signatures of the examining committee members are as follows:

1. Head of committee: Dr. Ihab A. Naser Signa.....
2. Internal examiner: Dr. Hazem Agha Signa.....
3. External examiner: Dr. Mohammed Ellulu Signa.....

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Dedication

To my father and my mother you are both amazing people, and will never encounter words to fully express the extent of my love and appreciation. You have raised me to be the person I am proud to be. And to my friend Mohammed Al-Asmar for their support, encouragement and love, and my sons Mahmoud, Toleen, Yazeed, Sereen, Miral for their emotional supports.

I dedicate this work especially to my wife Doaa who enlighten my heart with love and happiness

Hazem Mahmoud Yousef Parghout

Declaration

I certify that this thesis submitted for the degree of master is the result of my research, except where otherwise acknowledged, and this study (or any part of the same) has not been submitted for a higher degree from any other university or institution.

Signed:

Hazem Mahmoud Yousef Parghout

Date: 20/12/2021

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With respect,

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Abstract

The prevalence of childhood obesity has been increasing alongside with the rapid global economic and technological situation, including Palestine. This study aims to examine the association between nutritional knowledge, attitude and practice (KAP) of Palestinian mothers and childhood obesity of their children in 1st to 4th grade of governmental joint schools. This study is an analytical cross-sectional where 400 questionnaires were completed by using the personal interview method with the mother. The study sample was selected by using multi-stage cluster sampling from seven educational directorates. The socio--economic characteristics, family history, life style, dietary intake, physical activity and parental modeling were assessed for the targeted population. The childhood obesity was determined by anthropometric measurements using the 95 percentile of Body Mass index for age as a cut-off point. KAP data were obtained from the mothers by using valid and reliable questionnaire that contains 12 questions related to nutritional knowledge and 18 questions and 12 questions in the Likert scale form were used to assess the attitude and the practice of the mothers, respectively. The average age of the children was 7.96 years and almost one third of the children (29.8%) were males, while the remaining were females. The prevalence of obesity among the children was 23%. The result indicated that mothers who hold higher degree were 36.3% and the double-headed households were 97%. Moreover, the average number of household member was 6.86. The educational levels of mothers and fathers were statistically significant between obese Versus Non-obese groups and the $P < 0.001$. Regarding the variables of socioeconomic status, there were no relationship with childhood obesity at the multivariate analysis (Logistic regression).

The mean differences in the knowledge, attitude and practice of the mothers of non-obese children Versus obese children were; 15.19, 14.03 and 5.28 respectively and all the three differences were statistically significant. The results showed that each one-point increase in the mother's knowledge, attitudes, and practices will reduce the child obesity rate by 6.2%, 4.2%, and 8.5%, respectively.

Moreover, child who own a computer, laptop or smart phone will be more likely to be obese by approximately 7 times, and a child was on exclusively breastfed will be 0.11 times less likely to be obese. As for the child's birth weight, the relationship is negative, whenever the child's birth weight decreases by 1 kg, the rate of obesity will increase by approximately 65%. The result also indicated that child who eats nuts daily, 59 times more likely to be obese.

The study concluded that there is a need to establish educational sessions and workshops in cooperation between the Ministry of Health and the Ministry of Education along with other Community-Based Organizations (CBOs) for mothers regarding healthy lifestyle. In addition, monitoring of school canteens and integration of the vegetables and fruits into the food sold inside the canteen.

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List of Abbreviations

BMI	Body mass index
cAMA	Corrected arm muscle area
CBOs	Community based organization
CI	Confidence interval
GS	Gaza strip
HOMA	Homeostatic model of insulin resistance
IOTF	International task force
KAB	Knowledge, attitude and behavior
KAP	Knowledge, attitude and practices
MC4R	Melanocortin 4 receptor
MoE	Ministry of education
MoH	Ministry of health
MUAC	Med upper arm circumference
MVPA	Moderate to vigorous physical activity
NGOs	Non-Governmental Organizations
NHANES	National health and nutrition examination survey
NICU	The neonatal intensive care unit
OR	Odds ratio
OSA	Obstructive sleep apnea
PC	Personal computer
PCBS	Palestinian Central Bureau of Statistics
POMC	pro-opiomelanocortin
RCTs	Randomized controlled trial
SD	Standard deviation
SefSec	Socio-economic and food security
SES	Socio-economic status
SPSS	Statistical Package for Social Science
TNN13K	Troponin I-interacting protein kinase
TSF	Triceps skin folds
UNRWA	United Nations Relief and Works Agency for Palestine Refugees in the Near East
US	United States
WB	World bank
WHO	World Health Organization

Chapter One

Introduction

1.1 Background

By the twentieth century, main public health challenges transitioned from malnutrition and communicable diseases as the major cause of mortality to lifestyle correlated chronic diseases. These modern challenges are due to a grouping-of poor diet, food security issues, reduced physical activity and climate change (Shao et al., 2017).

Middle East countries are suffering several types of transitions. Although double burden faced them from epidemiological transition of communicable and non-communicable diseases, socioeconomic and demographic transitions are also occurring in these countries. In addition, developing countries suffer from a high prevalence of under-nutrition, but this transitional era has also brought a double burden of over-nutrition and under-nutrition in these countries (Bone & Fuller, 2003). The major dietary transition in the developing countries includes an increase in the consumption of added sugar and trans-fat in the diet, often a marked increase in food sourced from animal products compared with a decrease in total fibers intake like vegetables and cereals (Popkin, 2001). Like other developing countries, Palestinian people has also been undergoing nutrition transition where studies have shown nutrition related chronic diseases such as hypertension, heart diseases, cancer diabetes, sedentary lifestyle, smoking, and obesity to be widespread among Palestinians (Husseini et al., 2009). Despite Palestinian people suffering from low-income economies, both over nutrition and under nutrition coexist in the society. This stage of nutrition transition where both under- and over nutrition coexist and where over nutrition is more prevalent among the more affluent strata of the society (Mikki et al., 2009). Even though nutritional transition changes diet patterns, they also reduced physical activity with a shift away from walking and cycling to the use of cars, and from work in the fields to sedentary jobs in factories and offices. These changes in consumption and physical activity lead to a rising prevalence of overweight and obesity (Khor & Sharif, 2003). Furthermore, double burden households are common in countries whose undergoing nutrition transition may be a reflection of transformations in food allocation correlated to social norms based on generation or gender. For example, quality foods may be given specially to adult males rather than to children (Popkin et al., 2012). Transformation led to enduring changes in

lifestyles. Further, multiple factors, childhood obesity has gradually enlarged (Ang et al., 2013). As childhood obesity is represented by the accumulation of excess body fat as well as the growth of excess adipocytes (Binkovitz & Helba, 2009). With emerging global prevalence of childhood obesity. However, parents may be unaware to the childhood obesity consequences, it is valuable to screen for metabolic syndrome risk factors at an earlier age. Moreover, metabolic syndrome prevention should begin at an early age as children have greater motivation and are strongly influenced by family about behavior change (Quah et al., 2010). Several risk factors inducing childhood obesity and classified into non-modifiable involves genetic inheritance; on the other hands modifiable factors pertaining to the development of behaviors having the parents as a reference (Costa et al., 2003).

Parents shape dietary practices for their children's, sedentary behaviors, physical activity, and finally their weight status in several ways. Parents' knowledge of nutrition; their influence over meal structure, home eating patterns, and food selection; modeling of their levels of physical activity; their healthful eating practices; and their modeling of sedentary practices including television viewing are all significant in their children's development of permanent habits that contribute to normal weight or to obesity and overweight (Lindsay et al., 2006).

Treatment of childhood obesity will fail if a parent does not perceive their child's obese or overweight status and possible health risk as an outcome of excess weight, they may be less motivated to encourage physical activity and healthy nutritional choices (Tompkins et al., 2015). Since nutritional behaviors develop in early childhood, understanding the perceptions of mothers toward their own weight and that of their children impact child feeding practices. The literature on mothers' perception of their child's weight status suggests that mothers mostly fail to correctly identify obesity in their early children (Kim & Mallo, 2019). Reviewing various aspects of the nutritional status of Palestinian children and adolescents is significant as they represent about one-quarter of the Palestinian society (PCBS, 2019). And the prevalence of overweight and obesity was estimated at 13.0% for girls and 20.4% for boys (Al Sabbah et al., 2009). Therefore, this study aims to identify the role of mother knowledge, attitude and practices (KAP) and childhood obesity in the Gaza Strip (GS).

1.2 Problem Statement

The prevalence of obesity and overweight has developed into a disturbing rate, it is estimated that more than 40 million children under five years of age were obese in year 2010 (WHO, 2016), with 35 million of these children in developing countries, estimated overweight to occur in 41% of school aged children in the Mediterranean region, 46% in the Americas, 27% in the Western Pacific, and finally 22% in Southeast Asia (Lobstein & Wang, 2006).

Survey conducted in Palestine in 2004, the prevalence of overweight was estimated at 13.0% for girls and 20.4% for boys (Al Sabbah et al., 2009). Alongside, the overall prevalence's of overweight and obesity in the Gaza Strip among children were found to be 17.1% and 6.47%, respectively (Kanao et al., 2009). Malnutrition is wide-ranging in the Gaza Strip especially among children, two-thirds of school-age children had a frequency intake of fewer than three times per week for several of the five categories of foods, including fruit and vegetables, animal foods, milk products and traditional foods (Abudayya et al., 2011). Most of the households in the Gaza Strip threatened difficulties accessing food. The most often cited prevailing causes of difficulties were the current siege of Gaza and shortage of food commodities, followed by the high price of food products and the loss of income source. Almost two-thirds of the households had to use credit or borrow to purchase food to cope with food insecurity, while about half of households relied on donations and aid. About 9.4% of households have to sell assets. One-third of households reported selling gold in order to cope with food insecurity (Radi et al., 2013). Overweight and obese children were more likely to experience several and clinically important associated psychosocial problems than their healthy-weight children with increasing behavior disorders like destructive behavior, disruptive aggressive, disobedience, and verbal and physical abuse (Rankin et al., 2016). Although childhood obesity has several psychiatric consequences, metabolic consequences of obesity have been increasingly recognized in obese children. While the complications may not become apparent until years later, these metabolic derangements may be in progress and continue to stress the body, and may even be evident already in some obese children. (Lee et al., 2009). Moreover, age-school children who suffer from childhood obesity may have fewer opportunities in school, and a smaller social circle and certain obese individuals may therefore have lower incomes, less education levels, and higher poverty rates (Lee, 2010). Overweight adolescents and children often reported reduced health related quality of life in

emotional and social aspects. Persons who were obese in childhood are more possible to have poor body image, and confidence and low self-esteem, even more so than those with adult-onset obesity, as mid-childhood is the important period of development of self-esteem and body image. Overweight young children were able to maintain positive self-esteem and self-image, but overweight adolescents, mainly girls, tend to develop a negative self-image that continues into adulthood (Zeller et al., 2006). The economic impact of childhood obesity also a huge!. The direct costs in the US include annual emergency room, prescription drug costs of $14.1 billion, and inpatient costs of $237.6 million. An even larger cost is experienced when obese children transform to obese adults. Approximately half of obese school-age children, and about a third of obese preschool children, transform to obese adults. The predictable annual cost of treating obesity in adults is $147 billion. The medical costs of obesity are considerable, that the increase in obesity explains 27 percent of the increase in health care expenditure among 1987 and 2001 (Cawley, 2010).

1.3 Justifications of the study

In the Palestinian context the female head of household determines, for the most part, consumption of the food patterns of household members, exclusively for the main-meals, with less control over fat intake derived from cooked foods to the individual, it was found both effective and easier to measure the consumption of fat at the household rather than individuals (Abdul-Rahim et al., 2003).

A study about the nutritional status of Palestinian preschoolers in the Gaza Strip showed that children who are assisted by their mothers toward eating at an early age are three times more likely to be nutritionally flexible, but older children are significantly less flexible than younger ones. Furthermore, the educational level of the mother is not associated with nutritional vulnerability (Massad et al., 2012). Schoolchildren's tendency to eat more fruit and vegetables if they have educated parents, and consuming low intakes of dairy foods compared with children in developed countries, substantial intakes of sugar and sweets, and high consumption of foods providing monounsaturated fatty acids (Shatenstein et al., 1996).

The increase in the prevalence of obesity and over-weight recently is blamed on the continuous availability of dense-calorie foods, together with a major decrease in the obligatory need for physical activity. However, not everyone becomes over-weight/obese when placed in an obesogenic environment (Proietto, 2011).

Despite the seriousness of childhood obesity, a total of 32.9% of parents misjudgment their child's weight, with 30.6% of parents who misjudged their child's weight status from normal-weight to under-weight, from over-weight to normal, and from obesity to over-weight (Rodrigues et al., 2020). Moreover, parents' misunderstanding of the causes of childhood obesity and over-weight reported that parents believed childhood obesity and over-weight were mainly caused by genetics (Sosa et al., 2012). About the knowledge of mothers toward the healthy food, the result of interesting study showed among all the mothers 51% agreed that it was an extra workload, 26% did find it more expensive, and only 29% of mothers usually read the food labels before purchasing a food item, whereas 38% did not, with 33% of the mothers reading the food labels rarely! (Vereecken & Maes, 2010).

Preschool children have low control on their obesogenic behaviors like the availability of unhealthy foods, which reflect the attitude of the whole household, specifically, the parenting style of mothers. Furthermore, parental recognition of their child's over-weight status is important and critical in the prevention of childhood obesity efforts. Such perception of their child's over-weight status and of the related health risks with their child being over-weight are driving forces motivating parents to act. The previous study has shown that parents with correct perceptions have a better readiness to make weight related changes in health correlated attitude and are more effective in doing so (Duncan et al., 2015).

The mother is the closest person to her children. She is the first person who will shaping their children's lifestyle by introduce healthy behaviors. So, she plays critical role in preventing childhood obesity. However, to reduce childhood obesity effectively the mother needs to detect the understanding of healthy eating patterns and well known about physical activity that helps her child lead a healthy lifestyle (Akhtar-Danesh et al., 2011). Therefore, this study aims to obtain primary data about the knowledge, practices and attitudes of mothers regarding the problem of childhood obesity and to provide useful information to control this growing epidemic among children.

1.4 Significance of the Study

A little evidence that public health measures adopted so far have had any influence on the increase in the prevalence of obesity. Moreover, one way forward is to emphasis public health measures on preventing childhood obesity while making resources accessible to treat people who are already obese (Proietto, 2011).

Numerous studies conducted on the factors associated with childhood obesity indicated the effective role of parents and family environment in the development of obesity (Parikka et al., 2015; Danielzik et al., 2004), but few studies discussed the association of mothers knowledge and the occurrence of childhood obesity.

1.5 General Objective

To investigate the association between mother knowledge, attitude and practices (KAP) and childhood obesity in the Gaza.

1.6 Specific Objectives

1 To identify the prevalence rate of childhood obesity in the Gaza Strip.

2 To assess the socio-economic status (SES) of the children's households and to what extent it affects childhood obesity.

3 To assess the knowledge of the mother regarding childhood.

4 To identify the attitudes of the mother towards childhood obesity.

5 To evaluate mothers' practices with respect to obesity of their children.

6 To assess nutritional intake and its effect on childhood obesity.

7 To assess the physical activity of the children and its effect on childhood obesity.

1.7 Research Questions

1) What is the prevalence rate of the childhood obesity in the Gaza Strip?

What is the effect of the social and economic status of children’s families on their children’s obesity?

2) How can influence the SES of the households on childhood obesity in the Gaza Strip?

3) What is the relationship between the nutritional knowledge of mothers and childhood obesity?
4) What is the relationship between nutritional attitudes of mothers and childhood obesity?
5) What is the relationship between nutritional practices of mothers and childhood obesity?
6) Is there a relationship between dietary intake and childhood obesity?
7) Is there a relationship between the physical activity of the children and the occurrence of childhood obesity?

1.8 Context of the study

1.8.1 Gaza Strip Demographic Characteristics

The area of the GS is estimated at 365 square kilometers, and the GS consists of five governorates, from north to south, respectively, north of Gaza, Gaza, the central region, Khan Yunis, Rafah, and the population of Palestine in 2018 was estimated at 4,854 people. 39.8% lived in the GS, of whom 50.9% were male, 49.1% female (MoH, 2018).

The GS is considered one of the most densely populated areas around the world, with approximately 1,989,970 Palestinians living in it, and in every one kilometer about 5204 individuals, there is also a difference in population density between the West Bank and GS, and another noticeable difference in living and living conditions. The other, where deteriorating living conditions are evident in the GS as a result of the blockade imposed on the GS due to the Israeli occupation since June 2007 (PCBS, 2019).

The average life expectancy among the Palestinian population was 73.8 years, and it was higher among females as it reached (75.4), and in males (72.3) (PCBS, 2017).

The blockade imposed on the GS has created a chronic and complex humanitarian catastrophe that has difficult dimensions, so the dependence on external food aid by the residents of the GS has become essential to life, and the occupation situation has led all the crossings leading to the entry and exit of goods into and out of the GS under its control led to a marked deterioration in the general economic situation of the population (WHO, 2009)

The great Israeli restrictions imposed on the movement of goods and people and the prevention of workers' access to the Israeli labor market, as the residents of the GS relied

on the Israeli labor market before the blockade. This ban led to a decline in development indicators in all aspects of life in the GS, and unemployment rates reached high rates. In 2018 54% in the second quarter, and the unemployment rate for youth and women, respectively: (70%), (78%), and poverty rates increased in 2018 from that in the year 2011, respectively: 53%, 39%, and people who Mild or severe food insecurity reached 68%, and stunting children under five years old reached 11% (WHO, 2018).

1.8.2 Food security in the Gaza Strip

Conflict could decrease households' food consumption and availability. The presence of violence conflict may effectively reduce food imports, make food purchasing and production more dangerous, increase food prices, and decrease food stocks and disposable income (Martin-Shields et al., 2019). The GS is part of the Palestinian territories. It borders Egypt to its south, Israel to its east and north, and the Mediterranean Sea to its west. the GS and Israel are separated by a wall with regulated border passages. According to the latest data from the Palestinian Central Bureau of Statistics (PCBS), the population density in the GS is very high. In 2014, its economy was greatly regulated by Israel and it is almost totally dependent on aid, making almost 80% of the GS population aid-dependent. Unemployment reached 45% in the GS by middle of 2014, mainly affecting youth and women. A quarter of the Palestinian population in both the GS and in the West Bank survived in poverty in 2014, by 39% in the GS, this rate twice as high as in the West Bank (WB, 2015). Israel's siege policy has impoverished the Gazan population, This restrictions and widespread damage to sheep, livestock, and poultry farms in GS through the military operation, and the ban on "buffer zone" to restriction on access to grazing land in the along the Israel-GS border mainly reduced the availability of fresh meat in GS (Gross & Feldman, 2015). The price of fresh fruits and vegetables are expensive in GS, given that the lands accessible for horticulture is limited and with the ongoing blocked and restrictions on accessibility in place. Moreover, the people continues to grow at over 3% annually; putting additional burden on the resources in one of the most densely areas of the world. At the same time, the very high level of urbanization in GS made the lands very limited for cultivations (Costello et al., 2009). Total expenses, household income, consumption of food and calorie, the share of total expenditure on food, and the status of nutritional are also significant measures to the food security of a household (Wolfe et al., 2001). Similar condition in GS, socio-economically crisis and high unemployment records lead to investing in urban agriculture (Al-Najar & El Hamarneh, 2019).

1.9 Definitions

1.9.1 Theoretical definitions:

1.9.1.1 Obesity

The definition of obesity depends on several factors, the most important of which is the body mass index (BMI) as an indirect measure, which is association between body weight and height (dividing the body weight in kilograms by the square of the height in meters), when BMI exceeds 30 kg/m^2 classified as obese person according to cut-off (WHO, 1995).

1.9.1.2 Childhood obesity

According to Kuczmarski et al. (2000), the BMI is now accepted as a valid indirect measure of adiposity in children. However, as children grow in size, anthropometric cut-offs for fatness need to be adjusted for age. So, grades of nutritional status are usually measured according to a reference population. Cut-off point equal or above 95^{th} percentile.

1.9.1.3 CDC Growth Charts

These charts are often used to classify children's growth rates and measure their sizes according to weight status categories, body mass for age and corresponding proportions, this is according to experts' recommendations with the identification of cut-off points (Cooney et al., 1994).

1.9.2 Operational definition

1.9.2.1 Obese children

An obese child is a child whose BMI percentile equal or exceeds 95 according to the CDC growth chart.

1.9.2.2 Non-obese children

A non-obese child is a child who has not exceeded 95 BMI percentile according to the growth chart of the CDC.

1.9.2.3 Modifiable factors

The factors that can be control of the causes childhood obesity during the study setting, such as the lifestyle.

1.9.2.4 Un-modifiable factors

The factors that cannot be control of the causes childhood obesity during the study setting, such as genetics, intrauterine factors.

1.9.2.5 Parental determinants

Parents' determinants that inducing the childhood obesity, through parental behavior and their lifestyle, food intake.

1.9.2.6 Screen time

Time spent on watching television or playing computer games, and smartphones.

1.9.2.7 Household size

Household size is the number of persons (regardless of relationship) residing in the household for more than 3 months.

1.9.2.8 Employment status of the mother

Indicated that if the mother working away from home for income purpose.

1.9.2.9 Employment status of the father

Indicated that if father working away from home for income purpose.

1.9.2.10 Monthly income " NIS- New Israeli Shekels"

The amount of money a family earns from the combined income of both the mother and the father per month.

1.9.2.11 Food frequency

Food frequency is a group of foods confined to a framework that people usually tend to consume by asking (how many times a day, week or month) that type of food listed has been consumed during the past month.

1.9.2.12 Breastfeeding and Dietary Behavior

Breastfeeding and nutritional behavior were intended to ask about the nature of the child's feeding from birth (the child breastfed naturally, for how long was the breastfeeding period, and was the breastfeeding exclusively), as well as asking about the child's feeding pattern and who is responsible for providing feed to the child, describing the food appetite of the child by the mother, a description of the nature of the eating of the child with his family.

1.9.2.13 Place of residence

The place of residence is where the child lives with his mother.

1.9.2.14 Education Level

Education level represents the last educational certificate obtained.

1.9.2.15 Socioeconomic and Socio-demographic characteristics

They are 12 predictive variables for the households; child's age, child's gender, child's educational stage, family's monthly income, employment status for both mother and father, educational status for both mother and father, mother's marital status, family place of residence, number of family members, number of children under 5 years in the family.

Chapter Two

Conceptual Framework and Literature Review

2.1 Conceptual framework

This chapter summarizes the arguments, studies, and claims about key study concepts that are modifiable and non-modifiable factors with childhood obesity as reported in previous reviewers and studies. This was described after presenting the conceptual framework of this study, which presents the dependent variables, that are modifiable and non-modifiable factors, and the independent variable childhood obesity, whose relationship the researcher explained with previous studies. The conceptual framework for this study based on the previous literature review, and it clarifies what the researcher will go to study. The researcher developed the conceptual framework to address the main concepts and variables included in this study to explain the impact of mothers' knowledge, attitudes and practices on childhood obesity.

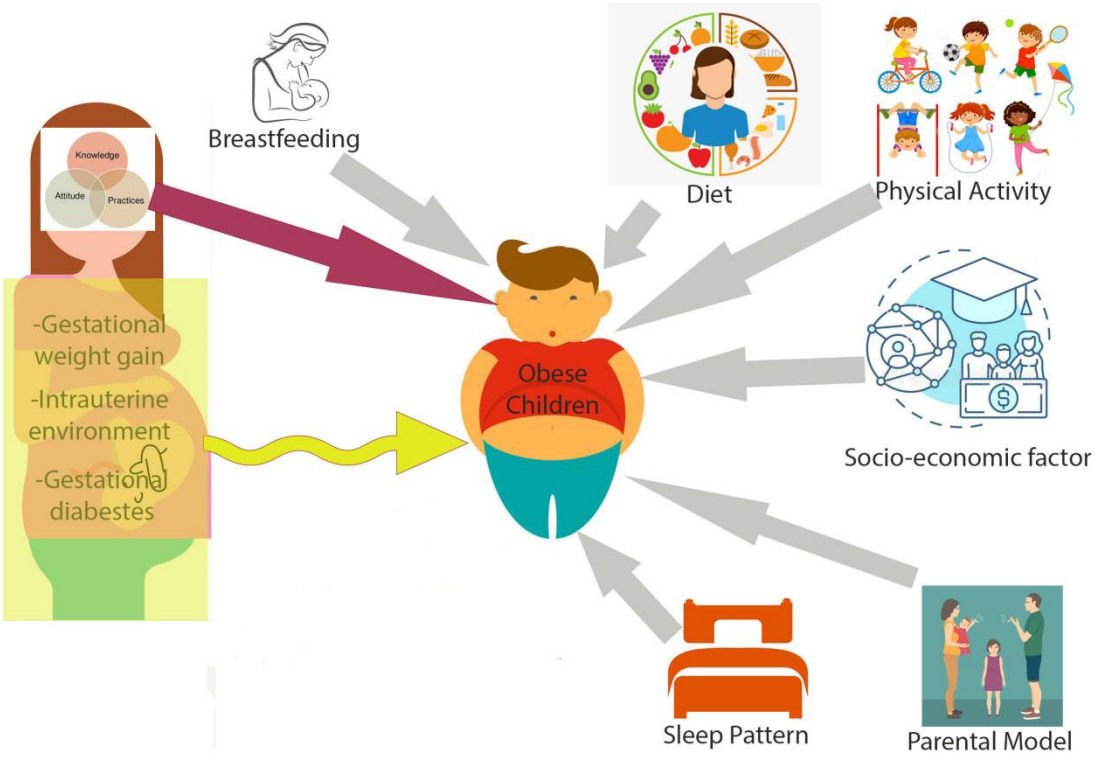


Figure (2.1): Conceptual framework diagram" self-constructed"

2.2 Modifiable factors

The cause of obesity in children and adolescents is diverse and multifactorial. There are extrinsic or environmental factors that are potentially modifiable as well as intrinsic factors that determine body weight and composition. The most important extrinsic factor is an imbalance between calorie intake and physical activity. This effect is enhanced by an increasing glycemic index of food and increased consumption of sugar-sweetened beverages. In addition, over the last few years physical activity has decreased, screen time, such as television or video-game consumption, has increased and sleep duration has shortened. Physical activity declines from the age of school entry (Tremblay et. al., 2014).

There is some uncertainty to what extent the same factors that have been found to predict increases in adults' obesity also predict the increase in children's obesity. Adults' (parents') and children's obesity prevalence have tended to move in tandem over time. A mother's obesity status is positively associated with her children's obesity status, and the correlation between parent's and child's BMI has increased somewhat over time. The correlation between parents' and children's caloric intake is also substantial, especially regarding calories eaten away from home or calories from fast food. (Anderson et al., 2019).

It is important to consider what causes a child to be overweight, including the environmental factors that may affect either the intake or expenditure of energy. In this regard, analysts have tended to point to factors like the availability and consumption of calorie-rich fast foods along with increased television viewing and decreased exercise. These explanations beg the question of why these behaviors have changed, however, since fast food and television have both been available for decades (Anderson et al., 2003).

According to the investigations of Anderson & Butcher (2006) other, equally important side of the energy balance equation is energy expenditures, both through physical activity and through dietary thermogenesis and the basal metabolic rate. Dietary thermogenesis refers to the energy required to digest meals, and the basal metabolic rate refers to the energy required to maintain the resting body's functions. For sedentary adults, physical activity is responsible for 30 percent of total energy expenditure, dietary thermogenesis for 10 percent, and basal metabolic rate for the remaining 60 percent. Many studies examine whether a low basal metabolic rate is responsible for overweight in children. For example, in a study of both obese and non-obese adolescents, researchers find that obese teens do

not have lower than average basal metabolic rate, and thus lowered energy expenditure through basal metabolic rate is not the cause of maintained obesity in children and adolescents.

Obesity and overweight are influenced by the interaction of several factors including nutrition, physical activity, sedentary behaviors. Socio-economic status exerts a significant influence on the prevalence and effect of multiple risk factors for the development and persistence of obesity in childhood. However, the association between SES and childhood obesity varies from country to country based on the country's socioeconomic standing which is high or low income (Jo, 2014).

An interesting study conducted by Alviola et al. (2014) showed that, junk food restaurants located within a mile of school affect school-wide weight outcomes. More specifically, adding a fast food restaurant within a one-mile radius of the school increases the school's obesity rates by 1.23% points, meaning that accessibility to fast food restaurants will increase the BMI of the children.

2.2.1 Knowledge, Attitude, and Practices (KAP)

Young children depend on their families and teachers to support their well-being and promote positive development, including eating behaviors. Children's food preferences and willingness to try new foods are influenced by the people around them (Anderson & Bellows, 2006). Eating behaviors of children practice early in life affect their health and nutrition which are significant factors in childhood overweight and obesity (Clark et al., 2007). And may continue to shape food attitudes and eating patterns through adulthood. Child feeding practices determine the availability of various foods, the portion sizes that children are offered, the frequency of eating occasions, and the social contexts in which eating occurs. Parents can influence children's dietary practices in many areas: availability and accessibility of foods; meal structure and environment; adult food modeling; food socialization practices; and food-related parenting styles. Family meals may also contribute positively to children's nutrition beliefs and attitudes as well as to the onset and persistence of overweight in elementary school children (Gable et al., 2007). Although children seem to possess an innate ability to self-regulate their energy intake, their food environment affects the extent to which they are able to exercise this ability. Offering large food portions (especially of high calorie, sweet, or salty foods), feeding practices that pressure or restrict eating, or modeling of excessive consumption can all undermine self-regulation

in children. Perhaps, the best advice regarding child-feeding practices continues to be the division of responsibility between adult and child advocated by Satter (Satter, 2007). According to this division, the role of parents and other caregivers in feeding is to provide positive structure, age-appropriate support, and healthful food and beverage choices. Children are responsible for whether and how much to eat from what adults provide. Mothers' attitudes of serving foods may influence children's attitude concerning likes and dislikes reported that family members' vegetable selection was affected by guardians' vegetable serving (Wenrich et al., 2010).

Interesting study conducted by Fisher et al. (1999) showed that parents shape the development of children's eating behaviors, not only by the foods they make accessible to children, but also by their own eating styles, behavior at meal times, and child-feeding practices. Parent's child feeding practices are associated with children's eating behaviors, including specific eating styles, food selection and preferences, and the regulation of energy intake.

According to Golan & Crow (2004) study, parents are role model!. The home environment has the potential to affect children's energy balance and diet composition in numerous ways. Parents may influence the family environment by exposing family members to certain foods, by actively encouraging the family members to eat certain foods, or by passively allowing certain foods in the regular diets. Food related parenting practices and the physical and emotional environment in which eating and activity behaviors are developed are also important variables. Parents may also serve as role models for their children's eating and activity behavior, although various studies have shown low family resemblance in food preference.

Effective nutrition interventions for children and adolescents should have a behavioral focus that will minimize the targeted risk factors, utilize theoretical framework, consist of changes to the environment, provide adequate dose and include strategies that are developmentally and culturally appropriate. However, to achieve the desired behavioral changes related to health and nutrition it will require the attainment of adequate knowledge, attitudes, skills and self-efficacy. In other words, for children and adolescents to adopt and maintain health-enhancing behaviors, they need to have adequate knowledge of the health concern, attain the right attitudes to deal with the concern and possess the necessary skills and be self-efficacious to assume the health-enhancing behavior (Vereecken et al., 2005).

Parents are seen as the most effective agents for implementing behavioral changes in managing childhood obesity in randomized controlled trials. Targeting the five to eight year old age group has several advantages: young children are more amenable to adult control and influence than adolescents and it is expected that the diet of children aged five to eight years is still largely within their caregivers' control. The knowledge and attitudes that these adults have concerning the identification and control of childhood obesity may influence the type, volume and variety of foods given to their children (Golan & Crow, 2004).

Mothers have major roles in shaping the knowledge, behaviors, and attitudes, in their children during the early ages. Mothers' roles have become more important when they are the primary caregivers; especially in developing countries. Therefore, maternal perceptions about their child's health have an important influence on children's nutrition and physical activity. Perception is a multifaceted expression which is highly influenced by knowledge and cultural practices and beliefs of any individual. Understanding maternal knowledge and perceptions is an important step in identifying potential intervention strategies for promoting healthy weight among children (Caprio et al., 2008).

Early eating behaviours and early obesity may persist into adulthood, the relationships between dietary attitudes and body weight during the school years may have a lifelong significance. Obese children, especially girls, omitted breakfast more frequently and ate smaller amounts of grain products at breakfast, in comparison to normal-weight children. The energy supplied by breakfast, measured as a percentage of energy expenditure, was lower in the obese than in the normal weight children, and their breakfasts were lower in carbohydrates, thiamine, niacin, vitamin B6, vitamin D, and iron (Juan, 2006).

Parental perceptions of their own weight, not only their child's weight, are important in the process of change. By assessing a parent's thoughts on this matter, providers will understand whether there are other, more personal issues that are influencing the parent's view of being overweight and readiness to make changes (Mehta & Davis, 2015).

Early childhood is a critical period for shaping and influencing feeding and lifestyle behaviors, attitude toward healthy food that have implications for future weight and health. With more women in the workforce, families have become reliant on child care. Thus, the child-feeding relationship has become a shared responsibility between the parent and child

care provider. Little is known about the impact of mothers on development of early childhood feeding behaviors and subsequent risk for obesity (Alvarez & Freedman, 2010).

Children must absorb enough nutrition to maintain their growth and development. Dieting and restriction to palatable foods are not suitable for the treatment of childhood obesity. Foods and nutritional components that can reduce the risk of obesity should be the smart choices. However, for young children, their choices of food usually follow their parents' example. That explains why obese parents have a higher risk of raising obese children because children would follow the preference choices of high-fat, energy-dense foods as their parents. At this point, the parents' awareness of a good diet is important to the food choice of their children Beyond this, the issue of food intake pattern should be involved, that is (How and when to intake the food with how much amount?). The development of food intake pattern of children is affected by a number of factors, such as parent's guide (Huang et al., 2015).

Furthermore, education appeared to have an important effect on both scores of mothers' nutritional knowledge and attitudes. These results are in accordance with a study investigating the consumption of specific food items in Flemish preschool children, where differences in consumption of fruits, vegetables, and soft drinks were found to be related to the mothers' educational levels. Concerning occupation, the results revealed that Omani mothers' work had an inverse effect on their nutritional knowledge and healthy eating attitudes. Children's nutritional intake in relation to their parental occupational status has been reported in other studies. In contrast to our study findings, several studies studied the dietary intake in children and found a higher intake of more healthy items and a lower intake of less healthy items such as soft drinks and coffee in children whose parents had higher levels of occupation (Al-shukaily et al., 2011).

Although many factors are thought to influence parental food choices, parents with good dietary awareness or nutrition knowledge are more likely to make healthy food choices for their children. Observational studies have shown that higher levels of maternal nutrition knowledge are associated with higher fruit and fiber intakes and lower fat intakes by children. The current United Kingdome dietary interventions reflect these knowledge–behavior associations by promoting healthy food choices, for example, raising awareness of the nutrient content of foods and the traffic light labeling system. These interventions assume that by improving knowledge and awareness, behavior change will follow (Verhagen et al., 2008).

A mothers' knowledge on balanced nutrition is essential to improving family health, which affects nutritional status and wellness. Their KAP on balanced nutrition and healthy lifestyles are important to support their children's nutritional and health status. Mothers with good knowledge are expected to have good practice. Knowledge is a construct of beliefs, information, and skills provided from both experience and education. Furthermore, the mothers' knowledge of balanced nutrition was significantly correlated with the nutritional status of school children in elementary school. Whereas the mothers' attitude to balanced nutrition had no correlation with the nutritional status of school children, while the mothers' practice of balanced nutrition had a significant correlation with the nutritional status of senior high school children (Khomsan & Prasetya, 2021).

The importance of nutrition knowledge in contributing to choices about food intake is increasingly being recognized, with studies showing associations between nutrition knowledge and eating behaviors. Mother's nutrition knowledge has been positively related to children's fruit consumption, although not with vegetable or confectionery consumption. However, in Australian adults, nutrition knowledge was found to be a positive predictor of vegetable intake found a significant positive relationship between nutrition knowledge and eating behaviors, with United Kingdome adults in the highest quintile for nutrition knowledge almost twenty five times more likely to consume adequate fruit and vegetables. The pathway through which parents' nutrition knowledge can influence children's dietary intake is through the home food environment they provide. There are many factors within the home food environment which may be determined by parents' nutrition knowledge and attitudes to foods, particularly the types of foods available, parents' own role modeling of eating behaviors feeding practices, and rules around eating. These factors have all been shown to predict children's dietary intake (Zarnowiecki et al., 2012)

A study by Yabanci et al. (2014) involving mothers of 132 male and 170 female school children in Ankara, Turkey, indicated that many mothers with a higher level of nutritional knowledge had children with normal weight. Mothers who have a higher level of nutritional knowledge fed their children more vegetables, fruits, legumes, and less sugary drinks such as juices and fast foods than those with a lower level of nutritional knowledge. Some factors, such as working status, income, age, educational level and the nutritional knowledge level of the mother affected their feeding practices.

More than half of the mothers perceived childhood overweight or obesity as a sign of good health. One reason for this misperception might be cultural prejudices. Mothers of skinny children are, in many cases, held guilty for not taking proper care of their children; thinness is often judged as proof of the mother's negligence of responsibility. Because of a lack of knowledge, these mothers frequently consider their offspring's thinness as analogous to parenting failure. As a result, parents are willing to see their children carrying excess weight. The perception of body image or weight is associated with many factors such as culture, geographic location, ethnicity, ethics and gender preference. For example, Latina mothers tend to prefer a thin figure for themselves but a heavy figure for their children. In Indian culture, overweight children are considered healthy (Gupta et al., 2012).

A study conducted in Bangladesh and showed there are no differences in perceptions of mothers toward childhood obesity whose child was a boy or girl. This finding is particularly important in the context of South Asian culture where favoring male children has been associated with under nutrition among female children in countries such as India. It is likely that social perceptions and attitudes towards the female gender are changing in Bangladesh due to various educational programs (Anis et al., 2017).

Parents, educators, and health professionals have long touted the association between what our children eat and their school performance. Evidence for this correlation is not always apparent, and biases on both sides of the argument sometimes override data when this topic is discussed. Understanding existing evidence linking pupils dietary intake and their ability to learn, control of body weight is a logical first step in developing school food service programs, policies, and curricula on nutrition and in guiding parents of school-aged children (Taras, 2005).

Interesting study result showed that, maternal nutrition knowledge has a positive effect on the diets of children. As they expected' this is particularly true for preschoolers. The impact of mothers' nutrition knowledge on the diets of their older children is less for several reasons. First, older children likely make more dietary decisions independently of their mothers, and, second, they tend to eat away from home more often and also receive a higher percentage of their total caloric intake from away from home food sources. These results lead to the conclusion that health and nutrition education may be more effective if targeted both toward mothers with young children and directly toward school age children. (Lin et al., 1996).

About the association between attitude of mothers and level of education, in recently study about perceptions and attitudes of mother toward childhood obesity showed that, obesity was more common in mothers with low education and their preschool children were heavier. Nearly all obese mothers believed that they were overweight. However, only one in five mothers correctly identified their overweight children as overweight, and mothers with less education were even less likely to recognize when their children were overweight. Children of mothers with low education may be at a greater risk for later obesity if the children are more likely to be overweight and their mothers are less likely to recognize it (Baughcum et al., 2001).

When talk about the relationship between attitude of mothers towards childhood obesity and SES, the result of study showed that overweight mothers were less aware of their children's excess weight problems than normal weight mothers were. Low parental education levels and low family income have been found to increase the odds of misperceiving weight problems (Carnell et al., 2005).

Interesting study by Salama et al. (2014) showed that, there was no significant correlation between nutritional knowledge of parents and nutritional practice of their children, whereas there was a significant correlation between parent's knowledge score and healthy food intake in general by children. Furthermore there was no significant correlation between nutritional practice of children and their BMI, whereas there was significant correlation between nutritional practice of children and their weight. There was a highly significant correlation between social class of parents and their children nutritional behavior; in addition, there is significant correlation between father's education and mother's education and their children nutritional practice.

Another study confirms that a sample of Canadian parents did not recognize their children's overweight or obese status. Parents were overly concerned about children being underweight, but not about them being overweight. Overall, 38% of parents were not able to identity their children's weight categories accurately. In addition to, many parents did not even recognize that their children were overweight and, as shown in other studies, tended to be unconcerned about the issue. Parents did not perceive their children as being overweight, as long as they are active and have a healthy diet and good appetite. Qualitative research has indicated that parents, especially those from low income families, describe overweight children as solid or thick rather than obese! (He & Evans, 2007).

Parents' influence, peer pressure, publicity and self-image among other factors should be taken into consideration when developing strategies to confront the complexity of causes overweight and childhood obesity. Furthermore, The children showed limited knowledge concerning aspects of nutrition. Brazilian studies confirmed that the concepts of eating habits and nutrition provide out of date and incomplete information concerning the role of diet in the prevention of obesity and chronic illnesses and that there are great gaps in this area of education (Triches & Giugliani, 2005).

Schools can be an effective and efficient medium to influence the health of school children, findings of this study showed that the nutrition education intervention produced significant improvements in nutrition knowledge, attitude and practices among primary school children. Similar findings were reported in other studies. Also demonstrated that the change in nutrition knowledge is concomitant with changes in dietary attitude and behaviors in the intervention group but not in the comparison group. This finding indicates that nutrition knowledge is integral to the achievement of healthful dietary behaviors and consequently in the improvement of diet quality (Raby et al., 2005).

When we talk about maternal nutrient attitude, a study conducted by Crow & Golan (2004) and showed the practicing authoritative rather than controlling parenthood might contribute to mothers ability to maintain a healthier environment. One of the main objectives of the mothers only group was to enhance authoritative parenting style to improve mothers ability to create a healthy environment in the house and support their child's autonomy and self-esteem. Moreover, fruit consumption and fruit specific cognitions were most favorable among children's who were being raised with an authoritative parenting style. In addition mothers pressure to eat fruit and vegetables discouraged intake among young girls.

Mothers who considered healthy diet preparation as an extra workload could be expected to prepare less of traditional meals. Only 12% of the subjects surveyed considered convenience as one of the three most important factors. While another study found that working mothers in particular those of high and intermediate occupational levels agreed to a greater extent that healthy food was an extra workload. These mothers spend less time at home and find it more difficult to prepare a healthy meal and consequently perceive it as a time-consuming burden. With the worldwide increase of women's labor force participation rates, redistribution of domestic tasks between husband and wife may help improve child nutritional problems (Kourlaba & Panagiotakos, 2009).

When talking about the gap between mothers and childrens and misjudgment among the nutritional knoweledge, Iranian study conducted by (Abdollahi et al., 2008) showed that the mothers claimed that children knew little about nutrition although the children's results showed their general knowledge and attitude regarding nutrition was relatively satisfactory. This misinterpretation by the mothers is probably due to the generation gap: mothers may still assume the general knowledge of their children is similar to their own childhood knowledge.

These results of Mirmiran et al. (2007) study showed that reveal a gap between knowledge and behavior in Tehranian adolescents, as reported in other countries. Findings from a study on Tehranian adults also indicated a sizeable gap between nutritional knowledge and behavior. More than half of the adults were residents of east Tehran and had moderate knowledge, whereas desirable practice was seen in only a quarter of them.

An interesting study in Korea by Lin et al. (2007) that was conducted to find out the relationship between KAP of healthy eating and its effect on the selection of healthy food consumption of students in elementary grades, the results showed, a gap was found between nutrition knowledge, attitude and eating practices, especially fruit and vegetable consumption. Furthermore, the attitude toward consumption for healthy food was not strong in this age group. Future nutritional education for school children should not only contain food serving requirements of food categories, but also apply suitable theories to increase the motivation for healthy consumption of food.

On the other hand, nutrition knowledge had no significant relationship with dietary practices among pupils in primary schools in this study. This implies that even though study children had some level of knowledge on the effect of an unhealthy diet on their health, they still continued to consume unhealthy diets. This finding is similar to that of another study which found poor diet- ary practices even among children with good nutrition knowledge (Abdollahi et al., 2008).

