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Knowledge, Attitude and Practice among Mothers of Celiac Disease Children in Gaza Strip

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Knowledge, Attitude and Practice among Mothers of Celiac Disease Children in Gaza Strip

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Thesis Approval

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1442 / 2020

Dedication

To the one who delivered the message and led the trust ... and advised the nation ... to the prophet of mercy and the light of the worlds ...

Our Master Mohammed, may God bless him and grant him peace

To whom God has entrusted with prestige and reverence...To those who taught me to give without waiting...To whom I bear his name with pride...I ask God to extend your life to see fruits whose harvest has ripe after a long wait, and your words will remain stars to be guided by today, tomorrow, and forever...

My dear Father

To my angel in life ... to the meaning of love, to the meaning of tenderness and devotion ... to the smile of life and the mystery of existence ... To whom her prayer is the secret of my success and her tenderness is a surgical balm to the most precious thing in my life...

My beloved Mother

To my dear **Brothers** Mohammed, Khaled, and my dear **Sisters** Imtiaz, Jasmine, Haneen, and Aseel thank you for supporting me...

To all my friends I would like to thank them for being always beside me...

To everyone who encouraged, supported, and helped me all the way...

I dedicate this research to them all ...

Mahmoud I. Abu Eida

Declaration

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

Signed:

Mahmoud I. Abu Eida

30/12/2020

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Mahmoud I. Abu Eida December, 2020

Abstract

Celiac disease (CD) is a major public health problem in the developed and developing worlds, it is one of the most common lifelong disorders affecting the general population around the world, and has spread widely over the past 20 years.CD is a complex autoimmune disease that results from the ingestion of gluten (found in grains including wheat, rye, and barley) in genetically predisposed individuals. This study aims to assess the knowledge, attitude, and practice (KAP) among mothers of CD children in the Gaza Strip. The study design was quantitative, descriptive cross-sectional investigation. A convenient sample of 174 mothers of children with CD was selected to participate in the study. The sample consisted of 120 mothers of children with CD who attended the Ard El Insan Association in Gaza and 54 mothers of children with CD who attended the Ard El Insan Association in Khan Yunis. A questionnaire was constructed and data was collected by the researcher through a face-to-face interview with mothers of children with CD. The study results revealed that the total mean for participants' knowledge was 26.12 out of 39 with a mean percentage of 66.99%, which is below the median score (67.94), which is considered not satisfactory. The mean score of attitudes regarding CD is 4.25 out of 5.0, which considered a positive attitude, while the mean score of their practices is 3.42 out of 4.0 (85.5%). Also, the results revealed that there are no significant differences in the mean level of total participants' knowledge regarding CD with regard to their age groups, residence, income, number of family members, number of children in the family, marital status, employment, and having other children with CD (p>0.05). On the other hand, there is a significant difference in the mean level of total participants' knowledge regarding CD with regard to their educational level (p<0.05). On the other hand, there is a significant difference in the mean level of total participants' attitudes regarding CD with regard to their residence (p < 0.05). On the other hand, there is a significant difference in the mean level of total participants' attitudes regarding CD with regard to having other children with CD (p<0.05). Also, the results revealed that there is a significant positive week relationship between participants' attitude and their practices regarding CD (p<0.05). Meaning that with an increase in the level of participants' attitude, their level of practice will increase. On the other hand, there is no significant relationship between participants' knowledge and their practices regarding CD (p>0.05), and there is no significant relationship between participants' knowledge and their attitude regarding CD (p>0.05). The study concluded that the mothers of children with CD in the Gaza Strip have a low level of knowledge regarding CD. The researcher recommends conducting health education sessions for the mothers of children with CD. Additionally, training workshops are needed to enhance mothers' practices regarding CD and how to prevent complications of the disease.

Key words: Knowledge, Attitude, Practice, and Celiac Disease

Table of Content

Declaration	i
Acknowledgments	ii
Abstract	iii
Table of Content	iv
List of Tables	ix
List of Annexes	xii
List of Abbreviations	xiii
Chapter One Introduction	
1.1 Background	
1.2 Problem Statement	
1.3 Justification of the Study	4
1.4 Aim of the study	6
1.5 Objectives of the study	6
1.6 Questions of the Study	6
1.7 Definition of terms	
1.7.1 Theoretical definition	
1.7.2 Operational definition	9
1.8 Context of the study	9
1.8.1 Demographic Context	9
1.8.2 Socio-Economic Context	
1.8.3 Health Care System	
1.8.4 Child Health Care Services	
1.8.5 Ard El Insan Palestinian Benevolent Association	

C	Chapter Two Literature Review	14
	2.1 Conceptual Framework	14
	2.2 Literature Review	15
	2.2.1 Background	15
	2.2.2 Definition of Celiac Disease	15
	2.2.3 Historical Review of Celiac Disease	16
	2.2.4 Epidemiology of Celiac Disease	17
	2.2.4.1 Globally	17
	2.2.4.2 In Developed Countries	19
	2.2.4.3 In Developing Countries	19
	2.2.4.4 Locally	21
	2.2.4.5 High-risk groups and associated autoimmune conditions	21
	2.2.4.5.1 Relatives of patients with celiac disease	21
	2.2.4.5.2 Down syndrome	22
	2.2.4.5.3 Type 1 diabetes mellitus	22
	2.2.4.5.4 Autoimmune thyroid disease	22
	2.2.5 Etiology of Celiac Disease	23
	2.2.6 Pathophysiology of Celiac Disease	26
	2.2.7 Classification of celiac disease	27
	2.2.8 Clinical Manifestations of Celiac Disease	28
	2.2.9 Diagnosis of Celiac Disease	35
	2.2.10 Complication of Celiac Disease	39
	2.2.11 Management of Celiac Disease	42
	2.2.12 Mother's Knowledge, Attitude, and Practice	48
	2.2.13 Role of Nursing	52

2.2.14 Summary	54
Chapter Three Methodology	55
3.1 Study Design	55
3.2 Study Population	55
3.3 Study Setting	55
3.4 Study Period	56
3.5 Sample and Sampling	56
3.6 Eligibility Criteria	56
3.6.1 Inclusion criteria	56
3.6.2 Exclusion criteria	56
3.7 Study instruments	56
3.8 Validity and Reliability of the instrument	57
3.8.1 Validity	57
3.8.2 Reliability	57
3.9 Pilot Study	58
3.10 Data Collection	58
3.11 Data Management and Analysis	58
3.12 Response Value	59
3.13 Ethical and Administrative Considerations	59
Chapter Four Results of the Study	60
4.1 Introduction	60
4.2 Socio-demographic characteristics of participants	60
4.3 The level of knowledge among mothers of children with celiac disease	62
4.4 The level of attitude among mothers of children with celiac disease	64
4.5 The level of practices among mothers of children with celiac disease	65

4.6 Differences in the participants' total level of knowledge with regard to their
demographic factors
4.7 Differences in the participants' attitude with regard to their demographic factors 69
4.8 Differences in the participants' practices with regard to their demographic factors71
4.9 Relationship between participants' knowledge, attitude and practices regarding celiac
disease73
4.10 Differences in the level of participants' knowledge, attitude, practices with regard to
organizational factors74
Chapter Five Discussion of Results
5.1 Introduction
5.2 Participants' knowledge about celiac disease
5.3 Participants' attitudes and practices about celiac disease
5.4 Factors associated with knowledge among participants
5.5 Relationship between participants' knowledge and attitude regarding celiac disease 82
Chapter Six: Conclusion and Recommendations
6.1 Conclusion
6.2 Recommendations
6.2.1 Recommendations for policy makers and healthcare providers
6.2.2 Recommendations for mothers
6.2.3 Recommendations for future research
References
Annexes

List of Tables

Table 2.1: Food items, which are permissible, restricted, and of questionable value for
patients with celiac disease
Table 3.1: Reliability Statistics (Cronbach alpha test) 57
Table 3.2: Response Value 59
Table 4.1: Sample distribution according to the participants' age, residence, employment,
and education (n=174)
Table 4.2: Sample distribution according to the participants' family numbers, number of
children, income and other children with celiac disease (n=174)
Table 4.3: Participants' knowledge about celiac disease (n=174)
Table 4.4: Participants' knowledge about signs and complications of disease
Table 4.5: Participants' knowledge about food containing gluten
Table 4.6: Participants' knowledge about celiac disease 63
Table 4.7: Sources of participants' knowledge about celiac disease 64
Table 4.8.a: Participants' attitude toward celiac disease
Table 4.8.b: Participants' attitude toward celiac disease 65
Table 4.9.a: Participants' practices toward celiac disease 65
Table 4.9.b: Participants' practices toward celiac disease 66
Table 4.10.a: Differences in the participants' knowledge with regard to their demographic
factors
Table 4.10.b: Differences in the participants' knowledge with regard to their demographic
factors
Table 4.10.c.1: Differences in the participants' knowledge with regard to their
demographic factors
Table 4.10.c.2: Differences in the participants' knowledge with regard to their
demographic factors
Table 4.11.a: Differences in the participants' attitude with regard to their demographic
factors
Table 4.11.b: Differences in the participants' attitude with regard to their demographic
factors
Table 4.11.c: Differences in the participants' attitude with regard to their demographic
factors

Table 4.12.a: Differences in the participants' practices with regard to their demographic
factors
Table 4.12.b: Differences in the participants' practices with regard to their demographic
factors
Table 4.12.c: Differences in the participants' practices with regard to their demographic
factors
Table 4.13: Relationship between participants' knowledge, attitude and practices regarding
celiac disease
Table 4.14: Relationship between participants' knowledge, attitude and practices and the
child weight and height73
Table 4.15: Differences in the participants' knowledge with regard to educational sessions
about the disease74
Table 4.16: Differences in the participants' attitude with regard to educational sessions
about the disease
Table 4.17: Differences in the participants' practices with regard to educational sessions
about the disease
Table 4.18: Differences in the participants' knowledge, attitude, and practices with regard
to child complications75

List of Figures

Figure (2.1). Conceptu	al framework o	of the study	"self-developed"	' 1.	4
1 15ul (2.1	. Conceptu	ul llulle work	or the study	sen developed	•••••••••••••••••••••••••••••••••••••••	

List of Annexes

Annex (1) English version of the questionnaire	. 100
Annex (2) Arabic version of the questionnaire	. 108
Annex (3) List of arbitrators	. 116
Annex (4) An official letter of approval from Helsinki Committee in the Gaza Strip	. 117
Annex (5) Administrative approval from the Ard El-Insan Palestinian Benevolent	
Association in the Gaza Strip	. 118
Annex (6) Arabic abstract	. 119

List of Abbreviations

AEI	Ard El-Insan Palestinian Benevolent Association			
ATD	Autoimmune Thyroid Disease			
CC	Celiac Crises			
CD	Celiac Disease			
DGPA	Deamidated Gliadin Peptide Antibodies			
DH	Dermatitis Herpetiformis			
DS	Down Syndrome			
EIM	Extra-Intestinal Manifestations			
EMAs	Antiendomysial Antibodies			
ESPGHAN	European Society of Pediatric Gastroenterology Hepatology & Nutrition			
FDRs	First Degree Relatives			
GFD	Gluten-Free Diet			
GIM	Gastro-Intestinal Manifestations			
GS	Gaza Strip			
HLA	Human Leukocyte Antigen			
KAP	Knowledge, Attitude and Practice			
МОН	Ministry of Health			
NIH	National Institute of Health			
NRCD	Non-Responsive Celiac Disease			
PCBS	Palestinian Central Bureau of Statistics			
RCD	Refractory Celiac Disease			
SPSS	Statistical Package for Social Sciences			
SS	Short Stature			
T1DM	Type1 Diabetes Mellitus			
tTG	Tissue Transglutaminase			
UNRWA	United Nations Relief and Works Agency			
WGO	World Gastroenterology Organization			
WHO	World Health Organization			

Chapter One

Introduction

1.1 Background

Celiac disease (CD) is considered one of the most common chronic diseases in children. It is an immune-mediated systemic disorder caused by the ingestion of gluten and related prolamin in genetically susceptible individuals (Fok et al., 2016 & Sarno et al., 2015). CD is a great public health problem and affects one in every 100 people all over the world. However, it was diagnosed with only 30% of those who suffer from this condition. The prevalence of CD has increased considerably over the last 20 years and it is estimated that the overall prevalence of CD is approximately 0.5% to 1% in many countries of the world (Singh et al., 2018). In the Gaza Strip, the cases of celiac disease registered with the Ard El-Insan Association (AEI) amounted to about 1000 patients, of whom about 350 were under the age of 18 years (AEI, 2019).