Not only parents who play a crucial role in altering an attitude, but nutritional interventions in primary schools to be successful need to be the following: A nutrition-based curriculum offered at school by trained teachers generally improved behavioral outcomes. A physical activity program and parental component were associated with most of the best practice clinical and behavioral outcomes. Furthermore, all best practice studies were grounded on a firm theory of behavior, such as social cognitive, social marketing, or stages of change.

Most of the interventions that included a food service component had best practice behavioral outcomes. (Steyn et al., 2009).

Study constructed by Ogden & Alderson (1999) the results showed that mothers feed their children significantly more sweet products (both more and less healthy), more of the less healthy bread, cereals, and potatoes, more of the less healthy dairy products, and more of the healthier meat, fish, and poultry products than they feed themselves. In addition, they tended to feed themselves significantly more of the healthier bread, cereals, and potatoes, more of the healthier dairy products, and more of the less healthy meat products. In terms of the overall scores, the results showed that mothers feed themselves significantly more healthy foods than their children and they feed themselves significantly less of the less healthy foods. The results showed that mothers did not differentiate between the Description of subjects themselves and their children for either healthier or less healthy fruit and vegetables.

The findings from Dehghan et al. (2005) study indicated that most of the parents were aware of healthy nutrition and the benefits of physical activity for their children and did not see being overweight or obese as a barrier to physical activity. Most of them were quite confident in their ability to deliver healthy nutrition to their children. Although it is important to further educate parents regarding childhood obesity and its health consequences, there is an urgent need for multicomponent commercial and social activities including integrated nutritional and physical activity such as non-competitive sports in the school curriculum and increasing time for physical activity.

Frequency of family mealtimes is possible a marker of other individual and family processes that are linked with possibility for weight problems. For example, children who consume meals with their families eat more healthy foods. Furthermore, patterns of (parent and child) interaction surrounding meals and food contribute to children's increasing nutrition attitudes and beliefs (Lambert et al., 2004).

According to developed the competence Model by Satter (2007) outlines an inclusive definition of the interrelated spectrum of eating attitudes and behaviors. The model is predicated on the utility and effectiveness of bio psychosocial processes: hunger and the drive to survive, appetite and the need for subjective reward, and the biological propensity to maintain preferred and stable body weight. Competent eaters have positive attitudes about eating and about food, food acceptance skills that support eating an ever-increasing

variety of the available food, internal regulation skills that allow intuitively consuming enough food to give energy and stamina and to support stable body weight, and skills and resources for managing the food context and orchestrating child's meals and prevent many problem associated with intake of food.

A cross-sectional study through multistage stratified random sampling technique, where 120 children and their parents were chosen to participate in completing the questionnaire, to assess the correlation between the knowledge, awareness and practices of healthy food and the impact on their children, after analyzing the results, there was no significant correlation between the nutritional knowledge of the parents and the nutritional practices of the children ($P>0.05$), while there was a significant correlation between the knowledge of parents and eating healthy food for their children ($r = 0.222$; $P < 0.05$). Whereas there was significant association between children's nutritional practice and their weight. Also, the study indicated that there is a significant correlation between the social degree of the parents and the nutritional behavior on their children, in addition to that, there was a significant correlation between the degree of mother's education and nutritional practices by their children ($\chi 2 = 15.3$ and 14.6; $P = 0.018$ and 0.023, respectively) (Salama et al., 2014).

According to intervention study conducted by Sahota et al. (2001) the focus groups supported the sense that the program had had an effect at school. The children who had participated in the project readily and enthusiastically recalled the activities in which they had been involved. These children also scored higher than did children who had not yet received the program in terms of knowledge of healthy eating, physical activity, and links between diet and health including obesity. They also attained higher scores for self-reported behavior change

Finally, it is important to improve the study of childhood obesity from a systematic perspective and to extend this analysis to other aspects of the complex family picture to prevent ovenveight or to maintain body weight within reasonable limits to avoid more serious complications. Further research must, however, assess such associations in a wider sample of the population and examine means whereby estimates of internal consistency can be improved to a satisfactory level. More generally, the present data suggest it is important in therapy with obese children that there be psychotherapy together with dietary treatment and that the therapy involves the mother with the goal of modifying the relational dynamics if possible (Trombini et al., 2003).

2.2.2 Life style

Because of the rapid increase in childhood obesity globally over a relatively short period of time, several researchers have focused on the association between lifestyle factors and the development of obesity (Sekine et al., 2002).

Palestinians peoples have been subject to a number of changes in their lifestyle during the past decades. Some of these are part of larger changes affecting the whole region, such as the undergoing transition in health and lifestyle. Food consumption patterns have changed to a more 'westernized' diet with high intake of foods rich in fat, cholesterol, free sugars and sodium and low in dietary fiber. Other nutritional changes that have occurred are unique to the Palestinian political situation, such as those caused by border closure policy which has affected households' economies and hence their access to and ability to purchase food. In becoming refugees; many Palestinians lost access to their traditional food bases which was characterized by a high-fiber content and was low in fat and cholesterol. In addition, the close attachment to the Israeli economy, the links to the global market, and the flow of donations given to refugees are important elements of these dietary changes. About two thirds (71.8%) of the Gaza population receive food assistance from the humanitarian community mainly from United Nations Relief and Works Agency (UNRWA) and World Food Program (Abudayya et al., 2009).

These developments notwithstanding, it is still likely that the need to modify eating and physical activity behavior will be important, and developing a better understanding of behavior change may be crucial to each of these areas. For example, in most cases, genetics is believed to provide a predisposition to become obese, but this predisposition requires an environment that interacts with the genetic predisposition to increase the probability of obesity. A good example of this is the Pima Indians, who often serve as a model for the study of genetics and obesity or diabetes. When the Pima Indians live on reservations in Arizona, they have an extraordinary prevalence of obesity, together with high rates of diabetes. When Pima Indians live in Mexico and have physically active lifestyles as farmers, however, they have a low prevalence of obesity, demonstrating that it is the interaction between genetics and the environment as the cause of obesity. Behavior is important even in situations in which genetics is known to be the cause of a disorder (Roemmich et al., 2004).

According to a study conducted by Flodmark et al. (2005) and showed the learning to adopt a healthy lifestyle, comprising of diet and exercise, during childhood is more easily incorporated into daily adult life than attempting to change later. A program used in clinical practice covers both of these aspects. The early treatment prevented progression to severe obesity in a group of obese school children. Furthermore, this treatment program has also been shown to have significant effects when used on a larger scale at a tertiary referral center covering a population of 1.3 million inhabitants. Finally, the new possibilities provided by ongoing research in the field of genetics, combined with indications of better results by preventing obesity in childhood, might give us greater opportunities of controlling the ongoing childhood obesity. It is important to help the patient to change the lifestyle.

An evidence based position statement of the American dietetic association supports the utility of family based lifestyle interventions in children and of similar multicomponent programs for adolescents. These recommendations are consistent with the conclusions of an evidence-based review of pharmacological interventions for childhood obesity that high- lighted the importance of concomitant intensive lifestyle interventions for both dietary, exercise (August et al., 2008).

Lifestyle intervention is recommended as the primary treatment for childhood obesity. However, the long term outcomes of lifestyle interventions for childhood obesity carried out in a clinical-practice setting have varied widely. Moreover, Successful lifestyle interventions are frequently based on behavioral therapy, including impulse control techniques, self-instruction, cognitive restructuring, development of problem-solving strategies, behavioral contracts, booster systems, self-reflection curves and model learning via parents. The effectiveness of behavioral therapy approaches for childhood obesity has been proven in several RCTs and meta-analyses. In the past few years, interventions for children with obesity have moved on to include systemic and solution-focused theories as well as family therapy. Therapists should be neutral and adopt a non-blaming position. Instead of focusing on un-favorable behavior habits, strengths should be encouraged. Furthermore, prohibitions should be avoided (Reinehr et al., 2013).

In the early 1970s, evidence increasingly showed that a structured lifestyle modification programme, combined with behavioral strategies, was associated with a significant reduction in body weight and a reduced incidence of a rebound in weight gain among

children. Researchers thus moved from stressing weight reduction to promoting a lifelong health focused lifestyle (Chan et al., 2013).

Changing model for lifestyle to treating obesity suggesting that large changes in weight will accumulate indefinitely in response to small sustained lifestyle modifications rely on the half century old 3500 kcal rule, which equates a weight alteration of 1 lb. (0.45 kg) to a 3500 kcal cumulative deficit or increment. However, applying the 3500 kcal rule to cases in which small modifications are made for long periods violates the assumptions of the original model, which were derived from short-term experiments pre- dominantly performed in men on very low energy diets (<800 kcal per day). Recent studies have shown that individual variability affects changes in body composition in response to changes in energy intake and expenditure, with analyses predicting substantially smaller changes in weight (often by an order of magnitude across extended periods) than the 3500 kcal rule does. For example, whereas the 3500 kcal rule, predicts that a person who increases daily energy expenditure by 100 kcal by walking 1 mile (1.6 km) per day will lose more than 50 lb. (22.7 kg) over a period of 5 years, the true weight loss is only about 10 lb. (4.5 kg), assuming no compensatory increase in caloric intake because changes in mass concomitantly alter the energy requirements of the body (Casazza et al., 2013).

The mainstay of obesity treatment is life-style change, and providers who can use counseling techniques to motivate families, guide parents' inconsistent limit-setting and reinforcement techniques, and identify and address family conflicts that interfere with change will likely be most successful in helping families (Barlow & Dietz, 2002).

According to review of the available literature about life-style change that constructed by Steele et al. (2012) the results showed the expert committee identified strategies with consistent evidence supporting their efficacy including, structured dietary and physical activity changes to yield a negative energy balance, life-style modification techniques to support these changes, involvement of the family in lifestyle changes, parental participation in therapy, and finally frequent contact with the treatment team.

Changing lifestyle easy in childhood rather than adulthood which is more difficult. Interventions targeting lifestyle modification should be addressed to both the child and the parents. Childhood obesity often continues with adult obesity and its related chronic diseases and dangerous disability. The difficulties in treating obesity in the adult are well known, therefore an intervention in childhood should be easier to deal with. The

family role in shaping the children's lifestyle may achieve better results if focused on the parents' practices in early childhood (Puia & Leucuta, 2017).

Successful lifestyle interventions are frequently based on behavioral therapy, including impulse control techniques, cognitive restructuring, self-instruction, behavioral contracts, booster systems, development of problem-solving strategies, self-reflection curves and model learning via parents. The effectiveness of behavioral therapy approaches for childhood obesity has been proven in some meta-analyses and RCTs. In the past years, interventions for childhood obesity have moved on to include systemic and solution-focused theories as well as family therapy. Therapists should be neutral and adopt a non-blaming position. Instead of focusing on un-favorable behavior habits, strengths should be encouraged. Moreover, prohibitions should be avoided (Thomas et al., 2009).

Recently study conducted on women in the GS, the result showed a healthy lifestyle even in the physical activity or feeding pattern can prevent most chronic diseases furthermore obesity (Marwan O et al., 2018).

Successful weight maintenance is associated with reaching to having a physically active lifestyle, a regular meal rhythm including breakfast and healthier eating, control of over-eating and self-monitoring of behaviors. Weight maintenance is further associated with an interior motivation to lose weight, social support, better coping tactics and ability to handle life stress, autonomy, self-efficacy, assuming responsibility in life, and generally more psychological strength and stability (Elfhag & Rössner, 2005).

2.2.2.1 Diet

Binge eating should be avoided. Binge eating means eating large meals without control, eating despite fullness or eating without hunger. Binge eating is not only harmful to health but also leads to obesity. High fat night meals intake also should be avoided. Short term food intake regulation is readily overcome by sudden increase of energy dense food, especially during the night. High fat intake in the night meals allow no compensatory adjustments until the next day, a great risk to become childhood obesity (Stunkard et al., 2003)

The results of this study revealed that the food frequency consumption patterns of adolescents in the Gaza Strip depended on SES. The poor consumed the foods included in the frequency list less often. A similar study from 2004 that adolescents in the Gaza Strip

consumed less frequently fruit, meat, chicken, sweets and soft drinks, but more frequently vegetables than their counterparts in the West Bank (Abudayya et al., 2009).

Childhood obesity might be aggravated by the increased intake of Sugar-sweetened beverages. Many studies reported that sugar-sweetened beverages provided little nutritional benefit and the consumption of sugar-sweetened beverages that causes weight gain was due to the low satiety of liquid carbohydrates, thus resulting in incomplete compensation of energy at subsequent meals. They concluded that the consumption of sugar-sweetened beverages, particularly among children and adolescents, should be discouraged (Malik et al., 2006).

Fruit juices are considered as healthy beverages and consumed in high quantities among children. Longitudinal studies on fruit juice intake showed no influence on weight gain. However, others studies showed that there is a positive link between fruit juices and obesity. A study reported that consumption of ≥12 L oz/day of fruit juice by children aged 2-5 years was associated with short stature and with obesity. They also found that the effects were probably due to the high content of fructose (13.9 g/8 oz serving) and sucrose (4.2 g/8 oz serving) in the apple juice. Their results were consistent with those indicating the particular role of fructose and sucrose in adiposity (Bray et al., 2004).

Studies found that milk and dairy products were effective in weight control and milk has long been considered as an essential beverage for children because it contains nutritive proteins, calcium and vitamins A and D. There is a claim that two servings of milk intake per day could reduce the risk of overweight by up to 70%. However, the effects of milk and dairy products on weight are controversial. The dairy calcium might promote weight loss, whereas estrone and whey protein might cause weight gain (Berkey et al., 2005).

Fast food consumption is associated with lower dietary quality, fast food consumption would lead to higher energy and fat intake but lower intake of healthful nutrients such as vitamins, milk, vegetables and fruits. Another study results found that fast food consumption among children might affect dietary quality that could plausibly increase the risk of obesity (Nicklas et al., 2001).

Vegetables and fruits have been recommended to prevent obesity because of their low energy dense, high water and fiber content. The percentage of overweight in families with increased vegetables and fruits consumption was significantly lower than that in those with decreased high fat or high sugar consumption. The inverse association between vegetables

and fruits intake and pediatric obesity was also reported (Field et al., 2003). Longitudinal study, overweight children aged 6 to 13 years with higher vegetables and fruits intake were less likely to remain overweight during the experimental years, compared with those with lower vegetables and fruits intake (Wang et al., 2003).

Over consumption of dietary fat mainly triglycerides from foods or cuisines can lead to obesity. Since the rate of obesity in adults and children is increasing, dietary fat should be reduced to balance energy consumption and energy needs, and there is a special need for fat modified food (Lichtenstein et al., 1998).

Dietary fiber is beneficial for energy intake control and reducing the risk of obesity to both adult and children. The physical and chemical properties of dietary fiber are effective in promoting satiation while prolonging signals of satiety. Dietary fiber could prevent excessive food intake and fat deposition by decreasing the caloric density of diet, slowing the rate of food ingestion, increasing the effort in eating, promoting intestinal satiety, and interfering slightly with the efficiency of energy absorption. The recommended dietary fiber consumption for children is about 14 g/1000 Kcal. Dietary fiber comes from a variety of sources, such as vegetables and grains (Anderson et al., 2009).

Breakfast is the most important meal in a day. Breakfast skipping is unsuitable for weight control. Several studies showed children who skip breakfast have higher BMI or weight gain than those who have regular breakfast. On the contrary, maintaining a good breakfast habit can not only receive adequate nutrition but also reduce the risk of obesity. Therefore, a daily breakfast containing a variety of foods, especially high dietary fiber, fruits, and dairy products is recommended (Rampersaud et al., 2005).

Eating while watching TV usually leads to more energy intake eating high energy dense snacks and drinking sugar sweeten beverages and less energy expenditure sedentary position (Dietz et al., 2001).

Changes of the 20th century which included the industrial processing of food, the spread of fast food culture, the use of automobiles, the introduction of radio and television broad casting, TV viewing has an additional effect through food and drink advertising that also affects food intake and childhood obesity rates and weight gain in general, the increasing labor force participation of women, and the information technology revolution. Combined with increasing affluence, these developments reinforced one another and led to the cultural transformation associated with the postindustrial nutritional revolution and a

sedentary lifestyle. For example, the share of food expenditures spent on eating outside of the home increased from 24% in 1950 to 45% in 1995 (The per capita number of fast food restaurants doubled between 1972 and 1997), and the dense calories food available for consumption increased by some 20% in the late 1980s and 1990s (Komlos et al., 2009).

2.2.2.2 Physical activity

The energy spent on physical activity depends on the type and intensity of the physical activity and on the time spent in different activities. Physical activity is often considered to be synonymous with muscular work which has a strict definition in physics, (force x distance), during which external work is performed on the environment. During muscular work (muscle contraction), the muscle produces 3 – 4 times more heat than mechanical energy. There is a wide variation in the energy cost of any activity both within and between individuals. The latter variation is due to differences in body size and in the speed and dexterity with which an activity is performed. In order to adjust for differences in body size, the energy costs of physical activities are expressed as multiples of basal metabolic rate (Kopelman et al., 2010).

Sport exercise sessions to progress physical activity have been recommended to numerous years as components for lifestyle interventions, and the purposes are to progress self-confidence hopeful results for date, moreover, telephone training was not linked with alterations at BMI within children who have obesity, and the large majority of effective lifestyle interventions to the obesity of children were performed as collection therapy (Nguyen et al., 2013).

Study conducted by Moore et al. (2003) and confirmed a strong protective effect of physical activity on the long term change in body fat during childhood. Although some earlier studies have also found a protective effect of activity on the development of obesity at various time periods during childhood, this is the first study to demonstrate the effects of physical activity on change in body fat from preschool to early adolescence. By age 11, the most active children in this study had lower BMIs and much less subcutaneous fat, as measured by skinfold thicknesses, than did children in the lower two activity categories. Furthermore, adiposity rebound occurred at a later age for the most active children, perhaps further reducing their risk of obesity later in life.

Physical activity has been associated with decreased childhood obesity among children and adolescents. Sedentary behavior and time spent watching TV, the most studied form of

sedentary behavior have been associated with increased childhood obesity. Since TV viewing has been associated with unhealthful dietary behaviors, such as increased consumption of soda, fried foods and snacks, the relationship between TV viewing and increased adiposity could be a function of poor dietary choices while watching television (Jago et al., 2005).

A recent study reported a prevalence of overweight or obesity of 18% among children in Sweden, the BMI of 5 and 10 year old children has increased over time among both girls and boys. The increased prevalence of obesity is probably due to decreased physical activity and increased energy intake, especially of sugar and fat. Obesity in childhood is not only a risk factor for adulthood obesity but also for diseases such as diabetes. Prevention of obesity requires changes in lifestyle, changes should probably be implemented early in life (Young et al., 2007).

In same direction about the important of physical activity for the children. The involvement of children in the uniform of physical activity has appeared as a remarkable health structure, given its positive impacts on the health of bone, and risk factors of cardiovascular, skeletal muscle system and well-being status. Furthermore, compelling information have well reported that elevated physically exercise activity at early childhood period may be linked by a reduced risk of obesity also being overweight, also, the existing physical activity guidelines to childhood period recommend that every child at least performs 60 min per day of mild-to-strong physical activity (MSPA) (Janz et al., 2007; Strong et al., 2005)

About rebound obesity, interesting study conducted by Janz et al. (2009) examined the association between early physical activity and later fatness during childhood. It provided evidence that early physical activity affects later fat mass. The effect was somewhat stronger in boys, given that significant associations persisted after adjusting for fatness at age 5 years. Moreover stronger relationship in boys compared to girls with respect to objective measures of moderate to vigorous physical activity (MVPA) and fat mass. Importantly, this report's regression analysis indicated that early physical activity predicted later fat mass even after adjustment for concurrent physical activity. This finding lends support to the hypothesis that there is a pathway between early physical activity and later fat mass that is independent of the effect of accumulated physical activity. Physical activity at an early age may influence the physiologic mechanism of fat accumulation during growth so that early physical activity may have a sustained effect on the fatness phenotype

later in life. These findings also suggest that children who are less physically active at an early age may be more susceptible to fat accumulation later in childhood.

A controversial study came about physical education and conducted by Casazza et al. (2013) showed there has not been to reduce or prevent obesity!. Findings in three studies that focused on expanded time in physical education indicated that even though there was an increase in the number of days children attended physical education classes, the effects on BMI were inconsistent across sexes and age groups. Two meta-analyses showed that even specialized school based programs that promoted physical activity were ineffective in reducing BMI or the incidence or prevalence of obesity There is almost certainly a level of physical activity a specific combination of frequency, intensity, and duration that would be effective in reducing or preventing obesity. Whether that level is plausibly achievable in conventional school settings is unknown, although the dose response relationship between physical activity and weight warrants investigation in clinical trials.

2.2.3 Socio-economic status

The need for evidence is especially pressing in low and middle income countries facing both a growing burden of non-communicable diseases and severe resource constraints that keep them from applying some of the strategies pursued in high income countries. Even within high income countries, socioeconomic disparities and other factors known to be associated with health inequities might, in some cases, contribute to differences in intervention efficacy (Eh et al., 2020).

The prevalence of childhood overweight and obesity has been increasing at an alarming rate throughout the world. A previous study estimated that 23.8% of boys and 22.6% of girls in developed countries and 12.9% of boys and 13.4% of girls in developing countries were overweight or obese in 2013 (Wu et al., 2015).

The high frequency of obesity among refugees in the occupied Palestinian territories could be related to a lack of attention to healthier life-styles, including good nutrition and exercise. However, in fields such as Gaza the lower consumption of certain foods could also be influenced by the limitations imposed on movement of people and goods that account for a poorer choice and higher prices in food markets (Mousa et al., 2010).

There are numerous societal barriers to healthy body weight for children, such as lack of access to markets or retail stores that sell healthy foods, targeted advertising of unhealthy foods, and poor walkability in residential neighborhoods. Because of the inherent

relationship between these barriers and individual factors such as race, ethnicity, and SES, individuals from low income households for parents and racial and ethnic minority groups are disproportionately affected (Schroeder et al., 2015).

Cultural influences such as preparing and eating traditional foods can be a protective influence on childhood obesity, as can eating together as a family. The risk of childhood obesity due to an obesogenic environment is not culture specific, rather income related, affecting children from low income families to a greater degree (Chatham et al., 2019).

Cultural attitudes and practices related to body image may influence behavior in relation to obesity. Relevant variables include body image and body size norms and concerns, attitudes and norms about dieting to lose weight, norms about overeating, attitudes and practices related to pregnancy weight gain, physical activity preferences and norms, concepts of social status, for example having a car, and social cultural history or current experience with hunger and deprivation (Kopelman et al., 2010).

Disparities and inequities exist within countries, but the extent varies among countries. The most notable within country disparity or inequity gradient is related to the organized sport participation indicator. Because participation in organized sport often requires resources like as registration fees, equipment, and travel to participating, it is more susceptible to socioeconomic or geographic (rural or urban) gradients. Such gradients were noted in several report cards. Most countries also reported a gender bias favoring boys in organized sport participation. International and cultural variation in gender roles and expectations complicate the transferability of interventions to help level the playing field between genders (Tremblay et al., 2014).

The socioeconomic status (SES) and childhood obesity is significantly inversely associations with mothers' education, indicating that education is more than a marker for parental overweight and probably exerts an independent effect on adiposity. Other covariates appeared to have a lesser effect on the SES childhood obesity association. The inverse association persisted for maternal education, suggesting it confers additional explanatory power beyond higher paternal education. This is consistent with the idea that mothers have more influence than fathers on children’s behaviors (Shrewsbury & Wardle, 2008).

According to Gebremariam et al. (2017) Parental BMI mediated the association between family SES and risk of overweight for children. TV in bedroom and TV time mediated the association between family SES score and BMI percentile (16% of effect mediated).

Early dietary patterns at 6 and 15 months of age were found to be associated with socio-demographic characteristics in a longitudinal study of children in the United Kingdome. A socioeconomic gradient has also been reported in child diet and television viewing with evidence that maternal diet and home television environment are key mediators. While less is known about the mediators of the relationship between Indigenous status and obesity in children, predictors of child obesity, including lower breastfeeding rates, poorer diets and sedentary behaviors are more prevalent amongst Indigenous children. This suggests that children from socioeconomically disadvantaged and indigenous families have a higher exposure to an obesity promoting environment and may benefit from interventions promoting healthy behaviors early in life. It is also likely that these groups will require obesity prevention interventions tailored to the specific barriers faced by these families (Laws et al., 2014).

Social traits define!. Controversial study results showed that the proportion of overweight characters had declined in recent decades, while the prevalence of underweight characters had increased. In addition, socially desirable traits were associated with thinness and socially disapproved traits were associated with being overweight. Specifically, overweight characters were far more likely to be obese as unattractive, unintelligent, and unhappy than their normal weight or underweight counterparts. Overweight characters were also more often shown eating junk food and engaging in physical aggression, and not classified as a good guy compared to thinner characters (Heuer & Puhl, 2009) .

Children exhibit a negative height income interaction effect on BMI and obesity such that the inverse association between income and BMI or obesity is larger in taller children. This interaction seems to be most prominent in male groups. Contemporary adolescents exhibit such an interaction effect on obesity but not BMI and the effect is not as large as in children. This interaction seems to be reflective of white males. These results suggest that although all children in the US have experienced gains in height and body mass over the past 40 years, physical growth at lower incomes has been somewhat distinct from that at higher incomes. The catch-up in height of lower-income children has been accompanied by disproportionate gains in body mass and may have contributed to a contemporary situation

where lower-income youth of greater stature are at higher risk for obesity relative to their higher-income counterparts. (Murasko, 2011).

Socio-economic change has different effects on childhood obesity according to environment and gender, study conducted by Due et al. (2009) and founded inverse social gradients in overweight in almost all high income countries, consistent with findings from several national and one international study. The unexpected lack of inequality in adolescent overweight in England observed in this study, may be because of a large number of English students with missing information on BMI (41%). For middle income countries, social gradients in adolescent overweight shifted. In 4 of 10 middle income countries, we found negative associations between family affluence and overweight for both sexes, as seen in high-income economies. In three middle income economies, we found positive associations between family affluence and overweight in both sexes, and in the three middle income countries with the lowest average income, there was a negative association between family affluence and over weight for girls, whereas a positive association was seen for boys.

Although economic status is one of the important mediators for childhood obesity, the race is almost significant when we talk about the effect of SES on the childhood obesity, not all low SES groups were at increased risk of overweight. Considerable racial, sex, and age differences existed. Previously, it was a widely accepted perception that high SES groups in the United States and other industrialized countries are less likely to become overweight than are their low SES counterparts. In general, the findings indicate that a reverse association only existed in white children, not in black children and adolescents. In whites, such a reverse association existed only in girls, not in boys. In blacks, there is a strong positive association (Youfa & Wang, 2012).

Even though SES effect on the durations of breastfeeding, maternal emotional behavior were both implicated in the association between breastfeeding and BMI. Adolescents with mothers who displayed a greater frequency of maternal dysphoric behavior had significant inverse associations between duration of breastfeeding and BMI. Adolescents with mothers who did not display a high frequency of dysphoric behavior did not show a strong association between breastfeeding and BMI. It is possible that high levels of maternal dysphoric behavior, observable into adolescence, may exacerbate the effect of a shorter duration of breastfeeding on weight by increasing overall stress in family environments

and interactions between family members, Furthermore, higher SES was associated with a longer duration of breastfeeding, which, in turn, was associated with a lower BMI score in adolescence. This is consistent with research showing that low SES and high adolescent BMI are associated and points to new evidence that a shorter duration of breastfeeding may be partially responsible as a mediator for this relationship (Byrne et al., 2017).

Returning to the economic situation, obesity remains a burden in poor societies the newer studies conducted in developing countries is an inverse relationship between high SES and obesity, with indications that the relative excess of obesity among lower SES groups tends to increase with increases in a country's gross national product. In conjunction with this finding, a joint analysis of national cross sectional data gathered on women of reproductive ages from 37 developing countries showed that the association between obesity and SES is substantially modified by a country's gross national product. A gross national product of $2500 per capita has been shown to be the trigger level at which obesity begins to be more common among the poor than among the rich (Monteiro et al., 2007).

Accessibility to the healthy food important for prevent childhood obesity, self efficacy, social norms, and gardening skills helped change student knowledge about and intent to eat vegetables. And, importantly, demonstrated commitment by school personnel can amplify changes in gardening skills, especially in lower income communities. Childhood obesity disproportionately affects those with fewer economic resources. School gardening programs in inner city schools increased students' life skills, knowledge of and confidence in their ability to make healthy choices surrounding fresh produce. Moreover, gardens can provide alternative access to fresh produce, especially in urban areas that may lack full service grocery stores. Locating gardens on school grounds may provide students, teachers, and communities with connections to produce and offer opportunities for learning new skills, developing new preferences, and changing social norms. However, school garden programs appear to provide less effect in communities where gardens and grocery stores are more readily available and households have more resources and choices available to them. (Roche et al., 2017).

On the other hand when we talking about food insecurity, childhood obesity was significantly associated with personal food insecurity for children aged 6 to 11 years, but not in children aged 2 to 5 years. However, child-level food insecurity was not associated with obesity among 2 to 5 year olds or 6 to 11 year olds (Mhs et al., 2015).

Childhood obesity one of the most outcome in the under developing countries!. Higher risks of overweight and obesity in children with lower SES in developed countries may be related to less access to healthy food and to safe exercise, less interest in weight control, cultural standards of physical effectiveness, and discrimination against socioeconomic advancement, and insufficient food supply is rare even in families with low SES. However, situations were different in developing countries and less economic developed areas, where malnutrition and opulence co-exist, food availability remains a daily challenge in populations with low SES and overweight is subsequently perceived as a sign of weath. These factors may explain why increased risks of childhood overweight and obesity associated with lower SES were only found in high income countries and in more economic developed areas. (Lim & Youfa, 2012).

Study conducted by Wu et al. (2015) showed the SES has been described as inversely related to obesity in adulthood. Findings further suggest that low SES is associated with a 10% higher risk of overweight and a 41% higher risk of obesity in children aged 0–15 years. However, according to the subgroup analyses by income level of countries, this relationship was only found in high income countries. In addition, subgroup analyses by geographical areas showed that children with low SES had higher risks of overweight and obesity only in North America, Europe and Oceania, and the included studies conducted in these areas were all from economic developed countries with high income level. Thus, we concluded that the increased risks were independent of the income levels of countries. Previous studies indicated that overweight and obesity tended to affect more people from a low socio-economic background in developed countries rather than in developing economies. This relationship has been further confirmed in children in this study result (quantitative analyses).

Children from low SES suffer from a lack of physical activity, because the families with low SES live in slums where they do not have any place to practice physical, furthermore live in unsafe neighborhoods and do not allow their children to play in these neighborhoods, additionally parents work long hours outside the home therefore do not find enough time for their children to exercise or make any physical activity (Chatham & Mixer, 2019).

According to cross-sectional study multistage sampling conducted in the GS, and introduced 357 mothers at the age of 18-50 years to assess the relationship between the obesity prevalence among women and the SES, where the prevalence of obesity was 57% in urban areas, 67% in villages, and 66.8% in refugee camps. The socioeconomic situation of the household and birth order of the child appear to be important predictors of the dual burden of malnutrition. That highlights the importance of having effective strategies within families, focusing on nutrition education and effective guidance to help parents promote caring and proper eating patterns among their children. (El Kishawi et al., 2014).

Another cross-sectional study, a study was conducted to estimate the relationship of the prevalence of malnutrition with socioeconomic status, where the study was conducted on 1022 students, the children who suffer from underweight 7% while girls who suffer from underweight were 5.3%. and the prevalence of obesity in boys was more than girls 5.9% and 4.9%, respectively, and the rate of overweight among girls 20.2% and 15.4%, respectively. Prevalence of overweight among girls was more when their mothers had a high educational status. Also, direct relationship between the prevalence of weight gain among girls and unavailable housing areas. Moreover higher association between the prevalence of overweight among girls with employment status of parents (23.1% vs 17.1%, P = .08), but within boys, the economic status of the family only was the significant effect (Abudayya et al., 2007).

2.2.4 Sleep

Sleep like physical activity and diet, serves an important role in the growth, maturation, and health of the child and adolescent by allowing for the diurnal rhythm of hormones related to growth, maturation, and energy homeostasis. There is increasing epidemiological evidence suggesting a link between sleep duration and obesity in children and adolescents. Sleep deprivation could influence the development of obesity through several possible pathways including increased sympathetic activity, elevated cortisol and ghrelin levels, decreased leptin, and impaired glucose tolerance (Eisenman, 2006).

Over the last century there has been a secular decline of 0.75 min per year in children's sleep duration. Even the recommended sleep duration has become shorter during the last decades. During the same period of time, a dramatic increase in the prevalence of obesity has been observed in both children and adults. However, the causative relationship between these two factors is still uncertain (Felső et al., 2017).

In large pediatric populations, observed that, sex and independent associations between sleep and leptin. Chronic sleep curtailment in infancy and childhood was associated with lower leptin at age 7 years only in females, especially those with greater adiposity (Boeke et al., 2014).

Additionally study conducted by Cappuccio et al. (2008) about association of sleep and childhood obesity, and the results show an association between sleeping ≤11 hours per night compared with sleeping ≥12 hours per night and overweight for 4–8 years old boys. The results also show an association between sleeping ≤10.25 hours per night compared with sleeping ≥11.25 hours per night and overweight for 9–13 year old boys and girls. These associations are stronger for boys than for girls and stronger for older boys than for younger boys.

According to amazing study founded that, habitual sleep duration below 7.7 hours was associated with increased BMI, including children, adolescents, and adults. Furthermore there are significant association of sleep duration with leptin and ghrelin that is independent of BMI, sex, age and other possible confounding factors. Short sleep duration was associated with decreased leptin and increased ghrelin, changes that have also been observed in reaction to food restriction and weight loss and are typically associated with increased appetite. These hormone alterations may contribute to the BMI increase that occurs with sleep curtailment (Lin et al., 2004).

Another meta-analysis suggests that sleep duration is inversely associated with later BMI in children and adolescents. Children and adolescents who sleep for a shorter duration have approximately twice the odds of overweight and obesity compared with those who sleep for a longer duration. The strength and direction of this prospective association between short sleep and overweight and obesity remained robust even after bias adjustment, and also remained robust to sensitivity analyses. (Fatima et al., 2015).

Although sleep duration has a strong relationship with childhood obesity, epidemiologic studies have demonstrated connections between sleep duration and diet!. Sleep deprivation can modify dietary choices, and reduced sleep duration has been associated with both metabolic disorders and the increased prevalence of obesity. Adequate sleep is positively associated with health-related behavior such as adopting a healthy diet. These associations have been shown in children, adolescents, and adults. Those who sleep less are more likely to consume energy-rich foods, get higher proportions of calories from fats or refined

carbohydrates, consume lower proportions of vegetables and fruits, and have more irregular meal patterns and consume snacks more often than those sleeping more (Peuhkuri et al., 2012).

Additionally, sleep has an influence on meal patterns, but even the timing of meals may influence sleep. It is well documented that individual eating episodes are highly interrelated; thus, the timing of the previous meal and the resulting satiety largely determine the time and size of the following meal. The incidence and prevalence of skipping breakfast are typically higher in persons with low sleep duration than in those with normal sleep duration (Qin et al., 2003).

Low sleep duration is especially typical in subjects with nocturnal lifestyles who replace meals with snacks and who consume most of their food in the later evening and at night. Thus, they are not hungry in the morning and replace breakfast with an early morning snack. As a matter of fact, a regular habit of snacking is associated with a shorter sleep duration. Interestingly, a very long sleep duration is also associated with an unconventional eating rhythm. Because snacking is generally found to indicate a nutritionally poor and energy-rich diet, the observed association between meal patterns and sleep may, at least partially, be due to the quality of diet, that is, an absence of nutrients or excessive amounts of energy-rich foods. (Kim et al., 2011).

Physical activity was also associated with significant improvements in sleep rates and time, and on the other hand, there was inversely an association between screen viewing time and short average time of sleeping, also sleep not only were these health behaviors related to bedtime but sleep rates were also associated with overall health and obesity, regardless of these health behaviors (Chennaoui et al., 2015).

Encouraging children to enhancement the duration of sleep will decrease childhood obesity!. The recommendations of another study by Chen et al. (2008) for the treatment of obesity came to improve sleep duration for both children and adults, the prevalence of childhood obesity may be decreased by increasing sleep duration, independent of other risk factors for childhood obesity. Findings have some important public health implications for fighting the growing childhood obesity epidemic. A combination of strategies targeting both earlier bedtime and later wake time to increase sleep duration may help prevent childhood obesity. Desirable sleep behaviors may represent an important and relatively low cost strategy to reduce childhood obesity.

Even though the sleep is important mediator for childhood obesity, the hypothesized long sleep on children effect might operate at, for instance, 18 h of sleep per day, which very few children would be able to accrue. The U-shape pattern may emerge in adults as sleep need decreases; short sleep continues to cause obesity but long sleep is now also a viable risk factor for weight gain. This might be explained by a survival effect where those with excess weight who are more common at either end of the sleep duration spectrum are more likely to die than slimmer people. However, both long and short sleep have been shown to be an independent risk factor for mortality even after controlling for obesity (Marshall et al., 2008).

Sleep problems in the child stage may be cause adulthood obesity, Sleep disturbances in childhood affect the prevalence of obesity in adulthood this study showed that young adults' mean BMI and the prevalence of obesity were greater in those who had maternally reported sleeping problems during early childhood (ages 2–4 years) than in those whose mothers reported no sleeping problems at this age. Young adults who had frequent sleeping problems in early life were 1.90 times as likely to be obese by age 21 years as young adults who did not (Mamun et al., 2007).

The consumption of energy dense foods, changes in energy expenditure, increased insulin resistance, the basic difference in metabolic rates, as well as changes in dietary calories, and thermogenesis of non-sports activity, in addition to, poor daytime sleep in children is associated with the prevalence of overweight and obesity in children, so controlling sleep rates for adequate periods in children should be given the highest priority (Chen et al., 2008).

Another researcher studied young children who sleep less and shows that they have a significantly increased risk of having a higher BMI in middle childhood, even after adjustment for multiple risk factors that have been implicated in the regulation of body weight. Each additional hour of sleep per night at ages 3 to 5 is associated with a reduction in BMI of0.49 at age 7. In a child of median height, this corresponds to a difference of 0.7 kg body weight. While this might seem minor at an individual level, the benefits for public health, if applied at the population level are considerable. A shift in the population distribution for BMI implies a reduction in the occurrence of the extreme values or the prevalence of overweight. This study shows a 61% reduction in the risk of being overweight or obese at age 7 for each extra hour of sleep. Perhaps more importantly, these

differences in body weight are explained by an increased deposition of fat mass, with little difference in fat free mass between children with varying amounts of sleep (Carter et al., 2011).

2.2.5 Parental determinants (Smoking)

Parenting practices shape children's early experiences with food and eating; these child feeding practices may differ in the extent to which feeding is initiated by child cues, or by environmental cues, such as time of day. Feeding practices involve parental choices about which foods children are offered; when, how frequently and how much children are fed; and the social contexts within which feeding occurs (Birch et al., 2009). Moreover parenting practices are shaped by parents' own experience with food and eating, and by what is traditional in their cultural group. Parenting practices are responses to environmental threats to parental goals for children. A universal goal of parents across all cultures is to raise healthy children who are growing well. Historically, one of the main environmental threats to this goal has been food scarcity: food supplies were unpredictable, available food was unpalatable and lacking in variety, energy-dense, nutrient-rich foods were limited and conditions were unsanitary. Faced with this environmental threat, traditional feeding practices evolved that include feeding children frequently; offering large portions; offering preferred foods; offering food as a first response to crying or distress; and coercing children to eat when food is available, even if they are not hungry. Additionally, in a context where food is scarce, bigger is better; a plump, large for age child is a sign of child health and successful parenting (LeVine et al., 1988).

Single-parent status, in combination with parental education and child age, appears to be a contributing risk factor for childhood obesity. Parenting is a difficult occupation and there are extra demands when undertaking this task alone. Understanding the relationship between parental status and obesogenic risk factors will inform the development of intervention strategies to reduce the incidence of obesity in children in single parent households (Fuller-Tyszkiewicz et al., 2010).

There is robust evidence that behavioral risk factors including unhealthy eating and television viewing are linked to childhood overweight and obesity. Two recent studies from the US indicate that children in families headed by a single parent are also more likely to be overweight or obese than those in dual parent families (Chen et al., 2010). But,

female children from single parent families were overrepresented in the obese category and underrepresented in the normal weight category (Huffman et al., 2010).

Furthermore found that a mother s perception of neighborhood safety was a predictor of higher weight in girls. If single mothers perceive the neighborhood as being unsafe, they may be less likely to encourage their daughters to go outside to exercise; such environmental factors are enhanced sedentary lifestyle then increased BMI (Bacha et al., 2010).

Althought parent watching TV pattern associated with sedentary lifestyle, interesting study conducted by Byrne et al. (2011) showed the important differences in dietary and TV viewing time in children from single and dual parent households and that these differences are evident at a young age. Although it was anticipated that children from single parent families would show evidence of higher BMIs, the finding that females from single parent families are overrepresented in the obese weight category was surprising.

The role of parental influences on children's food intake may be particularly important in understanding the development of childhood obesity. For example, a study of obese and nonobese parents and children, also found that obese mothers and children ate larger quantities of food in less time than did their thinner counterparts. Additionally, children of obese parents were found to rate foods as sweet more often than did children of normal weight parents (Klesges et al., 1991).

The parents have a strong impact on children's food selection. When mothers were directly involved in food selection, children chose meals that were lower in total kilocalories, lower in calories from saturated fatty acids, and had less sodium than when children freely chose their food. Interestingly, when children were told that their mothers would be viewing their food selections, children chose to alter only those foods high in sugar. It is possible that young children view nutritious foods only as those that are low in sugar without considering saturated fatty acid, sodium, or total energy intake (Klesges et al., 1986).

And about smoking; mothers smoking increase childhood obesity!, children of smoking mothers have a higher risk of obesity from 3 years to 33 years old, but the mechanism of smoking action is not very distinctive, but perhaps this is done by transferring nicotine through the placenta and also carbon monoxide, which affects the placental blood vessels and also leads to a lack of oxygen in the child, moreover, nicotine acts as an appetizer for the baby, while withdrawal from nicotine after birth leads to excessive swallowing and

thus this explains why the child is overweight after birth if the mother smokes during pregnancy (Lerman et al., 2004).

Although the effect of smoking by a pregnant mother on her child's obesity is not well known, it is possible that the presence of nicotine played a role, which is not transmitted through the placenta, and the presence of carbon monoxide is dangerous (Oken et al., 2008). The child has a lack of oxygenated blood through the blood vessels feeding the placent, and the effect of nicotine is clear in reducing appetite as well as nicotine works to reduce body weight (Lerman et al., 2004). On the other hand, quitting nicotine increases appetite and eating in large quantities, it has been suggested from studies, that the increase and cravings by infants to eat after the first period of birth due to the effect of nicotine withdrawal on them, which is compensated by increased food demand, and the relationship between BMI was also seen likewise, in addition to the fact that overweight and obesity in children was related to the number of working hours of the mother, so was the schedule of the father's working hours as well (Jo et al., 2002).

2.3 Unmodifiable factors

Known intrinsic factors for obesity are genetic factors, such as obesity associated polymorphisms and mutations. These include fat mass and obesity associated protein polymorphism, mutations in melanocortin 4-receptor or proopiomelanocortin or syndromal obesity, for example in patients with Bardet-Biedl or Prader-Willi syndrome. However, the proportion of genetic obesity is very low. In addition, patients with endocrine disorders, such as Cushing syndrome, hypothyroidism or hypothalamic disorders, are often severely obese. Prenatal programming by maternal malnutrition during gestation may also determine the offspring's body composition and its cardiovascular and metabolic risk (Desai et. al., 2015).

2.3.1 Genetics factors

Certain types of obesity are heritable. In addition, other genetic factors including those that affect dietary metabolism leading to alteration of body fat composition, energy intake, and energy expenditure may increase vulnerability of a child toward obesity. Although a BMI of 25%–40% has been reported to be heritable, genetic factors contribute to less than 5% of childhood obesity cases (Anderson & Butcher, 2006).

Furthermore, gene-environment interactions also play an important role in childhood obesity. Differences in body composition is also a likely factor; specifically, the lower abdominal adiposity found in African- American children compared with European or Hispanic American children, and the higher trunk skinfold thickness in Chinese girls compared to Malaysian and Lebanese girls. These differences in body composition phenotype suggest that the genetic makeup of individuals interacts with environmental factors from early developmental stages. (Ang et al., 2013).

A relationship has been found between the child's and the mother's obesity, and this obesity has been explained by several interpretations. It has been suggested that it is due to common and uncommon factors, in which one environment in which the child and the mother live, and also genetic factors that play a major role in the formation of obesity in these children, where scientific evidence has emerged. This is proven, by testing with identical twins who did not live together and had a slightly lower obesity rate than the others who lived together 0.70 against 74, it has also been observed that the mutation of genes that lead to obesity is slowly developing in America and is the major cause of obesity in American society in the last thirty years, and with regard to the mono gene mutation, a responsible for obesity has been identified among those who suffer from obesity, namely: leptin hormone, leptin receptors. It was found that the deficiency in the Melanocortin 4 receptor (MC4R) leads to obesity in children and an increase in bone growth in them as well as an increase in insulin secretion and that this deficiency affected the increased appetite for food (DelGiudice, 2017).

2.3.2 Gestational Weight and Intrauterine Factors

The environment inside the womb of the mother plays great importance for the development of obesity in children. Diabetes type II and metabolic problems are all problems that can affect the fetus in the womb of its mother, and these children have a greater possibility of developing obesity when they are born with a weight greater than 4 kg. There is also a great relationship between the high weight pre-pregnancy in the mother and the increase in pregnancy sugar in the mother and also the increase in fetal blood sugar, which led to an increase in the level of insulin in the fetus and this will lead to an increase in the weight of the fetus, and here shows a great relationship in increasing the weight of pregnancy and increasing the weight of the child regardless on the weight of the mother before pregnancy, and also independently of the genetic factors, and this early

increase in weight in humans has a significant impact on the chronic diseases that will occur in the future (Ferraro et al., 2012; Catalano et al., 2009).

2.4 Consequencies of childhood obesity

Childhood obesity has significant adverse effects on health in childhood. Psychological morbidity is likely to be the most widespread health impact in childhood. A large body of high-quality evidence has shown that childhood obesity is strongly associated with the presence and clustering of cardiovascular risk factors in childhood. A number of long-term adverse effects of childhood obesity are now well established. The socioeconomic impact of obesity in adolescence or young adulthood is considerable but little known. Obesity in childhood tends to persist into adulthood. Cardiovascular effects of obesity in childhood persist and this predicts a strong link between childhood obesity and morbidity or mortality in adulthood, which should be reflected in increased cardiovascular morbidity in the future, as the current generation of obese children become adults (Reilly et al., 2003).

2.4.1 Medical Consequences

Obese children suffer from severe medical conditions including fatty liver disease, sleep apnea, diabetes, asthma, cardiovascular disorders, increased cholesterol, gallstones, dermatological conditions, menstrual irregularities, and orthopedic problems. These health conditions, known to be prevalent in obese adults, are known to frequently occur in obese children as well. Although most of these conditions are preventable and can wane when a healthy weight is reached, adverse health effects of childhood obesity are likely to carry forward into adulthood (Ghosh et al., 2019).

The consequences of childhood obesity can be broadly classified into medical and psychosocial consequences. Medical consequences include metabolic complications such as diabetes mellitus, hypertension, dyslipidemia and non-alcoholic fatty liver disease, and mechanical problems such as obstructive sleep apnoea syndrome (OSA) and orthopedic disorders. Psychological and social consequences are prevalent but often overlooked (Lee, 2014).

A survey was conducted in the year 2007 by the UNRWA for non-communicable diseases, 7,762 Palestinian refugees were evaluated in Jordan, Syria, Lebanon, the GS, and the West Bank after a criteria was established to classify obesity, so that BMI ≥30 is considered obese, while BMI <30 is not considered obesity, where the results of the survey from the

GS: males in the study who suffer from obesity 727 (29.7%), and females who suffer from obesity number 2518 (47.4%), and this information linked obesity to the development of hypertension and diabetes type II as the p-value for male and female $p<0.001$ separately (Mousa et al., 2010).

2.4.1.1 Insulin resistance

Not fully understand the underlying mechanisms of how regional adiposity in children promotes metabolic dysregulation. As adipose tissue expands, there is an increase in insulin-resistant and thus chronic systemic low grade inflammation due to greater infiltration of immune cells and the production of cytokines. This chronic inflammation is thought to play a major role in the development of metabolic complications and diseases such as diabetes. Furthermore, different adipose tissue depots contribute differently to the risk of metabolic disease. Children who have an upper-body fat distribution around the abdomen are at greater risk of disease than those who tend to store fat in their lower body around the hips and thighs (Weiss, 2007.

The increasing prevalence of overweight and childhood obesity has been linked to parallel increases in childhood and adult morbidity. Children with obesity have been found to have at least 30% higher risk of obesity related morbidity and premature mortality during adulthood. In particular, recent systematic reviews have found strong evidence for higher risk of type 2 diabetes (Sonntag et al., 2016).

According to Caprio et al. (1996) study that indicated insulin resistance and hyperinsulinemia coexist in preadolescent children with a relatively short duration of excess adiposity. The degree of impairment in insulin action and hypersecretion of insulin in these young obese preadolescent children was the same as that observed in both adolescents and obese adults with a longer duration of the obese state. Hence, these data suggest that the impact of obesity on glucose metabolism is totally independent of the duration of obesity. It should be noted, however, that the degree of obesity in the preadolescent children varied from moderate to severe; it is therefore possible that puberty might worsen insulin sensitivity in children with a milder degree of obesity.

An Interesting study has shown that the effect of accumulation of deep abdominal fat on glucose tolerance was independent from total adiposity and subcutaneous abdominal adipose tissue and that no association was observed between total adiposity and glucose tolerance after control for visceral fat area. In their study of a wide range of total body fat

in both healthy young and middle-aged men, another result found that the intraabdominal fat area evaluated by computerized tomography (CT) was associated with a decrease in insulin sensitivity measured by a euglycemic hyperinsulinemic glucose clamp. In addition to being associated with disturbances in insulin-glucose homeostasis, abdominal obesity has been related to alterations in plasma lipoprotein-lipid levels, particularly increased plasma triglyceride and low high-density lipoprotein (HDL) cholesterol concentrations, as expected from the association of insulin resistance with disturbances in plasma lipid transport and lipoprotein levels (Wajchenberg et al., 2000).

Over 10% of the children and adolescents have been seen in the clinic have impaired glucose tolerance, a precursor to the development of diabetes, and a defect in glucose homoeostasis that may carry its own inherent risks. This study also emphasises the importance of characterising obese children by the use of a formal oral glucose tolerance test rather than simple fasting glucose levels that detect few of the patients who actually have abnormal glucose metabolism and who are at greatest risk of type 2 diabetes (Sabin et al., 2006).

2.4.1.2 Hypertention

Historically, childhood hypertension has been considered to be a rare condition, secondary to an underlying renal, cardiac, or endocrine disorder. However, over the last few decades, the prevalence of primary hypertension in children and adolescents has increased, in parallel with the growing prevalence of childhood overweight and obesity. Obesity has become a global health issue and is attracting more and more attention (Wühl, 2019).

The pathophysiology of childhood obesity hypertension is complex. A few major mechanisms are worth highlighting. Insulin resistance and hyperinsulinemia, both of which are present in obesity, are independent activators of the renal sympathetic nervous system. This, in turn, causes vasoconstriction and reduced renal blood flow, which is a trigger for renin release. The end result of this activation of the renin-angiotensin-aldosterone system is sodium and water retention, which raises blood pressure. Also contributing to the reduced blood flow through the kidney is direct compression of the parenchyma by perinephric fat, which encourages sodium reabsorption and contributes to higher blood pressure. This phenomenon occurs even in the absence of signs of glomerular sclerosis or chronic kidney disease (Kotsis et. al., 2010).

Increased levels of leptin, a hormone produced by adipose tissue, have been associated with elevated blood pressure, a relationship that to a large extent is mediated by BMI and, as with hyperinsulinemia, has effects on the sympathetic nervous system. This is illustrated in a recent cross-sectional study of 9,000 children in Indiana, which demonstrated that overweight children (BMI >85th percentile) had significantly higher leptin levels than children of normal weight; blood pressure percentiles of the overweight children were also higher than those of the normal-weight children. Conversely, obese individuals produce less adiponectin, another antiatherogenic, cardioprotective hormone made in adipose tissue that has been shown to inversely correlate with blood pressure parameters in obese children and adolescents. The proinflammatory cytokines and oxidative stress produced in obesity probably contribute to vascular endothelial dysfunction, impairing the local vasodilatory response, thereby increasing blood pressure because of increased peripheral resistance (Tu et al., 2011).

In the past, blood pressure was considered rare in children, but with the high prevalence of obesity in recent years it has become common, as obese children are three times more likely to have a blood pressure than their non-obese peers. The risk of blood pressure increases steadily as the BMI of the obese children increases, additionally, 30-20% of obese children between the ages of 5-11 years suffer from high diastolic or systolic blood pressure, just as it happens in adolescents, further, other factors may overlap with obesity as well from high hormone Renin-angiotensin or high insulin resistance, or an increase in the sympathetic nervous system, and even problems in the structure or function of blood vessels, all of this leads to an increase in the prevalence of high blood pressure, both systolic and diastolic in obese children, and it has been proven that weight loss in obese children, also, it will be reduce their high blood pressure (Daniels & Sorof, 2002).

Obese children with sleep-disordered breathing (apnea, hypopnea) are at an even higher risk of developing hypertension, especially at night. This is probably also related to the activation of the sympathetic nervous system due to intermittent hypoxia. Furthermore, sympathetic nervous system activation via multiple other obesity related mechanisms and morbidities may contribute to higher blood pressure in obese children; these include but are not limited to the proinflammatory state created by cytokines such as increased Interleukin 6 (IL-6) production, which in turn results in an acute phase response. In addition, the sympathetic nervous system plays a role in energy balance and metabolic syndrome as fasting suppresses, and meal ingestion induces sympathetic nervous system

activity. Weight loss reduces sympathetic nervous system overactivity in obesity, which may partly explain the lower blood pressure in response to dieting (Flynn, 2013)

2.4.1.3 Gallstones

In developed countries, 70% of gallstones are cholesterol stones, and most of the time, the cholesterol level is 50% higher than the minimum levels of calcium, moreove, the prevalence of cholesterol stones increases in children with increasing weight and Spanish race as well, also, family history has a large share, and female children are more likely to develop gallstones, and fatty liver disease that is not associated with drinking alcohol is also linked to gallstones that come from cholesterol, and in cases of obesity there is a large secretion of cholesterol from the liver, and this, in turn, leads to the increased possibility of gallstones formation, these transparent cholesterol stones are difficult to distinguish on a radiograph of the abdomen, and often their source is cholesterol or excessive mucin production, and lack of movement of the gallbladder, all of these factors mentioned above contribute greatly to the formation and formation of hard gallstones in the end, which has a yellowish white color (Goldman, 2020).

According to an interesting study, result showed that the children and adolescents with a BMI over the 85th percentile, who present with right upper quadrant or epigastric pain, need to be assessed for gallbladder disease. Studies clearly show a marked increase in the incidence of gallstones and cholecystectomy in children and adolescents worldwide. The main reason for the increased incidence appears to be early onset overweight and obesity. Within this vulnerable population, there is a female predominance majority. Clinicians need to be aware of the comorbidity of gallbladder disease and the subsequent need for cholecystectomy in children and adolescents with obesity to allow for early detection and treatment for this patient population. (Donnelly, 2019).

2.4.2 Social and Economical Consequences

Not only does childhood obesity affect physical health, but it also has a clear potential to negatively impact the social and emotional health of the child. Considered one of the major vilifying and least socially acceptable conditions, overweight and obese children are often victims of mockery, teasing, bullying, discrimination, and social marginalization. Limited physical fitness in these children often leads to them being excluded from play activities, which have a detrimental effect on self-esteem and self-confidence. This in turn results in the affected children confining themselves to safe and comfortable places, like their homes,

where they often resort to food as comfort. In addition, obese children have a limited social network, resulting in limited social interaction, which in turn leads to a more sedentary life-style resulting in more weight gain (Ghosh et al., 2019).

There are several possible explanations for links observed between obesity and lower educational attainment, one of which is weight bias. Research suggests that weight bias among educators may influence obese students' academic performance as early as elementary school. Teachers report stigmatizing attitudes toward obese students. If biased attitudes unintentionally result in differential treatment of obese students, their educational potential may be compromised (Puhl & Heuer, 2009).

Costs of childhood obesity are mainly due to excess healthcare expenditure attributable to the increased risk of obesity associated health conditions in adulthood. Moreover, childhood obesity has been found to be associated with increased risk of disability-related pension in adulthood. Besides adulthood healthcare costs, childhood obesity is associated with substantial indirect costs due to increased risk of children's psychosocial problems, mobbing, and school absences resulting in poor academic outcomes. Moreover, childhood obesity increases the risk of parental absences at work due to child sickness. These in turn lead to substantial later productivity losses (Sonntag et al., 2016).

Recently Tsai et al. (2011) was reviewed of 33 studies, and estimated that the annual direct medical cost of overweight is approximately $266 higher, and the incremental cost of obesity $1723 higher, than that of normal weight persons. These results were based on the four highest quality studies. Pooled estimates (n = 33 studies) showed per-person costs was $498 overweight and $1630 obesity. Based on there estimates of incremental cost from the four highest-quality studies and using a recently published estimate of national health expenditures, the aggregate national cost of overweight and obesity was 4.8% of US health spending in 2008 or 5.0% if pooled estimates are used.

2.4.3 Psychological consequences

Early childhood is a critical period for the development of self-esteem among obese boys and girls. These effects are particularly strong among obese girls. Unfortunately, negative attitudes toward obese children begin quite young and may be difficult to change. Additional studies need to focus on whether positive family or social interactions can alleviate the negative psychosocial effects of childhood obesity. Finally, pediatricians and

health professionals need to understand the detrimental psychosocial consequences of childhood and adolescent obesity (Hesketh et al., 2004).

Several poem used to taunt overweight and obese children. Although it may appear silly and inconsequential on initial inspection, these words, as well as those similar in nature, are capable of inflicting profound and enduring wounds on their victims. Obese children are the victims of teasing three times more often than their average weight peers. Evidence is revealing that the consequences of such teasing may impact all areas of the child's development, including the child's psychological, social, emotional, academic, professional, and spiritual development, not only during growth into adulthood but possibly well into middle age and beyond. One study found that 98% of obese adults reported being the victim of harassment, criticism, or teasing from family members and friends. Seventy-five percent reported that they were criticized or teased at work, whereas 50% indicated that the criticism or teasing came from their supervisor, and 33% reported being called negative names by a heathcare professional. Children are most frequently teased by unfamiliar children and classmates, then familiar classmates and siblings, and even parents, adults in their lives, and adult strangers (Neumark-Sztainer et al., 2002). Moreover, in a study examining the attitudes of high school teachers on obesity, the teachers indicated their belief that obese teens were unkempt, emotional, less likely to succeed, and had more family problems. Forty-three percent of the teachers believed that people felt uncomfortable around obese people, 55% believed that obesity stemmed from a lack of love or attention, and 28% believed that becoming obese was the worst thing that could happen to a person (Neumark-Sztainer et al., 1999). Although the frequency of teasing varies between boys and girls, girls indicate that the teasing is more stressful and results in greater incidents of emotional problems, such as anxiety and sadness, than that reported by boys, who exhibit greater behavioral problems and fighting. Although many obese children are the victims of teasing and bullying, it should be noted that obese children are also the perpetrators of bullying. Bullying behavior can manifest in various forms including name calling and teasing, threats, physical harm, social rejection, rumors, or sexual harassment (Manus, 1995).

Obese adolescents with decreasing self-esteem are likely to report increased levels of loneliness, sadness, and nervousness and are also more likely to smoke. The professional community is concerned with the medical concomitants of obesity, but the psychological and social perils are at least as important to those afflicted by the problem. The reason is

clear; society does not tolerate the excess weight. The effects of this overt and covert pressure to be thin can be powerful and permanent (Strauss et al., 2000).

Several studies find a prospective relationship between eating disturbances and depression. However, this relationship is not unidirectional; depression may be both a cause and a consequence of obesity. Additionally, in a clinical sample of obese adolescents, a higher life time prevalence of anxiety disorders was reported compared to non-obese controls. Although some studies demonstrate no significant relationship between increased BMI and increased anxiety symptoms. Thus, the relationship between obesity and anxiety may not be unidirectional and is certainly not conclusive (Sahoo et al., 2015).

When we talk about obesity, and psychological consequence, must talking about eating disorders. Recently result of study showed, only two of the 196 (1%) obese children met the full diagnostic criteria for binge-eating disorder. Eating disturbances such as binge eating, episodic overeating and the use of inappropriate compensatory behaviors were more common. Previous studies of binge eating in obese adolescents, however, reported much higher prevalence estimates. Several factors may explain the low prevalence of binge eating in obese children. The most important factor is the subjects in the present study may have been too young. It is possible that a larger number of children in this study may develop an eating disorder at a more advanced age, given that childhood obesity is related to the development of bulimia nervosa as well as binge-eating disorder (Decaluwé et al., 2003).

This study found that overweight children were more concerned about weight and shape than healthy-weight children. In addition, and irrespective of weight status, children with high weight and shape concern reported lower levels of global self-esteem and appearance self-esteem, and higher levels of body dissatisfaction and depression, than children with low weight and shape concern. Weight and shape concern also mediated links between weight status and self-esteem, body dissatisfaction and depression. Contrary to predictions, however, mean Weight and Shape. Concern scores were not significantly higher in girls than in boys. The observed relationship between weight status and weight and shape concern is consistent with findings from previous studies. This relationship may explain why childhood obesity is a risk factor for eating disorders such as bulimia nervosa and binge eating disorder, as previous research has found that high weight and shape concern predicts the development and maintenance of such eating problems (Byrne et al., 2017).

Research that has studied childhood obesity and its impact on children's psychological state shows that obese children have increased physical dissatisfaction, lower self esteem, increased social isolation, depression, and decreased quality of life (Flodmark, 2005).

Increasing BMI z-score was significantly associated with higher levels of depression, increased body dissatisfaction, poor quality of life, lower self-esteem, greater eating disorder symptomatology, poor peer relationships and behavioral problems. On the measure of depression, there was a significant interaction between BMI z-score and gender, with girls having a significantly stronger increase in depression than boys as BMI z-score increased. This suggests that girls may be particularly vulnerable to depressive symptoms with increasing adiposity (Borjeson, 2008).

Chapter Three

Methodology

This chapter details in general about the research methodology, in order to explain all the elements of the study design, study preparation, and the study population, in addition to the study period, sample and sampling, study tools, data collection used in the study, data management, data analysis, study limitations. and ethical considerations of the study. This chapter deals also with the reliability and validity of the data collection tool used in conducting the study.

3.1 Study Design

This study was designed as a analytical and descriptive cross-sectional study, in order to determine the effect of mothers' knowledge, attitudes, and practices on their Pupils obesity as the researcher targeted child-mother pairs who were met the eligibility criteria. The researcher collected quantitative data by means of a questionnaire from the child's mother, as well as anthropometric measurements from the child that meet the eligibility criteria. Also, this design is inexpensive in terms of money, relatively practical, and can be controlled, and in a short time, through which the researcher can achieve the objectives of his study.

3.2 Study Setting

Governmental primary joint schools were the study setting. According to the administrative division of the educational areas in the Ministry of Education (MoE), as there are seven educational areas in the GS; northern Gaza, western Gaza, eastern Gaza, the central region, eastern Khan Yunis, western Khan Yunis, and finally Rafah. Two schools were randomly selected from each region previously mentioned, except for the east of Gaza and the west of Gaza where three schools, and one school from each east of Khan Yunis and Rafah were chosen from these areas which are proportionate to the population density.

3.3 Period of the Study

In May 2020, the research proposal was approved, ethical and administrative approvals required for commencing the study were obtained, and a pilot study was conducted in

March 2021, and data results were entered and completed and analyzed at the end of June 2021 and continued writing until the end of August 2021.

3.4 Study Population

Pupils of the first to fourth grade in the governmental joint primary schools (from >6 years old to 10 years old), and their mothers were selected according to the seven administrative regions according to the MoE in the GS. This age group was selected from the male and female Pupils because it is one of the critical stages that express recurrent obesity (Kelishadi et al., 2011).

3.5 Sample and sampling

The sample size was calculated using the EPI info 7.2.4.0, a sample of 396 was calculated based on the following parameters:

- Confidence interval of 95%.
- The design effect was 2.
- Expected frequency 15.3% (Al-Lahham *et al.*, 2019).
- The population size 40549 Pupils in all government primary schools (1-4th grade) in the Gaza Strip (The Ministry of Education, 2019).

The sample size was increased by 5% and reached up to 416 to cover possible non-responses.

3.5.1 Sampling frame

The sampling framework of this study was the record of all first to fourth grade Pupils enrolled in the governmental joint primary schools, and subjects were recruited after they met the eligibility criteria listed below.

Eligibility criteria

Inclusion criteria

1- For the children

- Children of both genders.
- 1-4th grade Pupils aged > 6 -10 years
- Apparently healthy and not suffering from chronic diseases.
- Living with his mother in the same household.
- Without any mental disability.

2-For mother

- Agree to sign the consent form.

Exclusion criteria

1 – For both mothers with children

- Mothers with children suffering from disability and movement disorders, diagnosed with psychiatric disorders, suffering from chronic diseases, under treatment by certain medications or medications to gain or lose weight.
- Twin children

3.5.2 Sampling method

The sampling design was a multi-stage cluster sampling.

The sample size was calculated, which is 416 Pupils from the (1-4th grade), and the response rate 400/416 = 96%, and the class density is about 38 students, where 400 is the number of Pupils who participated and successfully completed the study.

Table (3.1): Distribution of joint school students for the first to fourth grades among the education directorates

Directorate of Educational	No. of Pupils	%	No. of sample
North Gaza	4708	11.6	48
East Gaza	9793	24.2	100
West Gaza	10638	26.2	109
Middle Regions	4884	12	50
East Khan-Younes	2678	6.6	27
West Khan-Younes	5556	13.7	56
Rafah	2292	5.7	26
Total	40549	100	416

The first stage: The Directorate of Education in the seven educational directorates (North Gaza, East Gaza, West Gaza, Middle, East Khan- Younes, West Khan- Younes, Rafah).

Second stage: 14 schools of governmental primary joint schools (1-4th grade) were selected by simple random sampling from all seven educational directorates of Gaza Strip, they were distributed based on weight of Pupils for each educational directorates of governmental primary joint schools (1-4th grade).

Third stage: Registered students records from the selected school have been used to recruit students by simple random sampling according to the proportions of pupils in primary joint governmental schools (1-4th grade) in each educational directorates, as the sample in each school was drawn equally from four targeted grades, knowing that the number of primary joint governmental schools (1-4th grade) in the GS is 62 schools with 40549 students (The Ministry of Education, 2019).

Schools were distributed and random selected of students as shown in Table (3.2).

Table (3.2): Multi -stage cluster sampling according to official number of combined primary school in the Gaza Strip

Region / Stage	North Gaza	East Gaza	West Gaza	Middle	E. Khan Yunis	W. Khan Yunis	Rafah
Stage 1	8	15	16	8	5	6	4
Stage 2 Simple Random selection of school	2	3	3	2	1	2	1
Stage 3: Simple Random selection of Students	48 11.6%	100 24.2%	109 26.2%	50 12%	27 6.6%	56 13.7%	26 5.7%

3.6 Pilot of the Study

The pilot study was conducted prior to the intended study. The purpose of the pilot study was to test the research process and protocol, to develop or test the accuracy of research tools, to maintain maximum objectivity and observer drift was minimized, and the reliability and validity of the questionnaire were checked as well as possible outcomes were evaluated. It was conducted on 10% of the study population (40 Pupils and their mothers) to identify any problem with the research tools before beginning data collection. The researcher considered the area of misunderstanding and ambiguity and modified the final version according to the feedbacks from respondents. The cases that participated in the pilot study were not included in the major study.

3.7 Study Materials

The data were well collected by a face-to-face interview with the child's mother to collect relevant data. A well-structured questionnaire was used to collect information from the respondents' mothers about the bio-social, demographic, nutritional status of the respondents and other relevant information, and anthropometric data of the children such as height, weight, and med upper arm circumference - MUAC were measured.

The questionnaire was consisting of seven sections:

- **Section I: Socio Demographic data;**

Personal data (gender, date of birth, child rank, mother and father education), socio-demographic characteristics (family members, family residence, family income).

- **Section II: Knowledge, Attitudes, and Practice (KAP)**

The Knowledge, Attitude, and Practice Questionnaire tested maternal KAP in relation to childhood obesity.

Knowledge

The mother’s knowledge survey included 12 questions, as in some questions the choice was likely to have more than one answer and score 2 was given for each correct answer except for the question that was asking about (the source of the mother’s nutritional information), and the correct answer (nutritionist) got more weight in the score (3), and 1 score to whom the answer is (I don't know) and 0 score for the answer (others).

Attitude

The mother’s attitude questions included 18 questions, and the answers to them were according to the five-point Likert scale, where the answer (strongly agree) got the highest evaluation (5 points) and descended until it reached (strongly reject) and gets the lowest score (1 point).

Practices

The questions were divided to ask about the mother’s practices towards childhood obesity into 12 questions, so that the answer is by a triple Likert scale, where the choice (actually does it) is (3 points) and descended until it reaches (I will not do it) and deserved (1 point).

- **Section III: Medical History**

A. For Child

1- If they are suffering from any disease, any food allergy, or any type of allergy.

2- If the children loss or gain any weight at the last six months, and if they, what is the percent?

B. For Mothers

1- This model evaluates if the mother has suffered from any diseases.

2- The birth weight of the child was recorded per Kilograms (Kg).

3- If the child was admitted into Intensive Care Unit (ICU) when he/she was borne, furthermore, the reasons for admission to ICU.

- **Section IV: Physical Activity**

1- Activities that the child participates in: classified into categories: indoors, outside the home and duration.

2- Screen time : Watching TV or playing computer games, and smartphones were categorized below 2 hours, 2-4 hours, and more than 4 hours/day.

- **Section V: Breastfeeding and Dietary Behavior**

Questions related to the nature of feeding of the child and the type of breastfeeding and its duration were asked. In this section another question related to dietary behavior such as the number of meals eaten by the child, snaking, etc.

- **Section VI: Dietary Intake**

A short form food frequency questionnaire was used consisting of 13 food items that are usually eaten by Palestinians and the question posed as follows: How often is food (a food item) eaten in a day/week/month/year?

- **Section VII: Family Data:**

1- Parents' nutritional status: self-reported height and weight. Classified into categories according to BMI: <18.5 kg/m2 = underweight; and 18.5-24.9 kg/m2 = normal weight; and 25-29.9 kg/m2 = overweight; and >30 kg/m2 = obesity (WHO, 1995).

2- Parental Modeling: Mother smoking, parental physical activity, habitual eating of the parents.

- **Section VIII: Anthropometric Data**

Anthropometric data of the child:

❖ **Weight Measurement**

To determine the nutritional status of the children, anthropometric measurements (weight, height) were measured by a well-trained nutritionist. Body weight was measured twice to the nearest 0.1 Kg by a digital electronic scale and the accuracy was periodically checked using reference measurements. We used a digital scale (SECA - Germany) to take the weight and the following considerations were taken:

1. The researcher put a zero on the scale before the subject steps on it, to calibration of the scale.
2. The subject removes any “heavy” items from his or her pockets (keys, wallets, etc.) and removes any heavy clothing or clothing (large jackets, shoes, pullovers, etc.)
3. When measuring the weight, the target looks straight ahead and remains stationary on the scale, and waits for the digital display to stabilize before recording the measurement.
4. Two measurements must be made in immediate succession which must be agreed to within 100 g (0.1 kg).

❖ **Height Measurement**

Height measurements were taken using a tape measure "dropped down" (SECA - Germany) attached to a distance of approximately two meters on the wall, and two measurements were taken to the nearest 0.1 cm. More than, the measurement should be repeated, taking into account the following:

1- The respondent took off his shoes before taking the measurement
2- The subject stands with his back to the wall and looks straight ahead. The back of their feet, calves, lower back, upper back, and the back of their head were in contact with the wall. They were placed directly under the pull-down meter.
3- The measuring plate was lowered until it rested gently over the subject's head and the measurement was recorded.
4- We had a step stool or short ladder to stand on to read the height of someone taller than the meter.

WHO Anthro Plus (version 1.0.4) was used for 5-19 years to monitor the growth of school-aged children and adolescents. It was used to compare height, weight, and height data for

school-aged children and adolescents and to calculate a Z-score/percentile for height-for-age, weight-for-age, and BMI-for-age for each subject, a number showing the number of standard deviations (SD) of the data point from the mean. It includes an anthropometric calculator, individual assessment, and nutritional survey units. Obesity was defined as the age-related BMI ≥ 95th percentile; and overweight was defined as the age-related BMI ≥ 85th percentile. (Cooney et al., 1994).

3.8 Scientific rigor

3.8.1 Validity:

The validation of the tool is very crucial step before commencing the data collection The face and the content validity of the tool that were used in the questionnaire were judged by a Delphi method including Dr. Bassam Abu Hamad, Prof. Yahya Abed, Dr. Khitam Abu Hamad, Dr. Ahmed Najim, Dr. Muhammad Lulu, and Dr. Muhammad Tabash.

3.8.2 Reliability:

The reliability test is important to know the stability of the tool in general and whether it is interconnected and objective in terms of asking questions. This test was conducted after the pilot study, in which the researcher used Cronbach's alpha coefficient to examine the extent to which the questions are closely related to each other.

- **Cronbach coefficient alpha:**

This method measures the reliability of the questionnaire between the average of the fields and each field in the questionnaire, and the normal period for the value of Cronbach's coefficient a lie between 0.0 and 1.0, where it expresses Cronbach's alpha the more it exceeds the range of internal consistency, and this is evident in Table (3.3), where the period from 0.924 to 0.952 This range is excellent, and these results are important to ensure the reliability of the questionnaire.

Table (3.3): Cronbach's Alpha for reliability for all domains

Domain	No. of Items	Cronbach's Alpha
Knowledge	12	0.927
Attitude	18	0.952
Practice	12	0.924

3.9 Data Collection

Once the administrative and ethical approvals were obtained, the pilot study began, whereby the researcher and data collectors began to collect important and relevant information using the questionnaire that had been prepared and qualified to be suitable for data collection, after obtaining the consent of the participants. In the study according to established standards. A face-to-face interview was used to collect all information from the mother and relevant anthropometric measurements for each child.

The data was taken and recorded in the questionnaire for archiving, the sample would be randomly selected, it took approximately 25-35 minutes to deal with each questionnaire for the mother's information and her child's anthropometric information.

Difficulties faced by data collectors due to the COVID-19 pandemic, which is why schools were frequently visited to coordinate with them, as children worked only three days a week.

Pilot participant was excluded from the study sample size.

3.10Data Management and Data Analysis

After data collection, questionnaires and anthropometric data were reviewed before being entered into the study database. Specific data were also checked for missing or unclear responses. Data were analyzed using the SPSS (Statistical Package for the Social Sciences) database version 24.0 for Window.

The descriptive data were arranged in frequency and percentages (%) were used for categorical data whereas mean and SD were used for continuous data. Test the symmetrical about the mean by Kolmogorov-Smirnov test. And then an independent t-test was used after verifying the normality of the variables to clarify the differences in the mean between the data distributed in a standard way, in order to determine the relationship between some social and economic characteristics of the family and their child's obesity, the relationship between some variables related to the health and disease history of the mother and her child's obesity, The relationship between some variables related to the child’s physical activity rate and his obesity, the relationship between some variables related to the breastfeeding behavior of that child and his obesity rate, the relationship between some variables related to the patriarchal system and the child’s obesity, and finally the

relationship between knowledge, behavior, and practice of the mother and her child's obesity.

Chi-square test was used to evaluate the relationship between the categorical independent variables and the dependent variable.

The independent variables with p values < 0.25 and logically related to Childhood obesity that were tested in univariate analysis were then included in the multivariable analysis (multiple logistic regression) and P-value less than 0.05 was always considered significant by the forward RL method.

The Person and Spearman Correlation coefficient (r) test used to explain the correlation of items with main variables. Person correlation was used to assess the correlation between Mothers Knowledge regarding Childhood obesity, Attitude and Practices, and Spearman was used to assess the correlation with Childhood obesity.

3.11Ethical Considerations

Letters of academic approval of the proposal were obtained from the public health research committee of Al-Quds University, and the approval of the Helsinki Committee was obtained, which bears the responsibility of the international code of conduct for the amendment of 1975, which was established by the World Medical Association.

A letter was also obtained from Al-Quds University addressed to the MoE so that the researcher's task would be facilitated for them, and then a letter facilitating tasks was obtained from the MoE in Gaza directed to the Directorates of Education in the five governorates, which in turn conducted coordination with its affiliated schools.

An informed consent was sent to the participants from the parents, and the consent contained the purpose of the study and the content of the questionnaire, and they had the right to refuse to participate in the study, and they were assured that the information obtained will be confidential.

3.12Limitations of the study

The difficulty of integrating UNRWA school students into the study is due to the difficulty of obtaining permission to conduct the study despite their representation of a large segment

of the general population included in the study due to restrict rules and regulations in the UNRWA schools.

Data collection was facing a problem related to accessibility to schools as a result of the spread of the Covid-19 epidemic and repeated lockdowns, and the frequent electricity cuts in the GS reason for restrictions in the same context.

Chapter Four

Result and Discussion

4.1 Introduction

This chapter illustrates the results of statistical analysis of the data, including descriptive analysis that presents the socio-demographic characteristics of the study sample and answers to the study questions. The researcher used descriptive and inferential statistics including frequencies, means, and percentages, also independent sample t-test, Chi-square, Pearson & Spearman, and Binary Logistic Regression to analyze data and test the relationships between the variables of the study.

The present study is asking about the mother's knowledge, attitudes, and practices and its relationship with childhood obesity in the GS, by using the questionnaire reports analysis tool.

Also, this study takes into consideration the impact of socio-demographic, nutritional factors and parental models on childhood obesity.

4.2 Socio-demographic characteristics of the participants

Table (4.1): Socio-demographic characteristic of households (n=400)

Variables	No of respondents (%)	Mean (SD)
Age of mother (Year)		
20 - > 25	8 (2)	
25 - > 30	93 (23.3)	
30 - > 35	111 (27.8)	
35 - > 40	97 (24.3)	
40 - > 45	64 (16.0)	
45 - > 50	27 (6.8)	
Education level of mother		
Never been to school	6 (1.5)	
Primary	34 (8.5)	
Preparatory	68 (17)	
Secondary	147 (36.8)	
University or Diploma	145 (36.3)	
Employment status of mother		
Employed	47 (11.8)	
Unemployed	353 (88.3)	
Marital status of mother		
Married	388 (97.0)	

Table (4.1a): continued

Divorced	10 (2.5)	
Widowed	2 (0.5)	
Education level of father		
Never been to school	18 (4.5)	
Primary	42 (10.5)	
Preparatory	76 (19)	
Secondary	126 (31.5)	
University or Diploma	138 (34.5)	
Employment status of father		
Employed	126 (31.5)	
Unemployed	274 (68.5)	
Class level of children		
First	134 (34)	
Second	107 (26.8)	
Third	89 (22.3)	
Fourth	68 (17)	
Gender of children		
Male	119 (29.8)	
Female	281 (70.2)	
Age of children		7.96 (1.141)
No. of household member		6.86 (2.05)
No of children below 5 years		
Not have	137 (34.3)	
1 Child	133 (33.3)	
2 Child	113 (28.2)	
3 Child	16 (4)	
4 Child	1 (0.3)	
Place of residence		
City	341 (85.3)	
Village	47 (11.8)	
Refugee Camp	12 (3)	

A total of 400 children participated in the study, with a mean age of 7.96 months, of these children, 119(29.8%) were boys and 281(70.2%) were girls. The grade level of children 134(34%) were in the first class, 107(26.8%) second class, 89(22.3%) third class, and 68(17%) in the fourth class.

The socio-demographic background of the 400 mothers who answered the questionnaires shown in Table (4.1): Classified according to the age into categories,

20 - > 25, 25 - > 30, 30 - > 35, 35 - > 40, 40 - > 45, and 45 - > 50, with account and response rate, 8(2%), 93(23.3%), 111(27.8%), 97(24.3%), 64(16.0%), and 27(6.8%), respectively. The majority of them were from household sizes of 8 persons, and university level education or higher 145(36.3%), secondary school 147(36.8%), preparatory 68(17%),

primary school 34(8.5%), and finally illiterate 6(1.5%). Approximately 40% of mothers were homemakers or unemployed 353(88.3%). The marital status of the mother was divided into married with 388(97%), divorced with 10(2.5%), and widowed with 2(0.5%). The number of children whose below five years in the same households showed: not have any children under the five years, have one child, two, three, and four children, with, 137(34.3%), 133(33.3%), 113(28.%), 16(4%), and 1(0.3%), respectively.

The socio-demographic background of the fathers shown in Table (4.1) : 274(68.5%) of fathers were unemployed or loss of his job. Education level of fathers classified into: university or higher, secondary school, preparatory, primary, and illiterate, with, 138(34.5%), 126(31.5%), 76(19%), 42(10.5%), and 18(4,5%), Respectively.

4.3 Sample distribution based on place of residence

Table (4.1) shows that the children were from all three main places residence in the Gaza Strip with 85.2% city,11.8% village, and 3% refugee camp.

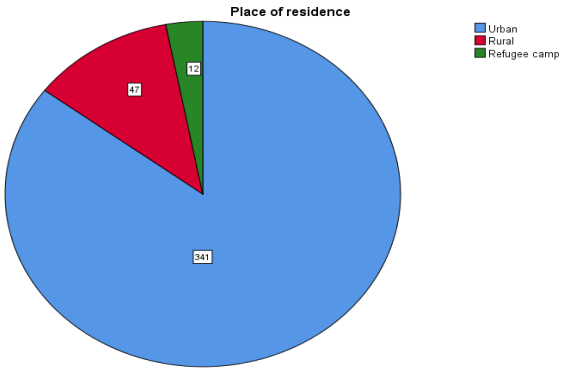


Figure (4.1): Place of residence for the participants

4.4 Distribution of samples according to the average monthly income of each family (n=400)

Table (4.2) Socio-economic characteristic of households (n=400)

Income monthly	**No of respondents (%)**
Less than 1974 NIS[a]	322 (80.5)
1975 – 2470[b] NIS	61 (15.2)
More than 2471 NIS	17 (4.3)

a Absolute Poverty b: Poverty line

Table (4.2) shows the economic distribution of families whose children participated in the study, so that the percentage of families that earned less than 1974 NIS was 80.5%, while families that were earning a salary from 1975 to 2470 NIS, their rate was 15.2%, and it was the lowest percentage of those earning more than 2,471 NIS, as they represented 4.3% of the study sample. The result indicated that 95.7% of the targeted households are living under the poverty line, out of these 80.5% are living under the absolute poverty line (PCBS, 2017).

The results of the economic situation of the families targeted in the study coincide with the results of the PCBS, which show the poor economic situation experienced by the residents of the GS as a result of the siege, where more than 80% of families are below the poverty line (PCBS, 2020).

4.5 Description of samples according to anthropometric characteristic of children (n=400)

Table (4.3) Anthropometric characteristic of children (n=400)

Variables	No of respondents (%)	Mean (SD)
Weight (Kg) for children		26.31 (6.28)
Height (m) for children		1.25 (0.08)
BMI for children(kg/m^2)		16.85 (3.13)
BMI Percentile for children		54.16 (35.61)
BMI Percentile for children Categorization		
Underweight	31 (7.8)	
Normal weight	234 (58.5)	
Over weight	43 (10.8)	
Obese	92 (23.0)	
BMI Percentile for children Categorization (Obese/Non-obese)		
Non-Obese	308 (77.0)	
Obese	92(23.0)	
Weight for Age Percentile		54.68 (32.40)
Weight for Age Z score		-0.04 (3.98)
Height for Age Percentile		55.76 (30.12)
Height for Age Z score		-0.09 (1.42)
BMI Z score		0.44 (3.06)
Mid upper arm circumference		28.20 (14.3)
Skin fold thickness		13.9 (5.47)

General anthropometric characteristic of children

Table (4.3) shows the mean and SD of the anthropometric characteristics of the children participating in the study, the mean weight was 26.31 kg with 6.28 SD, while their mean

height was 1.25 m with 0.08 SD, the mean BMI of the children's was 16.85 with 3.13 SD, and the mean BMI percentile for children was 54.16, with 35.61 SD.

Categorization of BMI percentile for participant children

With regard to the classification of the BMI for age, the prevalence of underweight, normal weight, overweight, and obese in the sample was 7.8%, 58.5%,10.8%, and 23%, respectively.

In this study, only obese children were classified as obese, and others were classified as non-obese children, according to this classification the percentage of obese children and non-obese children 77% and 23%, respectively.

The results were inconsistent with the study of Massad et al. (2016), in which the prevalence of obesity and overweight among children in the West Bank was 6%, and 12%, respectively while the prevalence of underweight was represented 3%, and this can be explained by the difference in age groups and in the economic situation between the GS and the West Bank, where the economic situation in the West Bank and the level of per capita income is better than in the GS. It is worth mentioning that most of the families are living on financial aids and these households are having low purchasing power. Low prices of caloric-dense foods and financial constraints may encourage overconsumption of a caloric-dense but low-quality diet, causing gradual weight gain for households members in low-income communities. This continuous cycle of temporary food abundance and deprivation may result in weight gain (Ihab et al., 2013).

In the other study Keane et al. (2012), which was conducted on children in Ireland, the proportion of children who suffer from obesity was 6.6% of the total sample, and children who are overweight were 19.3%. While children of normal weight represented 74.1%, which is a result that is not identical with the results of our study and can be explained by the difference in the economic and social situation and how parents see the weight of their children, which is reflected in the weight of the children, and this gives the GS specialty and great interest in the issue of childhood obesity.

In Shariff et al. (2000) study, which was conducted in Jordan on low-income primary school students, the results are close to current results in terms of the prevalence of obesity which indicated that 11% of the total sample were obese, and the students who were overweight were 24%, while the underweight students represented 5%, and this explains that the economic situation plays an important role in the prevalence of childhood obesity, especially in the primary grades of school.

The results are consistent with Al-Amer et al. (2019), which was conducted in Palestinian refugees camps in Jordan and the proportion of obese people was 24% of the study sample, and this can be explained that the socio-economic context has a significant impact on the prevalence of obesity.

As for Weight for Age Percentile, Weight for Age Z score, Height for Age Percentile, Height for Age Z score, BMI Z score, Mid upper arm circumference, and finally Skinfold thickness, the SD and mean reading were as follows, 32.40 and 54.68, 3.98 and -0.04, 30.12 and 55.76, 1.42 and -0.09, 3.06 and 0.44, 5.62 and 11.1, finally 5.47 and 13.9, respectively.