The main cause of CD is still unclear, but the disease may occur as a result of genetic, and environmental factors and other factors (Gujral, 2012). CD is a disorder that affects the gastrointestinal tract as a reaction due to exposure to take the substance of gluten found in bread, pasta, biscuits, and other types of food made from wheat, barley, or oats (Holmes, 2010). If a child suffering from CD consumes gluten, the immune system in the body attacks the intestinal villi, the villi that promote absorption of nutrients, and when damaging the villi, lead to the nutrients cannot be absorbed properly into the body (Perry et al., 2014).

According to the World Organization of Gastroenterology (WGO), the CD can develop at different ages, and patients suffering from CD may have various clinical signs and symptoms. The clinical signs and symptoms have divided into two main categories. Classical CD characterized by signs and symptoms of malabsorption, including (chronic diarrhea, abdominal distention, and failure to thrive), are common in children diagnosed within the first 2 years of life. Non-classical CD characterized by no signs and symptoms of malabsorption or with extraintestinal manifestation, such as (abdominal pain, constipation, and reduced bone density), are more common in older children and adolescents (Bai et al., 2019 & Ludvigssonet al., 2014).

Celiac disease is a lifelong disorder, which can be treated effectively by providing a gluten-free diet (GFD), which is also beneficial in improving symptoms, appropriate growth, improving quality of life, and preventing complications (Chauhan et al., 2010). Strict adherence to a GFD is crucial for the prevention of complications and to reduce morbidity and mortality associated with cases of untreated or poorly managed CD. Consequences of untreated CD including of osteopenia or early osteoporosis (leading to fractures), poor growth, anemia, infertility and neurological conditions such as gluten ataxia and neuropathy, and although rare there is an increased risk of small bowel cancer and intestinal lymphoma (Fok et al., 2016).

According to the National Institute of Health (NIH), education is the main part of CD management, education about the disease for both the family and particularly mothers and children can increase knowledge, leading to changes in the attitude of children and mothers and practice (Barzegar et al., 2017 & James, 2005). The mothers of children suffering from CD play an important role in providing access to health care services and developing attitudes and practices that affect childcare. Limited knowledge among mothers about GFD for children with CD is an important reason for the poor adherence to the GFD among children (Chishty, Bissu, & Singh, 2016).

Therefore, the mother's knowledge about childcare affects the nature and quality of care provided to the child. Several studies have shown that the level of mother education has a positive impact on her knowledge and how she deals with child health care issues. Experience in pediatric practice has revealed significant gaps pertaining to child health issues in the mothers' knowledge health care institutions play a major role in health education. There should be proper effective practical means of disseminating information on child health matters among mothers in our community (Al-ayed, 2010). Therefore, the aim of this study is to assess the knowledge, attitude, and practice among mothers of CD children in the GS.

1.2 Problem Statement

CD is a major public health problem among children all over the world. CD is a chronic and serious medical disease that requires long-term follow-up to ensure adherence to treatment and prevention of complications (Singh et al., 2018). Despite the importance of adherence to treatment, especially the treatment of chronic diseases such as CD. The problem of non-adherence to treatment is a serious problem, as the World Health Organization (WHO) indicate that the average rate of non-adherence is 50% among people with chronic diseases (Sabateb, 2003). Adherence to a GFD varies from 45% to 93% in children and adolescents (Jadrešin et al., 2008). Non-adherence to treatment leads to poor results, leading to increased use of health care services and increase health costs.

Non-adherence to a GFD is a major problem in the management of CD, especially in children and adolescents, which may occur due to several factors such as nonavailability of gluten-free foods, social pressure, especially in teenagers and the most important factor is the lack of knowledge of mothers about a GFD (Chauhan et al., 2010). Education and knowledge of mothers are found as an important factor in the adherence because the mother is responsible for preparation and food items and providing GFD. A study conducted by Al-raee, El-sakka, & Al-wahaidi, (2012) showed that the greater the knowledge of patients and mothers, whenever the better adherence. Although it is clearly beneficial, a GFD is an expensive and social burden for the patient and family (Jadrešin et al., 2008). Low mothers' knowledge will have severe negative consequences for the patient, family, health care providers, and the health system. The consequences of low mothers' knowledge of children with CD are worrying and can threaten their lives, increase non-adherence to treatment, and lead to CD complications that increase the cost of health care due to increased morbidity. Furthermore, parental frustration with treatment, poor health outcomes associated with poor adherence to treatment in children, increased financial pressure and burden on the family, increased morbidity and mortality and increased use of health resources and medical care costs. Patients suffering from CD require increased medical resources similar to patients who suffer from diabetes or high blood pressure disease (Heymann et al., 2013). Therefore, it is important to assess knowledge, attitude, and practice among mothers of CD children in the GS.

1.3 Justification of the Study

The study of knowledge, attitude, and practice of mothers of children who suffer from CD are critical in the provision of health care effectively. Because mothers are often the primary caregivers of their children, their ability to recognize the symptoms of CD early, prevent occurs complications in children by initiating early management (El Mahdi, 2005).

A study conducted by Al-raee, El-sakka, & Al-wahaidi, (2012) showed that CD continues to increase in the GS. Surprisingly, celiac disease has not received the attention of the Ministry of Health (MOH) and other health sectors, where no efforts have been made to increase awareness, prevention, and early detection of CD. Unfortunately, most patients lack the opportunity to obtain gluten-free food from any source in the Gaza Strip except the Ard El-Insan Association.

Successful management of CD, whether medically or psychologically requires appropriate education for patients and their families. It seems that adherence to a GFD is associated with knowledge and understanding of the disease both in children and adolescents (Ludvigsson et al., 2014). Education about the disease for both mothers and children may increase adherence to a gluten-free diet, especially in lower socioeconomic families (Chishty et al., 2016).

This study can add significant value in the following areas: In practice, after assessing the level of mothers' knowledge, the researcher expects that suggestions of this study will help in improving mothers' knowledge regarding the disease and have a significant impact on their children because they will be familiar with the disease and know how to deal with their children. In administrative level, the researcher will provide suggestions for the Ministry of Health (MOH), Ard El-Insan Palestinian Benevolent Association and other health sectors policy-makers building up policies for management of celiac disease and developing programs related to health education activities to improve the practice and management of children who suffer from celiac disease through helping mothers to care for their children in the GS. In education, this study will serve as a basis for a review of pediatrics curriculum in pre-service and in-service training in medical and nursing education. In research, this study will provide guidance to other researchers to conduct future studies related to this subject.

Several studies conducted around the world have revealed a poor mother's knowledge, negative attitude, and practice in caring for children who suffer from celiac disease. Finally, there is no study applied in the GS to determine the knowledge, attitude, and practice among mothers of children who suffer from CD. Therefore, this study aims to assess the knowledge, attitude, and practice among mothers of CD children in GS.

5

1.4 Aim of the study

This study aims to assess the knowledge, attitude, and practice (KAP) among mothers of CD children in the GS.

1.5 Objectives of the study

- To assess the knowledge level among mothers of CD children in the GS.
- To assess the attitude level among mothers of CD children in the GS.
- To assess the practice level among mothers of CD children in the GS.
- To determine the relationship between the socio-demographic characteristics of mothers and their level of knowledge, attitude, and practice towards celiac disease children in the GS.
- To identify the relationship between the level of knowledge and attitude among mothers of CD children in the GS.
- To identify the relationship between the level of knowledge and practice among mothers of CD children in the GS.
- To identify the relationship between the level of attitude and practice among mothers of CD children in the GS.
- To determine the relationship between the child's health history and the level of knowledge, attitude, and practice (KAP) among mothers of CD children in the GS.
- To determine the relationship between organizational factors and the level of knowledge, attitude and practice (KAP) among mothers of CD children in the GS.

1.6 Questions of the Study

- What is the knowledge level among mothers of CD children in the GS?
- What is the attitude level among mothers of CD children in the GS?
- What is the practice level among mothers of CD children in the GS?

- Does the mother's age affect the level of KAP among mothers of CD children in the GS?
- Does the mother's occupation affect the level of KAP among mothers of CD children in the GS?
- Does the number of children in the family affect the level of KAP among mothers of CD children in the GS?
- Does the mother's educational level affect the level of KAP among mothers of CD children in the GS?
- Does the household income affect the level of KAP among mothers of CD children in the GS?
- Does the Place of residence affect the level of KAP among mothers of CD children in the GS?
- Is there a significant relationship between the level of knowledge and attitude among mothers of CD children in the GS?
- Is there a significant relationship between the level of knowledge and practice among mothers of CD children in the GS?
- Is there a significant relationship between the level of attitude and practice among mothers of CD children in the GS?
- Does the duration of disease affect the level of KAP among mothers of CD children in the GS?
- Does the concomitant disease affect the level of KAP among mothers of CD children in the GS?
- Does the complication affect the level of KAP among mothers of CD children in the GS?

- Does the readmission of the hospital repeatedly affect the level of KAP among mothers of CD children in the GS?
- Does the number of clinic visits affect the level of KAP among mothers of CD children in the GS?
- Does the frequency of health education affect the level of KAP among mothers of CD children in the GS?
- Does the time period for health education affect the level of KAP among mothers of CD children in the GS?

1.7 Definition of terms

1.7.1 Theoretical definition

Celiac disease: Celiac disease (CD), also known as gluten-sensitive enteropathy, is defined as an immune-mediated inflammatory disease of the small intestine caused by sensitivity to dietary gluten and related proteins in genetically predisposed individuals (Hill, 2020).