4.6 The difference in respondent in relation to socio-economic characteristics

Table (4.4) Comparison between the socio-demographic and economic characteristics respondent n=400

Variables	Obese children (n=92)		Non-Obese children (n=308)		t-Stat (95% C.I)/x^2	p-Value
	N(%)	Mean(SD)	N(%)	Mean(SD)		
Age of mother (Year)					19.81	< 0.001
20 - ≤ 25	6(6.5)		2(0.6)			
25 - ≤ 30	15(16.3)		78(25.3)			
30 - ≤ 35	23(25)		88(28.6)			
35 - ≤ 40	19(20.7)		78(25.3)			
40 - ≤ 45	21(22.8)		43(14.0)			
45 - ≤ 50	8(8.7)		19(6.2)			
Education Level of Mother					102.55	< 0.001
Never been to school	2(2.2)		4(1.3)			
Primary	26(28.3)		8(2.6)			
Preparatory	32(34.8)		36(11.7)			
Secondary	20(21.7)		127(41.2)			
University or Diploma	12(13)		133(43.2)			
Employment status of mother					3.15	0.08
Employed	6(6.5)		41(13.3)			
Unemployed	86(93.5)		267(86.7)			
Education level of father					36.72	<0.001
Never been to school	12(13)		6(1.9)			
Primary	7(7.6)		35(11.4)			
Preparatory	25(27.2)		51(16.6)			
Secondary	33(35.9)		93(30.2)			
University or Diploma	15(16.3)		123(39.9)			
Employment status of father					7.89	0.005
Employed	18(19.6)		108(35.1)			
Unemployed	74(80.4)		200(64.9)			
Class level of children					13.75	0.003
First	22(23.9)		114(37)			
Second	38(41.3)		69(22.4)			
Third	19(20.7)		70(22.7)			
Fourth	13(14.1)		55(17.9)			

Table (4.4a): continued

Gender of children					1.95	0.16
Male	22(23.9)		97(31.5)			
Female	70(76.1)		211(68.5)			
No of children < 5 years					4.74	0.31
Not have	25(27.2)		112(36.4)			
1 Child	34(37)		99(32.1)			
2 Child	27(29.3)		86(27.9)			
3 Child	6(6.5)		10(3.2)			
4 Child	0(0)		1(0.3)			
Place of residence					30.31	< 0.001
City	62(67.4)		279(90.6)			
Village	24(26.1)		23(7.5)			
Refugee Camp	6(6.5)		6(1.9)			
Marital status of mother					20.33	< 0.001
Married	82(89.1)		306(99.4)			
Divorced	8(8.7)		2(0.6)			
Widowed	2(2.2)		0(0)			
Age of children		8.00(0.95)		7.95(1.19)	-0.45(-0.29, 0.18)	0.66
No. of household members		7.80(2.59)		6.58(1.77)	-4.25(-1.79, -0.65)	< 0.001
Income monthly					3.24	0.20
Less than 1974 NIS	80(87)		242(78.6)			
1975 – 2470 NIS	9(9.8)		52(16.9)			
More than 2471 NIS	3(3.3)		14(4.5)			

P-value ≤ 0.05

• Mother's age and child obesity

Table (4.4) shows that there is a strong statistically significant relationship ($p < 0.001$) between the mother's age and the obesity of her children and the value of $x^2 = 19.81$.

It appears that the mothers who participated in the study and whose children were not obese were in the age group 35 > 40 and represents 28.6% of the study population, followed by the mothers in the age group 25 > 30 and 35 > 40 representing 25.3%. The proportion of mothers in the age group 40 > 45 was 14%, and for mothers in the age group 45 > 50 were 2.6%, and finally came the category of mothers in the younger age group 20 > 25 that represents 0.6%. of the study population.

On the other hand, the percentage of mothers of obese children in the age group 30 > 35 was the percent of mothers who represented 25%, followed by mothers in the age group 40 > 45 represents 22.8%, and the mothers who were in the age group 35 > 40, with represents 20.7%, and the mothers in the age group 25 > 30 and represents 16.3%, and in the pre-last classification, the mothers in the age group 45 > 50 represented 8.7% Finally, the mothers in the age group 20 > 25 represents 6.5%.

This result is consistent with the study El Kishawi et al. (2016), where there was a clear statistically significant relationship between the age of the mother and the obesity of children, and in both cases, it was <0.001, and the possible interpretation is that the middle-aged women are more educated and usually follow the new lifestyle and more energic in preparing healthy food for her children, thus preventing them from gaining weight and obesity.

Education level of mother and child obesity

Table (4.4) shows that there is a strong statistical significance ($p < 0.001$) between the education level of mothers and the obesity of her children and the value of x^2 =102.55, and the largest number of children who did not suffer from obesity was their mothers with a high educational level such as diploma and university, with a number of 133 with 43.2%, followed by mothers with secondary education representing 41.2%, then mothers with preparatory education 11.7%, then those with primary education and illiterate women were 8, 2.6% and 1.3%, respectively.

On the other hand, the highest percentage of mothers of obese children with a preparatory education was 34.8%, then came the mothers with primary education and their number was 28.3%, and mothers with secondary education came in the third level by 20 mothers with a percentage of 21.7%, and finally, mothers who obtained a diploma or university and then illiterate women in these percentages were 13%, 2 and 2.2, respectively.

This result is consistent with the study of Abdulai (2010), where there was a clear statistically significant relationship between the educational level of the mother and obesity in her children.

Given that the educated mothers are aware of the impact of unhealthy diets such as high carbohydrates and fats on the occurrence of obesity, so they are more knowledgeable about preparing healthy and nutritious meals for the family members in general and children in particular.

On the other hand Wake et al. (2007), which did not find a relationship between the mother's educational level and her child's obesity.

Employee of mothers and child obesity

Table (4.4) shows that there is no statistically significant relationship between the mother's job status and the obesity of her children. This result is consistent with the study El

Kishawi et al. (2016) where there was no statistical significance between the mother's work and the obesity of her children, and the researcher explains this result as logical, as the Palestinian society lives a group life, so we find that the children of working women live with a society similar to what they are in their home, whether eating habits and life in general.

Education level of father and child obesity

Table (4.4) shows that there is a strong statistical significance (P <0.001) between the educational level of the father and the obesity of his children and the value of $x^2 = 36.72$.

The number of children without obesity was 123 and their percentage was 39.9% and their fathers had a diploma or university degree, while fathers who obtained secondary school did not suffer from obesity, 93 children represented 30.2%, while fathers who obtained a preparatory certificate did not suffer from their children of obesity, their number was 51 children, at a rate of 16.6%, and finally fathers who obtained the primary certificate and illiterate fathers had children who were not obese, the numbers and proportions 35 children, 11.4%, 6 children, 1.9%, respectively.

The results of current study contradict with the results of the study of Lazzeri et al. (2011), where the relationship between the educational level of the father and the level of obesity in his children is direct in current study, so that the higher the educational level of the father, the higher the obesity rates for his children, and this is clear in marginalized communities so that access becomes High-calorie products such as fast food are available, but in developed societies, the researcher find that the relationship is inverse, as the higher the educational level of the father, the easier it will be to access healthy food and products, and the percentage of obesity in their children will decrease. In the fact, women are not the breadwinners in most Palestinian families, hence their employment status is most related to the Childhood obesity.

Employee of father and child obesity

Table (4.4) shows that there is a strong statistical significance (P <0.005) between the job status of the fathers and the obesity of his children and the value of $x^2 = 7.89$.

The number of obese children whose parents were employed was 18 children and represented 19.6%, while obese children and their parents were not employed, 74 children represented 80.4%, on the other hand, children who did not suffer obesity and whose

parents were employed, their number was 108 children. They accounted for 35.1%, while children who did not suffer from obesity and whose parents were not employed, was 200 children and they represented 64.9%.

The results current study are consistent with the results of the study Farajian et al. (2013) where there is a relationship between a father's employment status and his children's obesity as men are the breadwinner in the Palestinian community.

Class level and child obesity

Table (4.4) shows that there is a strong statistical significance (P = 0.003) between the class level of the children and the obesity of his children and the value of $x^2 = 13.75$.

Children in the second grade and who were suffering from obesity numbered 38 children and they represented 41.3%, while children in the first grade who were suffering from obesity numbered 22 children and they represented 23.9%, while children who suffered from obesity in the third grade and the fourth consecutively, 19 children represented 20.7%, 13 children and they represented 14.1%.

The results of current study are consistent with the results of the study of Thorpe et al. (2004), which showed that students who are in the second academic level are the most obese group, and this can be consistent with the importance of this critical age stage in the incidence of obesity.

Gender and child obesity

Table (4.4) shows that there is no statistical relationship between the gender of the child and his obesity.

Family contains children less than five years old and child obesity

Table (4.4) shows that there is no statistically significant relationship between the family that contains children less than five years old and the obesity of her children.

Place of residence and child obesity

Table (4.4) shows that there is a strong statistical significance (P <0.001) between residence place of family and the obesity of children and the value of $x^2 = 30.31$.

Children who suffer from obesity and who live in the city were 62 children, representing 67.4%, while the children who suffered from obesity and live in the villages were 24

children, representing 26.1%, and finally, the children who suffer from obesity and live-in refugee camps, the number was 6 children and they represented 6.5%.

On the other hand, children who did not suffer from obesity lived in the city, the number was 279 children, representing 90.6%, while the children who did not suffer from obesity and living in the villages were representing 7.5%, and finally, children who did not suffer from obesity and lived in refugee camps were 6 children and representing 1.9%.

The results of current study are consistent with the results of the study Hassan and his co-workers Hassan et al. (2016), which indicated the prevalence of obesity in urban areas is greater than in rural areas, and the researcher explains that the possibility of access to energy-dense food products is easier in urban areas than in rural areas, and urban life depends on a sedentary lifestyle, unlike life in rural areas, which depend on a life rich in movement and activity.

Marital status of mother and child obesity

Table (4.4) shows that there is a strong statistical significance (P <0.001) between the marital status of the mother and the obesity status of children and the value of $x^2 = 20.33$.

Married mothers had 306 children without obesity, representing 99.4%, while divorced women had only 2 non-obese children that almost 0.6% of the total number of the none-obese children participating in the study and without any obese child in the widow group.

On the other hand, women who were married and had children suffered from obesity 82 children, representing 89.1%, while the number of divorced women who had children suffering from obesity was 8 children, representing 8.7%, while children who were obese and their mothers were widows. Their number was 2 children, and they represented 2.2%.

The results of current study are inconsistent with the results of the study Barrera et al. (2016), which the researcher explains that the married mother in the Palestinian society is surrounded by the family environment, which creates an atmosphere of stability and an increase in family visits, which in turn will increase the obesity of children as a result of all these circumstances, while the study that was inferred It refers to an American society that suffers from dispersion upon the separation between parents, and at that time the child suffers from malnutrition, which appears in the form of obesity in the child.

This study is identical to Huffman et al. (2010) study whose results were that children of single-parent families had significantly more (P<0.01) overweight than children of two-parent families.

• Age of children and obesity

Table (4.4) shows that there is no statistically significant relationship between the age of children and obesity.

Number of household members and child obesity

Table (4.4) shows that there is a strong statistical significance ($P < 0.001$) between the number of family members and child obesity with an approximate mean of 8 and SD with 2.59, The approximate mean number of family members whose child was 7 and SD with 1.77 and the t-value was -4.25 and the CI was (-1.79, -0.65).

The results of current study are consistent with the results of the study Nackers & Appelhans (2013), whereby a family with a large number of members suffer from food insecurity that might compromise the quality of their diet.

Food insecurity and higher intake of cheap food which is usually starchy or energy-dense foods might be the reason behind malnutrition over-nutrition, and obesity was one of its outcomes.

Income monthly of family and child obesity

Table (4.4) shows that there is no statistically significant relationship between the family's monthly income level and the obesity level of the children of that family.

4.7 The difference in respondent in relation to medical history for child

Table (4.5) Comparison between the medical history for child respondent n=400

Variables	Obese children (n=92)	Non-Obese children (n=308)	t-Stat (95% C.I)/x^2	p-Value
	N(%)	N(%)		
Clinical disease			0.12	0.73
Yes	12(13)	36(11.7)		
No	80(87)	272(88.3)		
Food allergy			0.69	0.41
Yes	9(9.8)	22(7.1)		
No	83(90.2)	286(92.9)		
Gain or loss weight			6.26	0.01
Yes	7(7.6)	57(18.5)		
No	85(92.4)	251(81.5)		

P-value ≤ 0.05

Table (4.5) shows that there is no statistically significant relationship between diseases and food allergies that children suffer from and their level of obesity, but there is a statistically significant relationship between weight gain or loss in the last six months of the child and

their level of obesity at P-value = 0.01 and the value of x^2 = 6.26, the number of children who lost or gained weight in the last six months and suffered from obesity was 7 children, representing 7.6% of the obese children, and the children who lost or gained weight in the last six months and did not suffer from obesity were 57 children, or 18.5% of the children Non-obese children, on the other hand, the number of children who did not lose or gain weight in the last six months and suffered from obesity was 85 children or 92.4% of the obese children, and the children who lost or gained weight in the last six months and did not suffer from obesity were 251 children or 81.5 % of children who are not obese.

4.8 The difference in respondent in relation to medical history for mother

Table (4.6) Comparison between the medical history for mother respondent n=400

Variables	**Obese children (n=92)**		**Non-Obese children (n=308)**		**t-Stat (95% C.I)/x^2**	**p-Value**
	N(%)	**Mean(SD)**	**N(%)**	**Mean(SD)**		
High risk at pregnancy					53.80	< 0.001
High blood pressure	17(18.5)		14(4.5)			
Gestational diabetes	13(14.1)		14(4.5)			
Preeclampsia	10(10.9)		6(1.9)			
Preterm labor (before 37 weeks of pregnancy)	4(4.3)		8(2.6)			
Others	12(13)		47(15.3)			
None	36(39.1)		219(71.1)			
Complications during labor					6.28	0.01
Have	23(25)		121(39.3)			
Not have	69(75)		187(60.7)			
Birth weight of child		2.45(0.59)		3.20(0.62)	10.27 (0.61, 0.89)	< 0.001
Introducing neonatal to ICU					7.44	0.006
Yes	17(18.5)		26(8.4)			
No	75(81.5)		282(91.6)			

P-value ≤ 0.05

- **Risk at pregnancy**

Table (4.6) shows that there is a strong statistically significant relationship ($p < 0.001$) between the risks that affect the pregnant woman and the risk of obesity for the same child with the value of x^2=53.80.

The study included children who suffered from obesity and their mothers did not suffer from any risk during pregnancy, some of whom suffered from high blood pressure and gestational diabetes, some of whom suffered from other problems, preeclampsia, and premature birth before 37 weeks, their proportions were: 39.1% of obese children, 18.5% and, 14.1% and, 13% and, 10.9% finally 4 children with 4.3%, respectively.

On the other hand, the number of non-obese children and their mothers did not suffer from any risk during pregnancy, some of whom suffered from high blood pressure and gestational diabetes, some of whom suffered from other problems, preeclampsia, and premature birth before 37 weeks, their proportions were 71.1%4.5% and 4.5% and 15.3% and 1.9% finally 8 children with 2.6%, respectively

The results of current study are not consistent with the results of the previous study by Josey et al. (2019), a pregnant woman with gestational diabetes can give birth to obese children, and the researcher explains this to the effect of high blood glucose levels and high insulin levels, which is also growth hormone. Furthermore, results of current study did not agree with the results of the study Gaskins et al. (2010). prematurely born 11-year-old adolescents with pre-natal poly-drug and postnatal environmental risk factors, we did not find higher rates of obesity.

- **Complications during labor**

Table (4.6) shows that there was a statistical significance in the relationship ($p < 0.05$) between obese children and the complications of childbirth of their mothers while giving birth for those children with values of $x^2=6.28$.

The obese children and their mothers suffered complications during their birth were 25% of the obese children, while 75% were obese and their mother did not suffer any complications during birth.

On the other hand, 121 children who were not obese and their mothers suffered from complications during their birth, representing were 39.3% of the obese children, while 60.7% of the children were obese and their mother did not suffer any complications during their birth.

- **Birth weight of child**

Table (4.6) shows that there is a strong statistical significance association ($P < 0.001$) between the birth weight of the child and obesity in children with an approximate mean of the birth weight for obese children 2.45 kg and SD with 0.59, and with an approximate mean of the birth weight for non-obese children 3.20 kg and SD with 0.62 and the t-value was 10.27 and the CI was (0.61, 0.89).

It is noticed that obese children were born with low birth weight and can be related to hormonal factors (Jaquet et al., 1999). Interestingly, it has been suggested that children born with a low weight develop high leptin levels during catch-up growth, which suggests leptin resistance.

The results of this study were inconsistent with the results of Qiao et al. (2015) study, which positively linked birth weight gain and obesity in stages from 6 years to 13 years. The researcher explains his results that when children are born with low weights in the Gazan society, they will receive nutrition additional doses of feeding that is not from breastfeeding and this can that expose them to weight gain in their childhood.

- **Introducing neonatal to ICU**

Table (4.6) shows that there is a statistical significance relationship ($P < 0.05$) that the child at birth was admitted to the intensive care unit and between obesity in children and the value of $x^2 = 7.44$.

The children who became obese and were admitted to the intensive care unit when they were born were 18.5% of the obese children while 8.4% of the non-obese children were admitted to the NICU.

The results of this study are consistent with those of Phaff et al. (1978) study, whereby children when admitted to intensive care units will be given combinations of high-protein foods that will affect their future weight in childhood.

4.9 The difference in respondent in relation to physical activities for child

Table (4.7) Comparison between the physical activities for children respondent n=400

Variables	Obese children (n=92)		Non-Obese children (n=308)		t-Stat (95% C.I)/x^2	p-Value
	N (%)	Mean (SD)	N (%)	Mean (SD)		
Hours per day child spend on screen time					2.84	0.24
< 2 hours	53(57.6)		149(48. 3)			
2-4 hours	35(38)		136(44.2)			
> 4 hours	4(4.3)		23(7.5)			
Child have TV/PC in the bedroom					17.32	< 0.001
Yes	33(35.9)		49(15.9)			
No	59(64.1)		259(84.1)			
Hours per day child active					68.64	< 0.001
< 2 hours	13(14.1)		12(3.9)			
2 hours - < 6 hours	45(48.9)		45(14.6)			
6 hours – 12 hours	34(37)		251(81.5)			
Hours of child sleep per day		7.76(1.69)		9.83(1.74)	10.05 (1.66, 2.47)	< 0.001
Kind of activities child participate in					4.71	0.03
Inside the house	67(72.8)		186(60.4)			
Outside the house	25(27.2)		122(39.6)			
Child have PC/Laptop/Smartphone					99.85	< 0.001
Yes	58(63)		38(12.3)			
No	34(37)		270(87.7)			

P-value ≤ 0.05

- **Hours per day child spend on screen time**

Table (4.7) shows that there is no statistically significant association between the time a child screen time that includes TV, smartphone, and video games and obesity in children. This is against most of the literature where different studies from different contexts proved the relationship between the dose of screen time and the occurrence of obesity among children and this might be explained by data collection that happened during the lockdown and closure where children spend more of their time on smartphones and TV screen. It is also important to remember that e-learning has increased the screen time.

- **Child have TV/PC in the bedroom**

Table (4.7) shows that there is a strong statistical significance association ($P < 0.001$) between the presence of a TV or computer in the child's bedroom and obesity, where the values of $x^2 = 17.32$.

Where 35.9% obese children who have a TV or computer in their bedrooms were, and the children who were obese and did not have a TV or computer were 64.1%.

In contrast, the non-obese children who owned a TV and computer were 15.9% of the non-obese children, and those who did not own a TV and computer and were not obese were 259 children, with 84.1%.

The results of this study are identical with the results of Ferrari et al. (2015), which conducted in Brazil on children, and the presence of a computer or TV in the children's bedroom was linked to childhood overweight and obesity, and this was interpreted as that these electronic devices can lead to a sedentary lifestyle and this will reduce losing calories and leading to obesity and weight gain.

- **Hours per day child active**

Table (4.7) shows that there is a strong statistical significance association ($P < 0.001$) between the hours of activity during the day and being obese, where the values of $x^2 = 68.64$.

The obese children whose average movement per day was less than two hours, from two hours to less than six hours, and from six hours to 12 hours were divided, and were 14.1%, 48.9%, and 37%, respectively.

On the other hand, the non-obese children whose average movement per day was less than two hours, from two hours to less than six hours, from six hours to 12 hours, their percentage were; 3.9%, 14.6%, 81.5%, respectively.

The results of this study are identical with the results of LeBlanc et al. (2015), which inversely linked the child's activity rate and his BMI, and came out with recommendations to remove computers and reduce screen time, in general, to increase the rate of physical activity of children and integrate them in activities after and before school to maintain their weight.

- **Hours of child sleep per day**

Table (4.7) shows that there is a strong statistical significance relationship ($P < 0.001$) between the sleep hours of the child and obesity in children, with an approximate average of the hours of sleep for obese children per day 7.76 hours and SD with 1.69, and the average hours of sleep for non-obese children was 9.83 hours, SD with 1.74.

The results of this study are identical with the results of Chaput et al. (2006), which associated the rate of children's sleep per day and their obesity. The relationship was inverse between children who spend more time sleeping and their BMI. Many previous studies that have found a relationship between sleep deprivation and increased ghrelin level and decreases leptin level with a corresponding increase in hunger and appetite, especially for foods rich in fats and carbohydrates among adulthood and childhood.

- **Kind of activities child participate in**

Table (4.7) shows that there is a statistical significance relationship ($P < 0.05$) between the place of practicing activities for the child and obesity, where the values of $x^2 = 4.71$.

The percentages of obese children who are doing their activities outside the home and inside the were 27.2% and 72.8%, respectively.

On the other hand, the number and percentage of non-obese children who were practicing their activities outside the home and inside the home were 39.6% and 60.4%, respectively.

Referring to the results of a study conducted in Bangladesh by Saha et al. (2013) to find out the effect of the time-out for physical activities by the child, whether inside or outside the home, and its impact on childhood obesity, and the relationship was statistically significant at ($P < 0.000$) and this is consistent with the results of this study.

- **Child have PC/Laptop/Smartphone**

Table (4.7) shows that there is a strong statistical significance ($P < 0.001$) between the child's possession of a smartphone, computer, or laptop device and obesity, where the values of $x^2 = 99.85$.

The percentage of children who own and do not own computers, smartphones, laptops, and are obese: 58 children with 63%, 34 children with 37%, respectively.

On the other hand, the number and percentage of children who own and do not have computers, smartphones, and laptops and are not obese were 12.3%, and 87.7%, respectively.

The results of this study are consistent with the results of LeBlanc et al. (2015) study, which linked the child's possession of electronic devices such as a computer or smartphone, and his weight gain, because there is a relationship between the presence of these devices and a sedentary lifestyle in children, which affects the child's gaining additional weight and increases obesity.

4.10 The difference in respondent in relation to breastfeeding and dietary behavior

Table (4.8) Comparison between the breastfeeding and dietary behavior respondent n=400

Variables	Obese children (n=92)		Non-Obese children (n=308)		t-Stat (95% C.I)/x^2	p-Value
	N(%)	Mean(SD)	N(%)	Mean(SD)		
Child breastfeed					52.31	< 0.001
Yes	62(67.4)		292(94.8)			
No	30(32.6)		16(5.2)			
Exclusive breastfeeding					39.99	< 0.001
Yes	13(21.0)		158(54.1)			
No	49(79.0)		134 (45.9)			
Long of breastfeeding/Month					109.88	< 0.001
Without	29(31.9)		16(5.2)			
1 m-less 3 m	6(6.6)		5(1.6)			
3 m-less 6 m	22(24.2)		15(4.9)			
6 m-less 9 m	9(9.9)		49(15.9)			
9 m-less 12 m	2(2.2)		31(10.1)			
12 m-less 15 m	5(5.5)		99(32.1)			
15 m-less 18 m	6(6.6)		51(10.6)			
More than 18 m	12(13.2)		42(13.6)			
Responsible for meal preparation					16.81	< 0.001
Mother	81(88)		299(97.1)			
Father	4(4.3)		2(0.6)			
Sister	0(0)		4(1.3)			
Brothers	0(0)		0(0)			
Others	7(7.6)		3(1)			
No. of meals child eat per day		2.83(0.57)		3.00(0.48)	2.62 (0.42, 0.30)	0.01
No. of snacks child eat per day		0.98(1.31)		2.02(1.25)	6.76(0.74, 1.35)	< 0.001
Describe of child appetite					9.08	0.03
Good	30(32.6)		138(44.8)			
Fair	44(47.8)		139(45.1)			
Poor	14(15.2)		20(6.5)			
Picky	4(4.3)		11(3.6)			
Family eat meal together weekly		2.96(2.41)		5.79(2.01)	10.23(2.28, 3.38)	< 0.001
Child refused food					4.16	0.225
Never	14(15.2)		61(19.8)			
Rarely	49(53.3)		180(58.4)			
Often	28(30.4)		63(20.5)			
Usually	1(1.1)		4(1.3)			
Offer another option when child refused food					0.39	0.53
Yes	45(48.9)		162(52.6)			
No	47(51.1)		146(47.4)			

P-value ≤ 0.05

- **Child breastfeeding**

Table (4.8) shows that there is a strong statistical significance association ($P < 0.001$) between breast-feeding a child and obesity status, where $x^2 = 52.31$ values.

The percentage of children who were breastfed and not breastfed among the obese children were 67.4%, 30 and 32.6%, respectively.

In contrast, the percentages of children who were breastfed Versus not breastfed among non-obese children were 94.8%, and 5.2%, respectively.

The results of this study are consistent with the study of Wang et al. (2017), which linked between reducing the prevalence of obesity in children and breastfeeding.

Majority of the breastfeed obese children (79.0%) were not breastfed exclusively for six months while only 21% of obese children who were breast feed they were on exclusive breastfeeding.

On the other hand, majority of the breastfed non-obese children (54.1%) were on exclusive breast feeding and the difference between the proportions is statistically significant indicating strong association between exclusive breastfeeding and obesity among children.

- **Length of breastfeeding/Month**

Table (4.8) shows that there is a strong statistical significance association ($P <0.001$) between the length of the breastfeeding period for the child and obesity, where the values of $x^2 = 109.88$.

The period of breastfeeding for obese children was divided into those who were not breastfed, from one month to less than three months, from three months to less than six months, from six months to less than nine months, from nine months to less than 12 months, From 12 months to less than 15 months, from 15 months to less than 18 months, more than 18 months, and were: 31.9%, 6.6%, 24.2%, 9.9%, 2.2%, 5.5%, 6.6%, and finally 13.2% respectively.

On the other hand, the period of breastfeeding for non-obese children was divided into those who were not breastfed, from one month to less than three months, from three

months to less than six months, from six months to less than nine months, from nine months to less From 12 months, from 12 months to less than 15 months, from 15 months to less than 18 months, more than 18 months, and were: 5.2%, 1.6%, 4.9 %, 15.9%, 10.1%, 32.1%, 10.6%, and finally 13.6% respectively.

The results of this study are consistent with the study of Armstrong & Reilly (2002), where the results of the two studies indicated that breastfeeding can protect against the spread of obesity in childhood.

The results of this study are consistent with the study of Durmuş et al. (2011), where the children most protected from the prevalence of obesity were breast-fed until the age of 12 months, but after the year the results were not significant in reducing the prevalence of obesity for children who were breast-fed for more than a year. Also, children who received breastfeeding for less than three months are also less protected from obesity, so there is an important role for breastfeeding up to a year of the child's age to protect against childhood obesity.

Responsible for meal preparation

Table (4.8) shows that there is a strong statistical significance relationship ($P < 0.001$) between those responsible for food preparation and obesity, where the values of $x^2 = 16.81$.

The result showed that among the obese children, fathers were responsible for meal preparation for 4.3% of these children, while in the non-obese group's fathers were responsible for preparing food for only 0.6% of these children.

These results might be more logical as fathers give less attention to the contents of the meals and they will prepare more satiating energy-dense meals.

The results of this study were largely consistent with many studies, including the study conducted by FitzPatrick & Cohen-Aponte (2019) and summarized many studies, where this study linked the place of food for the child and where and who prepares it and linked it directly to his obesity, and in which the child who eats food prepared at home from Before his mother is less likely to be obese, unlike a child who eats food outside the home or prepared by someone other than his mother. The results of a consumer expenditure survey indicated that fewer vegetables were purchased by single-parent households (single father

or mother) as compared to dual-parent households (Ziol-Guest et al., 2006). These findings suggest a possibility of higher fat consumption by children of single-parent as compared to dual-parent households as there has been an established negative association of vegetable consumption with an intake of dietary fat.

Numbers of meals child eat per day

Table (4.8) shows that there is a statistical significance association (P = 0.01) between the number of meals per day and obesity in children with an approximate mean of the number of meals of 2.83 meals and SD with 0.57, and the approximate mean of the number of meals for non-obese children was 3 meals and SD with 0.48, and the t-value was 2.62 and the CI (0.42, 0.30).

The results of this study are consistent with the results of the study conducted by Andre et al. (2005), which linked between the number of meals a child eats and obesity, where there was an inverse relationship, the more the number of meals eaten by the child, the less obesity that children suffer in childhood, and the researcher explains this regular insulin secretion rate who eats at least three meals, and thus the demand for sweets and energy-dense items is reduced.

Number of snacks child eat per day

Table (4.8) shows that there is a strong statistical significance relationship (P < 0.001) between the number of snacks per day and obesity in children with an approximate mean of the number of snacks 0.98 snacks and SD with 1.31, and the approximate mean of the number of snacks for non-obese children was 2.02 snacks and SD with 1.25 The t-value was 6.76 and the CI (0.74, 1.35).

The results of the number of meals and snacks daily of the non-obese children were almost consistent with the general guidelines for healthy eating where they recommended 3 meals and two snacks daily.

The results of this study are consistent with the results of the study conducted by Andre et al., (2005), which found between more meals, including snacks, but healthy ones, and preventing the spread of obesity rates in children, but if the type of snacks was compared, this study could contradict the study conducted by Newby (2007), who reported that if the

type of snack was rich in trans fats or sugars, this would have a great relationship to the increase in the prevalence of obesity in children.

Therefore, what determines weight control in children is the quality of snacks, not their presence or not. Healthy snacks reduce the rates of weight gain and obesity in childhood.

Child appetite

Table (4.8) shows that there is a statistical significance association ($P < 0.05$) between the child's appetite and obesity, where $x^2 = 9.08$.

The obese children were divided according to their average appetite into: good, fair, poor, and finally picky, and their proportions were 32.6%, 47.8%, 14 children with 15.2% and 4.3%, respectively.

On the other hand, the non-obese children were divided according to their average appetite into: good, fair, poor, and finally picky, and their numbers and percentages were, respectively: 138 children with 44.8%, 139 children at 45.1%, 20 children with 6.5%, and finally 11 children with a rate 3.6%.

Child refused food

Table (4.8) shows that there is no statistically significant relationship between the number of times a child refuses food and obesity.

Offer another option when child refused food

Table (4.8) shows that there is no statistically significant relation between offering another's option when the child refuses food and obesity.

4.11 The difference in respondent in relation to food frequency for child

Table (4.9) Comparison between the food frequency for child respondent n=400

Variables	Obese children (n=92)	Non-Obese children (n=308)	t-Stat (95% C.I)/x^2	p-Value
	N (%)	N (%)		
Vegetables / salads			60.20	< 0.001
Daily	3(3.3)	106(34.4)		
4-6 Times	11(12)	79(25.6)		
1-3 Times	63(68.5)	94(30.5)		
Don't eat	15(16.3)	29(9.4)		
Fruits and vegetables			43.96	< 0.001
Daily	8(8.7)	74(24.0)		
4-6 Times	5(5.4)	89(28.9)		
1-3 Times	58(63)	110(35.7)		
Don't eat	21(22.8)	35(11.4)		
Fast foods			72.18	< 0.001
Daily	8(8.7)	7(2.3)		
4-6 Times	43(46.7)	34(11)		
1-3 Times	20(21.7)	101(32.8)		
Don't eat	21(22.8)	166(53.9)		
Milk, cheese and dairy			62.57	< 0.001
Daily	8(8.7)	133(43.2)		
4-6 Times	9(9.8)	65(21.1)		
1-3 Times	46(50)	76(24.7)		
Don't eat	29(31.5)	34(11)		
Meat			55.24	< 0.001
Daily	0(0)	11(3.6)		
4-6 Times	0(0)	60(19.5)		
1-3 Times	43(46.7)	180(58.4)		
Don't eat	49(53.3)	57(18.5)		
Fish			39.16	< 0.001
Daily	0(0)	4(1.3)		
4-6 Times	2(2.2)	47(15.3)		
1-3 Times	34(37)	174(56.5)		
Don't eat	56(60.9)	83(26.9)		
Chicken			8.08	0.04
Daily	0(0)	6(1.9)		
4-6 Times	5(5.4)	44(14.3)		
1-3 Times	77(83.7)	237(76.9)		
Don't eat	10(10.9)	21(6.8)		
Sweets and candies			92.41	< 0.001
Daily	20(21.7)	56(18.2)		
4-6 Times	57(62)	47(15.3)		
1-3 Times	11(12)	149(48.4)		
Don't eat	4(4.3)	56(18.2)		

Table (4.9a): continued

Nuts			23.37	< 0.001
Daily	3(3.3)	6(1.9)		
4-6 Times	6(6.5)	45(14.6)		
1-3 Times	32(34.8)	167(54.2)		
Don't eat	51(55.4)	90(29.2)		
Chocolate			71.36	< 0.001
Daily	51(55.4)	68(22.1)		
4-6 Times	32(34.8)	57(18.5)		
1-3 Times	7(7.6)	155(50.3)		
Don't eat	2(2.2)	28(9.1)		
Soft drinks			105.91	< 0.001
Daily	19(20.7)	22(7.1)		
4-6 Times	45(48.9)	29(9.4)		
1-3 Times	20(21.7)	99(32.1)		
Don't eat	8(8.7)	158(51.3)		
Canned fruit juices			82.69	< 0.001
Daily	3(3.3)	24(7.8)		
4-6 Times	36(39.1)	14(4.5)		
1-3 Times	27(29.3)	89(28.9)		
Don't eat	26(28.3)	181(58.8)		
Legumes (chickpeas, beans, lentils)			26.15	< 0.001
Daily	0(0)	32(10.4)		
4-6 Times	17(18.5)	112(36.4)		
1-3 Times	64(69.6)	142(46.1)		
Don't eat	11(12)	22(7.1)		

P-value ≤ 0.05

Vegetables / Salads

Table (4.9) shows a strong statistical significance (P < 0.001) between vegetable and salad intake and childhood obesity, where $x^2 = 60.20$.

The numbers and percentages of obese children who eat salad on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: 3 children with 3.3%, 11 children with 12%, 63 children with 68.5%, and finally 15 children, 16.3%.

On the other hand, the numbers and percentages of non-obese children who eat salad on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, following, 106 children with 34.4%, 79 children at 25.6%, 94 children with a rate of 30.5%, and finally 29 children, 9.4%, respectively.

The results of current study are consistent with the study conducted by Kremer-Sadlik et al. (2015), where he compared the difference between the American diet, which is poor in vegetables, and the French diet rich in vegetables, and how the French diet affects the reduction of childhood obesity.

Fruits and vegetables

Table (4.9) shows a strong statistical significance association ($P < 0.001$) between fruits and vegetable intake and childhood obesity, where $x^2 = 43.96$.

The numbers and percentages of obese children who eat fruits and vegetables on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: 8 children with 8.7%, 5 children with 5.4%, 58 children with 63%, and finally 21 children, 22.8%.

On the other hand, the numbers and percentages of non-obese children who eat fruits and vegetables on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, following, 74 children with 24%, 89 children with 28.9%, 110 children with a rate of 35.7%, and finally 35 children, 11.4%, respectively.

Before talking about the results of this study, which talked about the fact that family and child consumption of fruits can reduce childhood obesity, the researcher refer to a wonderful study that linked the effect of parental behavior on preschool children to the introduction of fruits to the children's diet (Natale et al., 2014).

The results of this study were consistent with a previous study conducted by He et al. (2004), which stated that there is an inverse relationship between the amount of vegetable and fruit intake and the prevalence of obesity.

Fast foods

Table (4.9) shows a strong statistical significance ($P < 0.001$) between fast foods and childhood obesity, where $x^2 = 72.18$.

The numbers and percentages of obese children who eat fast food on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: 8 children with 8.7%, 5 children with 5.4%, 58 children with 63%, and finally 21 children, 22.8%.

On the other hand, the numbers and percentages of non-obese children who eat fast food on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, following, 7 children with 2.3%, 34 children with 11%, 101 children with a rate of 35.7%, and finally 35 children, 11.4%, respectively.

The results of this study coincided with the study conducted by Kar & Khandelwal, (2015) in India, which drew a strong direct correlation between the rate of eating fast food and junk food and between weight gain and obesity.

Milk, cheese and dairy

Table (4.9) shows a strong statistical significance ($P < 0.001$) between milk, cheese/ dairy products and childhood obesity, where $x^2 = 62.57$.

The numbers and percentages of obese children who eat dairy products, cheese, and drink milk, on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: 8 children with 8.7%, 9 children with 9.8%, 46 children with 50%, and finally 29 children, 31.5%.

On the other hand, the numbers and percentages of non-obese children who eat dairy products, cheese, and drink milk on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, respectively: 133 children with 43.2%, 65 children with 21.2%, 76 children with a rate of 24.7%, and finally 34 children, 11%.

The results of this study are consistent with a study conducted by Lu et al. (2016), which drew an inverse relationship between the rate of eat dairy products, cheese, and drink milk in general among children and the decrease in the rate of fat formation in their body, and thus the result was that children who eat dairy products, cheese, and drink milk will have lower rates of obesity.

Meat

Table (4.9) shows a strong statistical significance association (P < 0.001) between meat intake and childhood obesity, where $x^2 = 55.24$.

The numbers and percentages of obese children who eat meat on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: null children with 0%, null children with 0%, 43 children with 46.7%, and finally 49 children, 53.3%.

On the other hand, the numbers and percentages of non-obese children who eat meat on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, following, 11 children with 3.6%, 60 children with 19.5%, 180 children with a rate of 58.4%, and finally 57 children, 18.5%, respectively.

The results of this study are not consistent with the results of various studies conducted on the presence of red meat in the diet and its association with obesity, such as Henneberg, (2016) and Wang & Beydoun, (2009) study, where these studies link the presence of meat in diets directly to obesity, the researcher explains that animal protein and red meat despite its high-calorie content, However, it works to satiate for a longer period of time than other nutrients, and therefore the demand for the next meal is longer.

Fish

Table (4.9) shows a strong statistical significance association (P < 0.001) between fish intake and childhood obesity, where $x^2 = 39.16$.

The percentages of obese children who eat fish on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat were 0%, 2.2%, 37%, and 60.9%, respectively.

On the other hand, the percentages of non-obese children who eat fish on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, were 1.3%, 15.3%, 56.5%, and 26.9%, respectively. The findings of this study are consistent with the study conducted by Tarro et al. (2014), in which childhood fish consumption was

associated as a protective factor from childhood obesity (odds ratio 0.39; 95% CI 0.23 to 0.67).

Chicken

Table (4.9) shows a statistical significance relationship ($P < 0.05$) between chicken intake and childhood obesity, where $x^2 = 8.08$.

The percentages of obese children who eat chicken on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: null children were 0%, 5.4%, 83.7%, and 10.9%., respectively.

On the other hand, the percentages of non-obese children who eat chicken on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it were 1.9%, 14.3%, 76.9%, and 6.8%, respectively.

The results of our study are consistent with the recent talk about the importance of the Mediterranean diet and what it contains poultry meat as an alternative to red meat and its effectiveness in controlling blood sugar levels and reducing insulin resistance, and all of this has a significant impact on rates of reducing obesity in children (Donma & Donma, 2017).

The results of this study are also in line with the results of a previous study on the relationship between consumption intake of chicken or poultry meat and protection from the childhood obesity (Nicklas et al., 2003).

Sweets and candies

Table (4.9) shows a strong statistical significance association ($P < 0.001$) between sweets and candies intake and childhood obesity, where $x^2 = 92.41$.

The percentages of obese children who eat sweets and candies on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it were 21.7%, 62%, 12%, and 4.3%, respectively.

On the other hand, the percentages of non-obese children who eat sweets and candies on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it was were 18.2%, 15.3%, 48.4%, and 18.2%, respectively.

The results of this study are consistent with several studies, including Nicklas et al. (2003), which have linked eating energy-dense foods such as sweets and sweets to an increase in obesity in America.

Nuts

Table (4.9) shows a strong statistical significance association ($P < 0.001$) between nuts intake and childhood obesity, where $x^2 = 23.37$.

The percentages of obese children who eat nuts on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it were 3.3%, 6.5%, 34.8%, and 55.4%, respectively.

On the other hand, percentages of non-obese children who eat nuts on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it were1.9%, 14.6%, 54.2%, and 29.2%, respectively.

Our study results are consistent with Wall et al. (2018) study, in which increasing the intake of nuts to three times a week reduced the prevalence of childhood obesity.

Chocolate

Table (4.9) shows a strong statistical significance association ($P < 0.001$) between chocolate intake and childhood obesity, where $x^2 = 71.36$.

The numbers and percentages of obese children who eat chocolate on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: 51 children with 55.4%, 32 children with 34.8%, 7 children with 7.6%, and finally 2 children, 2.2%.

On the other hand, the numbers and percentages of non-obese children who eat chocolate on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat

it, following, 68 children with 22.1%, 57 children with 18.5%, 155 children with a rate of 50.3%, and finally 28 children, 9.1%, respectively.

The results of our study were in line with the results of a study conducted in the Kingdom of Saudi Arabia AlShehri (2014) on the direct relationship between increase the chocolate intake and the increased prevalence of childhood obesity.

Soft drinks

Table (4.9) shows a strong statistical significance relationship ($P < 0.001$) between soft drinks intake and childhood obesity, where $x^2 = 105.91$.

The numbers and percentages of obese children who drink soft drinks on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: 19 children with 20.7%, 45 children with 48.9%, 20 children with 21.7%, and finally 8 children, 8.7%.

On the other hand, the numbers and percentages of non-obese children who drink soft drinks on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it, following, 22 children with 7.1%, 29 children with 9.4%, 99 children with a rate of 32.1%, and finally 158 children, 51.3%, respectively.

The results of this study agree with all reviews and scientific literature Chang & Nayga (2010), where a strong relationship was found between soft drinks and weight gain and obesity in children, and Ludwig et al. (2001) study found that there is a strong relationship with increased intake of soft drinks in childhood and obesity in children, one of the solutions on how to replace these high-calorie drinks with low-calorie ones to stop the spread of childhood obesity.

Canned fruit juices

Table (4.9) shows a strong statistical significance association ($P < 0.001$) between canned fruit juices intake and childhood obesity, where $x^2 = 82.69$.

The numbers and percentages of obese children who drink canned fruit juices on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it were the following, 3.3%, 39.1%, 29.3%, and 28.3%, respectively.

On the other hand, the numbers and percentages of non-obese children who drink canned fruit juices on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it were 7.8%, 4.5%, 28.9%, and 58.8%, respectively.

The results of our study are consistent with the talk about the difference between full-fiber fruit and peels and de-fibered and high-sugar fruit juice, which raises the number of calories contained in canned fruit juice, and therefore one of the solutions to treat childhood obesity was to replace canned fruit juice with natural full-fiber fruit (Heyman & Wojcicki, 2012).

Legumes (chickpeas, beans, lentils)

Table (4.9) shows a strong statistical significance association ($P < 0.001$) between legumes (chickpeas, beans, lentils) intake and childhood obesity, where $x^2 = 26.15$.

The percentages of obese children who eat lignums (chickpeas, beans, lentils) on a daily basis, from 4 to 6 times a week, from one to three times a week, and who did not eat it: null children were the following, 0%, 18.5%, 69.6%, and 12%, respectively.

On the other hand, percentages of non-obese children who eat lignums (chickpeas, beans, lentils) on a daily basis, from 4 to 6 times a week, from one to three times a week, and did not eat it was were the following, 10.4%, 36.4%, 46.1%, and 7.1%, respectively.

The results of this study are consistent with Rebello et al. (2014) study, which suggested replacing energy-dense foods with fiber-rich legumes, which control blood sugar levels and reduce the intake of energy-dense foods, which are empty of the basic nutritional components for building the human body, and therefore a new mechanism was adopted based on legumes in healthy food to prevent the prevalence of obesity in general.