Gluten: Gluten is the main storage protein for wheat, rye, and barley grains. Gluten is a complex mixture of hundreds of related but distinct proteins, especially gliadin and glutenin. Gluten is widely used in food processing to give the dough the desired baking properties, add flavors, and improve texture (Bai et al., 2019 & Biesiekierski, 2017).

Gluten-free diet (GFD): Exclusion of wheat, barley, and rye from the diet, as well as all food derivatives of these grains (Bai et al., 2019).

Knowledge: The facts, information, and skills acquired through experience or education (Soanes, 2011).

Attitude: A settled way of thinking or feeling about something (Brooker, 2006).

Practice: The actual doing of something; action as contrasted with ideas (Soanes, 2011).

1.7.2 Operational definition

Children with celiac disease: In this study, the researcher identified children with CD as children under the age of 18 who were diagnosed with CD and who were registered and attended at Ard EL-Insan Association.

Knowledge: The level of the mother's information regarding CD as shown in the scale used by the researcher of the study.

Attitude: This refers to the level of feeling and thinking of mothers regarding CD as shown in the scale used by the researcher of the study.

Practice: The ways in which mothers of children with CD demonstrate the knowledge they have through their actions as shown in the scale used by the researcher of the study.

1.8 Context of the study

1.8.1 Demographic Context

Palestine is an Arab country, fairly small. The total area of historic Palestine is approximately 27,000 km². Palestine was occupied by Israel in 1948 and the remaining two parts are geographically separated (West Bank and Gaza) after the 1948 war. Palestine is bordered by Syria, Jordan, Egypt, Lebanon, and the Mediterranean Sea. At the end of 2018, the population of Palestine was estimated at about 4.915 million people: 2.954 million in the West Bank (60.1%) and 1.961 million (39.9%) in the GS. GS is a small area located in the southwest corner of Palestine on the eastern coast of the Mediterranean Sea. GS is 40 km long, from Beit Hanoun in the north to Rafah in the south. Its width ranges from 5 to 10 km from east to west with a total area of 365 square Kilometer. GS is a very

crowded area, with a population of about 1.961 million people, is one of the most densely populated areas in the world, with a population of more than 5,453 persons per square kilometer (PCBS, 2018).

1.8.2 Socio-Economic Context

Underwent GS for political and economic restrictions and the closure after the Palestinian elections in 2006, according to PCBS in 2013, gross domestic product reached (GDP) of \$ 6797.3 GDP per capita (PCBS, 2014). The Israeli war on Gaza resulted in December 2008 and January 2009, hundreds of deaths and thousands of injuries, and badly affected the already debilitating situation for the water sector, sanitation, and energy in the GS (PCBS, 2009).

Medical supplies were extremely limited and health facilities were often unable to treat patients during the crisis (PCBS, 2009). The deteriorating economic situation in the Gaza Strip leads to an increase in the unemployment rate by more than 40% in 2015 and 85% of households living below the poverty line in the 2015 Household Survey (International Monetary Fund, 2016). The poor economic situation of Palestinians in the GS increases the burden on the government hospital to provide secondary care, especially in case of emergency. This also increases the need to provide an effective health care system and an effective clinical supervision system to effectively manage services (PCBS, 2014).

The economy and its ability to create jobs have been destroyed, leading to the impoverishment and development of a society with high skills and good education. The unemployment rate in the Gaza Strip is among the highest in the world. Where 52% of the participants in the labor force in the Gaza Strip were unemployed in 2018 (PCBS, 2017). Palestine refugees relying on UNRWA for food assistance increased from less than 80,000 in 2000 to nearly one million today (UNRWA, 2016). More than half of the population was

poor in the Gaza Strip during the year 2019, with the poverty rate reaching 53.0%, and 34% of individuals in the Gaza Strip were below the extreme poverty line (PCBS, 2019).

In Palestine, the percentage of individuals (15 years and over) who completed their university education (Bachelor's degree or more) was 15%, while the percentage of individuals who did not complete any educational stage was 8%. The illiteracy rate among individuals (15 years and over) in Palestine is 3%. The illiteracy gap was significantly observed between males and females at 1% and 4%, respectively (PCBS, 2019).

1.8.3 Health Care System

The health system in Gaza Strip consists of primary, secondary, and tertiary care. The service providers include the Ministry of Health (MOH), UNRWA, NGOs, PMMS, and the private sector. With so many providers, there are many challenges in providing well-coordinated and well-coordinated health services during normal times and resistance exacerbated during emergencies (World Health Organization, 2014). UNRWA provides health care services to the vast majority of more than 1.2 million Palestinian refugees in the GS through 22 medical centers, providing primary health care (PHC) and the purchase of secondary health services and tertiary (UNRWA, 2016).

The Ministry of Health is the largest health care provider in the governorates, providing primary health care and secondary and tertiary services to the entire population. Advanced medical services are consumed by mentioning patients to neighboring countries and other private health care facilities and NGOs. It was seriously affected by the financial crisis of the Palestinian Authority. In particular, there was a decrease in the number of patients who are referred outside the occupied Palestinian territories for a particular treatment, and there was a growing and growing shortage of medicines and consumables (WHO, 2013).

1.8.4 Child Health Care Services

UNRWA provides care for children across the phases of the life cycle, with specific interventions to meet the health needs of newborns, infants under 1 year of children, children under 5 years of age, and school-age children. Both preventive and curative care is provided, with a special emphasis on prevention. Services include newborn assessment, well-baby care, periodic physical examinations, immunization, growth monitoring, and nutritional surveillance, micronutrient supplementation, preventive oral health, school health services, and care of sick children, including referral for specialist care. Growth and nutritional status of children under 5 are monitored at regular intervals through UNRWA health services. Breastfeeding is promoted and mothers are counseled on infant and child nutrition, including the appropriate use of complementary feeding and micronutrient supplements. A new electronic growth monitoring system, based on the revised WHO growth monitoring standards, was introduced in pilot health centers during 2011. The system documents the four main growth and nutrition-related problems among children under 5: underweight, wasting, stunting and obesity (UNRWA, 2016).

1.8.5 Ard El Insan Palestinian Benevolent Association

Ard El Insan Palestinian Benevolent Association (AEI) was established in 1984 in Gaza as the successor of the international famous Swiss organization (Terre Des Hommes). In 1999 AEI was localized as a national NGO by the Palestinian National Authority (PA) Ministry of Interior with a license number (6037). Moreover, AEI is a core and leading member of the Health and Nutrition group of the Office for the Coordination of Humanitarian Affairs (OCHA) - within the WHO between the UN system in the Gaza Strip and Palestine and maintains a very professional relationship with the Palestinian Ministry of Health. It is a leading institution specialized in the field of common childhood diseases, nutrition, and community health in the Gaza Strip. Ard El Insan Palestinian Benevolent Association (AEI) provides preventive and curative services, family counseling, and health education through its centers in Gaza and Khan Yunis according to its strategic plan based on the activities and standards of the World Health Organization (WHO), taking into account all laws and Protocols approved by the Palestinian Ministry of Health and others in line with existing programs and activities. It works to provide health, nutritional and social services to children (especially under five), poor and marginalized mothers and families, to improve their health, standard of living, and community participation through community projects and programs.

Ard El Insan Palestinian Benevolent Association (AEI) is the organization where celiac patients receive health services in the Gaza Strip. Among the main services of AEL, follow-up of children and adults who suffer from celiac disease; provision of gluten-free flour to them, counseling, conducting educational sessions about the disease and glutenfree diet (GFD), supply dietary supplements for patients with nutrient deficiencies such as iron, calcium or vitamins deficiencies, provision psychological support for celiac patients, mothers of celiac children and their families through individual and group counseling sessions, organizing home visits, trips, and camps as well as conducting training courses of cooking and baking gluten-free foods.

Ard El Insan Palestinian Benevolent Association (AEI) attaches great importance to conducting scientific research and studies on health and nutrition at the highest levels; and even exceeded in this context all institutions of community work and this research contributed to the feeding of the databases of the Ministry of Health and major international institutions such as the World Health Organization and others (AEI, 2019 & PNGOs, 2019).

Chapter Two

Literature Review

2.1 Conceptual Framework



Figure (2.1): Conceptual framework of the study "self-developed"

The model constructed by the researcher after an extensive review of related websites and articles. The model consists of the following main concepts:

1) Factors affecting KAP among mothers of celiac disease children:

1. Socio-demographic characteristics: variables that can affect KAP for mothers include: age, occupation, level of education, number of children, household income, and place of residence.

- Children's health profile: variables that can affect KAP for mothers include: duration of disease, comorbidities, previous complications and previous of hospitalization.
- 3. Organizational factors: variables that could affect KAP for mothers include: number of clinic visits, health education in the last 6 months, and the time period for health education.
- Knowledge and Attitude: Mothers' adequate knowledge of the disease can lead to a positive attitude and vice versa.
- **3) Practice**: Mothers' adequate knowledge and a positive attitude about the disease leads to best practices and the child's commitment to treatment.

2.2 Literature Review

2.2.1 Background

Celiac disease is chronic, a multiple-organ autoimmune disease characterized by chronic inflammation and atrophy of the intestinal villi, which impair digestion and absorption (Bai et al., 2019). CD occurs in several countries of the world, affecting approximately 1% of the population and the etiology of this disease is genetic, and environmental factors. Appropriate treatment is a lifelong GFD, which leads to a complete resolution of symptoms and healing of mucous membranes in most individuals and may also reduce the long-term risk of adverse complications including intestinal lymphoma. (Hill, 2020 & Poddighe et al., 2019).

2.2.2 Definition of Celiac Disease

Celiac Disease is a complex autoimmune disease caused by ingestion of gluten (the main protein for storage in wheat, rye, and barley) in genetically exposed individuals, which leads to high titers of celiac-specific autoantibodies and resulting in a variable

degree of small intestinal inflammation and a wide range of gastrointestinal and nongastrointestinal manifestations (Jericho & Guandalini, 2018).

2.2.3 Historical Review of Celiac Disease

The word celiac comes from the Greek word koiliakos, meaning "suffering in the bowels". CD was discovered in the second century AD when a Greek doctor named Aretaeus Cappadocia described the prevailing features of this disease for diarrhea, paleness, weight loss, and chronic relapse. Aretaeus identified the CD as an affliction of later life, most commonly affecting women. In 1856, Francis Adams translated the works of Aretaeus from Greek into Latin and printed for the Sydenham Society of England (Griffiths, 2008).

In 1888, Dr. Samuel Gee described the CD as a type of chronic indigestion, which affects individuals of all ages, especially children aged between 1 and 5 years, and Offering nutritional therapy as an effective intervention. In 1908, Dr. Emmett Holt and Christian Herter, their most important contributions were to observe that while the fats were tolerated fairly well, the carbohydrates were poorly tolerated, often causing relapse or recurrence of diarrhea (Griffiths, 2008).

In 1921, Dr John Howland noticed that carbohydrates especially bread and cereals were the last foods that could be reintroduced into the diet and that growth suffered in proportion to the length of time that symptoms persisted and that many children were as a consequence below the average in height. In 1932, Dr. Sydney Haas was also the first to recognize the familial tendency to the disease, especially in identical twins. In 1949, Dr. Sydney Haas observed that children with severe diarrhea did well on banana flour and plantain meal. The 'specific carbohydrate diet', consisting of bananas and particular carbohydrate containing fruit and vegetables, recognized as treatment (Griffiths, 2008).