4.12 The difference in respondent in relation to parental modeling for child

Table (4.10) Comparison between the parental modeling for child respondent n=400

Variables	Obese children (n=92)		Non-Obese children (n=308)		t-Stat (95% C.I)/x^2	p-Value
	N (%)	Mean (SD)	N (%)	Mean (SD)		
Fathers' height		1.72(0.08)		1.73(0.08)	0.73 (-0.01, 0.03)	0.47
Father's weight		91.42(11)		80.57(15)	-7.59 (-13.67, -8.03)	< 0.001
Mothers' height		1.62(0.07)		1.61(0.08)	-0.10 (-0.02, 0.02)	0.92
Mother's weight		77.38(10.09)		67.11(12.37)	-8.12 (-12.77, -7.77)	< 0.001
Parental Obesity					56.85(2)	< 0.001
Both are obese	30(32.6)		25(8.1)			
One is Obese	34(37.0)		65(21.1)			
None is obese	28(30.4)		218(70.8)			
Father physical activity					13.16	< 0.001
Yes	14(15.2)		108(35.1)			
No	78(84.4)		200(64.9)			
Mother physical activity					9.09	0.003
Yes	22(23.9)		127(41.2)			
No	70(76.1)		181(58.8)			
Mother smoke					53.71	< 0.001
Smoker/Hookah	1(1.1)		2(0.6)			
Passive smoker	60(65.2)		73(23.7)			
None	31(33.7)		233(75.6)			
I/his father eat when I/ he is watching TV					36.23	< 0.001
Most often	43(46.7)		51(16.6)			
Sometimes	29(31.5)		165(53.6)			
I rarely/I don't eat	20(21.7)		92(29.9)			
I /his father when I/he feels bored					61.85	< 0.001
Most often	48(52.2)		41(13.3)			
Sometimes	22(23.9)		132(42.9)			
I rarely/I don't eat	22(23.9)		135(43.8)			
I /his father eats when I/he is angry					38.34	< 0.001
Most often	28(30.4)		40(13.0)			
Sometimes	39(42.4)		73(23.7)			
I rarely/I don't eat	25(27.2)		195(63.3)			
I/his father eat late at night before going to sleep					34.29	< 0.001
Most often	38(41.3)		46(14.9)			
Sometimes	40(43.5)		148(48.1)			
I rarely/I don't eat	14(15.2)		114(37)			
I/his father eat when I/he am anxious					42.43	< 0.001
Most often	33(35.9)		33(10.7)			
Sometimes	33(35.9)		88(28.6)			
I rarely/I don't eat	26(28.3)		187(60.7)			

P-value ≤ 0.05

Fathers' height and weight

Table (4.10) shows that there is no statistical significance for father's height and childhood obesity.

Table also shows that there is a strong statistical significance relationship ($P < 0.001$) between father's weight and childhood obesity, where the mean weight of fathers of obese children was 91.42 kg, SD with 11, mean weight of fathers of non-obese children 80.57 kg, SD with 15, t-value was -7.59 and CI (-13.67, -8.03).

The results of current study are consistent with the talk about the study conducted by Huang et al. (2009), where the general perception and the parent's view of their child's weight has a significant impact on stopping or treating his child's weight gain, and all of this can be due to knowing that they are any parents who suffer primarily from overweight and obesity.

Mothers' height and weight

Table (4.10) shows that there is no statistical significance for mothers' height and childhood obesity.

Table (4.10) shows that there is a strong statistical significance ($P < 0.001$) between mother's weight and childhood obesity, where the mean weight of mothers of obese children was 77.38 kg, SD with 10.09, the mean weight of mothers of non-obese children was 67.11 kg, SD with 12.37, t-value was -8.12 and CI (-12.77, -7.77).

The results of current study are in agreement with the results of a study conducted by Johannsen et al. (2006), which found that there is an incremental positive relationship between the weight of the mother and the weight of her child, as the researcher explains that the mother can transfer her knowledge and perceptions about obesity without feeling to her child and thus the mother who suffers from obesity can change From her young child's view of obesity, since it is his ideal at the beginning of his life.

It was reported that overweight or obese mothers who exceeded the gestational weight gain recommendations had higher chances of delivering a large baby by 3-folds (OR=3.59) and 6-folds (OR=6.71) compared to normal-weight mothers, increased gestational weight gain

was also highly significant for neonates of gestational age nevertheless of maternal BMI, also this result establishes that higher BMI and pre-gestational, gestational weight gain was attendant with a significant increase of BMI-for-gestational-age after maternal control gestational pre-pregnancy weight, parity, age, and smoking (Ferraro et al., 2012).

Parental obesity indicated that 32.6% of the obese children are children of both obese parents, while in the normal children group the 8.1% of these children are from both obese parents.

The results indicated a positive association between parental obesity and childhood obesity.

The finding of this study is consistent with an Italian study in which they highlighted the role of parental obesity in the occurrence of obesity among children (Moraeus et al., 2012).

It has been reported that children had a higher obesity risk if they had an obese father (OR = 2.11), an obese mother (OR =7.66), or two obese parents (OR=8.05) (Ochoa et al., 2009).

Father physical activity

Table (4.10) shows that there is strong statistical significance (P <0.001) between the physical activities of the father and childhood obesity, where $x^2 = 13.16$.

The percentage of childhood obesity and their fathers engaged in physical activities and did not engage in physical activities was15.2%, and 84.4%, respectively.

On the other hand, the percentage of non-obese children and their fathers engaged in physical activities was 35.1%, and those who did not engage in physical activities, was 64.9%, respectively.

The results of this study are consistent with the studies that discussed the role of behavioral change in parents such as exercise, walking, or even healthy food and its transmission to their children (Golan, (2006) .

Mother physical activity

Table (4.10) shows that there is a statistical significance association ($P < 0.05$) between the physical activities of the mother and childhood obesity, where $x^2 = 9.09$.

The proportion of childhood obesity and their mothers who engaged in physical activities, and did not engage in physical activities was 23.9% and 76.1%, respectively.

On the other hand, the proportions of non-obese children and their mothers who engaged in physical activities and did not engage in physical activities were 41.2%, and 58.8%, respectively.

The results of current study coincide with the results of a study conducted in Iran by Mottaghi et al. (2017), which there was a strong relationship between increased physical activity and strength by the mother and a decrease in the rate of obesity in her children, and this also indicates that the child and the period of his stay with his mother affect his behavior and create him motivation to imitate his mother in the exercise of any activity you do, including physical activity, which in turn will increase his energy consumption and reduce the possibility of obesity.

Mother Smoke

Table (4.10) shows a strong statistical significance relationship ($P < 0.001$) between maternal smoking and childhood obesity, where $x^2 = 53.71$.

The number and percentage of childhood obesity and their mothers who smoke, passive smoke, and do not smoke were the following, 1.1%, 60 children by 65.2%, and finally 31 children by 33.7%, respectively.

On the other hand, the proportions of non-obese children and their mothers who smoke, passive smoke, and do not smoke were 23.7%, and 75.6%, respectively.

The results of this study are consistent with the results of various studies that have linked child obesity with maternal smoking, whether in pregnancy, before or after childbirth (Brophy et al., 2009). The study conducted by Toschke et al. (2002), which documented the effect of maternal smoking on increasing obesity in her child, mentioned that smoking after pregnancy, it can cause a child to gain weight, and this can be explained by the

researcher by the association of nicotine and smoking in general with an increase in insulin resistance.

Eating by father or mother while watching TV

Table (4.10) shows that there is a strong statistical significance association ($P < 0.001$) between eating by the mother or father while watching TV and childhood obesity, where $x^2 = 36.23$.

The percentages of childhood obesity and their parents who eat food while they are watching TV most often, sometimes, rarely or not eat were the following, 46.7%, 31.5%, and finally 21.7%, respectively.

On the other hand, the proportions of non-obese children and their parents who eat food while they are watching TV most often, sometimes, rarely or not eat were the following, 16.6%, 53.6%, and 29.9%, respectively.

The results of this study are consistent with the study conducted by Golan (2006), which talked about the great relationship between the effect of fathers' behavior on the nutritional path and physical activity and thus obesity in their children, and thus the researcher confirms that there is great importance for forming a healthy behavior in parents for easy transfer to children.

Eating by father or mother during bored

Table (4.10) indicated that there is a strong statistical significance relation ($P < 0.001$) between eating by the mother or father when they are bored and the childhood obesity, where $x^2 = 61.85$.

The percentages of childhood obesity and their parents who eat food while they are bored most often, sometimes, rarely or not eat, following, 52.2% and 23.9% and 23.9%, respectively.

On the other hand, the number and percentage of non-obese children and their parents who eat while bored most often, sometimes, rarely or not eat are 13.3%, 42.9%, and 43.8%, respectively.

Eating by father or mother while they are angry

Table (4.10) shows that there is a strong statistical significance association ($P < 0.001$) between eating by the mother or father when they are angry and childhood obesity, where $x^2 = 38.34$.

The proportions of childhood obesity and their parents who eat food when they are angry most of the time, sometimes, rarely or not eat were the following, 30.4%, 42.4%, and 27.2%, respectively.

On the other hand, the percentages of non-obese children and their parents who eat food when they are angry most of the time, sometimes, rarely or not eat were 13%, 23.7%, and 63.3%, respectively.

Eating by father or mother late before going to bed

Table (4.10) shows that there is a strong statistical significance association ($P < 0.001$) between eating by the mother or father late before going to bed and childhood obesity, where $x^2 = 34.29$.

The proportions of childhood obesity and their parents who eat late before going to bed most of the time, sometimes, rarely, or not ate were the following, 41.3%, 43.5%, and 15.2 %, respectively.

On the other hand, the proportions of non-obese children and their parents who eat late before going to bed most often, sometimes, rarely, or do not eat were the following, 14.9%,48.1%, and 37%, respectively.

Eating by father or mother when they are anxious

Table (4.10) indicates that there is a strong statistical significance relationship ($P < 0.001$) between mothers eating while they feel anxious and the childhood obesity, where $x^2 = 42.43$.

The proportions of childhood obesity and their parents who eat while they are anxious most often, sometimes, rarely or not eating were, the following, 35.9%, 35.9%, and 28.3%, respectively.

On the other hand, the number and percentage of non-obese children and their parents who eat when they are anxious most often, sometimes, rarely or not eat were10.7%, 28.6%, and 60.7%, respectively.

4.13The difference in respondent in relation to mother's knowledge, attitude and practices about childhood obesity for child

Table (4.11) comparison between mother's knowledge, attitude and practices about Childhood obesity for child respondent n=400

Variables	Obese children (n=92)	Non-Obese children(n=308)	t-Stat (95% C.I)/x2	p-Value
	Mean (SD)	Mean (SD)		
Knowledge	21.05(10.00)	36.24(11.98)	12.18(12.73, 17.65)	< 0.001
Attitude	53.14(15.80)	67.17(12.19)	7.85(10.49, 17.57)	< 0.001
Practice	21.71(6.14)	26.99(6.68)	6.77(3.75, 6.81)	< 0.001

P-value ≤ 0.05

4.13.1 Knowledge of the mother regarding childhood obesity

Table (4.11) shows that there is a strong statistical significance relation (P <0.001) between the level of nutritional knowledge of the mother and childhood obesity, and the mean nutritional knowledge score for mothers of obese children was 21.05 out of the total scores 57, that were collected after answering the questionnaire, and SD with 10.00 and the mean nutritional knowledge score for mothers of non-obese children 36.24 of the total scores 57, collected after answering the questionnaire, SD with 11.98, t-value was 12.18 and CI (12.73, 17.65).

From this it is clear that the mothers who had more nutritional knowledge, their child did not suffer from obesity and vice versa.

The results of this study are in line with a study conducted in the Congo by Mabiala et al. (2016), but it is inconsistent with this result, parents of obese children are distinguished by a worthy knowledge of the childhood obesity in 48.0% of cases. This is an not good result when we know the place of parents in the avoidance of childhood obesity. Really,

preventive actions are easier to carry out when speaking to parents with a deeper thoughtful of the disease.

A study was also conducted on mothers in Turkey by Yabancı et al. (2014) and measured the impact of their health nutritional knowledge and compared it to the weight of their children, and the results were identical with the results of our study, as there is a strong statistically significant relationship between a mother who has healthy nutritional knowledge and what she feeds to her children and choose the appropriate food for her child and this is reflected in a healthy way on the child's weight and reduce his obesity rate.

In an experimental intervention study conducted on children and their parents to increase the level of health nutritional knowledge of parents and its impact on their children, it showed a clear improvement in the rate of decrease in the prevalence of obesity in their children and a significant improvement in the rate of physical activity in children and an improvement in watching TV time and reducing the rate of introduction of large-energy nutrients A significant improvement was also observed in the healthy eating pattern of the children (Davison et al., 2013). These results are in great agreement with the results of current study.

The results of this study are consistent with the results of the study that was conducted in China by Liu et al. (2018), which showed that there is a relationship between the lack of nutritional knowledge among teachers of preschool students and the rates of obesity control for children at that age.

Developed countries have been interested in health education and increasing nutritional knowledge because they knew and recognized their importance in controlling obesity rates, especially in childhood, so they introduced various programs, through which the Malaysian government seeks to control and reduce childhood obesity (Sains, 2018).

The results of this study are consistent with the results of a study conducted on students from the rich society in Bangladesh by Saha et al. (2013), where it was found that increasing health nutritional knowledge can save the community in Dhaka from many nutritional problems, including the prevalence of obesity in children, where the study sample showed that healthy nutritional knowledge even when the rich society is low.

The results of this study are also consistent with the results of a study conducted in China Haq et al. (2018), which compared the effect of health nutritional knowledge and its inverse relationship with BMI, and finally concluded that attention should be paid to health nutritional knowledge to prevent the spread of obesity among students.

An interventional study was conducted in the United States on children in schools to change their nutritional knowledge with healthy nutritional knowledge. It was noted that the students undergoing the intervention improved their BMI and decreased their obesity prevalence rates Edwards (2005), and this is consistent with the results of this study.

An interesting study was conducted by Dawson-Mcclure et al. (2014), in which the focus was on parents who have children in pre-school, by including them in an educational program to gain healthy nutritional knowledge, and the results were positive for children in terms of preventing them from gaining excess weight and reducing their obesity in addition to significant prevention of a sedentary life They have by decreasing the time of watching television and increasing the physical activity of children and also of parents, and this is consistent with the results of this study.

In a study conducted in the Korean capital, Seoul by Kim. et al. (2008), to examine the impact of maternal health nutritional knowledge and its reflection on the choice of healthy and appropriate food for their pre-school children, and the results were in the same direction as the results of our study, where there was a strong inverse statistical relationship between the mother with healthy nutritional knowledge and weight. her child, while the relationship between the mother's healthy nutritional knowledge and the obesity of her children was not clear, but the relationship was clear and direct between the mother who enjoys healthy nutritional knowledge and the choice of appropriate and healthy food for her children.

On the other hand, the results of this study were not consistent with the study that was conducted to raise the health nutritional knowledge of children in the fourth and fifth grade, which was not reflected in the BMI, but it improved the systolic blood pressure (Moore et al., 2009), and this can be explained by the researcher that the intervention procedure that took place it would not have been followed up properly to correct their healthy eating behavior and practice.

In addition, the results of this study are not consistent with the study conducted by Hatta et al. (2017), in Malaysia, which was conducted to study the relationship between healthy

nutritional knowledge in mothers and its impact on obesity in their children, and his study did not produce any statistically significant relationship.

Furthermore, the results of this study are not consistent with Ismail et al. (2011), which was conducted on preparatory school students in Egypt, where there were no statistically significant results between knowledge of healthy nutrition and physical activity and their BMI.

The results of a cross-sectional study of Karimy et al. (2019), which was conducted in Iran and aimed at studying the relationship between the mother's healthy nutrition and its reflection on obesity in her children at the age of 6-7 years, and the results were contradictory with the results of our study, as there is no statistically significant relationship between the health nutritional knowledge of the mother and the BMI of her children.

4.13.1.1 The proportions of the correct answers regarding the nutritional Knowledge among mothers

Table (4.12) The proportions of the correct answers regarding the nutritional Knowledge among mothers

#	Question	Obese Children	Non-Obese Children	Total Correct answers
Q1	Obesity is a complex condition involving an excessive amount of body ----	43(15.8%)	230(84.2%)	273
Q2	Is there a difference between obesity and overweight--------?	21(8.3%)	232(91.7%)	253
Q3	What are the nutrients which usually give energy?	5(7.9%)	58(92.1%)	63
Q4	---------- is considered the most energy-dense nutrient?	20(9.8%)	185(90.3%)	205
Q5	Can you tell me the reasons why people are overweight or obese?	13(6.0%)	204(96.0%)	217
Q6	What are the health problems that can occur when a person is overweight or obese?	6(7.1%)	79(92.9%)	85
Q7	How can people prevent overweight and obesity?	5(7.8%)	41(92.2%)	46
Q8	How can you identify an obese child?	1(2.7%)	37(97.3%)	38
Q9	What's your source of information regarding child obesity management?	3(1.5%)	17(98.5%)	20
Q10	What are the possible means of obesity treatment?	16(16.3%)	196(83.7%)	212
Q11	What are the problems can children have if they don't eat before going to school?	64(19.5%)	265(80.5%)	329
Q12	Why is it so bad to eat too many sweets and candies?	9(6.6%)	128(93.7%)	137

Table (4.12) show that with regard to the mothers knowledge of childhood obesity, 15.8%, 8.3%, 7.9%, 9.8%, 6%, and 2.7% of the participating mothers of obese children can correctly define obesity, can differentiate between overweight and obesity, know the nutrients that provide us with energy, identify the Energy-rich foods, knowing the causes that lead to weight gain and obesity in children, and can identify the fat child, respectively.

Furthermore, 7.1%, 19.5%, and 6.6% of the participating mothers of obese children know the health problems resulting from obesity, they know the health complications of the child when he goes to school without eating breakfast, and they know the bad consequences of eating sweets for children, respectively. Also, 7.8% of the participating mothers of obese children know how to prevent overweight and obesity in their children, 1.5% know the correct source of information to control and treat childhood obesity, and finally, 16.3% know the available means to treat childhood obesity.

The results of this study matched with Kim et al. (2019) study that conducted on children older than 6 years, and showed that mothers who have healthy nutritional knowledge and have healthy knowledge in general, their children do not suffer from overweight.

4.13.2 Attitude of the mother regarding childhood obesity

Table (4.11) shows that there is a strong statistical significance (P <0.001) between the level of nutritional Attitude of the mother and childhood obesity, and the mean nutritional attitude score for mothers of obese children were 53.14 out of the total scores 90, that were collected after answering the questionnaire, and SD with 15.80 and the mean nutritional attitude score for mothers of non-obese children 67.17 of the total scores 90, collected after answering the questionnaire, SD with 12.19, t-value was 7.85 and CI (10.49, 17.57).

From this, it is clear that the mothers who had a more nutritional attitude, their child did not suffer from obesity and vice versa.

A study conducted in Congo corresponds to the results of this study, where the study in Brazzaville was designed as a case-control study, where 12.2% of parents of children suffering from childhood obesity had a good attitude about childhood obesity (Mabiala et al., 2016).

The results of this study are consistent with the results of Ismail et al. (2011) study in Egypt, which was conducted on middle school children, which found a strong statistical significance between the healthy nutritional attitudes of children and their BMI, as it was found that children who have healthy nutritional attitudes do not suffer from obesity.

In another study conducted by Dasappa et al. (2018), the attitudes of parents towards obesity and the determination of excess weight in their children at the age of 6-13 years, and its impact on preventing the spread of childhood obesity, and the results were statistically significant, as parents with healthy nutritional attitudes and those who have an increased understanding and awareness about disease, their children were of normal weight, and that was a protective factor from the childhood obesity, this is consistent with the results of this study.

In a study conducted by Arunachalam & Kandasami (2020), on the impact of the mother's nutritional attitudes and behaviors on childhood obesity, the results were positive, as the mother who has healthy nutritional behaviors and has a perception/ attitudes towards obesity, therefore, her children do not suffer from childhood obesity and these results are statistically significant. The results are consistent with this study result.

The results also in Etelson et al. (2003) study showed that there is a statistically significant relationship between parents' attitudes/perceptions about the risks of obesity and their childhood obesity occurrence ($P < 0.001$), this association was in direct relationship, and this is consistent with the results of this study.

A cross-sectional study was conducted in Iran by Karimy et al. (2019), about their healthy nutritional attitudes and their association with the prevalence of childhood obesity, the results were statistically significant, and showed, a mothers who have healthy nutritional attitudes/perceptions, her children do not suffer from an increase BMI, and this corresponds to the results of our study.

In the study conducted by Gable & Lutz (2000), it was found that there is a statistically significant relationship between attitudes/perceptions of parents about childhood obesity

and about the child's physical activity and its association with childhood obesity or overweight, this is fully consistent with the results of this study.

On the other hand, the results of this study are not consistent with the study conducted by Hatta et al. (2017), in Malaysia, which found a statistically significant between health nutritional knowledge and healthy nutritional attitudes as well as health practices, but there was no statistically significant relationship between association between the health nutritional attitudes among mothers and childhood obesity.

In one of the interesting studies conducted by Craeynest et al. (2005), and through this study, a hypothesis was tested on children, after dividing them into two parts, children with obesity and children with an ideal weight, and distributing questions to them to measure their attitudes towards sports, healthy food, and obesity problems, the results were not statistically significant among children who do not suffer from obesity and the healthy attitudes, nutritional behavior, and sports activity, on the other hand, children who suffer from obesity have enjoyed high attitudes towards healthy food.

Another study Moore et al. (2012), which was conducted on the parents of students in the pre-school and in the first primary grades, the questions focused on their perception and attitudes about the danger of obesity to their children, and there was a clear statistically significant association between parents' perceptions about obesity and childhood obesity in their children, this is consistent with the results of this study.

On the other hand, in the study that was conducted on nurses working in American schools by Nauta et al. (2009), which did not find any statistical significance between the nurse who has a perception or attitude towards childhood obesity and the intervention to change some practices to treat childhood obesity in the schools, and thus these results are not consistent with the results of current study.

4.13.2.1 The proportions of the good attitude regarding the nutritional attitudes among mothers

Table (4.13) The proportions of the good nutritional attitude among mothers regarding to the obesity

#	Items	Obese N(%)	Non-obese N(%)
1	Obesity is a serious problem for children	57(17.7%)	265(82.3%)
2	I believe giving different types of food to your child each day	54(16.8%)	267(83.2%)
3	Consuming dairy products every day	46(14.9%)	262(85.1%)
4	Fruits have better benefits than sweetened natural juices of the same fruits	48(15.4%)	264(84.6%)
5	losing weight for a child who suffers from obesity will positively affect his health	53(17.2%)	255(82.8%)
6	If your child continues with a bad lifestyle, he will become obese in the future	40(15.7%)	215(84.3%)
7	Parents' behavior affects the child's obesity level	51(16.7%)	254(83.3%)
8	The child must have breakfast before going to school	52(16.1%)	271(83.9%)
9	Eating fruits and vegetables frequently is a healthy practice in the family	52(16.3%)	267(83.7%)
10	It is good for the child to have three meals a day and two snacks	44(15.2%)	254(84.4%)
11	From your opinion obesity and thinness are considered abnormal conditions	49(16.6%)	246(83.4%)
12	Obesity can be prevented by modifying the lifestyle (diet and physical activity)	45(14.4%)	267(85.6%)
13	Obesity can be treated by modifying the lifestyle (diet and physical activity)	48(15.4%)	264(84.6%)
14	My child is more likely to become obese or overweight	39(18.8%)	168(81.2%)
15	Overweight children are likely to become over overweight adults	46(16.6%)	231(83.4%)
16	Overweight/obesity can cause serious problems for adults	50(16%)	263(84%)
17	I am not worried about my child weight right now	46(15.6%)	249(84.4%)
18	My child has a normal weight now	45(15%)	256(85%)

Table (4.13) show that with regard to the mother's attitudes of childhood obesity, 17.7%, 16.8%,14.9%,15.4%,17.2%,15.7%,16.7%,16.1%,16.3% of the participating mothers of obese children, have good awareness toward childhood obesity, good awareness toward introducing a healthy diet to children every day, good attitudes towards dairy products, good attitude toward selection fruit rather juice, good perception toward lost the

overweight and benefit to improve health, worthily perception about the lifestyle of their children, good awareness toward the effect of parent behavior on the children, good perception toward the presence of breakfast is a healthy practice for children and awareness toward the vegetables as a healthy snack, respectively. Furthermore, 15.2%, 16.6%, 14.4%, 15.4%, 18.8%, 16.6%, 16%, 15.6% have good awareness toward presence three meals and two snacks, good perception towards the childhood obesity is abnormal conditions, good awareness towards obesity may prevent by change lifestyle, good attitude towards obesity can treat with alteration of lifestyle, good awareness towards weight of her child, good perception toward the childhood obesity may convert into adulthood obesity, good awareness towards the health consequences of obesity and good perception toward the weight of her children, respectively.

4.13.3 Practice of the mother regarding childhood obesity

Table (4.11) shows that there is a strong statistical significance (P <0.001) between nutritional practices of the mother and childhood obesity, and the mean nutritional practice score for mothers of obese children were 21.71 out of the total scores 36, that were collected after answering the questionnaire, and SD with 6.14, and the mean nutritional practice score for mothers of non-obese children 26.99 of the total scores 36, collected after answering the questionnaire, SD with 6.68, t-value was 6.77, and CI (3.75, 6.81).

From this result, it is clear to know that, the mothers who had more healthy nutritional practice, their children did not suffer from childhood obesity and vice versa.

In Egypt, a study was conducted by Ismail et al. (2011) on preparatory school students in order to find the association between the nutritional practices / physical activity of the students with their BMI, the result showed that, there was a strong statistically significant relationship and this is consistent with the results of this study

The results of this study are consistent with Congolian study conducted by Mabiala et al. (2016), which was designed as a case-control study and showed the relationship between healthy practices about childhood obesity for the parents with the occurrence of childhood obesity in their children, where only 14.8% of the obese children whose fathers follow healthy practices, therefore, and these results support changing health practices for parents to protect and prevent their children from childhood obesity.

The results of current study are consistent with the results of a study conducted in Indonesian schools by Azrin et al. (2018), which found that there is a statistically significant relationship between the nutritional practice of mothers and the nutritional practice of their children.

The results of this study are consistent with a study conducted in Iran by Karimy et al. (2019), which was designed to include mothers of children and ask them about some healthy nutritional practices that are applied on their children as a daily life-style, and found a close association between healthy nutritional practices as well as daily practices of physical activity by children and with the BMI of their children.

Another study conducted by Ayed et al. (2021) in Egypt, it proved that there is a clear statistically significant relationship between the healthy nutritional practice of the mother and its impact on the growth of her children in general, and this is consistent with the results of this study, especially when we talk about obesity, which is one of the outcomes of malnutrition.

The results of this study are not consistent with the study conducted by Salama et al. (2014) in Egypt, which was conducted to find out the relationship between healthy nutritional practice of parents with their weight of children's, and the result showed that there did not a statistically significant relationship between them.

The results of this study are inconsistent with the results of the study that was conducted in Malaysia by Hatta et al. (2017), which was to find a relationship between the nutritional practice and physical activity of the mother and the impact on the BMI of their children, but no statistically significant relationship was founded.

4.13.3.1 The proportions of the doing practices regarding the nutritional practices among mothers

Table (4.14) The proportions of the doing nutritional practices among mothers regarding to the obesity

#	Items	Obese N(%)	Non-obese N(%)	Total already do N(%)
1	During the next month, I will start offering breakfast daily for my child before going to school?	24(28.6%)	60(71.4%)	84(21%)
2	During the next month, I will minimize eating outside the house to once monthly?	39(28.1%)	100(71.9%)	139(34.8%)
3	I do have the time to prepare a healthy meal for my family	19(30.6%)	43(69.4%)	62(15.5%)
4	I know how to plan a healthy meal for my child	26(34.2%)	50(65.8%)	76(19%)
5	During the next month, I have the intention to stop buying junk food when I shop	40(33.1%)	81(66.9%)	121(30.3%)
6	During the next month, I will encourage my children to be active during most days? (5 day at least)	30(35.3%)	55(64.7%)	85(21.3%)
7	During the next month, I intended to buy less sweeten beverages such as soft drinks	43(36.1%)	76(63.9%)	119(29.8%)
8	During the next month, I intended to prepare healthier meals at home	26(38.8%0	41(61.2%)	67(16.8%)
9	During the next month, I intended to restrict purchasing fast food for the family twice a month	41(34.2%)	79(65.8%)	120(30%)
10	During the next month, I will control screen time "TV, smartphone, computer" of my child to less than two hours? (Excluding the time for virtual school work)	39(37.9%)	64(62.1%)	103(25.8%)
11	During the next month, I intend to increase the intake of fruits and vegetables of my child every day to more than three servings	32(32.7%)	66(67.3%)	98(24.5%)
12	During the next month, I have the intention to stop purchasing processed meat products	46(37.7%)	76(62.3%)	122(30.5%)

Table (4.14) show that with regard to the mother's practices of childhood obesity, 28.6%, 28.1%, 30.6%, 34.2%, 33.1%, and 35.3% of the participating mothers of obese children already doing the following practices: offering breakfast to her children before he/she going to school, minimize the eating outside the home until once monthly, have a suitable time to prepare a healthy food, she know how to plan a healthy meal for her children, she not buying junk food during shopping, and encouraging her children to be active at minimum five days every week, respectively.

Furthermore, 36.1%, 38,8%, 34.2%, 37.9%, 32.7%, and 37.7% of the participating mothers of obese children already doing the following practices: buy less sweets and beverage, prepare healthier food at home, restrict the purchasing fast food for her family to twice time monthly, control the screen time of children to less than two hours, encourage the children to increase of fruit and vegetables three time daily and stop purchasing the processed meat product, respectively.

4.14 The relationship between mother's knowledge, attitude and practices about childhood obesity for child

Table (4.15) Relationship between mothers knowledge, attitude and practices about Childhood obesity for child respondent n=400

	Knowledge		Attitude		Practices	
Variables	**r**	**p-value**	**r**	**p-value**	**r**	**p-value**
Knowledge	-	-	0.696	< 0.001	0.489	< 0.001
Attitude	0.696	< 0.001	-	-	0.404	< 0.001
Practices	0.489	< 0.001	0.404	< 0.001	-	-
Obesity of children	-0.457	< 0.001	-0.364	< 0.001	-0.306	< 0.001

P-value ≤ 0.05

Person and Spearman Correlation Test

Table (4.15) shows that there is a significant positive strong relationship between mothers' knowledge regarding childhood obesity and mothers' attitude about childhood obesity ($p<0.001$), with an improve in the level of mothers' knowledge regarding childhood obesity, therefore, the attitude about childhood obesity will significantly increase. But there is a significant positive moderate relationship between mothers' knowledge regarding childhood obesity and mothers' practices about childhood obesity ($p<0.001$), Finally, there is a significant positive weak relationship between mothers' attitudes about childhood obesity with practices of mothers regarding the obesity of children.

The results also show that there is a significant inverse moderate relationship between mothers' knowledge about childhood obesity and childhood obesity ($p<0.001$). Increase in the knowledge of mothers regarding childhood obesity, the childhood obesity will significantly decrease. Additionally, there is a significant inverse weak relationship between mothers' attitudes, practices regarding childhood obesity and childhood obesity ($p<0.001$).

The results of this study were consistent with some of the results of Hatta et al. (2017) cross-sectional study, which aimed to determine the role of knowledge, attitudes, and practices of mothers toward childhood obesity in Malaysia, where the sample size was 100 mothers with 18 years old, where knowledge of mothers was positively correlated with the attitudes, and the attitudes of the mother have a weak positive correlation with the practices, on the other hand, there was no relationship between mother's knowledge and practices.

4.15The association between independent variables with the childhood Obesity

Table (4.16): Detailed estimates KAP model

Variables	β	S.E	Wald x^2	p-Value	OR[1]	95% CI for Exp(B)	
						Lower	Upper
Knowledge	-0.071	0.031	5.149	0.023	0.932	0.876	0.990
Attitude	-0.043	0.020	4.598	0.032	0.958	0.922	0.996
Practices	-0.089	0.041	4.591	0.032	0.915	0.844	0.992
Child have his PC, Laptop, Tablet, smartphone	1.878	0.516	13.255	0.000	6.539	2.379	17.969
Exclusive breastfeeding?	-2.198	0.582	14.252	0.000	0.111	0.035	0.348
Birth weight of this child per Kg	-1.057	0.412	6.565	0.010	0.348	0.155	0.780
Education levels of the mother			7.767	0.100			
Never been to school	-22.102-	20035.190	0.000	0.999	0.000	0.000	
Primary	2.491	1.123	0.000	0.027	12.076	1.337	109.060
Preparatory	-.122-	0.868	0.000	0.888	0.885	0.161	4.854
Secondary	.580	0.657	0.000	0.378	1.786	0.492	6.477
Nuts			11.071	0.011			
Daily	4.075	1.228	11.009	0.001	58.864	5.301	653.587
Nuts (4-6 Time weekly)	0.713	0.866	0.678	0.410	2.041	0.374	11.141
Nuts (1-3 Times weekly)	0.826	0.602	1.883	0.170	2.285	0.702	7.435

P-value ≤ 0.05

[1]Odd Ratio : Multiple Logistic Regression

Table (4.16) show that Exp (β), which is the odds ratio and its value is equal to 1, this means that there is no effect, but when the odds ratio is less than 1, this means that the variable studied reduces the probability of the outcome, but when the odds ratio is greater than 1 it means that the variable being studied increases the probability of the outcome (Menard, 2000).

Table (4.16) shows that, 8 variables which contributed to childhood obesity (knowledge, attitude, practice, birth weight of the child per Kg, education level of the mother, exclusive breastfeeding or not, child have PC, Laptop, Tablet or Smartphone, and finally frequency of eating of nuts.

The table shows that, with increasing healthy nutritional knowledge with one unit among mothers, the childhood obesity decreased by 7%, but, increasing the attitudes of mothers with one unit towards the risks of childhood obesity, healthy food, therefore, decreasing the childhood obesity by 4%, and with increased healthy nutritional practice among mothers with one unit, the childhood obesity decreases by 8%.

Moreover, if the child having own electronic devices (such as; PC, Laptop, Tablet, smartphone), therefore, childhood obesity 6.5 is more likely rather than children not having these electronic devices.

Moreover, about influence of breastfeeding, the children who are exclusive breastfeeding, therefore, childhood obesity 0.11 times are less likely compared to not having exclusive breastfeeding.

On the other hand, every Kg decreased in the birth weight of the children, will increase the possibility of childhood obesity by 35%.

Finally, regarding the nutritional profile, children who eating nuts daily are 59 times more likely to be obese than children who do not eating nuts.

Chapter Five

Conclusions and Recommendations

5.1 Conclusions

This study was conducted to identify the association between mother KAP and childhood obesity among joint primary school pupils in governmental schools in the GS.

There was no relationship between parental socioeconomic status and childhood obesity. The researcher considers this result is fair, especially in these economic conditions experienced by the residents of the Gaza Strip, where the poverty line has risen to include many families who were not suffering from poverty in the past. Furthermore, increasing the educational level of the population made the social and economic situation more homogeneous than any other time ago.

Inversely relationship between mother knowledge about childhood obesity with occurrence rate of childhood obesity, which means that mothers who had knowledge about healthy nutrition, consequences of childhood obesity, associated with normal weight of her children. According to the result, enhancing the mother's knowledge about healthy diet and consequences of childhood obesity by workshops and media, lead to reducing the rate of childhood obesity, and this improves their health. In addition, there are negative association between awareness of mothers' towards childhood obesity and occurrence of childhood obesity, mothers who did not have the correct perception or attitudes towards childhood obesity, therefore, her children suffered from childhood obesity. It is possible to change the attitudes of mothers by influencing the surrounding environment, targeting the family as a whole to improve the awareness about childhood obesity, this makes the behavior repetitive each time. Moreover, visiting the school by the mothers after inviting them in regular period will have a great influence to encourage the mothers after asking some questions that mothers were learned in the previous episode and rewarding the mothers who made an achievement. The results of the study also showed that there is a negative relationship between healthy practices of mothers about childhood obesity and the occurrence of childhood obesity. The healthy practice of mothers towards preventing childhood obesity can be improved by encouraging communication with the health advisor and providing them with suitable advice for their children, and establishment of a network

between the mother and the health advisor make a significant influence on improving the health practices of the mother towards childhood obesity.

On the other side, results of this study show that children who eat nuts on a daily emerge with obese more than children who do not eat nuts which are dense calories, thus explaining the increasing childhood obesity with these eating patterns. These eating patterns can be controlled by preventing purchasing them from school canteens so that they are not accessible to children most of the time.

Finally, the presence of some smart devices such as the computer, smartphones, and tablets that owned by the child, the presence of them was a problem for the child's weight, the child who had owned this device was exposed to childhood obesity. But the presence of such devices is familiar nowadays in Palestinian society, and this explains the prevalence of obesity in the last decade, especially in the childhood stage. This problem can be reduced by conducting special workshops to increase awareness about the dangers of these devices on childhood obesity and encourage the integrating children to engage in sports activities which reduce the time of their use of such devices.

5.2 Recommendation

1- Establishing educational sessions and workshops in cooperation between the MoH and Ministry of Education for mothers on healthy lifestyle in general and children specifically.
2- There is a need for programs to encourage breastfeeding in maternity hospitals and at Primary Health Care Level.
3- Draw the attention of policy makers in the MoH and MoE about the dangers of childhood obesity in the primary education stages, and that obesity at this critical stage could cause an economic burden on the country in the future.
4- Increasing cooperation between the MoE and MoH in monitoring school canteens to incorporate vegetables and fruits into the food sold inside the canteen.
5- Introducing a new educational material covering healthy nutrition in schools to be taught to students in a way that increases nutritional and health awareness in general because of its importance that will return to the health of students and the prevention of malnutrition and all its consequences.

6- Encouraging sports activities that take place for competition among students, because this will increase the physical activity of the students and prevent sedentary lifestyle, and this will reduce childhood obesity.
7- Establishing networking between the MoH, MoE, local Community-based organization (CBOs) and Ministry of Information to promote healthy eating habits and to raise the alarm of childhood obesity.

5.3 Recommendation for further research

1- A study of the effect of family socioeconomic status on mothers' nutritional knowledge, attitude, and practice.
2- Conducting a similar study on the parental KAP to find out the importance of nutritional knowledge, attitude, and practice and their impact on childhood obesity.
3- Conducting a study on private schools to find out the difference in knowledge, behavior, and practice towards obesity, and the impact of the economic situation.

Reference

Abdollahi, M., Amini, M., Kianfar, H., Dadkhah-Piraghag, M., Eslami-Amirabadi, M., Zoghi, T., Assasi, N., & Kalantari, N. (2008). Qualitative study on nutritional knowledge of primary-school children and mothers in Tehran. *Eastern Mediterranean Health Journal*, *14*(1), 82–89.

Abdul-Rahim, H. F., Holmboe-Ottesen, G., Stene, L. C. M., Husseini, A., Giacaman, R., Jervell, J. E. A., & Bjertness, E. (2003). Obesity in a rural and an urban Palestinian West Bank population. *International journal of obesity*, 27(1), 140-146.

Abdulai, A. (2010). Socio-economic characteristics and obesity in underdeveloped economies: Does income really matter? *Applied Economics*, *42*(2), 157–169. https://doi.org/10.1080/00036840701604313.

Abudayya, A., Shi, Z., Abed, Y., & Holmboe Ottesen, G. (2011). Diet, nutritional status and school performance t among adolescents in Gaza Strip. EMHJ-Eastern *Mediterranean Health Journal*, 17 (3), 218-225, 2011.

Abudayya, A. H., Stigum, H., Shi, Z., Abed, Y., & Holmboe-Ottesen, G. (2009). Sociodemographic correlates of food habits among school adolescents (12-15 year) in north Gaza Strip. *BMC Public Health*, *9*, 1–13. https://doi.org/ 10.1186/1471-2458-9-185

Abudayya, A., Thoresen, M., Abed, Y., & Holmboe-Ottesen, G. (2007). Overweight, stunting, and anemia are public health problems among low socioeconomic groups in school adolescents (12-15 years) in the North Gaza Strip. *Nutrition Research*, *27*(12), 762–771. https://doi.org/10.1016/j.nutres.2007.09.017

Akhtar-Danesh, N., Dehghan, M., Morrison, K. M., & Fonseka, S. (2011). Parents' perceptions and attitudes on childhood obesity: A Q-methodology study. *Journal of the American Academy of Nurse Practitioners*, *23*(2), 67–75. https://doi.org/10.1111/j.1745-7599.2010.00584.x

Al Sabbah, H., Vereecken, C., Abdeen, Z., Coats, E., & Maes, L. (2009). Associations of overweight and of weight dissatisfaction among Palestinian adolescents: findings from the national study of Palestinian schoolchildren (HBSC-WBG2004). *Journal of Human Nutrition and Dietetics*, 22(1), 40-49.

Al-Amer, R., Salamonson, Y., Villarosa, A. R., Subih, M., Darwish, R., & Maneze, D. (2019). Accuracy of Body Weight Estimation Among Palestinian Refugee Adolescents Living in Jordan: A Cross-Sectional Study. *Journal of Nursing Scholarship*, *51*(6), 642–650. https://doi.org/10.1111/jnu.12517.

Al-Lahham, S., Jaradat, N., Altamimi, M., Anabtawi, O., Irshid, A., Alqub, M., Dwikat, M., Nafaa, F., Badran, L., Mohareb, R., Haji, R., Aqqad, T., Jayyab, S., Ghosh, B. A., Taher, R., & Al Zabadi, H. (2019). Prevalence of underweight, overweight and obesity among Palestinian school-age children and the associated risk factors: A cross sectional study. *BMC Pediatrics*, *19*(1), 1–13. https://doi.org/10.1186/s12887-019-1842-7

Al-Najar, H., & El Hamarneh, B. (2019). The effect of education level on accepting the reuse of treated effluent in irrigation. *Indonesian Journal of Science and Technology*, 4(1), 28-38.

Al-shukaily, L. (2011). *Effect of Mothers Nutritional Knowledge and Attitudes on Omani Children's Dietary Intake*. *26*(4), 253–257.

Allen, K. L., Byrne, S. M., Blair, E. M., & Davis, E. A. (2006). Why do some overweight children experience psychological problems? the role of weight and shape concern. *International Journal of Pediatric Obesity*, *1*(4), 239–247. https://doi.org/10.1080/17477160600913552

AlShehri, J. (2014). Childhood obesity prevalence among primary schoolboys at Al-Iskan sector, Holy Makkah, Saudi Arabia. *International Journal of Medical Science and Public Health*, *3*(2), 150. https://doi.org/10.5455/ijmsph. 2013.061120131

Alviola IV, P. A., Nayga, R. M., Thomsen, M. R., Danforth, D., & Smartt, J. (2014). The effect of fast-food restaurants on childhood obesity: A school level analysis. *Economics and Human Biology*, *12*(1), 110–119. https://doi.org/10.1016/j.ehb.2013.05.001

Anderson, J. W., Baird, P., Davis, R. H., Ferreri, S., Knudtson, M., Koraym, A., & Williams, C. L. (2009). Health benefits of dietary fiber. *Nutrition reviews*, 67(4), 188-205.

Anderson, P. M. (2012). Parental employment, family routines and childhood obesity. *Economics and Human Biology*, *10*(4), 340–351. https://doi.org/10.1016/j.ehb.2012.04.006

Anderson, P. M., & Butcher, K. F. (2006). Reading, writing, and refreshments: Are school finances contributing to children's obesity? *Journal of Human Resources*, *41*(3), 467–494. https://doi.org/10.3368/jhr.xli.3.467

Anderson, P. M., Butcher, K. F., & Schanzenbach, D. W. (2019). Understanding recent trends in childhood obesity in the United States. *Economics and Human Biology*, *34*, 16–25. https://doi.org/10.1016/j.ehb.2019.02.002.

Ang, Y. N., Wee, B. S., Poh, B. K., & Ismail, M. N. (2013). Multifactorial Influences of Childhood Obesity. *Current Obesity Reports*, *2*(1), 10–22. https://doi.org/10.1007/s13679-012-0042-7

Anis, F., & White, J. (2017). The Meena communicative initiative in Bangladesh. In *Inclusive Education* (pp. 61-76). SensePublishers, Rotterdam.

Arens, R., Sin, S., Nandalike, K., Rieder, J., Khan, U. I., Freeman, K., Wylie-Rosett, J., Lipton, M. L., Wootton, D. M., McDonough, J. M., & Shifteh, K. (2011). Upper airway structure and body fat composition in obese children with obstructive sleep apnea syndrome. *American Journal of Respiratory and Critical Care Medicine*, *183*(6), 782–787. https://doi.org/10.1164/rccm.201008-1249OC

Armstrong, J., & Reilly, J. J. (2002). Breastfeeding and lowering the risk of childhood obesity. *Lancet*, *359*(9322), 2003–2004. https://doi.org/10.1016/S0140-6736(02)08837-2

Armstrong, M. E. G., Lambert, M. I., Sharwood, K. A., & Lambert, E. V. (2006). Obesity and overweight in South African primary school children - The health of the nation study. *Journal of Endocrinology, Metabolism and Diabetes of South Africa*, *11*(2), 52–63. https://doi.org/10.1080/22201009.2006.10872144

Arunachalam, S., & Kandasami, M. (2020). Mother's attitude on childhood obesity and its prevention. *Current Pediatric Research*, *24*(3), 117–121.