In 1950, Professor Dickey observed that removing wheat, oats, and rye flour from the diet of children with celiac disease had significantly improved symptoms. In 1952, Anderson (1952) and her colleagues determined that the wheat factor is a gluten protein and concluded that changes in gastrointestinal function in children with celiac disease were very similar to those of adults with idiopathic steatorrhea. In 1953, Professor Dicke, Professor Dolf Wijers & Jan Van de Kamer Identified a factor in wheat as the main cause of the symptoms but acknowledged that this factor was not wheat starch (Griffiths, 2008).

2.2.4 Epidemiology of Celiac Disease

2.2.4.1 Globally

Celiac Disease is a major public health problem in the developed and developing world, and it is one of the most common lifelong disorders that affect the general population around the world, and it has spread widely over the past twenty years (Singh et al., 2018). Despite the wide variation in prevalence according to the geographical area, CD not only spreads in developed countries but also spreads increasingly in the regions of the developing world, particularly North Africa, the Middle East, and India. This broad spread is not surprising at all, since the causal factors, such as genetic (including HLA and non-HLA genes), and environmental – including patterns of wheat consumption, age at wheat introduction, infant feeding practices, gastrointestinal infections, and medication, may affect the risk of developing CD. By contrast, the CD is very rare in the Far East in Asia and sub-Saharan Africa, where wheat and other gluten are not basic foods (Poddighe et al., 2019 & Green, Krishnareddy, & Lebwohl, 2015).

CD is considered as a description of the phenomenon of the "tip of the iceberg", besides about 90% of CD cases remain undiagnosed. This may be due to a lack of awareness among health professionals, particularly with regard to extra-intestinal symptoms of CD —such as iron deficiency anemia, dental enamel defects, and delay in onset or progression of puberty— Leading to a delay in diagnosis and associated increased morbidity. It is also possible that in some regions of the world where the primary diet is rice or food containing potato starch, symptoms may remain sub-clinical, thereby leading to under-diagnosis (Fok et al., 2016 & Paul & Spray, 2014).

Cases are often diagnosed with CD in early childhood and during the fourth and fifth decades. Females are more at risk (2: 1 to 3: 1) than males. In 2010, about 2.2 million children worldwide were diagnosed with CD, although many cases of CD are undiagnosed (Durham & Temples, 2018). Currently, the prevalence of the CD is estimated between 1% to 3% of the general population worldwide. In Europe, the United States, and Australia, prevalence estimates range from 1: 80 to 1: 300 children (3 to 13 per 1,000 children) (Hill, 2020). In a systematic review and meta-analysis, it was found that CD has been reported worldwide. The results showed that the prevalence of CD based on the results of serological tests is 1.4% and based on the results of the biopsy is 0.7%. It showed a prevalence of CD of 0.4% in South America, 0.5% in Africa and North America, 0.6% in Asia, and 0.8% in Europe and Oceania. The prevalence of CD was significantly greater in children than in adults (Singh et al., 2018).

Significantly, CD is rapidly becoming one of the most common chronic diseases affecting children. A recent study reports that 3 million people, or 1% of the population in the United States (US), have CD. Additionally, in the United States, up to 1 in 80 children has CD (Gallegos & Merkel, 2019). It is estimated that up to 10 million people in India and possibly a similar number of individuals in China currently suffer from undiagnosed CD. If diagnostic rates improve dramatically in either group, the number of individuals with CD in these regions could exceed all people with CD in Europe (about 7 million) and in North America (about 5 million) (Castillo, Theethira, & Leffler, 2014).

2.2.4.2 In Developed Countries

The rate of diagnosis of CD in developed countries has increased over the last 20 years due to the availability of diagnostic facilities and a good awareness of the disease (Green et al., 2015). Despite the increasing incidence of CD, which was diagnosed clinically significantly, but only 10% of patients who have been discovered, but the larger part of the "celiac iceberg" about 90% of them are still undetected (Fok et al., 2016).

In North America, after several decades of increasing prevalence, it seems that the prevalence of the CD is stable in the last year. In the United States, CD affects about 0.5% - 1.0% of the population (Catassi, Gatti & Lionetti, 2015). In Canada, CD is one of the most common digestive diseases, where the prevalence rate is constantly increasing. besides, studies have shown that Canada is the country with the largest increase (around 35%) in the incidence and prevalence of CD over the past decades. It is estimated that about 1.0% of the population (or 1 in 114 Canadians) suffer from CD, although about 90% of cases of CD are still undiagnosed (Jamnik et al., 2017).

In Europe, the overall prevalence of the CD in the Western population is approaching the rate of 1% (1: 100) may be higher in the countries of northern Europe. The Scandinavian countries, Ireland, and the United Kingdom tend to show the high prevalence of CD rate of about 1.0% - 1.5%, Prevalence of CD up to 2-3% in Finland and Sweden (Green et al., 2015 & Gujral et al., 2012).

2.2.4.3 In Developing Countries

In the past, CD was very rare in developing countries (Middle East, North Africa, and Asia). Currently, CD is a common disorder in those regions as in western countries; However, the low diagnostic rate is mostly in these countries due to limited availability of
diagnostic facilities and poor awareness of the disease (Alshami, 2017 & Green et al., 2015).

In Africa, in North Africa (including Morocco, Algeria, Tunisia, Libya and Egypt) have been reported in the high incidence of 0.28% -5.6% of CD in the general population. This high prevalence in this population can be explained by genetic factors and environmental factors: changing dietary habits in the past few decades. Lower rates and duration of breastfeeding and to increase the consumption of gluten in early life as part of the basic diet, which was provided by Western countries in humanitarian aid, may have played a role in the increased prevalence of the CD (Gujral et al., 2012).

In Asia, previously it was believed that CD was uncommon in many Asian countries. Asia is currently at the center stage of celiac disease. The prevalence of CD in Asian countries such as India, Turkey, Israel, Saudi Arabia, and Iran, is as high as it is all over the world. The prevalence of the CD in various Asian countries is estimated to be about 0.5% -1% of the population. There is a need to raise awareness about the CD among health professionals. The widespread availability of serological tests, reliable gluten-free foods, gluten labeling legislation, training of dietitians, and the establishment of patient support groups are some of the unmet needs in Asia (Makharia & Catassi, 2019 & Poddighe et al., 2019).

Asia may be the main reservoir of undiagnosed CD in the world. The genetic, social, cultural, and nutritional variation of the Asian population extends from Turkey to Japan and from Russia to Indonesia. The pooled prevalence of CD was 0.3% in Iran, 0.5% in Turkey, 0.6% in India, and 0.7% in Israel. The pooled prevalence of CD was significantly higher in Israel and India as compared with Iran (Makharia & Catassi, 2019). The true prevalence of the CD in Arab countries is underestimated due to a lack of awareness of non-classical or non-gastrointestinal manifestations of CD. CD is common in

the Kingdom of Saudi Arabia (KSA), in a meta-analysis, the prevalence of the CD with biopsy was 1.4% and serological 2.7% (Safi, 2019).

2.2.4.4 Locally

In fact, the prevalence of CD in the Gaza Strip has increased dramatically over the past 10 years. It is estimated that approximately 1,000 patients have been diagnosed with CD in the Gaza Strip. Among those patients who have been diagnosed, there are about 350 patients under the age of 18 years (AEI, 2019).

2.2.4.5 High-risk groups and associated autoimmune conditions

Celiac disease can be associated with various autoimmune diseases and the prevalence of CD increases significantly in first- and second-degree relatives of patients with CD and in individuals with Down syndrome, type 1 diabetes mellitus, selective IgA deficiency, autoimmune thyroid disease, and possibly Turner and Williams syndromes. The importance of diagnosing CD associated with these associated diseases is twofold because the gluten-free diet is able to resolve symptoms, prevent complications, and improve some of the diseases associated with celiac disease (Hill, 2020).

2.2.4.5.1 Relatives of patients with celiac disease

The prevalence of CD was 7.5% in first degree relatives (FDRs) and 2.3% in second-degree relatives (SDRs). In the meta-analysis, the pooled prevalence of CD was higher in siblings (8.9%), followed by offspring (7.9%) and parents (3.0%). Female FDRs had a higher prevalence rate than male FDRs. While sisters and daughters of index patients had the highest risk of having CD, the risk was 1 in 13 in sons, 1 in 16 in brothers, 1 in 32 in mothers, and 1 in 33 in fathers (Singh et al., 2015).

2.2.4.5.2 Down syndrome

The association between Down syndrome (DS) and CD has been reported in many studies. However, the prevalence of CD in DS varies greatly across studies (from 0% to 19%). In a meta-analysis from Europe and America, we found the prevalence of CD 6% (21 studies) and 5.7% (6 studies) in DS patients, approximately a six-fold increase in the risk of developing CD in individuals with DS. Individuals with DS are at a high risk of developing CD, and more than one of twenty patients (children) with DS have celiac disease, at least in Europe and America (Du et al., 2017). The relationship between DS and CD is unclear. Although individuals with DS have a similar distribution of HLA genotypes as the general population (Mårild et al., 2013).

2.2.4.5.3 Type 1 diabetes mellitus

Children with type 1 diabetes mellitus (T1DM) are at a greater risk of developing CD, and individuals with T1DM and CD participate in the highly dangerous HLA-DR-DQ genotypes DR3 and DR4, which partly explains the overlap of the disease (Hagopian et al., 2017). The prevalence of CD in individuals with T1DM ranges from 4% to 11.5%, which appears higher in children than in adults (Ciacci & Zingone, 2016).

2.2.4.5.4 Autoimmune thyroid disease

Several studies have indicated an increased prevalence of CD among individuals with autoimmune thyroid disease (ATD) but estimates have varied widely. CD can occur in 2-5% of patients with ATD (Ventura, et al., 2014). In a meta-analysis, the pooled prevalence of CD among patients with ATD was 1.6%. The prevalence was higher in children with ATD (6.2%) than in adults (2.7%). CD was more prevalent in hyperthyroidism (2.6%) than in hypothyroidism (1.4%) (Roy et al., 2016).

2.2.5 Etiology of Celiac Disease

Although the exact mechanism that leads to the development of the CD is not entirely clear. However, current evidence indicates that CD has multiple etiological factors involving genetic factors (human leukocyte antigens (HLA) and non-HLA genes), gluten, and environmental factors that contribute significantly to the development of the CD (Tyedin, Galipeau, & Agardh, 2018 & Namatovu, 2015).

2.2.5.1 Genetic Factors

Celiac disease is a multi-gene disorder that develops when the intestinal mucosa in susceptible individuals is exposed to gluten. Genetic predisposition plays a major role in the development of CD and the main genetic factors involved in the development of CD are the genotypes that denote the Human leukocyte antigen (HLA) (HLA-DQ2 and HLA-DQ8) molecules (Serena, Lima, & Fasano, 2019 & Durham & Temples, 2018). CD contains a strong genetic component, as evidenced by its high family frequency of approximately (10-15%) and high compatibility of the disease between monozygotic twins approaching (75-80%) (Caio et al., 2019).