August, G. P., Caprio, S., Fennoy, I., Freemark, M., Kaufman, F. R., Lustig, R. H., Silverstein, J. H., Speiser, P. W., Styne, D. M., & Montori, V. M. (2008). Prevention and treatment of pediatric obesity: An Endocrine Society clinical practice guideline based on expert opinion. *Journal of Clinical Endocrinology and Metabolism*, *93*(12), 4576–4599. https://doi.org/10.1210/jc.2007-2458

Aung, P. P., Foung, C. S., Azman, K. B., Ain, N., & Zulkifeli, B. (2012). Knowledge , Attitude , and Practice of Healthy Eating Among the 1st and 2 nd Year Students of Universiti Malaysia Sarawak (UNIMAS). *2012 International Conference on Nutrition and Food Sciences IPCBEE*, *39*, 188–194.

Au, N. (2012). The health care cost implications of overweight and obesity during childhood. Health services research, 47(2), 655-676.

Azrin, A., Aishath, N., Al, H., Hani, N., Azreena, M., Fatima, M., Saba, Y., Suwanmanee, S., Hassan I, Alsharif, K., Sahar, B., A, M., Suriani I, Ahmad, M., NorAfiah MZ, & Rosliza AM. (2018). Knowledge, attitude and practice regarding healthy diet and physical activity among overweight or obese children. *International Journal of Public Health and Clinical Sciences*, *5*(4), 254–266. http://link.springer.com/10.1007/s40273-014-0243-x

Bacha, J. M., Appugliese, D., Coleman, S., Kaciroti, N., Bradley, R. H., Corwyn, R. F., & Lumeng, J. C. (2010). Maternal perception of neighborhood safety as a predictor of child weight status: The moderating effect of gender and assessment of potential mediators. *International Journal of Pediatric Obesity*, 5(1), 72-79.

Badrasawi, M. M., Shraim, N. Y., & Al-atrash, M. H. (2018). *Knowledge of Physical Education Students about Nutrition : A Cross-Sectional Study from Palestine*. https://doi.org/10.4103/ijnpnd.ijnpnd

Bank, W. (2017). *West Bank and Gaza Jobs in West Bank and Gaza Enhancing Job Opportunities for Palestinians*. *June*.

Barlow, S. E., & Dietz, W. H. (2002). Management of child and adolescent obesity: Summary and recommendations based on reports from pediatricians, pediatric nurse practitioners, and registered dietitians. *Pediatrics*, *110*(1 II), 236–238.

Barrera, C. M., Perrine, C. G., Li, R., & Scanlon, K. S. (2016). *Age at Introduction to Solid Foods and Child Obesity at 6 Years*. *12*(3), 1–5. https://doi.org/10.1089/chi.2016.0021

Batran, A., Ayed, A., & Salameh, B. (2020). *Analysis of the body composition of school age children 9-12 years old : Palestinian perspective*. *25*(02), 937–942.

Bellows, L., & Anderson, J. (2006). The food friends: Encouraging preschoolers to try new foods. *YC Young Children*, 61(3), 37.

Berenson, G. S. (2012). Health Consequences of Obesity. *Pediatric Blood and Cancer*, *58*(1), 117–121. https://doi.org/10.1002/pbc.23373

Berkey, C. S., Rockett, H. R., Willett, W. C., & Colditz, G. A. (2005). Milk, dairy fat, dietary calcium, and weight gain: a longitudinal study of adolescents. *Archives of pediatrics & adolescent medicine*, 159(6), 543-550.

Birch, L. L., & Ventura, A. K. (2009). Preventing childhood obesity: what works?. *International journal of obesity*, 33(1), S74-S81.

Black, R. E., Victora, C. G., Walker, S. P., Bhutta, Z. A., Christian, P., De Onis, M., Ezzati, M., Grantham-Mcgregor, S., Katz, J., Martorell, R., & Uauy, R. (2013). Maternal and child undernutrition and overweight in low-income and middle-income countries. *The Lancet*, *382*(9890), 427–451. https://doi.org/ 10.1016/S0140-6736(13)60937-X

Boeke, C. E., Storfer-Isser, A., Redline, S., & Taveras, E. M. (2014). Childhood sleep duration and quality in relation to leptin concentration in two cohort studies. *Sleep*, *37*(3), 613–620. https://doi.org/10.5665/sleep.3510

Borjeson, M. (2008). Overweight children. *Acta Paediatrica. Supplementum*, *132*(i), 1–76.

Böttcher, H., Eisbrenner, K., Fritz, S., Kindermann, G., Kraxner, F., McCallum, I., & Obersteiner, M. (2009). An assessment of monitoring requirements and costs of "Reduced Emissions from Deforestation and Degradation." *Carbon Balance and Management*, *4*, 7. https://doi.org/10.1186/1750-0680-4-7.

Brophy, S., Cooksey, R., Gravenor, M. B., Mistry, R., Thomas, N., Lyons, R. A., & Williams, R. (2009). Risk factors for childhood obesity at age 5: Analysis of the Millennium Cohort study. *BMC Public Health*, *9*, 1–7. https://doi.org/ 10.1186/1471-2458-9-467

Bray, G. A., Nielsen, S. J., & Popkin, B. M. (2004). Consumption of high-fructose corn syrup in beverages may play a role in the epidemic of obesity. *The American journal of clinical nutrition*, 79(4), 537-543.

Byrne, L. K., Cook, K. E., Skouteris, H., & Do, M. (2011). Parental status and childhood obesity in Australia. *International Journal of Pediatric Obesity*, 6(5-6), 415-418.

Byrne, M. L., Ph, D., Schwartz, O. S., Ph, D., Simmons, J. G., Ph, D., Sheeber, L., Ph, D., Whittle, S., Ph, D., Allen, N. B., & Ph, D. (2017). Duration of Breastfeeding and Subsequent Adolescent Obesity : Effects of Maternal Behavior and Socioeconomic Status. *Journal of Adolescent Health*, 1–9. https://doi.org/ 10.1016/j.jadohealth.2017.10.019

Canapari, C. A., Hoppin, A. G., Kinane, T. B., Thomas, B. J., Torriani, M., & Katz, E. S. (2011). Relationship between sleep apnea, fat distribution, and insulin resistance in obese children. *Journal of Clinical Sleep Medicine*, *7*(3), 268–273. https://doi.org/10.5664/JCSM.1068

Caprio, S., Daniels, S. R., Drewnowski, A., Kaufman, F. R., Palinkas, L. A., Rosenbloom, A. L., & Schwimmer, J. B. (2008). Influence of race, ethnicity, and culture on childhood obesity: implications for prevention and treatment: a consensus statement of Shaping America's Health and the Obesity Society. *Diabetes care*, 31(11), 2211-2221.

Caprio, S., Bronson, M., Sherwin, R. S., Rife, F., & Tamborlane, W. V. (1996). Co-existence of severe insulin resistance and hyperinsulinaemia in pre-adolescent obese children. *Diabetologia*, *39*(12), 1489-1497.

Cappuccio, F. P., Taggart, F. M., Kandala, N. B., Currie, A., Peile, E., Stranges, S., & Miller, M. A. (2008). Meta-analysis of short sleep duration and obesity in children and adults. *Sleep*, *31*(5), 619–626. https://doi.org/10.1093/ sleep/31.5.619

Carnell, S., Edwards, C., Croker, H., Boniface, D., & Wardle, J. (2005). Parental perceptions of overweight in 3-5 y olds. *International Journal of Obesity*, *29*(4), 353–355. https://doi.org/10.1038/sj.ijo.0802889

Carter, P. J., Taylor, B. J., Williams, S. M., & Taylor, R. W. (2011). Longitudinal analysis of sleep in relation to BMI and body fat in children: The FLAME study. *Bmj*, *342*(7809), 3–9. https://doi.org/10.1136/bmj.d2712

Casazza, K., Fontaine, K. R., Astrup, A., Birch, L. L., Brown, A. W., Bohan Brown, M. M., Durant, N., Dutton, G., Foster, E. M., Heymsfield, S. B., McIver, K., Mehta, T., Menachemi, N., Newby, P. K., Pate, R., Rolls, B. J., Sen, B., Smith, D. L., Thomas, D. M., & Allison, D. B. (2013). Myths, Presumptions, and Facts about Obesity. *New England Journal of Medicine*, *368*(5), 446–454. https://doi.org/10.1056/nejmsa1208051

Catalano, P. M., Farrell, K., Thomas, A., Huston-Presley, L., Mencin, P., De Mouzon, S. H., & Amini, S. B. (2009). Perinatal risk factors for childhood obesity and metabolic dysregulation. *The American journal of clinical nutrition*, *90*(5), 1303-1313.

Cawley, J. (2010). The economics of childhood obesity. *Health Affairs*, *29*(3), 364–371. https://doi.org/10.1377/hlthaff.2009.0721.

Chang, H. H., & Nayga, R. M. (2010). Childhood obesity and unhappiness: The influence of soft drinks and fast food consumption. *Journal of Happiness Studies*, *11*(3), 261–275. https://doi.org/10.1007/s10902-009-9139-4

Chaput, J. P., Gray, C. E., Poitras, V. J., Carson, V., Gruber, R., Olds, T., ... & Tremblay, M. S. (2016). Systematic review of the relationships between sleep duration and health indicators in school-aged children and youth. *Applied physiology, nutrition, and metabolism*, *41*(6), S266-S282.

Chaput, J. P., Brunet, M., & Tremblay, A. (2006). Relationship between short sleeping hours and childhood overweight/obesity: Results from the "Québec en Forme" project. *International Journal of Obesity*, *30*(7), 1080–1085. https://doi.org/10.1038/sj.ijo.0803291.

Chatham, R. E., & Mixer, S. J. (2020). Cultural influences on childhood obesity in ethnic minorities: a qualitative systematic review. *Journal of Transcultural Nursing*, *31*(1), 87-99.

Chen, A. Y., & Escarce, J. J. (2010). Peer reviewed: Family structure and childhood obesity, early childhood longitudinal study—kindergarten cohort. *Preventing chronic disease*, 7(3).

Chen, T. J., Modin, B., Ji, C. Y., & Hjern, A. (2011). Regional, socioeconomic and urban-rural disparities in child and adolescent obesity in China: A multilevel analysis. *Acta Paediatrica, International Journal of Paediatrics*, *100*(12), 1583–1589. https://doi.org/10.1111/j.1651-2227.2011.02397.x

Chen, X., Beydoun, M. A., & Wang, Y. (2008). Is sleep duration associated with childhood obesity? A systematic review and meta-analysis. *Obesity*, *16*(2), 265.

Chennaoui, M., Arnal, P. J., Sauvet, F., & Léger, D. (2015). Sleep and exercise: A reciprocal issue? *Sleep Medicine Reviews*, *20*(June), 59–72. https://doi.org/ 10.1016/j.smrv.2014.06.008.

Clark, H. R., Goyder, E., Bissell, P., Blank, L., & Peters, J. (2007). How do parents' child-feeding behaviours influence child weight? Implications for childhood obesity policy. *Journal of public health*, 29(2), 132-141.

Cooney, K., Pathak, U., & Watson, A. (1994). Infant growth charts. *Archives of Disease in Childhood, 71*(2), 159–160. https://doi.org/10.1136/adc.71.2.159

Costa Ribeiro, I., Taddei, J. A. A., & Colugnatti, F. (2003). Obesity among children attending elementary public schools in Sao Paulo, Brazil: a case–control study. *Public Health Nutrition*, 6(7), 659-663.

Costello, A., Abbas, M., Allen, A., Ball, S., Bell, S., Bellamy, R., & Patterson, C. (2009). Managing the health effects of climate change: lancet and University College London Institute for Global Health Commission. *The lancet*, 373(9676), 1693-1733.

Craeynest, M., Crombez, G., De Houwer, J., Deforche, B., Tanghe, A., & De Bourdeaudhuij, I. (2005). Explicit and implicit attitudes towards food and physical activity in childhood obesity. *Behaviour Research and Therapy*, *43*(9), 1111–1120. https://doi.org/10.1016/j.brat.2004.07.007

Danese, A., & Tan, M. (2014). Childhood maltreatment and obesity: Systematic review and meta-analysis. *Molecular Psychiatry*, *19*(5), 544–554. https://doi.org/ 10.1038/mp.2013.54

Daniels, S. R. (2009). Complications of obesity in children and adolescents. *International Journal of Obesity*, *33*, S60–S65. https://doi.org/10.1038/ ijo.2009.20

Danielzik, S., Czerwinski-Mast, M., Langnäse, K., Dilba, B., & Müller, M. J. (2004). Parental overweight, socioeconomic status and high birth weight are the major determinants of overweight and obesity in 5-7 y-old children: Baseline data of the Kiel Obesity Prevention Study (KOPS). *International Journal of Obesity*, *28*(11), 1494–1502. https://doi.org/10.1038/sj.ijo.0802756

Dasappa, H., Fathima, F. N., Ganesh, K., & Prasad, S. (2018). Prevalence, risk factors and attitude of parents towards childhood obesity among school children in Bangalore city. *International Journal Of Community Medicine And Public Health*, *5*(2), 749. https://doi.org/10.18203/2394-6040.ijcmph20180262.

Davison, K. K., Jurkowski, J. M., Li, K., Kranz, S., & Lawson, H. A. (2013). A childhood obesity intervention developed by families for families: Results from a pilot study. *International Journal of Behavioral Nutrition and Physical Activity*, *10*, 1–11. https://doi.org/10.1186/1479-5868-10-3

Dawson-Mcclure, S., Brotman, L. M., Theise, R., Palamar, J. J., Kamboukos, D., Barajas, R. G., & Calzada, E. J. (2014). Early childhood obesity prevention in low-income, Urban communities. *Journal of Prevention and Intervention in the Community*, *42*(2), 152–166. https://doi.org/10.1080/10852352.2014.881194

de Jong, E., Stocks, T., Visscher, T. L. S., HiraSing, R. A., Seidell, J. C., & Renders, C. M. (2012). Association between sleep duration and overweight: The importance of parenting. *International Journal of Obesity*, *36*(10), 1278–1284. https://doi.org/10.1038/ijo.2012.119

de Niet, J., Timman, R., Bauer, S., van den Akker, E., Buijks, H., de Klerk, C., ... & Passchier, J. (2012). The effect of a short message service maintenance treatment on body mass index and psychological well-being in overweight and obese children: a randomized controlled trial. *Pediatric obesity*, *7*(3), 205-219.

Decaluwé, V., & Braet, C. (2003). Prevalence of binge-eating disorder in obese children and adolescents seeking weight-loss treatment. *International journal of obesity*, 27(3), 404-409.

Dehghan, M., Akhtar-Danesh, N., & Merchant, A. T. (2005). Childhood obesity, prevalence and prevention. *Nutrition Journal*, *4*(Table 1), 1–8. https://doi.org/10.1186/1475-2891-4-24

DelGiudice, M. (2018). Middle childhood: An evolutionary-developmental synthesis. *Handbook of life course health development*, 95-107.

Devlin, B. L., & Belski, R. (2015). Exploring general and sports nutrition and food knowledge in elite male Australian athletes. *International journal of sport nutrition and exercise metabolism*, *25*(3), 225-232.

Desai, M., Jellyman, J. K., & Ross, M. G. (2015). Epigenomics, gestational programming and risk of metabolic syndrome. *International journal of obesity*, 39(4), 633-641.

Dietz, W. H., & Gortmaker, S. L. (2001). Preventing obesity in children and adolescents. *Annual review of public health*, 22(1), 337-353.

DiSantis, K. I., Collins, B. N., Fisher, J. O., & Davey, A. (2011). Do infants fed directly from the breast have improved appetite regulation and slower growth during early childhood compared with infants fed from a bottle?. *International Journal of Behavioral Nutrition and Physical Activity*, *8*(1), 1-11.

Divakaran, B., Muttapillymyalil, J., Sreedharan, J., & Shalini, K. (2010). Lifestyle riskfactors of noncommunicable diseases: awareness among school children. *Indian Journal of Cancer*, *47 Suppl 1*, 9–13. https://doi.org/10.4103/0019-509x.63864

Donma, M. M., & Donma, O. (2017). Beneficial effects of poultry meat consumption on cardiovascular health and the prevention of childhood obesity. *Med One*, *2*(4).

Donnelly, S. (2019). Gallstone Disease and Cholecystectomy in Children and Adolescents With Obesity. *Journal of Pediatric Surgical Nursing*, *8*(3), 55–57. https://doi.org/10.1097/jps.0000000000000212

Due, P., Damsgaard, M. T., Rasmussen, M., Holstein, B. E., Wardle, J., Merlo, J., Currie, C., Ahluwalia, N., Sørensen, T. I. A., Lynch, J., Borraccino, A., Borup, I., Boyce, W., Elgar, F., Gabhainn, S. N., Krølner, R., Svastisalee, C., Matos, M. C., Nansel, T., … Valimaa, R. (2009). Socioeconomic position, macroeconomic environment and overweight among adolescents in 35 countries. *International Journal of Obesity*, *33*(10), 1084–1093. https://doi.org/10.1038/ijo.2009.128

Duncan, D. T., Hansen, A. R., Wang, W., Yan, F., & Zhang, J. (2015). Change in misperception of child's body weight among parents of American preschool children. *Childhood Obesity*, 11(4), 384-393.

Durmuş, B., Van Rossem, L., Duijts, L., Arends, L. R., Raat, H., Moll, H. A., Hofman, A., Steegers, E. A. P., & Jaddoe, V. W. V. (2011). Breast-feeding and growth in children until the age of 3 years: The Generation R Study. *British Journal of Nutrition*, *105*(11), 1704–1711. https://doi.org/10.1017/ S0007114510005374

Ebbeling, C. B., Feldman, H. A., Chomitz, V. R., Antonelli, T. A., Gortmaker, S. L., Osganian, S. K., & Ludwig, D. S. (2012). A Randomized Trial of Sugar-Sweetened Beverages and Adolescent Body Weight. *New England Journal of Medicine*, *367*(15), 1407–1416. https://doi.org/10.1056/nejmoa1203388

Edith, M., & Priya, L. (2016). Knowledge, attitude, and practice (KAP) survey on dietary practices in prevention of malnutrition among mothers of under-five children. *Manipal Journal of Nursing and Health Sciences (MJNHS)*, *2*(2), 19-24.

Edwards, B. (2005). Childhood obesity: A school-based approach to increase nutritional knowledge and activity levels. *Nursing Clinics of North America*, *40*(4), 661–669. https://doi.org/10.1016/j.cnur.2005.07.006

Ekwochi, U., Ndu, I. K., Osuorah, C. D. I., Amadi, O. F., Okeke, I. B., Obuoha, E., Onah, K. S., Nwokoye, I., Odetunde, O. I., & Obumneme-Anyim, N. I. (2015). Knowledge of danger signs in newborns and health seeking practices of mothers and care givers in Enugu state, South-East Nigeria Neonatology and Fetal Medicine. *Italian Journal of Pediatrics*, *41*(1), 1–7. https://doi.org/10.1186/ s13052-015-0127-5

El Kishawi, R. R., Soo, K. L., Abed, Y. A., & Muda, W. A. M. W. (2014). Obesity and overweight: Prevalence and associated socio demographic factors among mothers in three different areas in the Gaza Strip-Palestine: A cross-sectional study. *BMC Obesity*, *1*(1), 1–7. https://doi.org/10.1186/2052-9538-1-7

El Kishawi, R. R., Soo, K. L., Abed, Y. A., & Muda, W. A. M. W. (2016). Prevalence and associated factors for dual form of malnutrition in mother-child pairs at the same household in the Gaza strip-palestine. *PLoS ONE*, *11*(3), 1–14. https://doi.org/10.1371/journal.pone.0151494.

Elfhag, K., & Rössner, S. (2005). Who succeeds in maintaining weight loss? A conceptual review of factors associated with weight loss maintenance and weight regain. *Obesity Reviews*, *6*(1), 67–85. https://doi.org/10.1111/j.1467-789X.2005.00170.x

Elhassan, M. R., Gamal, H. E., & Mohammed, G. S. S. (2013). Nutrition Knowledge Attitude and Practices Among Students of Ahfad University for Women. *Indian Journal of Scientific Research*, *4*(1), 25–34.

Erermis, S., Cetin, N., Tamar, M., Bukusoglu, N., Akdeniz, F., & Goksen, D. (2004). Is obesity a risk factor for psychopathology among adolescents? *Pediatrics International*, *46*(3), 296–301. https://doi.org/10.1111/j.1442-200x.2004.01882.x

Etelson, D., Brand, D. A., Patrick, P. A., & Shirali, A. (2003). Childhood obesity: Do parents recognize this health risk? *Obesity Research*, *11*(11), 1362–1368. https://doi.org/10.1038/childhood obesity.2003.184

Farajian, P., Panagiotakos, D. B., Risvas, G., Karasouli, K., Bountziouka, V., Voutzourakis, N., & Zampelas, A. (2013). Socio-economic and demographic determinants of childhood obesity prevalence in Greece: The GRECO (Greek Childhood Obesity) study. *Public Health Nutrition*, *16*(2), 240–247. https://doi.org/10.1017/S1368980012002625

Fatima, Y., Doi, S. A. R., & Mamun, A. A. (2015). Longitudinal impact of sleep on overweight and obesity in children and adolescents: A systematic review and bias-adjusted meta-analysis. *Obesity Reviews*, *16*(2), 137–149. https://doi.org/10.1111/obr.12245

Felső, R., Lohner, S., Hollódy, K., Erhardt, & Molnár, D. (2017). Relationship between sleep duration and childhood obesity: Systematic review including the potential underlying mechanisms. *Nutrition, Metabolism and Cardiovascular Diseases*, *27*(9), 751–761. https://doi.org/10.1016/j.numecd.2017.07.008

Ferrari, G. L. D. M., Araújo, T. L., Oliveira, L. C., Matsudo, V., & Fisberg, M. (2015). Association between electronic equipment in the bedroom and sedentary lifestyle, physical activity, and body mass index of children. *Jornal de Pediatria*, *91*(6), 574–582. https://doi.org/10.1016/j.jped.2015.01.009

Ferraro, Z. M., Barrowman, N., Prud'Homme, D., Walker, M., Wen, S. W., Rodger, M., & Adamo, K. B. (2012). Excessive gestational weight gain predicts large for gestational age neonates independent of maternal body mass index. *The Journal of Maternal-Fetal & Neonatal Medicine*, *25*(5), 538-542.

Field, A. E., Gillman, M. W., Rosner, B., Rockett, H. R., & Colditz, G. A. (2003). Association between fruit and vegetable intake and change in body mass index among a large sample of children and adolescents in the United States. *International journal of obesity*, 27(7), 821-826.

Fisher, J. O., & Birch, L. L. (1999). Restricting access to foods and children's eating. *Appetite*, *32*(3), 405-419.

Fisher, L., Fraser, J., & Alexander, C. (2006). Caregivers' inability to identify childhood adiposity: A cross-sectional survey of rural children and their caregivers' attitudes. *Australian Journal of Rural Health*, *14*(2), 56-61.

FitzPatrick Sifford, E., & Cohen-Aponte, A. (2019). A Call to Action. *Art Journal*, *78*(4), 118–122. https://doi.org/10.1080/00043249.2019.1684113

Flechtner-Mors, M., Neuhauser, H., Reinehr, T., Roost, H. P., Wiegand, S., Siegfried, W., Zwiauer, K., Molz, E., & Holl, R. W. (2015). Blood pressure in 57,915 pediatric patients who are overweight or obese based on five reference systems. *American Journal of Cardiology*, *115*(11), 1587–1594. https://doi.org/10.1016/j.amjcard.2015.02.063

Flodmark, C. E. (2005). The happy obese child. *International Journal of Obesity*, *29*, S31–S33. https://doi.org/10.1038/sj.ijo.0803060

Flodmark, Carl Erik. (2005). Management of the obese child using psychological-based treatments. *Acta Paediatrica, International Journal of Paediatrics, Supplement*, *94*(448), 14–22. https://doi.org/10.1080/08035320510035591

Flynn, J. (2013). The changing face of pediatric hypertension in the era of the childhood obesity epidemic. *Pediatric Nephrology*, *28*(7), 1059–1066. https://doi.org/10.1007/s00467-012-2344-0

Freedman, D. S., Mei, Z., Srinivasan, S. R., Berenson, G. S., & Dietz, W. H. (2007). Cardiovascular Risk Factors and Excess Adiposity Among Overweight Children and Adolescents: The Bogalusa Heart Study. *Journal of Pediatrics*, *150*(1). https://doi.org/10.1016/j.jpeds.2006.08.042

Freedman, M. R., & Alvarez, K. P. (2010). Early Childhood Feeding: Assessing Knowledge, Attitude, and Practices of Multi-Ethnic Child-Care Providers. *Journal of the American Dietetic Association*, *110*(3), 447–451. https://doi.org/10.1016/j.jada.2009.11.018

Frisvold, D. E., & Lumeng, J. C. (2011). Expanding exposure: Can increasing the daily duration of head start reduce childhood obesity? *Journal of Human Resources*, *46*(2), 373–402. https://doi.org/10.3368/jhr.46.2.373

Fuller, G., & Bone, I. (2003). Direct Access to Medline Medline. *Current Opinion in Neurology*, *74*(Suppl II), 2–3.

Fuller-Tyszkiewicz, M., Skouteris, H., Hardy, L. L., & Halse, C. (2012). The associations between TV viewing, food intake, and BMI. A prospective analysis of data from the Longitudinal Study of Australian Children. *Appetite*, 59(3), 945-948.

Gable, S., Chang, Y., & Krull, J. L. (2007). Television watching and frequency of family meals are predictive of overweight onset and persistence in a national sample of school-aged children. *Journal of the American dietetic association*, *107*(1), 53-61.

Gable, S., & Lutz, S. (2000). Household, parent, and child contributions to childhood obesity. *Family Relations*, *49*(3), 293–300. https://doi.org/10.1111/j.1741-3729.2000.00293.x.

Gahagan, S. (2004). Child and adolescent obesity. *Current Problems in Pediatric and Adolescent Health Care*, *34*(1), 6–43. https://doi.org/10.1016/j.cppeds. 2003.09.001

Gaskins, R. B., Lagasse, L. L., Liu, J., Shankaran, S., Lester, B. M., Bada, H. S., Bauer, C. R., Das, A., Higgins, R. D., & Roberts, M. (2010). Small for gestational age and higher birth weight predict childhood obesity in preterm infants. *American Journal of Perinatology*, *27*(9), 721–730. https://doi.org/ 10.1055/s-0030-1253555.

Gebremariam, M. K., Lien, N., Nianogo, R. A., & Arah, O. A. (2017). Mediators of socioeconomic differences in adiposity among youth: a systematic review. *Obesity Reviews*, *18*(8), 880-898.

Gross, A., & Feldman, T. (2015). We Didn't Want to to Hear the Word Calories: Rethinking Food Security, Food Power, and Food Sovereignty-Lessons from the Gaza Closure. *Berkeley J. Int'l L.*, 33, 379.

Ammar, H. G. S. (2015). Exposure and attitudes of MOH hospitals' physicians toward the marketing practices of pharmaceutical companies in the Gaza strip. Islamic University of Gaza, Gaza.

Ghosh, N., Das, A., & Sen, C. K. (2019). Childhood Obesity: Factors, Consequences and Intervention. In *Global Perspectives on Childhood Obesity* (2nd ed.). Elsevier Inc. https://doi.org/10.1016/b978-0-12-812840-4.00021-9

Gillis, L. J., & Bar-or, O. (2013). *Journal of the American College of Nutrition Food Away from Home , Sugar-Sweetened Drink Consumption and Juvenile Obesity Food Away from Home , Sugar-Sweetened Drink*. *November 2014*, 37–41. https://doi.org/10.1080/07315724.2003.10719333

Golan, M. (2006). Parents as agents of change in childhood obesity–from research to practice. *International journal of pediatric obesity*, *1*(2), 66-76.

Golan, M., & Crow, S. (2004). *Targeting Parents Exclusively in the Treatment of Childhood Obesity : Long-Term Results*.

Goldman, D. A. (2020). Gallbladder, gallstones, and diseases of the gallbladder in children. *Pediatrics in Review*, *41*(12), 623–629. https://doi.org/10.1542/ pir.2019-0077

Grant-guimaraes, J., & Feinstein, R. (2016). Childhood Overweight and Obesity. *Gastroenterology Clinics of NA*, *45*(4), 715–728. https://doi.org/10.1016/j.gtc. 2016.07.007.

Graves, J. E., Pollock, M. L., Colvin, A. B., Van Loan, M., & Lohman, T. G. (1989). Comparison of different bioelectrical impedance analyzers in the prediction of body composition. *American Journal of Human Biology*, *1*(5), 603–611. https://doi.org/10.1002/ajhb.1310010511

Green, T. L. (2014). Examining the temporal relationships between childhood obesity and asthma. *Economics and Human Biology*, *14*(1), 92–102. https://doi.org/10.1016/j.ehb.2012.10.002

Gupta, N., Goel, K., Shah, P., & Misra, A. (2012). Childhood obesity in developing countries: epidemiology, determinants, and prevention. *Endocrine reviews*, 33(1), 48-70.

Hall, J. E., Do Carmo, J. M., Da Silva, A. A., Wang, Z., & Hall, M. E. (2015). Obesity-Induced Hypertension: Interaction of Neurohumoral and Renal Mechanisms. *Circulation Research*, *116*(6), 991–1006. https://doi.org/10.1161/CIRCRESAHA.116.305697

Harman-Boehm, I., Blüher, M., Redel, H., Sion-Vardy, N., Ovadia, S., Avinoach, E., ... & Rudich, A. (2007). Macrophage infiltration into omental versus subcutaneous fat across different populations: effect of regional adiposity and the comorbidities of obesity. *The Journal of Clinical Endocrinology & Metabolism*, *92*(6), 2240-2247.

Hassan, N. E., El-Masry, S. A., Farid, T., & Khalil, A. (2016). Influence of parental and some demographic characteristics on overweight/obesity status among a sample of Egyptian children. *Macedonian Journal of Medical Sciences*, *4*(3), 342–347. https://doi.org/10.3889/oamjms.2016.088.

He, K., Hu, F. B., Colditz, G. A., Manson, J. E., Willett, W. C., & Liu, S. (2004). Changes in intake of fruits and vegetables in relation to risk of obesity and weight gain among middle-aged women. *International Journal of Obesity*, *28*(12), 1569–1574. https://doi.org/10.1038/sj.ijo.0802795.

He, M., & Evans, A. (2007). Are parents aware that their children are overweight or obese? Do they care? *Canadian Family Physician*, *53*(9), 1493–1499.

Helba, M., & Binkovitz, L. A. (2009). Pediatric body composition analysis with dual-energy X-ray absorptiometry. *Pediatric Radiology*, *39*(7), 647–656. https://doi.org/10.1007/s00247-009-1247-0.

Hemmingsson, E., Johansson, K., & Reynisdottir, S. (2014). Effects of childhood abuse on adult obesity: A systematic review and meta-analysis. *Obesity Reviews*, *15*(11), 882–893. https://doi.org/10.1111/obr.12216

Hense, S., Barba, G., Pohlabeln, H., De Henauw, S., Marild, S., Molnar, D., Moreno, L. A., Hadjigeorgiou, C., Veidebaum, T., & Ahrens, W. (2011). Factors that influence weekday sleep duration in European children. *Sleep*, *34*(5), 633–639. https://doi.org/10.1093/sleep/34.5.633

Hesketh, K., Wake, M., & Waters, E. (2004). Body mass index and parent-reported self-esteem in elementary school children: evidence for a causal relationship. *International journal of obesity*, 28(10), 1233-1237.

Huang, J. S., Donohue, M., Becerra, K., & Xu, R. (2009). Relationship Between Parents' and Children's Weight Perceptions Results of a Survey. *ICAN: Infant, Child, & Adolescent Nutrition*, *1*(1), 15–20. https://doi.org/10.1177/194140640 8329218

Huang, J. Y., & Qi, S. J. (2015). Childhood obesity and food intake. *World Journal of Pediatrics*, 11(2), 101-107.

Huffman, F. G., Kanikireddy, S., & Patel, M. (2010). Parenthood—a contributing factor to childhood obesity. *International journal of environmental research and public health*, 7(7), 2800-2810.

Husseini, A., Abu-Rmeileh, N. M., Mikki, N., Ramahi, T. M., Ghosh, H. A., Barghuthi, N., & Jervell, J. (2009). Cardiovascular diseases, diabetes mellitus, and cancer in the occupied Palestinian territory. *The lancet*, 373(9668), 1041-1049.

Ihab, A. N., Rohana, A. J., Wan Manan, W. M., Wan Suriati, W. N., Zalilah, M. S., & Mohamed Rusli, A. (2013). Nutritional outcomes related to household food insecurity among mothers in rural Malaysia. *Journal of Health, Population and Nutrition*, *31*(4), 480–489. https://doi.org/10.3329/jhpn.v31i4.20031

Ismail, M. A., Kamel, M. H., & Ibrahim, D. E. (2011). Assessment of knowledge , attitude and practice of adolescents towards obesity in the preparatory schools in Ismailia city - Egypt Introduction : *The Egyptian Journal of Community Medicine*, *29*(2), 17–30.

Jago, R., Baranowski, T., Baranowski, J. C., Thompson, D., & Greaves, K. A. (2005). BMI from 3-6y of age is predicted by TV viewing and physical activity, not diet. *International Journal of Obesity*, *29*(6), 557–564. https://doi.org/10.1038/sj.ijo.0802969

Janz, K. F., Gilmore, J. M. E., Levy, S. M., Letuchy, E. M., Burns, T. L., & Beck, T. J. (2007). Physical activity and femoral neck bone strength during childhood: The Iowa Bone Development Study. *Bone*, *41*(2), 216–222. https://doi.org/10.1016/j.bone.2007.05.001

Janz, K. F., Kwon, S., Letuchy, E. M., Gilmore, J. M. E., Burns, T. L., Torner, J. C., Willing, M. C., & Levy, S. M. (2009). Sustained Effect of Early Physical Activity on Body Fat Mass in Older Children. *AMEPRE*, *37*(1), 35–40. https://doi.org/10.1016/j.amepre.2009.03.012

Jaquet, D., Leger, J., Tabone, M. D., Czernichow, P., Levy-Marchal, C., & Jaquet, D. (1999). High serum leptin concentrations during catch-up growth of children born with intrauterine growth retardation. *Journal of Clinical Endocrinology and Metabolism*, *84*(6), 1949–1953. https://doi.org/10.1210/jc.84.6.1949

Jo, Y. H., Talmage, D. A., & Role, L. W. (2002). Nicotinic receptor-mediated effects on appetite and food intake. *Journal of Neurobiology*, *53*(4), 618–632. https://doi.org/10.1002/neu.10147

Johannsen, D. L., Johannsen, N. M., & Specker, B. L. (2006). Influence of parents' eating behaviors and child feeding practices on children's weight status. *Obesity*, *14*(3), 431–439. https://doi.org/10.1038/childhood obesity.2006.57

Jones-Smith, J. C., Gordon-Larsen, P., Siddiqi, A., & Popkin, B. M. (2011). Cross-national comparisons of time trends in overweight inequality by socioeconomic status among women using repeated cross-sectional surveys from 37 developing countries, 1989-2007. *American Journal of Epidemiology*, *173*(6), 667–675. https://doi.org/10.1093/aje/kwq428

Jones, K. M., Power, M. L., Queenan, J. T., & Schulkin, J. (2015). *Racial and Ethnic Disparities in Breastfeeding 1,2 1*. *10*(4), 186–196. https://doi.org/10.1089/bfm.2014.0152.

Josey, M. J., McCullough, L. E., Hoyo, C., & Williams-Devane, C. (2019). Overall gestational weight gain mediates the relationship between maternal and child obesity. *BMC Public Health*, *19*(1), 1–9. https://doi.org/10.1186/s12889-019-7349-1

Juan, P. M. F. S. (2006). Dietary habits and nutritional status of school aged children in Spain. *Nutricion Hospitalaria*, *21*(3), 374–378.

Kanao, B. J., Abu-Nada, O. S., & Zabut, B. M. (2009). Nutritional status correlated with sociodemographic and economic factors among preparatory school-aged children in the Gaza Strip. *Journal of Public Health*, *17*(2), 113–119. https://doi.org/10.1007/s10389-008-0229-2

Karimy, M., Armoon, B., Fayazi, N., & Koohestani, H. R. (2019). A study on the knowledge, attitude, and practices of Iranian mothers towards childhood obesity. Obesity facts, 12(6), 669-677.

Katzmarzyk, P. T., Barreira, T. V., Broyles, S. T., Champagne, C. M., Chaput, J. P., Fogelholm, M., & Church, T. S. (2015). Physical activity, sedentary time, and obesity in an international sample of children. Medicine and science in sports and exercise, 47(10), 2062-2069.

Keane, E., Layte, R., Harrington, J., Kearney, P. M., & Perry, I. J. (2012). Measured parental weight status and familial socio-economic status correlates with childhood overweight and obesity at age 9. *PLoS ONE*, *7*(8). https://doi.org/10.1371/journal.pone.0043503

Kelishadi, R., Natale, R., Scott, S. H., Messiah, S. E., Schrack, M. M., Uhlhorn, S. B., Delamater, A., Science, F., Wagner, D. I., Freedman, D. S., Dietz, W. H., Srinivasan, S. R., Berenson, G. S., Background, A., Branch, G., Metabolic, P., Working, S., Kanao, B. J., Abu-Nada, O. S., … Smith, M. S. (2011). Long-term effects of childhood obesity on morbidity and mortality. *American Medical Association*, *7*(1), 42–45. https://doi.org/10.1016/j.jada.2011.02.011

Khor, G. L., & Sharif, Z. M. (2003). Dual forms of malnutrition in the same households in Malaysia - A case study among Malay rural households. *Asia Pacific Journal of Clinical Nutrition*, *12*(4), 427–437.

Kim., J.-W., Ha.., A.-W., & Yoo, K.-S. (2008). 어머니의 영양지식에 따른 유아기 자녀의 비만도 및 식습관의 차이. *23*(5), 646–654.

Kim, S., DeRoo, L. A., & Sandler, D. P. (2011). Eating patterns and nutritional characteristics associated with sleep duration. Public health nutrition, 14(5), 889-895.

Kim, H. O., Kim, G. N., & Park, E. (2015). Perception of childhood obesity in mothers of preschool children. *Osong Public Health and Research Perspectives*, *6*(2), 121–125. https://doi.org/10.1016/j.phrp.2015.01.007

Kim, L. P., & Mallo, N. (2019). Maternal Perceptions of Self-Weight and Child Weight May Influence Milk Choice of Participants in the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). *Journal of Obesity*, *2019*. https://doi.org/10.1155/2019/3654728

Klesges, R. C., Malott, J. M., Boschee, P. F., & Weber, J. M. (1986). The effects of parental influences on children's food intake, physical activity, and relative weight. *International Journal of Eating Disorders*, 5(2), 335-345.

Klesges, R. C., Stein, R. J., Eck, L. H., Isbell, T. R., & Klesges, L. M. (1991). Parental influence on food selection in young children and its relationships to childhood obesity. *The American journal of clinical nutrition*, 53(4), 859-864.

Koo, H. C., Poh, B. K., & Ruzita, A. T. (2015). Assessment of knowledge, attitude and practice towards whole grains among children aged 10 and 11 years in Kuala Lumpur. *Int J Food Sci Nutr Diet*, *4*(1), 171-7.

Kopelman, P. G., Caterson, I. D., & Dietz, W. H. (2010). Clinical Obesity in Adults and Children: Third Edition. In *Clinical Obesity in Adults and Children: Third Edition*. https://doi.org/10.1002/9781444307627

Kotsis, V., Stabouli, S., Papakatsika, S., Rizos, Z., & Parati, G. (2010). Mechanisms of obesity-induced hypertension. *Hypertension research*, 33(5), 386-393.

Kourlaba, G., & Panagiotakos, D. B. (2009). Dietary quality indices and human health: a review. *Maturitas*, 62(1), 1-8.

Kremer-Sadlik, T., Morgenstern, A., Peters, C., Beaupoil, P., Caët, S., Debras, C., & le Mené, M. (2015). Eating fruits and vegetables: An ethnographic study of American and French family dinners. *Appetite*, *89*, 84–92. https://doi.org/ 10.1016/j.appet.2015.01.012

Lambert, J., Agostoni, C., Elmadfa, I., Hulshof, K., Krause, E., Livingstone, B., Socha, P., Pannemans, D., & Samartín, S. (2004). Dietary intake and nutritional status of children and adolescents in Europe. *British Journal of Nutrition*, *92*(S2), S147–S211. https://doi.org/10.1079/bjn20041160

Laws, R., Campbell, K. J., Van Der Pligt, P., Russell, G., Ball, K., Lynch, J., ... & Denney-Wilson, E. (2014). The impact of interventions to prevent obesity or improve obesity related behaviours in children (0–5 years) from socioeconomically disadvantaged and/or indigenous families: a systematic review. *BMC public health*, *14*(1), 1-18.

Lazzeri, G., Pammolli, A., Pilato, V., & Giacchi, M. V. (2011). Relationship between 8/9-yr-old school children BMI, parents' BMI and educational level: A cross sectional survey. *Nutrition Journal*, *10*(1), 1–8. https://doi.org/10.1186/1475-2891-10-76.

LeBlanc, A. G., Katzmarzyk, P. T., Barreira, T. V., Broyles, S. T., Chaput, J. P., Church, T. S., Fogelholm, M., Harrington, D. M., Hu, G., Kuriyan, R., Kurpad, A., Lambert, E. V., Maher, C., Maia, J., Matsudo, V. K. R., Olds, T., Onywera, V., Sarmiento, O. L., Standage, M., … Wiltz, D. (2015). Correlates of total sedentary time and screen time in 9-11 year-old children around the world: The international study of childhood obesity, lifestyle and the environment. *PLoS ONE*, *10*(6), 1–20. https://doi.org/10.1371/journal.pone.0129622

Cawley, J. (2010). The economics of childhood obesity. *Health affairs*, 29(3), 364-371.

Lee, Y. S., Kek, B. L. K., Poh, L. K. S., Saw, S. M., & Loke, K. Y. (2008). Association of raised liver transaminases with physical inactivity, increased waist–hip ratio, and other metabolic morbidities in severely obese children. *Journal of pediatric gastroenterology and nutrition*, *47*(2), 172-178.

Lee, Y. S. (2009). Consequences of childhood obesity. *Annals of the Academy of Medicine Singapore*, *38*(1), 75–81.

Lee, Y. S. (2014). *Consequences of Childhood Obesity*. *June*.

Lerman, C., Berrettini, W., Pinto, A., Crystal-mansour, F. P. S., Wileyto, E. P., Restine, S. L., Leonard, D. G. B., Shields, P. G., & Epstein, L. H. (2004). *Changes in food reward following smoking cessation : a pharmacogenetic investigation*. 571–577. https://doi.org/10.1007/s00213-004-1823-9

LeVine, R. A. (1988). Human parental care: Universal goals, cultural strategies, individual behavior. *New Directions for Child and Adolescent Development*, 1988(40), 3-12.

Lichtenstein, A. H., Kennedy, E., Barrier, P., & Danford, D. (1998). Dietary fat consumption and health/discussion. *Nutrition reviews*, 56(5), S3.

Li, L., Law, C., Lo Conte, R., & Power, C. (2009). Intergenerational influences on childhood body mass index: the effect of parental body mass index trajectories. *The American journal of clinical nutrition*, *89*(2), 551-557.

Lin, B. H., Guthrie, J., & Blaylock, J. R. (1996). The diets of America's children: Influences of dining out, *household characteristics, and nutrition knowledge* (No. 1473-2017-3853).

Lin, W., Yang, H. C., Hang, C. M., & Pan, W. H. (2007). Nutrition knowledge, attitude, and behavior of Taiwanese elementary school children. *Asia Pacific Journal of Clinical Nutrition*, *16*(SUPPL. 2), 534–546. https://doi.org/10.6133/ apjcn.2007.16.s2.04

Lindsay, A. C., Sussner, K. M., Kim, J., & Gortmaker, S. (2006). The role of parents in preventing childhood obesity. *The Future of children*, 169-186.