(HLA-DQ2 and HLA-DQ8) are present in approximately 99% of patients with CD compared to about 40% in the general population (Saeed, Assiri, & Cheema, 2019). Nearly 90% of individuals with celiac disease carry the human leukocyte antigen DQ2 haplotype, and the remaining 10% carry the DQ8 haplotype. DQ2 is found in the white population in Western Europe, North and West Africa, the Middle East, and Central Asia, while DQ8 is common in individuals from Latin America and Northern Europe (Durham & Temples, 2018 & Sarno et al., 2015).

2.2.5.2 Environmental factors

Besides the genetic component, environmental factors are considered one of the main factors that contribute to the emergence of CD. The main environmental factors that play a role in the emergence and development of CD as an infant feeding and weaning practice, as well as the timing of gluten introduction into the diet. In addition, exposure to infection and antibiotics contributes significantly to the risk of developing CD. (Serena, Lima, & Fasano, 2019 & Tye-Din, Galipeau, & Agardh, 2018).

2.2.5.2.1 Infant feeding practice

Breastfeeding is the natural food for infants and is the optimal exclusive food for infants up to 6 months of age, but in the second half of the first year of life, the infant needs complementary feeding. But many complementary foods contain gluten, as the amount of gluten during the complementary feeding period plays a role in the emergence of CD (Silano et al., 2016, Ludvigsson & Fasano, 2012 & Shamir, 2012). The amount of gluten exposure during the first five years of life was associated with the development of the celiac disease. Eating a large amount of gluten during the first five years of life has been associated with a two-fold increased risk of developing the CD among genetically predisposed children. (hill, 2020, Aronsson et al., 2019 & Fewtrell et al., 2017).

For many years, breastfeeding has been assumed to have an effective protective role against the onset of CD through various mechanisms (Serena, Lima, & Fasano, 2019 & Akobeng, Ramanan, & Basude, 2005). Several studies have reported that breastfeeding during the introduction of dietary gluten, and increasing the duration of breastfeeding reduces the risk of developing CD (Serena, Lima, & Fasano, 2019, Ivarsson et al., 2013 & Shamir, 2012).

Likewise, in 2019, Tariq, Arshad, and Iqbal. They showed that prolonged breastfeeding while introducing gluten-containing nutrition was associated with a lower risk of developing the CD at infancy (Tariq, Arshad, & Iqbal, 2019). A meta-analysis showed that the risk of developing CD decreased significantly in infants who were breastfed upon the introduction of gluten (pooled odds ratio 0.48, 95% CI 0.40 to 0.59) compared to infants who were not breastfed during this period (Akobeng, Ramanan, & Basude, 2005).

In 2008, based on available evidence obtained exclusively from observational studies, the European Society for Pediatric Gastroenterology, Hepatology, and Nutrition (ESPGHAN) concluded that it was prudent to avoid introducing early gluten (<4 months of age) and late (\geq 7 months of age) and introducing gluten while an infant is still breastfeeding, because This may reduce the risk of developing the CD but also type 1 diabetes mellitus and wheat allergy (Agostoni et al., 2008).

In contrast, updated recommendations on gluten introduction in infants and the risk of developing the CD during childhood have been recently published by ESPGHAN and concluded that neither any breastfeeding nor breastfeeding during gluten introduction has been shown to reduce the risk of CD; gluten may be introduced into the infant's diet anytime between 4 and 12 months of age. The age of gluten introduction in infants in this age group does not appear to influence the absolute risk of developing the CD during childhood. Consumption of large quantities of gluten should be avoided during the first weeks after the introduction of gluten and also during infancy (Szajewska et al., 2016).

2.2.5.2.2 Infection and Antibiotics

Despite feeding the infant and weaning, as well as the timing of the introduction of gluten into the diet that plays a role in the emergence and development of the CD.

Moreover, infection is still considered one of the predisposing factors that lead to the development of CD in children (Saeed, Assiri, & Cheema, 2019). In the meta-analysis, 19 observational studies were included (15 on infection and six on antibiotic exposure). A pooled estimate showed that infection was associated with a 37% increase in the risk of developing celiac disease, especially among those who needed hospitalization. Additionally, exposure to antibiotics during early life was associated with an increased risk of developing the CD later in life (Jiang et al., 2019).

In a prospective study of Moba, it was found that children with ≥ 10 infections (respiratory and gastrointestinal) in the first 18 months of life had a higher risk of developing the CD compared to children with ≤ 4 infection (Mårild et al., 2015). The study found a correlation between upper respiratory infection (aOR=1.03, CI=1.02–1.05), lower respiratory tract infections (aOR=1.12, CI=1.01–1.23); and gastroenteritis (aOR=1.05 CI=0.99–1.11) (Bittker & Bell, 2019 & Mårild et al., 2015).

Several reasonable biological mechanisms have been suggested in which infection can play a role in the development of CD (Jiang et al., 2019). The virus, can suppress regulatory T cells and enhance type 1 T-helper cells, and thus weaken the immunity of the intestine. Pro-inflammatory interferon viruses may stimulate and cause increased regulation and release of tissue transglutaminase tissues, which is an important enzyme in enhancing gluten immunity (Jiang et al., 2019 & Mårild et al., 2015).

2.2.6 Pathophysiology of Celiac Disease

Celiac disease is an autoimmune inflammatory condition that primarily affects the small intestine and is characterized by villous atrophy of the small intestine in response to the protein gluten (Perry et al., 2014). Gluten is a grain storage protein, including wheat, rye, and barley. The toxic parts of gluten are called gliadins and are rich in glutamine and

proline residues, which cannot be fully digested by intestinal enzymes (Cui et al., 2017 & Leonard et al., 2017).

Villi are small finger-like projections that line the small intestine, which in turn increases the surface area to absorb food and add digestive secretion. When individuals are unable to digest the gliadin component of gluten, an accumulation of a toxic substance damages the mucosal cells. Damage to the mucosa of the small intestine leads to villous atrophy, hyperplasia of the crypts, and infiltration of the epithelial cells with lymphocytes. Villous atrophy leads to malabsorption caused by a reduced absorptive surface area (Hockenberry & Wilson, 2015 & Perry et al., 2014). Malabsorption resulting from this process can lead to failure to thrive, diarrhea, and extra-intestinal manifestations such as iron deficiency anemia, dental enamel defects, and poor absorption of micronutrients such as fat-soluble vitamins, iron, B12, and folic acid. Moreover, poor absorption leads to abdominal pain and bloating (Al-Toma et al., 2019 & Fok et al., 2016).

2.2.7 Classification of celiac disease

Celiac disease can be classified into four different categories depending on the clinical phenotype according to the Oslo classification which includes classic, non-clinical, subclinical, and potential CD (Ludvigsson et al., 2012).

2.2.7.1 Classic celiac disease

Patients with classical CD present with the features of malabsorption syndrome (indicated by diarrhea, steatorrhea, weight loss, abdominal distension, or failure to thrive). In classical CD, major histological changes (including villous atrophy) occur on a small intestinal biopsy. Mucosal lesions and symptoms improve with adhering to a gluten-free diet, usually within a few weeks to months (Hill, 2020 & Ludvigsson et al., 2012).

2.2.7.2 Non-classical celiac disease

Non-classical CD, which is characterized by little or no signs and symptoms of malabsorption. In non-classical CD, the patient does not suffer from malabsorption (for example, a patient with vomiting or constipation, abdominal pain, and iron deficiency but does not have malabsorption). Patients with the mono-symptomatic disease (other than diarrhea or steatorrhea) usually have non-classical CD. In both classical and non-classical CD, the results of serological tests a.re abnormal and there are varying degrees of villous atrophy (Saeed, Assiri, & Cheema, 2019 & Ludvigsson et al., 2012).

2.2.7.3 Subclinical celiac disease

This disease was previously known as asymptomatic CD; the disease is below the threshold of clinical detection without signs or symptoms sufficient to trigger CD testing in routine clinical practice. These cases are usually detected by screening in high-risk groups, and the subclinical CD is characterized by patients who have a positive serologic test for CD, as well as the presence of villous atrophy (Hill, 2020 & Ludvigsson et al., 2012).

2.2.7.4 Potential celiac disease

This disease was previously known as a latent CD, the patient has a positive serologic test for celiac disease, but normal small intestinal histology. Many of these individuals will develop an intestinal lesion over time, which requires careful monitoring and follow-up (Ludvigsson et al., 2012).

2.2.8 Clinical Manifestations of Celiac Disease

In the past, the CD was considered a gastrointestinal disorder that appears between the age of 6 months and two years with chronic diarrhea (84%), failure to thrive (91%) and anemia (84%), weight loss, and abdominal pain. The current understanding of CD has changed widely, and it is now considered a multi-systemic disorder that affects various age groups in which patients may develop gastrointestinal and extra-intestinal manifestations such as diarrhea, abdominal pain, constipation, vomiting, iron deficiency anemia, faltering growth, dental enamel defects, bone disease, short stature, liver disease, and dermatitis herpetiformis (Taheri et al., 2017 & Fok et al., 2016).

The clinical manifestations of CD in children are different from the adult patient. Gastrointestinal manifestations (GIM) are common in the toddler's age group while extraintestinal manifestations (EIM) predominate in adolescents and older children (Saeed, Assiri, & Cheema, 2019). These symptoms usually appear between 6 and 24 months of age after gluten-containing foods are added to the diet (Durham & Temples, 2018).

2.2.8.1 Gastrointestinal Manifestations

The gastrointestinal manifestations (GIM) of CD are most common in children younger than 3 years (Caio et al., 2019). A recent American study showed an increased prevalence of CD in children from 2010 (0.10%) to 2014 (0.17%). (34%) of children with CD presented with GIM of CD (Almallouhi et al., 2017). The most common GIM in celiac children include loose motions that remain persistent, recurrent abdominal pain or discomfort, bloating, anorexia, and vomiting. Chronic diarrhea caused by poor absorption leads to growth failure and a lack of other micronutrients. Constipation may be one of the symptoms that appears in children (Saeed, Assiri, & Cheema, 2019).

If the diagnosis is delayed, children may present with signs of severe malnutrition. Severely affected infants may present with a celiac crisis (CC) and the hemodynamic and metabolic consequences of dehydration. GI manifestations of CD are similar in older children and adults but are usually less dramatic. Paradoxically, this disease may cause either constipation (8%) or diarrhea (64%). (Hill, 2020).

29

2.2.8.2 Extra-Intestinal Manifestations

Extra-Intestinal manifestations (EIM) of CD are most common in children and adults (Caio et al., 2019). A recent American study showed that (43%) of the EIM of CD were more common in children with CD (Almallouhi et al., 2017). Whereas, the prevalence of EIM of CD is similar between children (60%) and adults (62%) (Jericho, Sansotta & Guandalini, 2017). The most common EIM in children who suffer from CD, such as poor growth (27%) and anemia (18%). Children with CD often suffer from fatigue (8%) and symptoms of the skin (15%) and the nervous system (9%) and joints (6%) (Nurminen et al., 2018).