Liu, H., Xu, X., Liu, D., Rao, Y., Reis, C., Sharma, M., ... & Zhao, Y. (2018). Nutrition-related knowledge, attitudes, and practices (KAP) among kindergarten teachers in Chongqing, China: A cross-sectional survey. *International journal of environmental research and public health*, *15*(4), 615.

Liu, J., Zhang, A., & Li, L. (2012). Sleep duration and overweight/obesity in children: Review and implications for pediatric nursing. *Journal for Specialists in Pediatric Nursing*, *17*(3), 193–204. https://doi.org/10.1111/j.1744-6155.2012.00332.x

Lu, L., Xun, P., Wan, Y., He, K., & Cai, W. (2016). Long-term association between dairy consumption and risk of childhood obesity: A systematic review and meta-analysis of prospective cohort studies. *European Journal of Clinical Nutrition*, *70*(4), 414–423. https://doi.org/10.1038/ejcn.2015.226.

Ludwig, D. S., Peterson, K. E., & Gortmaker, S. L. (2001). Relation between consumption of sugar-sweetened drinks and childhood obesity: A prospective, observational analysis. *Lancet*, *357*(9255), 505–508. https://doi.org/10.1016/ S0140-6736(00)04041-1.

Mabiala Babela, J. R., Nika, E. R., Nkounkou Milandou, K. G. C., Missambou Mandilou, S. V., Bouangui Bazolana, S. B. A., Monabeka, H. G., & Moyen, G. (2016). Knowledge, Attitudes, and Practices of Parents Facing Child and Adolescent Obesity in Brazzaville, Congo. *Global Pediatric Health*, *3*, 2333794X1667554. https://doi.org/10.1177/2333794x16675546

Magarey, A. M., Perry, R. A., Baur, L. A., Steinbeck, K. S., Sawyer, M., Hills, A. P., Wilson, G., Lee, A., & Daniels, L. A. (2011). A parent-led family-focused treatment program for overweight children aged 5 to 9 years: The PEACH RCT. *Pediatrics*, *127*(2), 214–222. https://doi.org/10.1542/peds.2009-1432

Malek Mahdavi, A., Abdolahi, P., & Mahdavi, R. (2012). Knowledge, Attitude and Practice between Medical and Non-Medical Sciences Students about Food Labeling. *Health Promotion Perspectives*, *2*(2), 173–179. https://doi.org/ 10.5681/hpp.2012.020

Malik, V. S., Schulze, M. B., & Hu, F. B. (2006). Intake of sugar-sweetened beverages and weight gain: a systematic review–. *The American journal of clinical nutrition*, 84(2), 274-288.

Mamun, A. A., Lawlor, D. A., Cramb, S., O'Callaghan, M., Williams, G., & Najman, J. (2007). Do childhood sleeping problems predict obesity in young adulthood? Evidence from a prospective birth cohort study. *American journal of epidemiology*, *166*(12), 1368-1373.

Manus H, Killeen M. Maintenance of self-esteem by obese children. *Journal of Child and Adolescent Psychiatric Nursing* 1995;8:17e24.

Marshall, N. S., Glozier, N., & Grunstein, R. R. (2008). Is sleep duration related to obesity? A critical review of the epidemiological evidence. *Sleep Medicine Reviews*, *12*(4), 289–298. https://doi.org/10.1016/j.smrv.2008.03.001

Martin-Shields, C. P., & Stojetz, W. (2019). Food security and conflict: Empirical challenges and future opportunities for research and policy making on food security and conflict. *World Development*, 119, 150-164.

Marwan O, J., Basil, K., Mohammed S, E., Smaher, Y., & Mueen, E.-K. (2018). Dietary and Lifestyles assessment among Obese Women in Gaza City, Palestine. *New Insights in Obesity: Genetics and Beyond*, *2*(1), 017–025. https://doi.org/10.29328/journal. niogb.1001009

Massad, S. G., Nieto, F. J., Palta, M., Smith, M., Clark, R., & Thabet, A. A. (2012). Nutritional status of Palestinian preschoolers in the Gaza Strip: a cross-sectional study. *BMC public health*, 12(1), 1-11.

Massad, S., Deckelbaum, R. J., Gebre-Medhin, M., Holleran, S., Dary, O., Obeidi, M., Bordelois, P., & Khammash, U. (2016). Double Burden of Undernutrition and Obesity in Palestinian Schoolchildren. *Food and Nutrition Bulletin*, *37*(2), 144–152. https://doi.org/10.1177/0379572116637720

Maughan, R. J., & Shirreffs, S. M. (2021). *Plenary Lecture 2 Nutrition for sports performance : issues and opportunities*. *October 2011*, 112–119. https://doi.org/ 10.1017/S0029665111003211.

McGovern, L., Johnson, J. N., Paulo, R., Hettinger, A., Singhal, V., Kamath, C., Erwin, P. J., & Montori, V. M. (2008). Treatment of pediatric obesity: A systematic review and meta-analysis of randomized trials. *Journal of Clinical Endocrinology and Metabolism*, *93*(12), 4600–4605. https://doi.org/10.1210/ jc.2006-2409

Mech, P., Hooley, M., Skouteris, H., & Williams, J. (2016). Parent-related mechanisms underlying the social gradient of childhood overweight and obesity: a systematic review. *Child: Care, Health and Development*, *42*(5), 603–624. https://doi.org/10.1111/cch.12356

Mehta, S. D., & Davis, R. K. (2015). *Factors Associated With Parental Readiness to Make Changes for Overweight Children*. *116*(1). https://doi.org/10.1542/ peds.2004-2479

Menard, S. (2000). Coefficients of determination for multiple logistic regression analysis. *American Statistician*, *54*(1), 17–24. https://doi.org/10.1080/ 00031305.2000.10474 502.

Mhs, J. K., Lamb, M. M., & Ogden, C. L. (2015). The Association between Food Insecurity and Obesity in Children-The National Health and Nutrition Examination Survey. *Journal of the Academy of Nutrition and Dietetics*. https://doi.org/10.1016/ j.jand.2015.01.003

Mikki, N., Abdul-Rahim, H. F., Awartani, F., & Holmboe-Ottesen, G. (2009). Prevalence and sociodemographic correlates of stunting, underweight, and overweight among Palestinian school adolescents (13-15 years) in two major governorates in the West Bank. *BMC Public Health*, *9*, 1–12. https://doi.org/10.1186/1471-2458-9-485

Mirmiran, P., Azadbakht, L., & Azizi, F. (2007). Dietary behaviour of Tehranian adolescents does not accord with their nutritional knowledge. *Public Health Nutrition*, *10*(9), 897–901. https://doi.org/10.1017/S1368980007246701

Mohamed Ahmed Ayed, M., Kamel Yousef Ali, F., & Sayed Masoed Sayed, E. (2021). Effect of Mothers' Nutritional Knowledge, Attitude, and Practices in Childcare on the Growth of Children. *Egyptian Journal of Health Care*, *12*(2), 371–382. https://doi.org/10.21608/ejhc.2021.161003

Mohd Hatta, N. K. B., Rahman, N. A. A., Rahman, N. I. A., & Haque, M. (2017). Knowledge, attitude and practices among mothers regarding childhood obesity at Kuantan, Malaysia. *International Medical Journal*, *24*(2), 200–204.

Mohd Shariff, Z., Abu Samah, B., Paim, L., Ismail, M., Kasim, M., Othman, N., Hashim, N., Buhari, S., Jamil Osman, Z., & Mohd Hussein, Z. (2008). Nutrition education intervention improves nutrition knowledge, attitude and practices of primary school children : a pilot study. *International Electronic Journal of Health Education*, *11*(1), 119–132.

Monteiro, C. A., Conde, W. L., & Popkin, B. M. (2007). Income-specific trends in obesity in Brazil: 1975-2003. *American Journal of Public Health*, *97*(10), 1808–1812. https://doi.org/10.2105/AJPH.2006.099630

Moore, J. B., Pawloski, L. R., Goldberg, P., Oh, K. M., Stoehr, A., & Baghi, H. (2009). Childhood obesity study: A pilot study of the effect of the nutrition education program Color My Pyramid. *Journal of School Nursing*, *25*(3), 230–239. https://doi.org/10.1177/1059840509333325

Moore, L. C., Harris, C. V., & Bradlyn, A. S. (2012). Exploring the relationship between parental concern and the management of childhood obesity. *Maternal and Child Health Journal*, *16*(4), 902–908. https://doi.org/10.1007/s10995-011-0813-x

Moore, L. L., Gao, D., Bradlee, M. L., Cupples, L. A., Sundarajan-Ramamurti, A., Proctor, M. H., Hood, M. Y., Singer, M. R., & Ellison, R. C. (2003). Does early physical activity predict body fat change throughout childhood? *Preventive Medicine*, *37*(1), 10–17. https://doi.org/10.1016/S0091-7435(03)00048-3

Moraeus, L., Lissner, L., Yngve, A., Poortvliet, E., Al-Ansari, U., & Sjöberg, A. (2012). Multi-level influences on childhood obesity in Sweden: Societal factors, parental determinants and childs lifestyle. *International Journal of Obesity*, *36*(7), 969–976. https://doi.org/10.1038/ijo.2012.79

Morgan, E. H., Schoonees, A., Sriram, U., Faure, M., & Seguin-Fowler, R. A. (2020). Caregiver involvement in interventions for improving children's dietary intake and physical activity behaviors. *Cochrane Database of Systematic Reviews*, (1).

Mottaghi, A., Mirmiran, P., Pourvali, K., Tahmasbpour, Z., & Azizi, F. (2017). Incidence and prevalence of childhood obesity in Tehran, Iran in 2011. *Iranian Journal of Public Health*, *46*(10), 1395–1403.

Mousa, H. S. A., Yousef, S., Riccardo, F., Zeidan, W., & Sabatinelli, G. (2010). Hyperglycaemia, hypertension and their risk factors among Palestine refugees served by UNRWA. *Eastern Mediterranean Health Journal*, *16*(6), 460–465. https://doi.org/10.26719/2010.16.6.609

Muckelbauer, R., Libuda, L., Clausen, K., Toschke, A. M., Reinehr, T., & Kersting, M. (2009). Promotion and provision of drinking water in schools for overweight prevention: Randomized, controlled cluster trial. *Pediatrics*, *123*(4), 27–34. https://doi.org/10.1542/peds.2008-2186.

Murasko, J. E. (2011). Trends in the associations between family income, height and body mass index in US children and adolescents: 1971-1980 and 1999-2008. *Annals of Human Biology*, *38*(3), 290–306. https://doi.org/10.3109/ 03014460.2010.537698

Nackers, L. M., & Appelhans, B. M. (2013). Food insecurity is linked to a food environment promoting obesity in households with children. *Journal of Nutrition Education and Behavior*, *45*(6), 780–784. https://doi.org/10.1016/j.jneb.2013.08. 001.

Natale, R. A., Messiah, S. E., Asfour, L., Uhlhorn, S. B., Delamater, A., & Arheart, K. L. (2014). Role modeling as an early childhood obesity prevention strategy: Effect of parents and teachers on preschool children's healthy lifestyle habits. *Journal of Developmental and Behavioral Pediatrics*, *35*(6), 378–387. https://doi.org/10.1097/DBP.0000000000000074

Nauta, C., Byrne, C., & Wesley, Y. (2009). School nurses and childhood obesity: An investigation of knowledge and practice among school nurses as they relate to childhood obesity. *Comprehensive Child and Adolescent Nursing*, *32*(1), 16–30. https://doi.org/10.1080/01460860802610186

Neumark-Sztainer D, Story M, Harris T. Beliefs and attitudes about obesity among teachers and school health care providers working with adolescents. *Journal of Nutritional Education* 1999;31:3e9

Neumark-Sztainer, D., Falkner, N., Story, M., Perry, C., Hannan, P. J., & Mulert, S. (2002). Weight-teasing among adolescents: correlations with weight status and disordered eating behaviors. *International journal of obesity*, 26(1), 123-131.

Newby, P. K. (2007). Are dietary intakes and eating behaviors related to childhood obesity? A comprehensive review of the evidence. *Journal of Law, Medicine and Ethics*, *35*(1), 35–60. https://doi.org/10.1111/j.1748-720X.2007.00112.x

Nguyen, B., Shrewsbury, V. A., O'Connor, J., Steinbeck, K. S., Hill, A. J., Shah, S., Kohn, M. R., Torvaldsen, S., & Baur, L. A. (2013). Two-year outcomes of an adjunctive telephone coaching and electronic contact intervention for adolescent weight-loss maintenance: The Loozit randomized controlled trial. *International Journal of Obesity*, *37*(3), 468–472. https://doi.org/10.1038/ijo.2012.74.

Nicklas, T. A., Baranowski, T., Cullen, K. W., & Berenson, G. (2001). Eating patterns, dietary quality and obesity. *Journal of the American college of nutrition*, *20*(6), 599-608.

Nicklas, T. A., Yang, S. J., Baranowski, T., Zakeri, I., & Berenson, G. (2003). Eating patterns and obesity in children - The Bogalusa Heart Study. *American Journal of Preventive Medicine*, *25*(1), 9–16. https://doi.org/10.1016/S0749-3797(03) 00098-9.

Nielsen, L. S., Danielsen, K. V., & Sørensen, T. I. A. (2011). Short sleep duration as a possible cause of obesity: Critical analysis of the epidemiological evidence. *Obesity Reviews,12*(2),78–92. https://doi.org/10.1111/j.1467-789X.2010.00724.x

Nordmann, A. J., Nordmann, A., Briel, M., Keller, U., Yancy, W. S., Brehm, B. J., & Bucher, H. C. (2006). Effects of Low-Carbohydrate vs Low-Fat Diets on Weight Loss and Cardiovascular Risk Factors. *Archives of Internal Medicine*, *166*(3), 285. https://doi.org/10.1001/archinte.166.3.285.

Ochoa, M. C., Azcona, C., Moreno-Aliaga, M. J., Martínez-González, M. A., Martínez, J. A., & Marti, A. (2009). Influence of parental body mass index on offspring body mass index in a Spanish population. *Revista Espanola de Obesidad*, *7*(6), 395–401.

Okely, A. D., Collins, C. E., Morgan, P. J., Jones, R. A., Warren, J. M., Cliff, D. P., Burrows, T. L., Colyvas, K., Steele, J. R., & Baur, L. A. (2010). Multi-site randomized controlled trial of a child-centered physical activity program, a parent-centered dietary-modification program, or both in overweight children: The HIKCUPS study. *Journal of Pediatrics*, *157*(3), 388-394.e1. https://doi.org/10.1016/j.jpeds.2010.03.028.

Oken, E., Levitan, E. B., & Gillman, M. W. (2008a). *Maternal smoking during pregnancy and child overweight : systematic review and meta-analysis*. 201–210. https://doi.org/10.1038/sj.ijo.0803760

Oken, E., Levitan, E. B., & Gillman, M. W. (2008b). Maternal smoking during pregnancy and child overweight: Systematic review and meta-analysis. *International Journal of Obesity*, *32*(2), 201–210. https://doi.org/10.1038/ sj.ijo.0803760

Ong, K. E. N. K. L., Preece, M. A., Emmett, P. M., Ahmed, M. L., Dunger, D. B., The, F. O. R., & Study, A. (2002). *Size at Birth and Early Childhood Growth in Relation to Maternal Smoking , Parity and Infant Breast-Feeding : Longitudinal Birth Cohort Study and Analysis*. *52*(6), 0–4. https://doi.org/10.1203/01.PDR.0000036602.81878.6D.

Øvrebø, E. M. (2014). Knowledge and attitudes of adolescents regarding home economics in Tromsø, Norway. *International Journal of Consumer Studies*, *38*(1), 2–11. https://doi.org/10.1111/ijcs.12043.

Parikka, S., Mäki, P., Levälahti, E., Lehtinen-Jacks, S., Martelin, T., & Laatikainen, T. (2015). Associations between parental BMI, socioeconomic factors, family structure and overweight in Finnish children: A path model approach Disease epidemiology - Chronic. *BMC Public Health*, *15*(1), 1–10.https://doi.org/10.1186/s12889-015-1548-1

Patimah, S., Royani, I., Mursaha, A., & Thaha, A. R. (2016). Knowledge, attitude and practice of balanced diet and correlation with hypochromic microcytic anemia among adolescent school girls in maros district, South Sulawesi, Indonesia. *Biomedical Research (India)*, *27*(1), 165–171.

PCBS, (2017). Palestinian Central Bureau of Statistics. Ramalla. Palestine.

PCBS, (2020). Palestinian Central Bureau of Statistics. Ramallah. Palestine.

Pereira, M. A., Kartashov, A. I., Ebbeling, C. B., Van Horn, L., Slattery, M. L., Jacobs, P. D. R., & Ludwig, D. S. (2005). Fast-food habits, weight gain, and insulin resistance (the CARDIA study): 15-year prospective analysis. *Lancet*, *365*(9453), 36–42. https://doi.org/10.1016/S0140-6736(04)17663-0.

Pérez-escamilla, R., Obbagy, J. E., Altman, J. M., Essery, E. V, Mcgrane, M. M., Wong, Y. P., Spahn, J. M., & Williams, C. L. (2012). Dietary Energy Density and Body Weight in Adults and Children: A Systematic Review. *JAND*, *112*(5), 671–684. https://doi.org/10.1016/j.jand.2012.01.020

Pérez-Rodrigo, C., Klepp, K.-I., Yngve, A., Sjöström, M., Stockley, L., & Aranceta, J. (2001). The school setting: an opportunity for the implementation of dietary guidelines. *Public Health Nutrition*, *4*(2b), 717–724. https://doi.org/10.1079/phn2001162.

Peuhkuri, K., Sihvola, N., & Korpela, R. (2012). Diet promotes sleep duration and quality. *Nutrition Research*, *32*(5), 309–319. https://doi.org/10.1016/ j.nutres.2012.03.009

Phaff, H. J., Miller, M. W., & Mrak, E. M. (1978). *The life of yeasts. Nutrition and growth*. 163–182. https://doi.org/10.3945/ajcn.113.064071.1

Popkin, B. (2001). Symposium: Obesity in developing countries: biological and ecological factors. *The Journal of Nutrition*, *131*(3), 871–873.

Popkin, B. M., Adair, L. S., & Ng, S. W. (2012). Global nutrition transition and the pandemic of obesity in developing countries. *Nutrition Reviews*, *70*(1), 3–21. https://doi.org/10.1111/j.1753-4887.2011.00456.x

Prasetya, G., & Khomsan, A. (2021). The Knowledge, Attitude and Practice of Mothers and Children on the Indonesian Dietary Guidelines and the Relationship with Children's Nutritional Status. *Jurnal Gizi Dan Pangan*, *16*(1), 55–64.

Proietto, J. (2011). Why is treating obesity so difficult? Justification for the role of bariatric surgery. *Medical Journal of Australia*, *195*(3), 144–146. https://doi.org/ 10.5694/j.1326-5377.2011.tb03242.x.

Puhl, R. M., & Heuer, C. A. (2009). *The Stigma of Obesity : A Review and Update*. *17*(5). https://doi.org/10.1038/childhood obesity.2008.636

Puia, A., & Leucuta, D. C. (2017). Childrens lifestyle behaviors in relation to anthropometric indices: a family practice study. *Clujul Medical*, 90(4), 385.

Qiao, Y., Ma, J., Wang, Y., Li, W., Katzmarzyk, P. T., Chaput, J.-P., Fogelholm, M., Johnson, W. D., Kuriyan, R., Kurpad, A., Lambert, E. V, Maher, C., Maia, J., Matsudo, V., Olds, T., Onywera, V., Sarmiento, O. L., Standage, M., Tremblay, M. S., … Hu, G. (2015). Birth weight and childhood obesity: a 12-country study. *International Journal of Obesity Supplements*, *5*(S2), S74–S79. https://doi.org/ 10.1038/ijosup.2015.23.

Qin, L. Q., Li, J., Wang, Y., Wang, J., Xu, J. Y., & Kaneko, T. (2003). The effects of nocturnal life on endocrine circadian patterns in healthy adults. *Life sciences*, 73(19), 2467-2475.

Quah, Y. V., Poh, B. K., & Ismail, M. N. (2010). Metabolic syndrome based on IDF criteria in a sample of normal weight and obese school children. *Malaysian Journal of Nutrition*, *16*(2), 207–217.

Raby Powers, A., Struempler, B. J., Guarino, A., & Parmer, S. M. (2005). Effects of a nutrition education program on the dietary behavior and nutrition knowledge of second-grade and third-grade students. *Journal of school health*, 75(4), 129-133.

Radi, S. M., El Sayed, N. A., Nofal, L. M., & Abdeen, Z. A. (2013). Ongoing deterioration of the nutritional status of Palestinian preschool children in Gaza under the Israeli siege. *Eastern Mediterranean Health Journal*, *19*(03), 234–241. https://doi.org/10.26719/2013.19.3.234.

Rampersaud, G. C., Pereira, M. A., Girard, B. L., Adams, J., & Metzl, J. D. (2005). Breakfast habits, nutritional status, body weight, and academic performance in children and adolescents. *Journal of the american dietetic association*, 105(5), 743-760.

Rankin, J., Matthews, L., Cobley, S., Han, A., Sanders, R., Wiltshire, H. D., & Baker, J. S. (2016). Psychological consequences of childhood obesity: psychiatric comorbidity and prevention. *Adolescent Health, Medicine and Therapeutics*, *Volume 7*, 125–146. https://doi.org/10.2147/ahmt.s101631

Rebello, C. J., Greenway, F. L., & Finley, J. W. (2014). A review of the nutritional value of legumes and their effects on obesity and its related co-morbidities. *Obesity Reviews*, *15*(5), 392–407. https://doi.org/10.1111/obr.12144.

Reddy, S. P., Resnicow, K., James, S., Funani, I. N., Kambaran, N. S., Omardien, R. G., Masuka, P., Sewpaul, R., Vaughan, R. D., & Mbewu, A. (2012). Rapid increases in overweight and obesity among South African adolescents: Comparison of data from the South African national youth risk behaviour survey in 2002 and 2008. *American Journal of Public Health*, *102*(2), 262–268. https://doi.org/10.2105/AJPH.2011.300222

Reilly, J. J., Methven, E., McDowell, Z. C., Hacking, B., Alexander, D., Stewart, L., & Kelnar, C. J. (2003). Health consequences of obesity. *Archives of disease in childhood*, 88(9), 748-752.

Reinehr, T., Hoffmeister, U., Mann, R., Goldapp, C., Westenhöfer, J., Egmond-Froehlich, A., Bullinger, M., Ravens-Sieberer, U., & Holl, R. W. (2009). Medical care of overweight children under real-life conditions: The German BZgA observation study. *International Journal of Obesity*, *33*(4), 418–423. https://doi.org/10.1038/ijo.2009.50.

Reinehr, Thomas. (2013). Lifestyle intervention in childhood obesity: Changes and challenges. *Nature Reviews Endocrinology*, *9*(10), 607–614. https://doi.org/10.1038/nrendo.2013.149

Reinehr, Thomas, Widhalm, K., L'Allemand, D., Wiegand, S., Wabitsch, M., & Holl, R. W. (2009). Two-year follow-up in 21,784 overweight children and adolescents with lifestyle intervention. *Obesity*, *17*(6), 1196–1199. https://doi. org/10.1038/childhood obesity.2009.17

Reynolds, W. W., & Nelson, R. M. (2008). Empirical Data and the Acceptability of Research Risk. *Archives of Pediatrics & Adolescent Medicine*, *162*(1), 88. https://doi.org/10.1001/archpediatrics.2007.4

Roche, E., Kolodinsky, J. M., Johnson, R. K., Pharis, M., & Banning, J. (2017). *School Gardens May Combat Childhood Obesity*. *32*(1), 1–6.

Rodrigues, D., Machado-Rodrigues, A. M., & Padez, C. (2020). Parental misperception of their child's weight status and how weight underestimation is associated with childhood obesity. *American Journal of Human Biology*, 32(5), e23393.

Roemmich, J. N., Liu, E. Y., Rogol, A. D., Epstein, L. H., & Quattrin, T. (2004). Diminished insulin resistance with weight loss in severely overweight youth. *Metabolic Syndrome and Related Disorders*, *2*(3), 160–168. https://doi.org/10.1089/met.2004.2.160

Roszanadia, R., & Norazmir, M. N. (2011). Knowledge, attitude and practice on healthy eating among special needs boarding school students. *International Journal of Dairy Science*,*6*(5),278–286.https://doi.org/10.3923/ijds.2011.278.286

Saha, S., Zahid, M. K., & Rasheed, S. (2013). The Study of the Level of Knowledge, Attitude, Practices (KAP) as well as the Effects of School Environment on the Nutritional Status of Children (7-12) Coming from Affluent Families in the Dhaka City in Bangladesh. *Bangladesh Journal of Nutrition*, *24*, 31–48. https://doi.org/10.3329/bjnut.v24i0.14035

Sahoo, K., Sahoo, B., Choudhury, A. K., Sofi, N. Y., Kumar, R., & Bhadoria, A. S. (2015). Childhood obesity: causes and consequences. *Journal of family medicine and primary care*, 4(2), 187.

Sahota, P., Rudolf, M. C. J., Dixey, R., Hill, A. J., Barth, J. H., & Cade, J. (2001). Evaluation of implementation and effect of primary school based intervention to reduce risk factors for obesity. *British Medical Journal*, *323*(7320), 1027–1029. https://doi.org/10.1136/bmj.323.7320.1027

Sains, J. (2018). *Juara Sihat ™ : Study Design of a School-based Childhood Obesity Nutrition Education Programme in Kuala Lumpur , Malaysia*. *17*, 119–127.

Salama, A., Elhawary, D., & El-Nmer, F. (2014). Nutritional knowledge, attitude, and practice of parents and its impact on growth of their children. *Menoufia Medical Journal*, *27*(3), 612. https://doi.org/10.4103/1110-2098.145529

Sanyaolu, A., Okorie, C., Qi, X., Locke, J., & Rehman, S. (2019). Childhood and Adolescent Obesity in the United States: A Public Health Concern. *Global Pediatric Health*, *6*. https://doi.org/10.1177/2333794X19891305

Satter, E. (2007). Eating Competence: Definition and Evidence for the Satter Eating Competence Model. *Journal of Nutrition Education and Behavior*, *39*(5 SUPPL.). https://doi.org/10.1016/j.jneb.2007.01.006.

Schanzenbach, D. W. (2009). Do school lunches contribute to childhood obesity? *Journal of Human Resources*, *44*(3), 684–709. https://doi.org/10.3368/ jhr.44.3.684.

Schmidt, M. I., Duncan, B. B., E Silva, G. A., Menezes, A. M., Monteiro, C. A., Barreto, S. M., Chor, D., & Menezes, P. R. (2011). Chronic non-communicable diseases in Brazil: Burden and current challenges. *The Lancet*, *377*(9781), 1949–1961. https://doi.org/10.1016/S0140-6736(11)60135-9.

Schroeder, K., Kulage, K. M., & Lucero, R. (2015). *Beyond positivism : Understanding and addressing childhood obesity disparities through a Critical Theory perspective*. 259–270. https://doi.org/10.1111/jspn.12122

Sekine, M., Yamagami, T., Hamanishi, S., Handa, K., Saito, T., Nanri, S., & Kagamimori, S. (2002). Parental obesity, lifestyle factors and obesity in preschool children: results of the Toyama Birth Cohort study. *Journal of epidemiology*, 12(1), 33-39.

Shao, A., Drewnowski, A., Willcox, D. C., Krämer, L., Lausted, C., Eggersdorfer, M., Mathers, J., Bell, J. D., Randolph, R. K., Witkamp, R., & Griffiths, J. C. (2017). Optimal nutrition and the ever-changing dietary landscape: a conference report. *European Journal of Nutrition*, *56*(s1), 1–21. https://doi.org/10.1007/s00394-017-1460-9.

Shariff, Z. M., Bond, J. T., & Johson, N. E. (2000). Nutritional status of primary school children from low income households in Kuala Lumpur. *Malaysian Journal of Nutrition*, *6*(1), 17–32.

Shatenstein, B., Abu-Shaaban, D., Pascual, M. L., & Kark, J. D. (1996). Dietary adequacy among urban and semi-rural schoolchildren in Gaza. *Ecology of food and nutrition*, 35(2), 135-148.

Shrewsbury, V., & Wardle, J. (2008). *Socioeconomic Status and Adiposity in Childhood : A Systematic Review of Cross-sectional Studies 1990 – 2005*. *16*(2). https://doi.org/10.1038/childhood obesity.2007.35

Skinner, A. C., Steiner, M. J., & Perrin, E. M. (2012). Self-reported energy intake by age in overweight and healthy-weight children in NHANES, 2001-2008. *Pediatrics*, *130*(4), 2001–2008. https://doi.org/10.1542/peds.2012-0605

Sonntag, D., Ali, S., Lehnert, T., Konnopka, A., Riedel-Heller, S., & König, H. H. (2015). Estimating the lifetime cost of childhood obesity in Germany: Results of a Markov Model. *Pediatric Obesity*, *10*(6), 416–422. https://doi.org/10.1111/ ijpo.278

Sonntag, Diana, Ali, S., & De Bock, F. (2016). Lifetime indirect cost of childhood overweight and obesity: A decision analytic model. *Obesity*, *24*(1), 200–206. https://doi.org/10.1002/childhood obesity.21323.

Sosa, E. T. (2012). Mexican American mothers' perceptions of childhood obesity: a theory-guided systematic literature review. *Health Education & Behavior*, 39(4), 396-404.

Sorof, J., & Daniels, S. (2002). Obesity hypertension in children: A problem of epidemic proportions. *Hypertension*, *40*(4), 441–447. https://doi.org/10.1161/ 01.HYP. 0000032940.33466.12

Spendlove, J. K., Heaney, S. E., Gifford, J. A., Prvan, T., Denyer, G. S., & Connor, H. T. O. (2012). *Evaluation of general nutrition knowledge in elite Australian athletes*. 1871–1880. https://doi.org/10.1017/S0007114511005125

Spronk, I., Kullen, C., Burdon, C., & Connor, H. O. (2021). *Systematic Review Relationship between nutrition knowledge and dietary intake*. *2014*, 1713–1726. https://doi.org/10.1017/S0007114514000087.

St John Alderson, T., & Ogden, J. (1999). What do mothers feed their children and why? *Health Education Research*, *14*(6), 717–727. https://doi.org/10.1093/her/ 14.6.717

Steele, R. G., Aylward, B. S., Jensen, C. D., Cushing, C. C., Davis, A. M., & Bovaird, J. A. (2012). Comparison of a family-based group intervention for youths with obesity to a brief individual family intervention: A practical clinical trial of positively fit. *Journal of Pediatric Psychology*, *37*(1), 53–63. https://doi.org/ 10.1093/jpepsy/jsr057.

Steinthorsdottir, S. D., Eliasdottir, S. B., Indridason, O. S., Agustsdottir, I. M., Palsson, R., & Edvardsson, V. O. (2011). Prevalence of hypertension in 9- to 10-year-old Icelandic school children. *Journal of Clinical Hypertension*, *13*(10), 774–779. https://doi.org/10.1111/j.1751-7176.2011.00496.x

Steyn, N. P., Lambert, E. V., Parker, W., Mchiza, Z., & De Villiers, A. (2009). A review of school nutrition interventions globally as an evidence base for the development of the HealthKick programme in the Western Cape, South Africa. *South African Journal of Clinical Nutrition*, *22*(3), 145–152. https://doi.org/10.1080/16070658.2009.11734236

Strauss, R. S. (2000). Childhood obesity and self-esteem. Pediatrics, 105(1), e15-e15.

Strong, W. B., Malina, R. M., Blimkie, C. J. R., Daniels, S. R., Dishman, R. K., Gutin, B., Hergenroeder, A. C., Must, A., Nixon, P. A., Pivarnik, J. M., Rowland, T., Trost, S., & Trudeau, F. (2005). Evidence based physical activity for school-age youth. *Journal of Pediatrics*, *146*(6), 732–737. https://doi.org/ 10.1016/j.jpeds.2005.01.055

Stunkard, A. J., & Allison, K. C. (2003). Two forms of disordered eating in obesity: binge eating and night eating. *International journal of obesity*, 27(1), 1-12.

Sung-Chan, P., Sung, Y. W., Zhao, X., & Brownson, R. C. (2013). Family-based models for childhood-obesity intervention: A systematic review of randomized controlled trials. *Obesity Reviews*, *14*(4), 265–278. https://doi.org/10.1111/ obr.12000.

Taras, H. (2005). Nutrition and student performance at school. *Journal of School Health*, *75*(6), 199–213. https://doi.org/10.1111/j.1746-1561.2005.00025.x

Tarro, L., Llauradó, E., Albaladejo, R., Moriña, D., Arija, V., Solà, R., & Giralt, M. (2014). A primary-school-based study to reduce the prevalence of childhood obesity - the EdAl (Educació en Alimentació) study: A randomized controlled trial. *Trials*, *15*(1), 1–13. https://doi.org/10.1186/1745-6215-15-58.

Taylor, P., Broad, E. M., & Cox, G. R. (2008). *European Journal of Sport Science What is the optimal composition of an athlete ' s diet ? August 2014*, 37–41. https://doi.org/10.1080/17461390801919177

The Ministry of Education. (2019). *Statistical yearbook for education in the governorates of Gaza for the academic year 2019/2020*.

Thorpe, L. E., List, D. G., Marx, T., May, L., Helgerson, S. D., & Frieden, T. R. (2004). Childhood obesity in New York City elementary school students. *American Journal of Public Health*, *94*(9), 1496–1500. https://doi.org/10.2105/ AJPH.94.9.1496

Tompkins, C. L., Seablom, M., & Brock, D. W. (2015). Parental Perception of Child's Body Weight: A Systematic Review. *Journal of Child and Family Studies*, *24*(5), 1384–1391. https://doi.org/10.1007/s10826-014-9945-0

Toschke, A., Koletzko, B., Slikker, W., Hermann, M., & Von Kries, R. (2002). Childhood obesity is associated with maternal smoking in pregnancy. *European Journal of Pediatrics*, *161*(8), 445–448. https://doi.org/10.1007/s00431-002-0983-z

Toschke, A. M., Küchenhoff, H., Koletzko, B., & Von Kries, R. (2005). Meal frequency and childhood obesity. *Obesity research*, *13*(11), 1932-1938.

Tremblay, M. S., Gray, C. E., Akinroye, K., Harrington, D. M., Katzmarzyk, P. T., Lambert, E. V., Liukkonen, J., Maddison, R., Ocansey, R. T., Onywera, V. O., Prista, A., Reilly, J. J., Martínez, M. D. P. R., Duenas, O. L. S., Standage, M., & Tomkinson, G. (2014). Physical activity of children: A global matrix of grades comparing 15 countries. *Journal of Physical Activity and Health*, *11*(Supp 1), S113–S125. https://doi.org/10.1123/jpah.2014-0177

Triches, R. M., & Giugliani, E. R. J. (2005). Obesity, eating habits and nutritional knowledge among school children. *Revista de Saude Publica*, *39*(4), 541–547. https://doi.org/10.1590/s0034-89102005000400004

Trombini, E., Baldaro, B., Bertaccini, R., Mattei, C., Montebarocci, O., & Rossi, N. (2003). Maternal attitudes and attachment styles in mothers of obese children. *Perceptual and Motor Skills*, 97(2), 613-620.

Truby, H., & Paxton, S. J. (2002). Development of the Children's Body Image Scale. *British Journal of Clinical Psychology*, *41*(2), 185–203. https://doi.org/10.1348/ 014466502163967.

Tsai, A. G., Williamson, D. F., & Glick, H. A. (2011). Direct medical cost of overweight and obesity in the USA: A quantitative systematic review. *Obesity Reviews*, *12*(1), 50–61. https://doi.org/10.1111/j.1467-789X.2009.00708.x

Tu, W., Eckert, G. J., DiMeglio, L. A., Yu, Z., Jung, J., & Pratt, J. H. (2011). Intensified effect of adiposity on blood pressure in overweight and obese children. *Hypertension*, *58*(5), 818–824. https://doi.org/10.1161/HYPERTEN SIONAHA.111.175695

ul Haq, I., Mariyam, Z., Li, M., Huang, X., Jiang, P., Zeb, F., Wu, X., Feng, Q., & Zhou, M. (2018). A comparative study of nutritional status, knowledge attitude and practices (KAP) and dietary intake between international and Chinese students in Nanjing, China. *International Journal of Environmental Research and Public Health*, *15*(9), 1–11. https://doi.org/10.3390/ijerph15091910

Vellinga A, O'Donovan D, De La HD. Length of stay and associated costs of obesity related hospital admissions in Ireland.BMC Health Serv Res 2008; 8: 88.

Vereecken, C. A., Van Damme, W., & Maes, L. (2005). Measuring attitudes, self-efficacy, and social and environmental influences on fruit and vegetable consumption of 11- and 12-year-old children: reliability and validity. *Journal of the American Dietetic Association*, 105(2), 257-261.

Vereecken, C., & Maes, L. (2010). Young children's dietary habits and associations with the mothers' nutritional knowledge and attitudes. *Appetite*, 54(1), 44-51.

Verhagen, H., & van den Berg, H. (2008). A simple visual model to compare existing nutrient profiling schemes. *Food & Nutrition Research*, 52(1), 1649.

Waisbord, S. (2014). Where do we go next? Behavioral and social change for child survival. *Journal of Health Communication*, *19*(March 2015), 216–222. https://doi.org/10.1080/10810730.2014.933288

Wajchenberg, B. L. (2000). Subcutaneous and visceral adipose tissue: their relation to the metabolic syndrome. Endocrine reviews, 21(6), 697-738.

Wake, M., Hardy, P., Canterford, L., Sawyer, M., & Carlin, J. B. (2007). Overweight, obesity and girth of Australian preschoolers: Prevalence and socio-economic correlates. *International Journal of Obesity*, *31*(7), 1044–1051. https://doi.org/ 10.1038/sj.ijo.0803503

Wall, C. R., Stewart, A. W., Hancox, R. J., Murphy, R., Braithwaite, I., Beasley, R., Mitchell, E. A., Gómez, M., Weyler, J., Pinto-Vargas, R., Cunha, A. J. L. A., De Freitas Souza, L., Ferguson, A., Aguilar, P., Amarales, L., Benavides, L. A. V., Contreras, A., Chen, Y. Z., Kunii, O., … Lee, B. W. (2018). Association between

Frequency of Consumption of Fruit, Vegetables, Nuts and Pulses and BMI: Analyses of the International Study of Asthma and Allergies in Childhood (ISAAC). *Nutrients*, *10*(3), 1–11. https://doi.org/10.3390/nu10030316

Wang, Y., Ge, K., & Popkin, B. M. (2003). Why do some overweight children remain overweight, whereas others do not?. *Public Health Nutrition*, 6(6), 549-558.

Wang, L., Collins, C., Ratliff, M., Xie, B., & Wang, Y. (2017). Breastfeeding Reduces Childhood Obesity Risks. *Childhood Obesity*, *13*(3), 197–204. https://doi.org/10.1089/chi.2016.0210

Wang, Y., & Beydoun, M. A. (2009). Meat consumption is associated with obesity and central obesity among US adults. *International Journal of Obesity*, *33*(6), 621–628. https://doi.org/10.1038/ijo.2009.45

Wang, Youfa, & Lim, H. (2012). *The global childhood obesity epidemic and the association between socio-economic status and childhood obesity*. *24*(June), 176–188. https://doi.org/10.3109/09540261.2012.688195

Wang, Youfa, & Lobstein, T. (2006). Worldwide trends in childhood overweight and obesity. *International Journal of Pediatric Obesity*, *1*(1), 11–25. https://doi.org/ 10.1080/17477160600586747

Wang, Youfa, & Zhang, Q. (2006). Are American children and adolescents of low socioeconomic status at increased risk of obesity? Changes in the association between overweight and family income between 1971 and 2002. *American Journal of Clinical Nutrition*, *84*(4), 707–716. https://doi.org/10.1093/ ajcn/84.4.707

Wee, B. S., Poh, B. K., Bulgiba, A., Ismail, M. N., Ruzita, A. T., & Hills, A. P. (2011). Risk of metabolic syndrome among children living in metropolitan Kuala Lumpur: a case control study. *BMC public health*, *11*(1), 1-7.

Weiss, R. (2007). *Fat distribution and storage : how much , where , and how ?* 39–45. https://doi.org/10.1530/EJE-07-0125.

Wenrich, T. R., Brown, J. L., Miller-Day, M., Kelley, K. J., & Lengerich, E. J. (2010). Family members' influence on family meal vegetable choices. *Journal of nutrition education and behavior*, 42(4), 225-234.

WHO (1995). Physical status: The use and interpretation of anthropometryGeneva, Switzerland.: World Health Organization 1995. WHO Technical Report Series Series No. 854. Geneva; P.1-452

WHO. (2006). *WHO child growth standards and the identification of severe acute malnutrition in infants and children*. http://apps.who.int/iris/bitstream/10665/44129/1/9789241598163_eng.pdf?ua=1

WHO. (2009). WHO Specialized Health Mission to the Gaza strip - As mandated by the Executive Board of WHO in its Resolution EB124.R4 adopted on 21 January 2009. *WHO World Health Organization*, *May*, 1–58.

Wojcicki, J. M., & Heyman, M. B. (2010). Let's Move — Childhood Obesity Prevention from Pregnancy and Infancy Onward. *New England Journal of Medicine*, *362*(16), 1457–1459. https://doi.org/10.1056/nejmp1001857

Wojcicki, J. M., & Heyman, M. B. (2012). Reducing childhood obesity by eliminating 100% fruit juice. *American Journal of Public Health*, *102*(9), 1630–1633. https://doi.org/10.2105/AJPH.2012.300719

Wolfe, W. S., & Frongillo, E. A. (2001). Building household food-security measurement tools from the ground up. *Food and Nutrition Bulletin*, 22(1), 5-12.

World Bank Group. (2015). *Economic Monitoring Report to the Ad Hoc Liaison Committee*. Washington,.

Wu, S., Ding, Y., Wu, F., Li, R., Hu, Y., Hou, J., & Mao, P. (2015). Socio-economic position as an intervention against overweight and obesity in children: A systematic review and meta-analysis. *Scientific Reports*, *5*(June), 1–11. https://doi.org/10.1038/srep11354.

Wühl, E. (2019). Hypertension in childhood obesity. *Acta Paediatrica, International Journal of Paediatrics*, *108*(1), 37–43. https://doi.org/10.1111/apa.14551

Yabancı, N., Kısaç, İ., & Karakuş, S. Ş. (2014). The Effects of Mother's Nutritional Knowledge on Attitudes and Behaviors of Children about Nutrition. *Procedia - Social and Behavioral Sciences*, *116*(December 2015), 4477–4481. https://doi.org/10.1016/j.sbspro.2014.01.970.

Yan, J., Liu, L., Zhu, Y., Huang, G., & Wang, P. P. (2014). *The association between breastfeeding and childhood obesity : a meta-analysis*. 1–11.

You, W., & Henneberg, M. (2016). Meat consumption providing a surplus energy in modern diet contributes to obesity prevalence: An ecological analysis. *BMC Nutrition*, *2*(1), 1–11. https://doi.org/10.1186/s40795-016-0063-9.

Young, K. M., Northern, J. J., Lister, K. M., Drummond, J. A., & O'Brien, W. H. (2007). A meta-analysis of family-behavioral weight-loss treatments for children. *Clinical Psychology Review*, *27*(2), 240–249. https://doi.org/10.1016/ j.cpr.2006.08.003

Zalilah, Mohd. Shariff, Siti Sabariah, B., Norlijah, O., Normah, H., Maznah, I., Sham, M. K., Laily, P., Bahaman, A. S., & Zabidi Azhar, M. H. (2008). Nutrition Education Intervention Improves Nutrition Knowledge , Attitude and Practices of Primary School Children : A Pilot Study. *International Electronic Journal of Health Education*, *11*, 119–132.