It was found that children with EIM of CD as their main clinical symptoms have more severe symptoms and a greater degree of villous atrophy than those with gastrointestinal manifestations in the examination (Nurminen et al., 2018 & Jericho & Guandalini, 2018). The pathogenesis of EIM in many respects is still not yet clear. There are likely to be two main mechanisms, the first related to malabsorption due to mucosal damage, and the second linked to the ongoing autoimmune response (Nardecchia et al., 2019).

2.2.8.2.1 Short Stature

Short stature (SS) is one of the main EIM of CD in the children (Jericho & Guandalini, 2018). SS is defined as height in child is two or more standard deviations (SD) below the mean for children of this gender and age (and ideally of the same ethnic group) (Rogol, 2018). The prevalence of SS in untreated CD in children is estimated to be between 4-33%. (Laurikka et al., 2018).

The pathological mechanism underlying the development of SS in CD is still unclear. Malnutrition caused by malabsorption is thought to play a major role, However, recently, it has evolved multiple pathological factors. In particular, dysfunction of the growth hormone (GH)- Insulin-like growth factor (IGF1) axis, other pathogenesis mechanisms may include autoimmune disorders of the pituitary gland and altered ghrelin secretion (Nardecchia et al., 2019 & Meazza et al., 2014).

Generally, after gluten withdrawal, an immediate growth recovery follows. Catchup growth is defined as rapid, compensatory growth during rehabilitation from a prior nutritional deficit, a remarkable phenomenon characterized by the child may grow in height at up to 4 times the average rate for his or her chronological age (Troncone & Kosova, 2010). Generally, Catch-up growth is maximal in the first 6 months on a glutenfree diet. In children with CD, after starting a gluten-free diet, weight catches up more quickly than height. However, within 1-2 years after starting a gluten-free diet, a child with CD usually returns to the normal growth curve of weight and height, depending on the extent of the disease, the age of onset and the extent of the height deficit compared with the target height (Meazza et al., 2014).

However, sometimes celiac patients do not reach their target height, perhaps because rapid catch-up growth can be associated with the rapid maturation of the bones. When catch-up growth cannot be observed despite a strict gluten-free diet, an endocrine evaluation is mandatory for the exclusion of growth hormone deficiency, a condition observed in ~0.23% of patients with celiac disease (Nardecchia et al., 2019).

A study conducted by Jericho, Sansotta, and Guandalini in 2017 showed that about 35% of children with SS failed to show catch-up growth despite strict adherence to a gluten-free diet. Of these, 50% were reported to have persistent short stature not otherwise specified, 22% were felt to have a constitutional growth delay, and 28% were found to have another underlying condition contributing to their short stature including

31

inflammatory bowel disease, food aversion, Turner Syndrome, or growth hormone deficiency (Jericho, Sansotta & Guandalini, 2017).

2.2.8.2.2 Delayed puberty

Delayed puberty is another common manifestation of the EIM of CD in children (Mauro, et al., 2019). Affecting about 11-20% of children patients who suffer from CD (Nardecchia et al., 2019). Delayed puberty is defined clinically as the absence of the first signs of pubertal development at the age of usual onset. In girls, the first sign is the absence of breast development by age 12 years. In boys, the first sign is the absence of testicular enlargement by age 14 years (Crowley & Pitteloud, 2018).

The pathological mechanism underlying delayed puberty associated with CD is unclear. It may be multifactorial and may be due to autoimmune factors, directed against hormones, receptors, or endocrine organs, and the effect of the overall increased inflammatory milieu can delay puberty. In addition, malabsorption of the micronutrients necessary to produce the sex hormone, carriers, or receptors can delay their onset (Leffler, Green & Fasano, 2015).

2.2.8.2.3 Anemia

Anemia is a common EIM of CD in all age groups. It is present in 23-48% of the adult population with CD and 12-40% of children with CD (Laurikka et al., 2018). the pathogenesis of anemia in CD has a multifactorial pathogenesis, iron deficiency is often the main cause of anemia 12-69% (for adults) and 10-20% (for children), but it can be caused by a deficiency of folic acid 20-30% or vitamin B12 8-41%, due to blood loss or because of its association with inflammatory bowel disease (IBD) or Other related diseases (Martín-Masot et al., 2019).

Iron is mostly absorbed in the first part of the small intestine, duodenum, which is the main part of the intestine affected by CD. CD caused by duodenal inflammation subsequently leads to malabsorption of iron and resultant iron deficiency anemia (Jericho & Guandalini, 2018). Many studies have shown that about 84% of Celiac children with anemia who strictly follow a gluten-free diet and receive iron supplements are recovering fully from their iron storages for a period of 12 to 24 months (Nardecchia et al., 2019 & Jericho, Sansotta & Guandalini, 2017).

2.2.8.2.4 liver Disease

The liver disease appears in 39% to 47% of adults with celiac disease and in 26% to 57% of children with CD (Anania et al., 2015). Whereas recent studies indicate its prevalence rate of about 9-14% (Laurikka et al., 2018). While it is possible for patients with CD to develop more severe liver diseases, such as autoimmune hepatitis, primary biliary cirrhosis, and sclerosing cholangitis, the majority of them have benign Hypertransaminasemia (Jericho & Guandalini, 2018).

Most times the liver damage is not severe and reversible, but in rare cases, it can lead to liver failure. The grade of hypertransaminasemia is correlated to the duodenal mucosal damage, malabsorption, and serum levels of anti-endomysial and anti-tissue transglutaminase2 (TG2) antibodies (Nardecchia et al., 2019 & Laurikka et al., 2018). Patients with hypertransaminaseemia and follow a strict gluten-free diet, have excellent response rates of 75-95% from normalizing full liver enzyme within 12-24 months (Jericho & Guandalini, 2018).

2.2.8.2.5 Neurological Manifestations

Many neurological manifestations are closely related to CD (Nardecchia et al., 2019). Approximately 4-52% of children and 24% of adults with CD suffer from

neurological manifestations (Laurikka et al., 2018). While headache is the most common neurological manifestations in children with CD (Jericho & Guandalini, 2018). In a metaanalysis study, the pooled prevalence of headaches among children with CD is 18.3% (Zis, Julian & Hadjivassiliou, 2018).

The pathogenic mechanism of neurological manifestations in CD remains somewhat mysterious. The Possible pathogenic mechanism underlying neuropathy includes anti-ganglioside antibodies, but nutritional deficiency may also play a role. In particular, some neurological manifestations are associated with a deficiency of vitamins such as E, B12, and D, or micronutrients like magnesium (Nardecchia et al., 2019). A GFD is an effective way to treat headaches in patients with CD, which leads to a full recovery from headaches in 75% of children with CD (Zis, Julian & Hadjivassiliou, 2018).

2.2.8.2.6 Joint and Musculoskeletal Disorders

The most common manifestations of musculoskeletal disorders in CD are myopathy, arthralgia, and arthritis, which affects 5-10% of children patients suffering from CD and the most common joint is the knee, followed by the hip and ankle (Nardecchia et al., 2019). At present, the pathogenesis of Joint and Musculoskeletal manifestations in CD is still unknown. However, the CD is associated with many autoimmune diseases, including rheumatic diseases such as Sjögren's syndrome, juvenile rheumatoid/idiopathic arthritis, and systemic lupus erythematosus (Laurikka et al., 2018).

2.2.8.2.7 Dermatitis herpetiformis

Dermatitis herpetiformis (DH) is a cutaneous manifestation of EIM of CD (Mansikka et al., 2018). Currently affects approximately 2-3% of children with CD (Laurikka et al., 2018). DH is a bilateral, itching, blistering skin disease, which usually appears as a rash on the extensor surfaces of the elbows, knees, and buttocks. In addition,

the upper back, abdomen, scalp, and face may be affected, but oral lesions are rare (Jericho & Guandalini, 2018 & Reunala et al., 2018).

After following a strict GFD, the rash recedes by almost 100% in children. Some patients may need additional medical treatment with dapsone, but over time, lesions are well controlled with an only gluten-free diet (Nardecchia et al., 2019). In children, the long-term prognosis of patients with DH in a gluten-free diet is excellent, where the mortality rate is lower than in the general population (Reunala et al., 2018).

2.2.9 Diagnosis of Celiac Disease

Despite increased awareness and the introduction of serological tests, these tests have improved the discovery of the disease. However, the diagnosis of CD is a major challenge and the disease remains largely undiagnosed in all parts of the world and the diagnosis is often delayed for several years. Reasons hindering an accurate and timely diagnosis include atypical presentation, lack of physician awareness of current diagnostic criteria, misdiagnosis, and limited access to specialists. The average delay in diagnosis after the onset of symptoms is highly variable and can last up to 12 years (Cichewicz et al., 2019 & Pudasaini, 2017).

The criterion for the diagnosis of CD is based on a set of typical signs and symptoms, positive serological tests (anti-tissue transglutaminase antibodies (tTGA), antiendomysium antibodies (EMA), and deamidated gliadin peptide antibodies (DGPA)), intestinal biopsy indicating characteristic changes of mucosal inflammation, crypt hyperplasia, and villous atrophy and clinical response to a GFD (Caio et al., 2019, Gallegos & Merkel, 2019 & Hockenberry & Wilson, 2015).

35

2.2.9.1 Serologic blood test

The first step in diagnosing CD is a serology test. Serological tests for CD are useful in identifying patients who require a bowel biopsy to diagnose the condition. furthermore, serological testing supports the diagnosis in individuals with the characteristic histopathological features of CD in small bowel biopsy screening and also has an important role in monitoring response to treatment (Hill, 2020 & Nadhem et al., 2015). Currently, the serological tests used to diagnose the CD are very accurate compared to other antibody-based tests that are used to identify other autoimmune disorders (Castillo, Theethira, & Leffler, 2014).

Prior to the initial serological test for CD, patients should follow a diet containing gluten for at least a month to prevent false-negative results and because antibodies in the blood have a half-life of 30-60 days (Durham & Temples, 2018 & Nadhem et al., 2015 & Castillo, Theethira, & Leffler, 2014). The most common serological tests for diagnosing CD are (IgA-endomysial antibody (EMA), IgA-tissue transglutaminase antibody (tTG), and IgA or IgG de-amidated gliadin peptide antibody (DGP)), some details of the tests are listed below (Hill, 2020 & Castillo, Theethira, & Leffler, 2014).

2.2.9.1.1 Tissue transglutaminase antibodies

The examination of immunoglobulin A (IgA) anti-tissue transglutaminase (TTG) antibody is one of the most common screening tests that are performed for the diagnosis of CD and is the preferred test for screening for CD in individuals over the age of two years. (Saeed, Assiri, & Cheema, 2019 & Al-Bawardy et al., 2017). According to the ESPGHAN, they recommend comprehensive testing for IgA and TGA-IgA as primary screening in children with suspected CD (Husby et al., 2020).

The most clinically useful test is for IgA antibodies against tissue transglutaminase (tTG-IgA), which is highly sensitive, specific, and more cost-effective than other antibody tests (Hill, 2020). The sensitivity of TTG-IgA is higher than that of EMA IgA (97% versus 94%), whilst the specificity of TTG-IgA is lower than that of EMA (91% versus 99%) (Caio et al., 2019).

2.2.9.1.2 Anti-endomysial antibodies

Before the development of IgA-tTG, the IgA-EMA antibody was the preferred diagnostic tool for diagnosing CD (Castillo, Theethira, & Leffler, 2014). The sensitivity of immunoglobulin A (IgA) EMA is lower than that of TTG-IgA, whereas the specificity is higher than that of TTG-IgA which approaches 100% (Caio et al., 2019). IgA EMA is used as a confirmatory test, especially when results are borderline positive or possibly false positive for tTGA antagonist tests, as occurs in other autoimmune diseases, including type 1 diabetes (Nadhem et al., 2015). In spite of the high specificity of the anti- endomysial IgA test, there are several issues with the test that may limit its use in clinical practice, and it is expensive and time-consuming. However, the IgA EMA test can be clinically useful if the IgA TTG test result is ambiguous (Al-Bawardy et al., 2017 & Lebwohl et al., 2012).

2.2.9.1.3 Deamidated gliadin peptide antibodies

Deamidated gliadin peptide (DGP) antibodies also have a good diagnostic accuracy (Hill, 2020). According to ESPGHAN, they recommend that in patients with low total IgA concentration, an IgG-based test (DGP, EMA, or TGA) should be performed as a second step. Additionally, DGP may be more sensitive than tTG in children younger than 2 years old (Husby et al., 2020 & Caio et al., 2019 & Saeed, Assiri, & Cheema, 2019). IgA and IgG anti-DGP had a sensitivity of almost 100 % in pediatric patients less than 3 years old (Rampertab & Mullin, 2014).

2.2.9.2 Intestinal biopsy

Despite serological tests have a high sensitivity and specificity for diagnosing CD and are also available routinely and non-invasively with minimal risks. However, a small bowel biopsy is still considered the gold standard for the definitive diagnosis of CD. A duodenal biopsy is most commonly performed and recommended to patients after a serological test result is positive for celiac disease (Al-Toma et al., 2019, Caio et al., 2019 & Rampertab & Mullin, 2014). Besides, patients who have normal serological markers but have highly suspicious signs and symptoms of CD should undergo an endoscopic evaluation as about 10% of celiac patients may be seronegative (Rampertab & Mullin, 2014).

Although bowel biopsy is useful for all patients to achieve maximum diagnostic certainty and exclude other gastrointestinal diseases (eg eosinophilic esophagitis). However, the biopsy is optional for some patients who have very high tTG test results, positive results for anti-endomysial antibodies (EMA), and typical symptoms of celiac disease (Hill, 2020). The location and number of biopsies taken play an important role in the accurate diagnosis of CD. This is due to the patchy nature of the villi atrophy and the tendency to affect the duodenal areas with varying degrees of severity (Rampertab & Mullin, 2014). In light of the patchy nature of the celiac disease, the ESPGHAN recommends that at least 4 biopsies of the distal duodenum and at least one biopsy of the duodenal bulb should be performed for histology assessment while following a gluten-containing diet (Husby et al., 2020).

Positive serological results, along with typical CD biopsy findings (intraepithelial lymphocytosis, crypt hyperplasia, and villous atrophy) indicate celiac disease (Castillo, Theethira & Leffler, 2014). In most patients with CD, the serological markers return to normal after six to twelve months of adherence to the gluten-free diet, but the histological

changes can persist for a longer period. A recent study in celiac patients who underwent a biopsy found that the average time to heal the mucosa was 3.8 years (Rampertab & Mullin, 2014 &Tavakkoli & Lebwohl, 2013). It must be emphasized to families that the child should be kept on a diet containing gluten until the final diagnosis of celiac disease is made. Initiation of a gluten-free diet prior to completion of all examinations, including duodenal biopsies may allow mucosal healing and thus give a false negative histological result on biopsy (Fok et al., 2016).

2.2.10 Complication of Celiac Disease

Patients with a late diagnosis of CD or who have not been treated or partially treated for CD in the long term have a greater risk of developing non-malignant and malignant complications compared to the general population and have a 1.4 times greater risk of death (Caio et al., 2019 & Bascuñán, Vespa & Araya, 2016). Non-malignant complications such as unexplained infertility, poor bone health, and growth (osteoporosis), bone fractures, ulcerative colitis, neurologic impairment (e.g., cerebellar ataxia, peripheral neuropathy), and repeated pregnancy loss. Malignant complications such as malignant lymphomas, small-bowel adenocarcinoma, oropharyngeal tumors (Durham & Temples, 2018 & Alexander & Abdullah, 2017). It is estimated that 42,000 children die annually globally from complications from CD, and approximately 4% of all diarrhea deaths may be due to undiagnosed CD. (Durham & Temples, 2018).

2.2.10.1 Non-Responsive Celiac Disease

Non-Responsive celiac disease (NRCD) is defined as persistent symptoms, signs, laboratory abnormalities, or histological changes typical of CD, despite at least 6 to 12 months of presumed adherence to a gluten-free diet and can affect approximately 10 -30% of patients (Penny et al., 2020 & Al-Bawardy et al., 2017). The most common cause of

NRCD is poor compliance with a gluten-free diet or unintended contamination with gluten, found in up to 50% of these patients (Elli et al., 2019 & Al-Bawardy et al., 2017). Other causes of NRCD are Whipple's disease, collagenous sprue, eosinophilic enteritis, small intestine bacterial overgrowth, pancreatic exocrine insufficiency, microscopic colitis, inflammatory bowel disease, lactose intolerance, enteropathy-associated T-cell lymphoma, and refractory celiac disease (Nadhem et al., 2015).

2.2.10.2 Refractory Celiac Disease

Refractory celiac disease (RCD) is defined as persistent or recurrent symptoms and signs of malabsorption with villous atrophy despite strict adherence to a GFD for at least 12 months (Penny et al., 2020 & Nadhem et al., 2015). Its prevalence is estimated to be about 0.3-4% among patients with CD, and about 8-23% in cases of unresponsive CD, and it has been reported to be two or three times higher in women than in men (Penny et al., 2020 & Elli et al., 2019). RCD is classified into two groups. RCD type I (RCDI) has an increased number of intraepithelial lymphocytes (IEL) with a normal phenotype. In contrast, RCD type II (RCDII) is a severe enteropathy with ulcerative duodenojejunitis, protein deficiency and a clonal expansion of abnormal IEL (Rowinski & Christensen, 2016).

RCD2 is most often diagnosed in adults aged 50 years or over. Patients with RCD2 are more likely to have constitutional symptoms, such as weight loss and nutrient deficiencies than those with RCD1, reflecting prolonged acute mucositis in these patients (Penny et al., 2020). The general prognosis for RCD is poor with a better prognosis for RCDI compared to RCDII although complications and mortality rates are higher in RCDI than in CD. The five-year survival rate for RCDI is 90-93%. Unlike RCDI, the prognosis for RCDII is very poor with five-year survival rates ranging from 44-58% (Rowinski & Christensen, 2016).

2.2.10.3 Malignancy

Malignancy is one of the most serious complications of CD and the main cause of death in patients with celiac disease. Patients with CD have a higher risk of developing malignancies, especially Enteropathy-associated T-cell lymphoma (EATL) and small intestinal adenocarcinoma and they also have a lower risk of developing colon, oropharyngeal, esophageal, pancreatic, and hepatobiliary cancer. (Kochhar et al., 2016 & Al-Raee, El-Sakka & Al-Wahaidi, 2012).

According to various studies, it confirms that the risk of developing lymphoma increases 5 years after the diagnosis of CD, the risk of developing T-cell lymphoma increases by two to three times, and the risk of developing small intestinal adenocarcinoma increases more than 30 times compared to the general population. (Bascuñán, Vespa & Araya, 2016 & Ilus et al., 2014 & Ludvigssonet al., 2014). T-cell lymphoma is more common in patients with RCD type 2 with a rate of 33-52% (Caio et al., 2019). However, strict adherence to a gluten-free diet remains the only effective way to prevent the onset of Enteropathy-associated T-cell lymphoma (Kochhar et al., 2016).

2.2.10.4 Celiac crisis

Celiac crisis (CC) is a potentially life-threatening complication of CD that occurs most often in children and rarely appears in adults (Forrest et al., 2018). Clinically, CC is a serious medical emergency caused by a brutal onset with profuse diarrhea, severe dehydration, hemodynamic instability, as well as profound electrolytic and metabolic disturbances like hypokalemia, hypomagnesemia, hypocalcemia, hypophosphatemia, and metabolic acidosis which is considered an acute, fulminant manifestation of CD. Acute onset and the rapidly progressing gastrointestinal symptoms of CC, accompanied by compromised metabolic, electrolytic, and hemodynamic processes, usually requires hospitalization and intensive care support (Balaban et al., 2019 & Waheed et al., 2016).

2.2.11 Management of Celiac Disease

The management of CD is unique and different from the treatment of other medical or surgical diseases. Nowadays, the most effective treatment for CD patients to alleviate gastrointestinal and extra-intestinal symptoms, normalize serological markers, and heal the intestinal mucosa is a lifelong GFD (Isaac et al., 2016 & Rajpoot & Makharia, 2013). In practice, this means the complete elimination of wheat, barley, and rye from the diet, and the complete elimination of all foodstuffs and medicines containing gluten and its derivatives. In theory, a strict diet in early childhood could prevent all or nearly all permanent complications of CD (Kivelä & Kurppa, 2018 & Mehtab et al., 2018).

Complete elimination of gluten in patients diagnosed with classic symptoms leads to reduced mortality rate, as well as improvement in the majority of related problems including osteoporosis and osteopenia, anemia, risk of malignancy, and in several studies, psychological well-being and quality of life. Eliminating gluten usually results in clinical improvement within days or weeks, however, histologic recovery takes months or even years. Although a completely GFD is the primary and only treatment for celiac disease, it is difficult to avoid the minimal amount of contaminated gluten. The smallest daily amount of gluten damages the intestinal mucosa over time (Nadhem et al., 2015).

At the present time, there are no medical treatments available or approved for CD. Glucocorticoids can stimulate symptom improvement but are not recommended for use in uncomplicated celiac disease due to long term side effects and symptom relapse upon discontinuation. Glucocorticoids may be used temporarily in severe or RCD. Several therapeutic agents for CD are currently being investigated, such as inhibition of tissue transglutaminase and HLA particles, as well as immunosuppressants and immune modulators (Al-Bawardy et al., 2017). According to the National Institutes of Health (NIH), there are six main components to managing the CD: Consultation with a skilled dietitian, Education about the disease, Lifelong adherence to a GFD, Identification and treatment of nutritional deficiencies, Access to an advocacy group, and Continuous long-term follow-up by a multidisciplinary team (James, 2005).