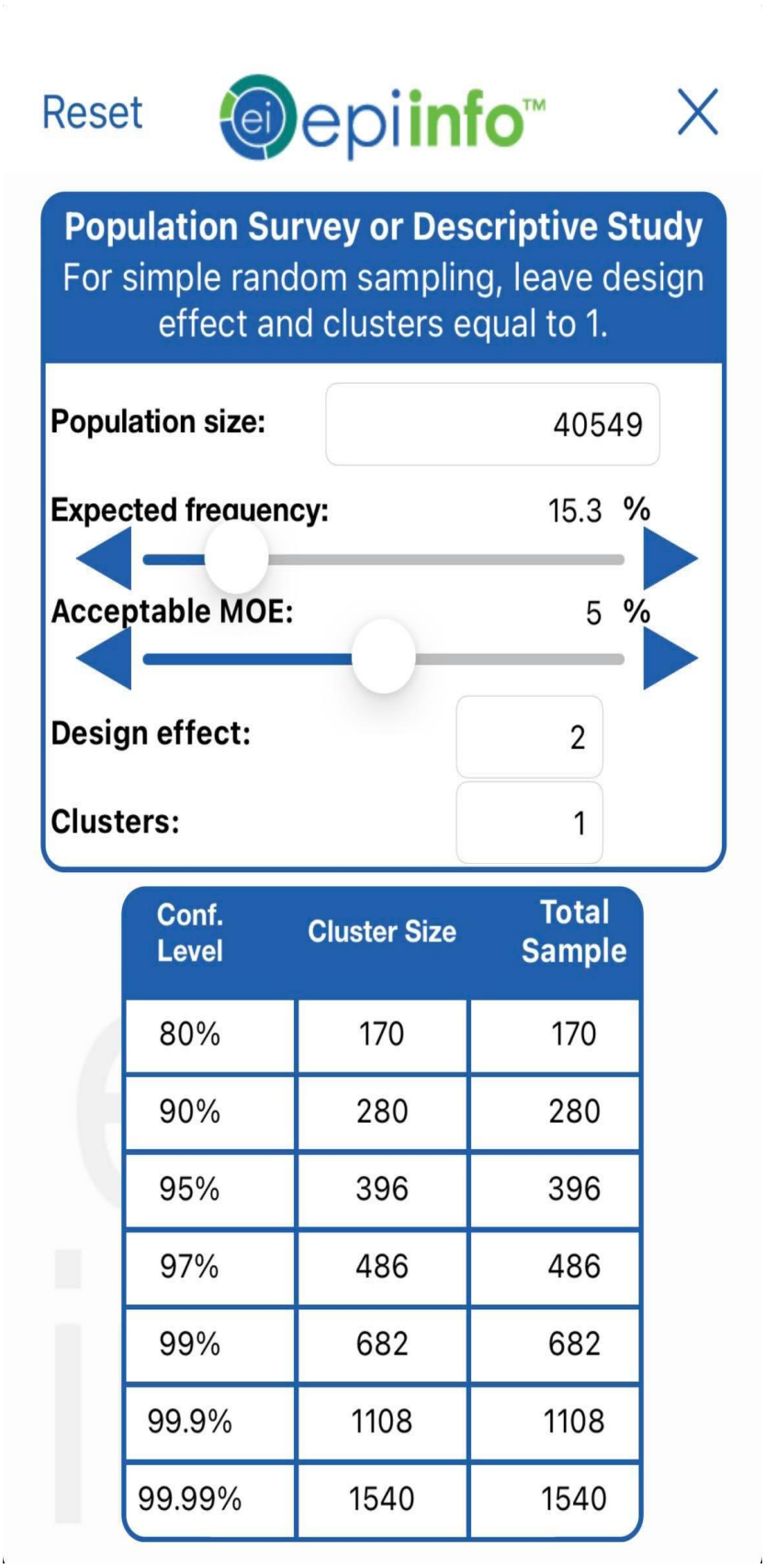
Zarnowiecki, D., Sinn, N., Petkov, J., & Dollman, J. (2012). Parental nutrition knowledge and attitudes as predictors of 5-6-year-old children's healthy food knowledge. *Public Health Nutrition*, *15*(7), 1284–1290. https://doi.org/10.1017/ S1368980011003259

Zeller, M. H., Roehrig, H. R., Modi, A. C., Daniels, S. R., & Inge, T. H. (2006). Health-related quality of life and depressive symptoms in adolescents with extreme obesity presenting for bariatric surgery. *Pediatrics*, 117(4), 1155-1161.

Ziol-Guest, K. M., DeLeire, T., & Kalil, A. (2006). The allocation of food expenditure in married- And single-parent families. *Journal of Consumer Affairs*, *40*(2), 347–371. https://doi.org/10.1111/j.1745-6606.2006.00061.x

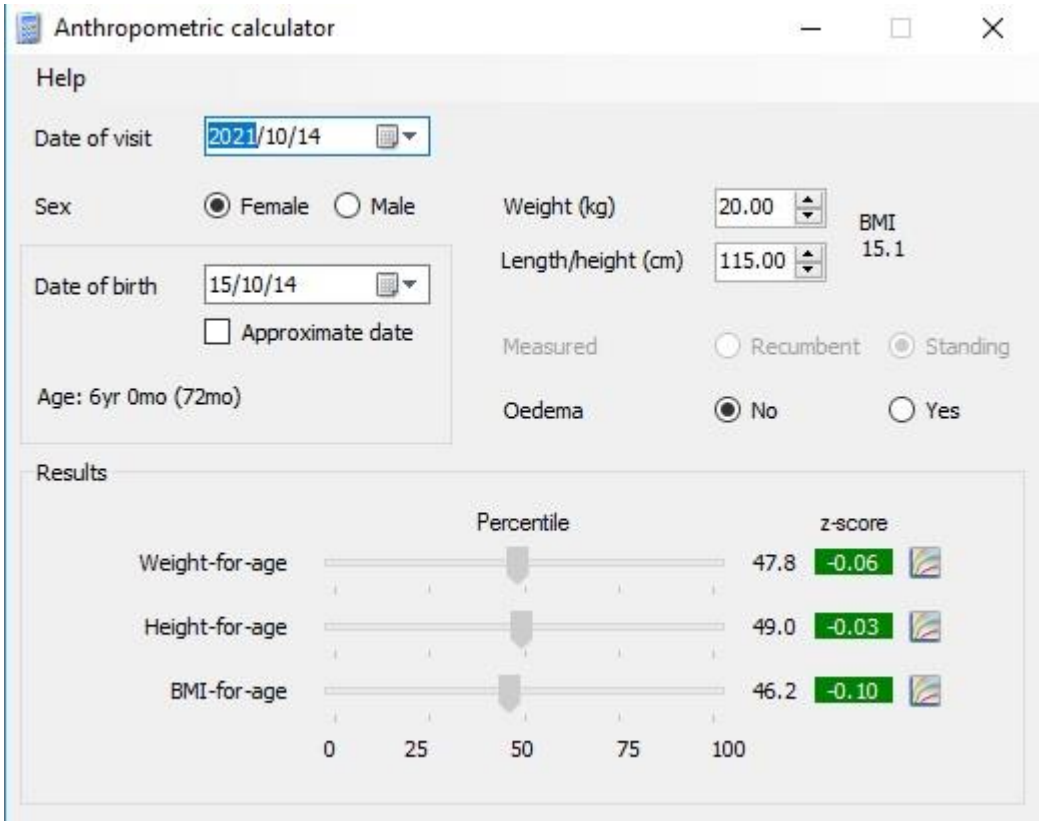
Annexes

Annex (1): Calculation of sample size



Conf. Level	Cluster Size	Total Sample
80%	170	170
90%	280	280
95%	396	396
97%	486	486
99%	682	682
99.9%	1108	1108
99.99%	1540	1540

Annex (2): Calculation BMI for child



Annex (3): The study quantitative instrument – English Study questionnaire

Part (1): Socioeconomic and Socio-demographic Characteristics

1	Name of the Mother (Optional)			
2	Age of the mother (Years)			
3	Name of Child (Optional)			
4	Date of Birth of the Child			
5	Gender of the child			
Male☐		Female ☐		
6	Child Class			
First☐	Second☐	Third☐	Fourth☐	
7	Income monthly " NIS- New Israeli Shekels"			
Less than 1974☐	1975 – 2470☐	More than 2471☐		
8	Employment status of the father			
Employed☐		Unemployed☐		
9	Employment status of the mother			
Employed☐		Unemployed☐		
10	Marital status of the mother			
Married☐	Divorced☐	widowed☐		
11	Place of residence			
City☐	Village☐	Refugee Camp☐		
12	Number of household members			
13	Number of children below 5 years			
14	Education Levels of the Mother			
Never been to school☐	Primary☐	preparatory☐	Secondary☐	University or Diploma☐
15	Education Levels of the Father			
Never been to school☐	Primary☐	preparatory☐	Secondary☐	University or Diploma☐

Part (2): Knowledge, Attitude and Practices

A. *Knowledge*

1	Obesity is a complex condition involving an excessive amount of body ----		
a. 2Fat☐	b. 0Others☐	c. 1I don't Know☐	
2	Is there a difference between obesity and overweight--------?		
a. 2Yes☐	b. 0No☐	c. 1I don't know☐	
3	What are the nutrients which usually give energy?		
2Carbohydrate☐ .a	2Protein☐ .b	2Fat☐ .c	0Others☐ .d	1I don't know☒ .e
4	---------- is considered the most energy-dense nutrient?		
a. 2Fat☐	b. 0Others☐	c. 1I don't know☐	
5	Can you tell me the reasons why people are overweight or obese? (You can choose more than one option)		
2Increased/excessive intake of energy-dense foods that are high in fat and/ or sugar☐ .a	2Lack of or decreased physical activity☐ .b	0Others☐ .c	1I don't know☐ .d
6	What are the health problems that can occur when a person is overweight or obese? (You can choose more than one option)		
a. 2Increased risk of chronic conditions (heart/cardiovascular disease, high blood pressure and diabetes, stroke, certain types of cancer, respiratory difficulties, chronic musculoskeletal problems, skin problems, and infertility☐ b. 2Reduced quality of life☐ c. 2Premature death☐ d. 0Others☐ e. 1I don't know☐			
7	How can people prevent overweight and obesity? (You can choose more than one option)		
a. 2Reduce energy intake (less high-energy foods and drinks)/reduce the intake of fatty and sugary foods☐ b. 2Eat vegetables and fruits more often☐ c. 2Eat legumes/whole-grain products more often☐ d. 2Increase physical activity level/engage in regular physical activity☐ e. 0Others f. 1I don't know			
8	How can you identify an obese child? (You can choose more than one option)		

a. 2Weight-related height☐ b. 2Waist circumstance☐ c. 2Fat percentage☐ d. 0Others☐ e. 1I don’t know☐	
9	What's your source of information regarding child obesity management? (You can choose more than one option)
a. 3Nutritionist☐ b. 2Physician☐ c. 2Pharmacist☐ d. 2Nurse☐ e. 0Others☐ f. 1I don’t know☐	
10	What are the possible means of obesity treatment? (You can choose more than one option)
a. 2Dietary management☐ b. 2Increase activity☐ c. 0Others☐ d. 1I don’t know☐	
11	What are the problems can children have if they don’t eat before going to school?
a. 2Children have low school achievement☐ b. 0Others☐ c. 1I don’t know☐	
12	Why is it so bad to eat too many sweets and candies? (You can choose more than one option)
a. 2Because they can cause tooth decay☐ b. 2Because they are not nutritious☐ c. 2Because they interfere with appetite☐ d. 0Others☐ e. 1I don’t know☐	

B. Attitude

No.	Attitude items	Strongly agree	Agree	Neutral	Disagree	Strongly disagree
1	Obesity is a serious problem for children	**5**	**4**	**3**	**2**	**1**
2	I believe giving different types of food to your child each day	**5**	**4**	**3**	**2**	**1**
3	Consuming dairy products every day	**5**	**4**	**3**	**2**	**1**
4	Fruits have better benefits than sweetened natural juices of the same fruits	**5**	**4**	**3**	**2**	**1**
5	losing weight for a child who suffers from obesity will positively affect his health	**5**	**4**	**3**	**2**	**1**
6	If your child continues with a bad lifestyle, he will become obese in the future	**5**	**4**	**3**	**2**	**1**
7	Parents' behavior affects the child's obesity level	**5**	**4**	**3**	**2**	**1**
8	The child must have breakfast before going to school	**5**	**4**	**3**	**2**	**1**
9	Eating fruits and vegetables frequently is a healthy practice in the family	**5**	**4**	**3**	**2**	**1**
10	It is good for the child to have three meals a day and two snacks	**5**	**4**	**3**	**2**	**1**
11	From your opinion obesity and thinness are considered abnormal conditions	**5**	**4**	**3**	**2**	**1**
12	Obesity can be prevented by modifying the lifestyle (diet and physical activity)	**5**	**4**	**3**	**2**	**1**
13	Obesity can be treated by modifying the lifestyle (diet and physical activity)	**5**	**4**	**3**	**2**	**1**
14	My child is more likely to become obese or overweight	**5**	**4**	**3**	**2**	**1**

15	Overweight children are likely to become over overweight adults	**5**	**4**	**3**	**2**	**1**
16	Overweight/obesity can cause serious problems for adults	**5**	**4**	**3**	**2**	**1**
17	I am not worried about my child weight right now	**5**	**4**	**3**	**2**	**1**
18	My child has a normal weight now	**5**	**4**	**3**	**2**	**1**

C. Practices Survey

No.	Practice items	I am already doing	I will do	I will not do
1	During the next month, I will start offering breakfast daily for my child before going to school?	**3**	**2**	**1**
2	During the next month, I will minimize eating outside the house to once monthly?	**3**	**2**	**1**
3	I do have the time to prepare a healthy meal for my family	**3**	**2**	**1**
4	I know how to plan a healthy meal for my child	**3**	**2**	**1**
5	During the next month, I have the intention to stop buying junk food when I shop	**3**	**2**	**1**
6	During the next month, I will encourage my children to be active during most days? (5 day at least)	**3**	**2**	**1**
7	During the next month, I intended to buy less sweeten beverages such as soft drinks	**3**	**2**	**1**
8	During the next month, I intended to prepare healthier meals at home	**3**	**2**	**1**
9	During the next month, I intended to restrict purchasing fast food for the family twice a month	**3**	**2**	**1**
10	During the next month, I will control screen time "TV, smartphone, computer" of my child to less than two hours? (Excluding the time for virtual school work)	**3**	**2**	**1**
11	During the next month, I intend to increase the intake of fruits and vegetables of my child every day to more than three servings	**3**	**2**	**1**
12	During the next month, I have the intention to stop purchasing processed meat products	**3**	**2**	**1**

Part (3) Medical history

A. For the child

1	Does your child suffer from any clinical disease?	
Yes☐		No☐
2	If yes, Specify the disease	
3	Does your child suffer from any food allergy	
Yes☐		No☐
4	If yes what type of allergy	
5	Has your child experienced any recent remarkable weight gain or loss?	
Yes☐		No☐
6	If yes, how much in how long? (% of his usual weight)	

B. For the mother

1	**During the pregnancy of ---------- (Name of the child) Did you suffer from high-risk pregnancy?**		
High Blood Pressure☐ **Gestational Diabetes☐**		Preeclampsia☐ Preterm Labor (before 37 weeks of pregnancy)☐	Others☐ None of them☐
2	Did you suffer from delivery complications as, labor that progresses too slowly, uterine rupture, stitches, or others (Child delivery)?		
Yes☐		No☐	
3	What was the birth weight of this child per Kg?		
4	After delivery, was the child admitted for any reason in the Neonatal ICU?		
Yes☐		No☐	
5	If Yes, what is the reason?		

Part (4) Physical Activity

1	How many hours per day does your child spend on screen time (TV, Video games, computers, play stations, and smartphones)?		
Less than two hours☒		2-4 hours☐	More than four hours☐
2	Does your child have a television or computer in the bedroom?		
Yes☐		No☐	
3	How many hours per day is your child active?		

4	How many hours does your child sleep per day?
5	What kinds of activities does your child participate in?
6	Does your child have his PC, Laptop, Tablet, smartphone?
Yes☐	No☐

Part (5) Breastfeeding and Dietary Behavior

1	Did your child breastfeed?			
Yes☐		No☐		
2	Was it exclusive breastfeeding?			
Yes☐		No☐		
3	How long he was on breastfeeding (Months)			
6	Who is responsible for meal preparation?			
Mother☐	Father☐	Sister☐	Brothers☐	Others☐
7	How many meals does your child eat per day?			
8	How many snacks?			
9	How would you describe your child's appetite? (Check one.)			
Good☐	Fair☐	Poor☐	Picky☐	
10	How many days per week does your family usually eat meals together?			
11	Does your child refuse food?			
Never☐	Rarely ☐	Often☐	Usually☐	
12	If so (often and usually), how often?			
13	Do you offer another option when food is refused?			
Yes☐		No☐		
14	What foods does he/she often refuse?			

Part (6): Food Frequency Questionnaire

How frequent do you eat these food items/groups per week (Choose one option only).

1	**Vegetables / salads**	Daily☐	4-6 Times ☐	3-1 times ☐	Don't eat☐
2	Fruits and vegetables	Daily☐	4-6 Times ☐	3-1 times ☐	Don't eat☐
3	Fast foods	Daily☐	4-6 Times ☐	3-1 times ☐	Don't eat☐

4	Milk, cheese and dairy	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
5	Meat	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
6	Fish	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
7	Chicken	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
8	Sweets and candies	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
9	Nuts	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
10	Chocolate	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
11	Soft drinks	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
12	Canned fruit juices	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐
13	Legumes (chickpeas, beans, lentils)	Daily☐	4-6 Times ☐	3-1 times ☐	Don’t eat☐

Part (7): Parental Modeling

1	Father**’s** height		**2**	Father**’**s weight	
3	Mother’s height		**4**	Mother’s weight	
5	Does the father do physical activity?				
Yes☐			No☐		
6	If yes how often per week --- duration (Min)				
7	Does the mother do physical activity?				
Yes☐			No☐		
9	If yes how often per week --- duration (Min)				
10	Does the mother smoke?				
Smoker/Hookah☐		Passive smoker☐		None☐	
11	I/his father eat when I/ he is watching TV	Most often	Sometimes	I rarely/I don't eat	
12	I /his father when I/he feels bored	Most often	Sometimes	I rarely/I don't eat	
13	I /his father eats when I/he is	Most	Sometimes	I rarely/I don't	

	angry	often		eat
14	I/his father eat late at night before going to sleep	Most often	Sometimes	I rarely/I don't eat
15	I/his father eat when I/he am anxious	Most often	Sometimes	I rarely/I don't eat

Part (8): Anthropometric part (For the child)

Measurement	**Reading (1)**	**Reading (2)**	**Average**
Child weight			
Child Height			
MUAC			
Skinfold Thickness Triceps			

Annex (4): Consent form for each mother participant

جامعة القدس– كلية الصحة العامة

الأخت الكريمة والدة الطالب: ---------- .. حفظكم الله

السلام عليكم ورحمة الله وبركاته

يسعدني أن أتقدم لسيادتكم بجزيل الشكر على مشاركتكم في البحث العلمي الخاص بي والذي بعنوان

"معرفة ومواقف وممارسات الأمهات حول السمنة لدى الأطفال في قطاع غزة".

إن هذا البحث يشكل جزء ضروري من دراستي كمتطلب أساسي للتخرج من جامعة القدس تخصص ماجستير صحة عامة (الإدارة الصحية) – وقد تم اختياركم ضمن مجموع المشاركين في هذه الدراسة للإجابة على العبارات الواردة فيها.

إذا كنتي توافقين على المشاركة في هذه الدراسة، يرجى التكرم بقراءة العبارات التالية بدّقة والإجابة عنها بموضوعية لما في ذلك من أثرٍ كبير على صحة النتائج والتوصيات التي سوف يتوصل إليها الباحث مع التأكيد بأن هذه البيانات سوف تستخدم لأغراض البحث العلمي فقط، وسيتم التعامل معها بسرية تامة.

شكرا لقراءة المذكور أعلاه

☐ **أوافق** ☐ **لا أوافق**

توقيع المشاركة.....
التاريخ: ...../...../...../

الباحث /حازم محمود برغوث
طالب ماجيستير- كلية الصحة العامة
جامعة القدس-غزة

Annex (5): The study quantitative instrument – Arabic

القسم الأول: الخصائص الاجتماعية والاقتصادية والديموغرافية

1	اسم الام (اختياري)			
2	عمر الام (بالسنوات)			
3	اسم الطفل (اختياري)			
4	تاريخ ميلاد الطفل			
5	جنس الطفل			
☐ذكر		☐أنثى		
6	المرحلة الدراسية للطفل			
☐الأول	☐الثاني	☐الثالث	☐الرابع	
7	الدخل الشهري للعائلة (بالشيكل الإسرائيلي الجديد)			
☐ اقل من 1974	☐1975 - 2470	☐أكثر من 2471		
8	الحالة الوظيفية للأب			
☐موظف		☐غير موظف		
9	الحالة الوظيفية للأم			
☐موظفة		☐غير موظفة		
10	الحالة الاجتماعية للأم			
☐متزوجة	☐منفصلة	☐أرملة		
11	مكان الإقامة			
☐مدينة	☐قرية	☐معسكر لاجئين		
12	عدد افراد الأسرة			
13	عدد الأطفال الأقل من 5 سنوات			
14	المستوى التعليمي للأم			
لم تذهب ☐للمدرسة	☐ابتدائية	☐اعدادية	☐ثانوية	☐دبلوم او جامعة
15	المستوى التعليمي للأب			
لم يذهب ☐للمدرسة	☐ابتدائية	☐اعدادية	☐ثانوية	☐دبلوم او جامعة

القسم الثاني: المعرفة والمواقف والممارسة

أ. استطلاع المعرفة

السمنة حالة معقدة تعبر عن زيادة ----- في الجسم		
أ.2 الدهون☐	ب.0 أخرى☐	ت.1 لا أعرف☐
هل هناك فرق بين زيادة الوزن والسمنة؟		

أ.2 نعم☐	ب.0 لا☐	ت.2 لا أعرف☐

ما هي المغذيات التي عادة ما تمدنا بالطاقة؟ (بإمكانك اختيار أكثر من جواب)

☐أ.2 الكربوهيدرات	☐ب.2 البروتينات	☐ت.2 الدهون	ث.0 أخرى☐	☐ج.1 لا أعرف

--- يعتبر أكثر العناصر الغذائية غناً بالطاقة؟

أ.2 الدهون☐	ب.0 أخرى☐	ت.1 لا أعرف☐

هل تستطيع ان تخبرني عن الأسباب التي تجعل الناس زائدي الوزن او سمينين؟ (بإمكانك اختيار أكثر من جواب)

أ. 2زيادة تناول المأكولات الغنية بالطاقة كالدهون و/أو السكر☐	ب.2 انعدام أو قلة ممارسة النشاط الرياضي☐	ت.0 أخرى☐	ث.1 لا أعرف☐

ما هي المشاكل الصحية التي تحدث للأشخاص عندما يكونون زائدي الوزن أو سمان؟ (بإمكانك اختيار أكثر من جواب)

أ. 2زيادة اعراض الامراض المزمنة (القلب/أمراض الاوعية القلبية، زيادة ضغط الدم الشرياني، ومرض السكري، الجلطة، بعض أنواع السراطان، مشاكل الجهاز التنفسي، مشاكل مزمنة في العضلات، مشاكل جلدية، وعقم☐

ب. 2قلة جودة الحياة☐

ت. 2الموت المبكر☐

ث. 0أخرى☐

ج. 1لا أعرف☐

كيف يستطيع الناس ان يمنعوا زيادة الوزن والسمنة؟ (بإمكانك اختيار أكثر من جواب)

أ. 2تقليل الطاقة الداخلة (اقلل من الأطعمة والمشروبات عالية الطاقة) / اقلل من ادخال الدهون والأغذية السكرية☐

ب. 2أكل الخضراوات والفواكه في كثير من الأحيان☐

ت. 2أكل البقوليات / ومنتجات الحبوب الكاملة في كثير من الاحيان☐

ث. 2زيادة مستوى النشاط الرياضي / الانخراط في نشاط رياضي منتظم☐

ج. 0أخرى☐

ح. 1لا أعرف☐

كيف تستطيع التعرف عل الطفل السمين؟ (بإمكانك اختيار أكثر من جواب)

أ. 2الوزن وعلاقته بالطول☐

ب. 2محيط الخصر☐

ت. 2نسبة الدهون☐

ث. 0أخري☐

ج. 1لا أعرف☐

ما هو مصدر معلوماتك فيما يتعلق بعلاج السمنة لطفلك؟ (بإمكانك اختيار أكثر من جواب)

أ. 3اخصائي التغذية☐

ب. 2الطبيب☐

ت. 2الصيدلاني☐

ث. 2الممرض☐

ج. 0أخرى☐

ح. 1لا أعرف☐

ما هي الوسائل الممكنة لعلاج السمنة؟ (بإمكانك اختيار أكثر من جواب)
أ. 2برنامج غذائي مدروس☐ ب. 2زيادة النشاط البدني☐ ت. 0أخرى☐ ث. 1لا أعرف☐
ما هي المشاكل التي يمكن للطفل أن يواجهها إذا لم يتناول الطعام قبل ذهابه الى المدرسة؟
أ. 2سيقل تحصيل الطفل في المدرسة☐ ب. 0أخرى☐ ت. 1لا أعرف☐
لماذا يعتبر من السيئ تناول السكاكر والحلوى بكميات كبيرة؟ (بإمكانك اختيار أكثر من جواب)
أ. 2لأنها يمكنها ان تسبب تسوس الاسنان☐ ب. 2لأنها لا تعتبر مغذية☐ ت. 2لأنها ستؤثر على الشهية للطعام☐ ث. 0أخرى☐ ج. 1لا أعرف☐

ب. <u>استطلاع المواقف</u>

رقم	عناصر الموقف	موافق بشدة	موافق	لا اهتم	رافض	رافض بشدة
1	السمنة مشكلة خطيرة عند الأطفال	**5**	**4**	**3**	**2**	**1**
2	أنا أؤمن بإعطاء طفلي أنواع متنوعة من الغذاء كل يوم	**5**	**4**	**3**	**2**	**1**
3	استهلاك منتجات الألبان كل يوم	**5**	**4**	**3**	**2**	**1**
4	الفواكه لها فوائد أكثر من العصائر الطبيعية المحلاة من نفس الفاكهة	**5**	**4**	**3**	**2**	**1**
5	خسارة الوزن للأطفال الذين يعانون السمنة سوف يكون له أثر إيجابي على صحتهم	**5**	**4**	**3**	**2**	**1**
6	إذا استمر طفلك في نفس نظام الحياة، سوف يصبح سمين في المستقبل	**5**	**4**	**3**	**2**	**1**
7	يؤثر سلوك الوالدين على مستوى السمنة عند الأطفال	**5**	**4**	**3**	**2**	**1**
8	يجب أن يتناول الأطفال طعام الإفطار قبل الذهاب الى المدرسة	**5**	**4**	**3**	**2**	**1**
9	تناول الفواكه والخضراوات بشكل متكرر هي ممارسة صحية في الأسرة	**5**	**4**	**3**	**2**	**1**

10	هل من الجيد للطفل ان يتناول ثلاث وجبات رئيسية ووجبتين خفيفتين (سناكس)	**5**	**4**	**3**	**2**	**1**
11	من وجهة نظرك السمنة والنحافة تعتبر حالات غير طبيعية	**5**	**4**	**3**	**2**	**1**
12	السمنة يمكن ان نمنعها بتغيير نظام الحياة (نظام غذائي ونظام رياضي)	**5**	**4**	**3**	**2**	**1**
13	طفلي أكثر عرضة للإصابة بالسمنة او زيادة الوزن	**5**	**4**	**3**	**2**	**1**
14	الأطفال زائدي الوزن أكثر عرضة لأن يكونوا زائدي الوزن عندما يكبرون	**5**	**4**	**3**	**2**	**1**
15	زيادة الوزن/السمنة يمكن أن تسبب مشاكل خطيرة للكبار	**5**	**4**	**3**	**2**	**1**
16	انا لست قلقة بخصوص وزن طفلي في هذه اللحظة	**5**	**4**	**3**	**2**	**1**
17	طفلي يتمتع بوزن طبيعي الان	**5**	**4**	**3**	**2**	**1**

ح. ***استطلاع الممارسات***

رقم	عناصر السلوك	انا بالفعل افعلها	انا سوف افعلها	انا لن افعلها
1	خلال الشهر القادم، سوف ابدأ بتقديم وجبة الإفطار يوميا لطفلي قبل ذهابه للمدرسة	**3**	**2**	**1**
2	خلال الشهر القادم، سوف اقلل الأكل خارج المنزل لمرة شهريا؟	**3**	**2**	**1**
3	لدي الوقت الكافي لتحضير وجباتي لعائلتي	**3**	**2**	**1**
4	اعرف كيف اخطط لوجبات صحية لأطفالي	**3**	**2**	**1**
5	خلال الشهر القادم، سأتوقف عن شراء الوجبات السريعة وأنا اتسوق	**3**	**2**	**1**
6	خلال الشهر القادم، سأشجع أطفالي على أن يكونوا نشيطين في معظم الأيام؟ (5 أيام على الأقل)	**3**	**2**	**1**
7	خلال الشهر القادم، لدي النية لشراء كميات اقل من المشروبات المحلاة كالمشروبات الغازية	**3**	**2**	**1**
8	خلال الشهر القادم، لدي النية لإعداد وجبات صحية في المنزل	**3**	**2**	**1**
9	خلال الشهر القادم، لدي النية لتقنين شراء الأكل السريع لعائلتي الى مرتين شهريا	**3**	**2**	**1**

10	خلال الشهر القادم، سوف اتحكم في وقت مشاهدة" شاشة التلفاز، والهواتف الذكية، والكمبيوتر" لطفلي لأقل من ساعتين؟ (باستثناء وقت المذاكرة الافتراضي للمدرسة)	**3**	**2**	**1**
11	خلال الشهر القادم، لدي النية لزيادة ادخال الفاكهة والخضراوات لطفلي كل يوم لأكثر من ثلاث حصص	**3**	**2**	**1**
12	خلال الشهر القادم، لدي النية للتوقف شراء اللحوم المصنعة عن	**3**	**2**	**1**

القسم الثالث: التاريخ الطبي

أ. خاص بالطفل

1	هل يعاني طفلك من أي مشاكل مرضية؟	
نعم ☐	لا☐	
2	اذا كان نعم, حدد المرض	
3	هل يعاني طفلك من حساسية الغذاء؟	
نعم☐	لا☐	
4	إذا كان نعم، ما نوع الحساسية	
5	هل عانى طفلك من أي زيادة أو خسارة ملحوظة في الوزن مؤخرًا؟	
نعم☐	لا☐	
6	إذا كانت الإجابة بنعم، فما هي المدة؟ (٪ من وزنه المعتاد)	

ب. خاص بالأم

1	خلال حملك ب----------(اسم الطفل) هل عانيت من الحمل الخطر؟		
☐ أ. زيادة في ضغط الدم ☐ ب. سكري الحمل	☐ ت. تسمم الحمل ث. الولادة المبكرة (قبل 37 أسبوعًا من الحمل)	☐ ج. أخرى ☒ ح. ليس مما سبق	
2	هل عانيت من مضاعفات الولادة، مثل ضعف الطلق، أو تمزق الرحم، أو الغرز، أو غيرها (في ولادة الطفل)؟		
☒نعم	لا☐		
3	كم كان وزن الطفل عند ولادته بالكيلوجرام؟		
4	بعد الولادة، هل ادخل الطفل الى الحضانة لأي سبب كان؟		
☐نعم	لا☐		
5	إذا كان نعم، فما هو السبب؟		

القسم الرابع: النشاط الرياضي

1	كم ساعة في اليوم يقضي طفلك على الشاشة (تلفزيون، العاب فيديو، كمبيوتر، بلايستيشن، كمبيوتر، هواتف ذكية)؟		
	اقل من ساعتين ☐	2-4 ساعات ☐	أكثر من أربع ساعات ☐
2	هل يملك طفلك تلفزيون او كمبيوتر في غرفة نومه؟		
	نعم ☐	لا ☐	
3	كم ساعة في اليوم يكون طفلك نشيطا؟		
4	كم ساعة ينام طفلك في اليوم؟		
5	ما نوع الأنشطة التي يشارك فيها طفلك؟		
6	هل يملك طفلك كمبيوتر خاص، لابتوب، جهاز كمبيوتر لوحي " تاب ", هاتف ذكي؟		
	نعم ☐	لا ☐	

القسم الخامس: الرضاعة الطبيعية والسلوك الغذائي

1	هل ارضعت طفلك طبيعيا؟				
	☒نعم	لا ☐			
2	هل كانت الرضاعة خالصة فقط؟				
	☐نعم	لا ☐			
3	كم كانت المدة التي تم ارضاعه طبيعيا بها (شهور)؟				
4	من المسؤول عن تحضير الطعام؟				
	الام ☐	الأب ☐	الأخت ☐	الأخ ☐	آخرون ☐
5	كم وجبة يتناول طفلك في اليوم؟				
6	كم عدد الوجبات الخفيفة (سناكس) التي يتناولها طفلك في اليوم؟				
7	كيف تصفين شهية طفلة للطعام؟ (اختر واحدة)				
	جيدة ☐	متوسطة ☐	سيئة ☐		صعب ارضاؤه ☐
8	كم يوم في الأسبوع تتناول عائلتكم الطعام سويا؟				
9	هل يرفض طفلك الطعام؟				
	أبداً ☐	نادراً ☐	غالبا ☐		عادة ☐
10	إذا كان الأمر كذلك (غالبا، عادة) فكم مرة؟				
11	هل تقدمين له حلاً آخر عندما يرفض الطعام؟				
	نعم ☐	لا ☐			
12	ما هو الطعام الذي غالبا هو/هي يرفضه؟				

القسم السادس: استبيان تردد الغذاء

ما مدى تكرار تناول هذه العناصر / المجموعات الغذائية في الأسبوع (اختر خيارًا واحدًا فقط)

1	الخضراوات / السلطات	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
2	الفواكه والخضراوات	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
3	الأغذية السريعة	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
4	الحليب، الاجبان ومشتقات الالبان	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
5	اللحم	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
6	السمك	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
7	الدجاج	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
8	السكاكر والحلويات	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
9	المكسرات	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
10	الشوكولاتة	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
11	المشروبات الغازية	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
12	عصائر الفاكهة المعلبة	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐
13	بقوليات (حمص، فاصوليا، عدس)	يوميا ☐	4-6مرات☐	1-3مرات☐	لا اتناولها☐

القسم السابع: النموذج الأبوي

1	طول الأب		**2**	وزن الأب	
3	طول الام		4	وزن الأم	
5	هل يمارس الأب أي نشاط رياضي؟				
☒نعم		لا☐			
6	إذا كان الجواب "نعم" كم مرة في الأسبوع---المدة(بالدقيقة)				
7	هل تمارس الأم أي نشاط رياضي؟				
نعم☐		لا☐			
8	إذا كان الجواب "نعم" كم مرة في الأسبوع---المدة(بالدقيقة)				
9	هل الأم مدخنة؟				
دخان / شيشة☐		تدخين سلبي☐		ليست مدخنة☐	

10	أنا /والده نأكل عندما أشاهد / يشاهد التلفزيون	غالبا ☐	بعض الاحيان ☐	نادرا لا اكل ☐
11	انا/والده نأكل عندما أشعر/يشعر بالملل	غالبا ☐	بعض الاحيان ☐	نادرا لا اكل ☐
12	أنا/والده نأكل عندما أغضب/يغضب	غالبا ☐	بعض الاحيان ☐	نادرا لا اكل ☐
13	أنا/والده نأكل في وقت متأخر ليلا قبل النوم	غالبا ☐	بعض الاحيان ☐	نادرا لا اكل ☐
14	أنا/والده نأكل عندما نتوتر	غالبا ☐	بعض الاحيان ☐	نادرا لا اكل ☐

القسم الثامن: هذا القسم خاص بالقياسات الجسمية للطفل

القياس	القراءة (1)	القراءة (2)	المتوسط
وزن الطفل			
طول الطفل			
محيط منتصف الذراع			
سماكة الجلد عن ترايسبس			

Annex (6): Helsinki Committee Approval Letter

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee

For Ethical Approval

Date: 10\08\2020 **Number:** PHRC/HC/750/20

Name: Hazem Mahmoud Barghout الاسم:

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Mothers' knowledge attitude and practice towards children obesity at combined governmental primary schools in the Gaza Strip

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/750/20 in its meeting on 10\08\2020

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member 10.8.2020

Chairman Dr. Yous 10 8 2020

Member 18/8/2020

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

10/8/2020

10/8/2020

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العين

Annex (7) Approval from MoE

State of Palestine
Ministry of Education & Higher Education
General Directorate of planning & Development

دولة فلسطين
وزارة التربية والتعليم العالي
الادارة العامة للتخطيط والتطوير

دولة فلسطين
وزارة التربية والتعليم العالي
دائرة الأرشيف
12-01-2021
وارد
صادر
الرقم: 167

الرقم: و ت غ/ ( )
التاريخ: 2021/1/12

المحترمون
السادة/ مديرو التربية والتعليم

السلام عليكم ورحمة الله وبركاته،،،

الموضوع/ تسهيل مهمة باحث.

نهديكم أطيب التحيات، وبالإشارة إلى الموضوع أعلاه، يرجى تسهيل مهمة الباحث/ **حازم برغوث**، المسجل لدرجة الماجستير في جامعة القدس كلية الصحة العامة تخصص إدارة صحية والذي يجري بحثاً بعنوان:

Mothers, Knowledge, Attitudes and Practices about Childhood " Obesity in the Gaza Strip"

في تطبيق أدوات الدراسة على عينة من طلبة الصف (الاول – الرابع) لديكم، وذلك حسب الأصول.

وتفضلوا بقبول فائق الاحترام والتقدير،،،

أ. رشيد محمد أبو جحجوح
مدير عام التخطيط والتطوير

دولة فلسطين
وزارة التربية والتعليم العالي

نسخة لـ:
- ✓ السيد/ وكيل وزارة التربية والتعليم العالي
- ✓ السيد/ وكيل الوزارة المساعد لشؤون التعليم العالي
- ✓ السيد/ نائب مدير عام الارشاد والصحة المدرسية
- الملف

Gaza: (08-2641295 - 2641297) غزة: (08-2641297 -2641295) فاكس: (08-2641292)
Fax:(08-2641292)
Email: info@mohe.ps

Annex (8): Map of Palestine


فلسطين
Palestine
N
35°E
33°N
32°N
31°N
30°N
لبنان
Lebanon
سوريا
Syria
عكا
Acre
صفد
Safad
حيفا
Haifa
طبريا
Tabariya
الناصرة
Nazareth
بيسان
Beisan
جنين
Jenin
طولكرم
Tulkarm
طوباس
Tubas
نابلس
Nablus
قلقيلية
Qalqiliya
سلفيت
Salfit
اريحا والاغوار
Jericho & Al Aghwar
يافا
Jaffa
رام الله والبيرة
Ramallah & Al Bireh
اللد
Lod
الرملة
Er Ramle
القدس
Jerusalem
بيت لحم
Bethlehem
البحر المتوسط
Mediterranean Sea
شمال غزة
North Gaza
غزة
Gaza
دير البلح
Deir Al Balah
خانيونس
Khan Yunis
رفح
Rafah
بئر السبع
Beersheba
الخليل
Hebron
البحر الميت
Dead Sea
الأردن
Jordan
مصر
Egypt
المصدر: الجهاز المركزي للإحصاء الفلسطيني
Source: Palestinian Central Bureau of Statistics

عنوان الدراسة: معرفة ومواقف وممارسات الأمهات حول السمنة لدى الأطفال في قطاع غزة

الطالب: حازم محمود برغوث

إشراف: د. إيهاب نصر

ملخص الدراسة

يتزايد انتشار سمنة الأطفال بالتوازي مع الوضع الاقتصادي والتكنولوجي العالمي السريع، بما في ذلك فلسطين. تهدف هذه الدراسة إلى فحص العلاقة بين المعرفة التغذوية والموقف والممارسة للأمهات الفلسطينيات والسمنة لدى أطفالهن في الصف الأول إلى الرابع من المدارس الحكومية المشتركة، هذه الدراسة مقطعية تحليلية حيث تم استكمال 400 استبانة باستخدام أسلوب المقابلة الشخصية مع الأم. تم اختيار عينة الدراسة باستخدام العينة العنقودية متعددة المراحل من سبع مديريات تعليمية، تم تقييم الخصائص الاجتماعية – الاقتصادية، تاريخ الأسرة، نمط الحياة، المدخول الغذائي ، النشاط البدني والنموذج الأبوي للسكان المستهدفين. تم تحديد السمنة في مرحلة الطفولة من خلال قياسات الأنثروبومترية باستخدام 95 بالمائة من مؤشر كتلة الجسم للعمر كنقطة فاصلة. تم الحصول على بيانات المعرفة، المواقف والممارسات من الأمهات باستخدام استبيان صالح وموثوق به يحتوي على 12 سؤالًا متعلقًا بالمعرفة التغذوية و 18 سؤالًا و 12 سؤالًا في نموذج مقياس ليكرت تم استخدامها لتقييم إدراك وممارسة الأمهات على التوالي. بلغ متوسط عمر الأطفال 7.96 سنة وكان ما يقرب من ثلث الأطفال (29.8٪) من الذكور والباقي من الإناث. بلغت نسبة انتشار السمنة بين الأطفال 23٪. كانت الفروق المتوسطة في المعرفة والمواقف والممارسات لأمهات الأطفال غير البدينين مقابل الأطفال البدينين؛ 15.19 و14.03 و 5.28 على التوالي وجميع الفروق الثلاثة كانت ذات دلالة إحصائية. وأظهرت النتائج أن كل زيادة بمقدار نقطة واحدة في معرفة الأم ومواقفها وممارساتها ستقلل من معدل السمنة عند الأطفال بنسبة 6.2٪ و 4.2٪ و 8.5٪ على التوالي. علاوة على ذلك، فإن امتلاك جهاز كمبيوتر أو كمبيوتر محمول أو هاتف ذكي من قبل الأطفال سيعرضهم للإصابة بالسمنة اكثر بحوالي 7 مرات ، والطفل الذي يرضع حصريًا من الثدي سيكون 0.11 مرة أقل عرضة للإصابة بالسمنة. أما بالنسبة لوزن الطفل عند الولادة، فالعلاقة سلبية ، فكلما انخفض وزن الطفل عند الولادة بمقدار 1 كيلوغرام ، فإن معدل السمنة سيزداد بنحو 65٪ ، والطفل الذي يأكل المكسرات يومياً ، 59 مرة أكثر عرضة للإصابة بالسمنة.

وقد خرجت هذه الدراسة ببعض من التوصيات الهامة من بينها:

إقامة دورات وورش عمل تثقيفية بالتعاون بين وزارة الصحة والتعليم للأمهات حول التغذية الصحية بشكل عام والأطفال بشكل خاص.

ضرورة وجود برامج لتشجيع الرضاعة الطبيعية في مستشفيات الولادة وللمرأة في المجتمع بشكل عام.

إرشاد صناع القرار في وزارة الصحة إلى مخاطر سمنة الأطفال في مراحل التعليم الابتدائي ، وأن السمنة في هذه المرحلة الحرجة يمكن أن تسبب عبئاً اقتصادياً على الدولة في المستقبل.

زيادة التعاون بين وزارة التربية ووزارة الصحة في مراقبة المقاصف المدرسية لإدخال الخضار والفواكه في المواد الغذائية المباعة داخل المقصف.

إدخال مادة تثقيفية جديدة تتناول التغذية الصحية في المدارس ليتم تدريسها للطلاب بشكل يزيد من الوعي الغذائي والصحي بشكل عام لأهميتها التي ستعود على صحة الطلاب والوقاية من سوء التغذية وجميع مخرجاتها.

تشجيع الأنشطة الرياضية التي تتم للمنافسة بين الطلاب، لأن ذلك يزيد من النشاط البدني لدى الطلاب ويمنع قلة الحركة ويقلل من السمنة لدى الأطفال.

ترسيخ العمل بين وزارة الصحة ووزارة التربية والتعليم من جهة، والجهات المعنية، وخاصة وزارة الإعلام، في تعزيز عادات الأكل الصحي والتوعية بالسمنة لدى الأطفال.