Successful management of the CD requires a team approach, including the patient, family, doctors, nurses, and dietitians. After a diagnosis is made, all patients should be referred to a dietitian for nutrition evaluation, nutritional education, meal planning, and assistance with social and emotional adjustment to the gluten-free lifestyle. A late referral, or no referral at all, increases the likelihood that the patient will obtain inaccurate information from the Internet, alternative health practitioners, family, friends, and other sources, which may be out of date, inaccurate, and/or inconsistent. This leads to confusion, frustration, and insufficient knowledge of CD and the gluten-free diet. Uninformed patients may unnecessarily restrict certain foods, limiting the variety and nutritional quality of their diet (Rajpoot & Makharia, 2013).

2.2.11.1 Gluten-Free Diet

The gluten-free diet is the only effective treatment for celiac patients, as not only do you avoid foods containing gluten but also contaminants. Although many patients follow a GFD, cross-contamination can occur either in production lines or while preparing gluten-free foods at home or when eating out. Gluten is a protein with low nutritional value. However, it imparts important qualities to foods, improves taste, and makes them indispensable for the food industry (Elli et al., 2019). As an ingredient for some grains, gluten is not listed separately on the product label, thus it may be difficult to identify which foods contain gluten. furthermore, it may be present as a hidden food ingredient. Due to its technological properties, it is used as a flavor enhancer, thickener, emulsifier, filler and fortifier, and might be hidden under the term's "flavorings", or "hydrolyzed vegetable proteins" (Melini & Melini, 2019).

Therefore, managing a restrictive diet such as the GFD poses many challenges as it eliminates foods commonly used in a variety of cuisines and cultures. Once diagnosed, individuals should know which foods to eat, foods to avoid, and hidden sources of gluten as shown in table (2.1). Family participation is inevitable, particularly if the individual diagnosed is a child. Family support is essential not only to ensure strict adherence to a GFD but also to support the social and emotional health of a patient with CD (Russo et al., 2020 & Mehtab et al., 2018).

Food group	Foods allowed	Foods to be restricted	Questionable food items (must be verified from food labels/manufacturers/kitchen staff)
Cereals and grains	Rice, rice flakes, pure puffed rice, maize, buckwheat, quinoa, amaranth, ragi, millets like bajra, pure corn starch, arrowroot, sago, labeled gluten-free bread	Wheat, rye, barley, wheat germ, bran, and all types of wheat products like wheat flakes, muesli, semolina, vermicelli, dalia, maida, noodles, pasta, biscuits, bread, rusk, pizza base, mathri, rusk, puffs, etc.	Oats, rice-crisps, corn-flakes, rice papad, rice chips
Milk and milk products	All plain and unflavored milk, curd, yogurt, buttermilk, khoa, cream,	Malted milk/milk shakes, curd/yogurt/ice-creams with added crunchies	Chocolate ice creams, nuts ice cream, cheese spreads, frozen yogurts
Meat, fish, and poultry	All types of raw and unprocessed meat, eggs, chicken, fish, seafood, etc. raw frozen meat/ chicken/fish, etc	Processed meat, breaded and battered meat, commercially treated meats, malt flavored meats, etc	Sausages, brine or canned fish/chicken/meat
Vegetables	All types of fresh, canned and frozen vegetables	Vegetables in sauces and gravies and preserved vegetables, canned soups, etc	French fries, powdered soups, packaged soups
Fruits	All types of fresh, frozen and canned fruits, plain dried fruits, fruit juices, etc.	Preserved fruits, dried fruit dusted with flour, etc.	Squashes, fruit marmalades, jams
Nuts and oilseeds	Any plain (salted and unsalted) nuts, seeds, fresh and dry coconut, plain nut butter like peanut butter, almond butter, etc.	Nut butter with gluten-containing ingredients, roasted nuts etc.	Nuts dusted with white flour, nuts coated with seasonings, etc.

Table 2.1: Food items, which are permissible, restricted, and of questionable value for patients with celiac disease

Beverages	Coffee, tea, pure cocoa powder, sodas, soft drinks, etc.	Hot chocolate drink, chocolate shakes, coffee-chocolate shakes, malted beverages/powders, nutritional drinksa (Bournvita, Complan, Horlicks, Boost), Canned soups, etc.	Beer, vodka, cocktails, coffee drinks, fruit shakes mocktails
Spices	All spices (either home grinded or bought from trusted spice-mill)	Asafoetida/Heeng (if bought open)	Mustard powder, spice-mix powder (check for asafetida and source of grinding spices), peri-peri mix spice, etc.
Miscellaneous food items	Potato chips (plain), plain popcorn, plain makhana, gluten-free biscuits, gluten-free cakes, home- made pickles, etc	Patties, samosa, mathri, cutlets, Gol-gappe, burgers, doughnuts, pizza, sandwiches, cakes, pastries, muffins, tortillas, white vinegar,	Energy bars, granola bars, French fries, corn-tortillas, corn puffs, rice puffs, soy- sauce, tomato sauce, chocolates, chocolate spreads/syrups, custard powder, etc.

2.2.11.2 Adherence to Gluten-Free Diet

Strict adherence to a GFD and a lifelong exclusion of gluten from the diet is the first-line treatment and is currently the only effective treatment for CD (Melini & Melini, 2019). However, dietary adherence is variable as several recent systematic reviews of studies of dietary adherence in children revealed that adherence rates to a GFD are between 23% to 98%, regardless of how adherence is determined (Russo et al., 2020). Adherence to a GFD results in regeneration of the intestinal villi after a period of 6 to 24 months. A lifelong GFD ensures the healthy development of the child and protects him from ailments such as abdominal pain, flatulence, loose stools, constipation, iron deficiency anemia, low stature, and osteoporosis (Czaja-Bulsa & Bulsa, 2018).

Strict lifelong adherence to a GFD is the key to success in managing a CD (Rajpoot et al., 2015). The most reliable way to control adherence to the GFD is serological tests and a small intestine biopsy (Czaja-Bulsa & Bulsa, 2018). Maintaining an adherence to a GFD is best when staying at home. While eating with friends or at school are the hardest places to stick to a GFD (Rajpoot & Makharia, 2013). Adherence to a GFD is complicated. Patients or their parents should have extensive knowledge of CD and the requirements of a GFD. Changes in eating habits not only affect the patient, but also their entire family (Czaja-Bulsa & Bulsa, 2018). Factors that contribute to a better adherence to a GFD: good knowledge of disease and its treatment, higher education level, better family social status, female gender, younger age, higher self-esteem, good grades in school, good availability and labelling of products, and good communication with the doctor and dietitian (Czaja-Bulsa & Bulsa, 2018).

There are many barriers to maintaining a GFD; Some are international, and some are for Palestinian patients with CD. Common barriers to adhering to a gluten-free diet include Cost concerns (especially of prepackaged gluten-free food), Poor availability of gluten-free products (in developing countries), hidden gluten in gluten-free (gluten-free) foods, food contamination, poor taste of gluten-free products, Incompatibility with usual lifestyle, Presence of other food intolerances, Absence of symptoms when dietary restrictions not observed, Incomplete or confusing food and drugs labeling, Inadequate dietary counseling, Inadequately counseled by physician, Inadequate medical or nutritional follow-up, Lack of participation in support group, Inaccurate information from physicians, dietitians, support groups, or the Internet, Inability to follow gluten-free diet outside the home (when traveling, dining, and at work), Social, cultural, or peer pressures and Adolescents are less likely to adhere strictly to GFD compared to young children and adults (Czaja-Bulsa & Bulsa, 2018 & Rajpoot et al., 2015 & Nadhem et al., 2015).

Gluten-free products have been reported to be more expensive and less available than their gluten-containing counterparts and have a negative impact on dietary adherence (Lee et al., 2019). A study by Lee and colleagues in 2012 showed that the restrictive nature of the diet was the main reason for non-compliance with the gluten-free diet in 73% of participants. Additionally, other reported causes of non-compliance included finding the diet uncomfortable in social settings (69%), difficulty following (68%), tasteless (45%), and too expensive (33%).

2.2.11.3 Follow up

Celiac disease is a lifelong inflammatory condition affecting multiple organ systems, so patients must be follow-up routinely (Alexander & Abdullah, 2017). Patients should have a regular follow-up at least twice in the first year after diagnosis to assess persistent or new symptoms, diet adherence, nutritional status, body mass index, and serologic features. After that, routine follow-up is needed to monitor adherence and detect complications arising from the condition (Elli et al., 2019 & Alexander & Abdullah, 2017). Children need special attention with regular monitoring of height and weight to ensure normal growth and development at each follow-up visit (Mehtab et al., 2018).

While prescribing a GFD is easy; The key to success for the treatment of patients with CD is the dietary counseling by a dietitian and maintain the patient's adherence to treatment. Like any other treatment for chronic diseases, educating the patients and their families about the disease and dietary restrictions is of great importance. In general, it is not possible to explain everything about dietary restrictions on one visit from a dietician. Understanding and maintaining a GFD requires consistent supervision and direction, which is best served to patients and families on multiple visits. On every visit to the hospital/clinic, the level of compliance must be checked to avoid gluten and appropriate guidance should be provided (Rajpoot & Makharia, 2013).

During the follow-up patients with CD, physicians should pay attention to early identification of complex CD in the emergence of new symptoms or persistent warning signs despite following a gluten-free diet. In these patients, appropriate evaluation of the small intestine should be performed for early identification of an RCD or malignancy (Elli et al., 2019). More frequent visits, especially by newly diagnosed celiac patients, to both physicians and dieticians, allowing them to have more frequent consultations, assess the level of adherence to a GFD, identify barriers, and devise solutions to barriers. Important

points to consider during follow-up visits are correcting nutritional deficiencies, healing mucosa, improving reducing bone mineral density, monitoring growth, and supporting weight gain in underweight patients (Mehtab et al., 2018).

2.2.12 Mother's Knowledge, Attitude, and Practice

A precise understanding of CD in patients of any age is associated with less distress, less confusion, improved satisfaction with medical care, better adherence to treatment and improved emotional state, all of which are key factors for the good quality of life-related to health. Knowledge of the patients of disease is one of the important determinants of health-related behavior. For children who suffer from CD, the knowledge of parents, especially mothers about CD in children, treatment and prevention of complications, this also promotes better health-related to their children's behavior through increased understanding of CD and increased adherence to treatment (El Mahdi, 2005).

The successful implementation of a GFD is an ongoing collaboration between the child, their parents, and the health care team. Parents are not only required to provide their children with special foods, but they are also encouraged to adhere to a strict diet. Parental knowledge plays an important role in their ability to manage a GFD. Certainly, studies show that parents of patients presenting with the disease considered themselves sufficiently informed about the disease and were better able to choose gluten-free items from the list. Likewise, in another study, lack of parental knowledge about disease and diet was considered a significant factor for poor compliance (Tomlin et al., 2014).

Education is a very important part of any dietary change, not only for health care providers but also for the environment around patients with celiac disease (including nannies, school staff, and family). To the greatest extent possible, the patient and his/her family should be allowed to actively participate in decisions regarding the care of celiac disease. This awareness helps the patients to adapt to the new lifestyle better and faster, and it may improve symptoms in patients with celiac disease (Elsahoryi et al., 2020 & Ludvigsson et al., 2014). Elsahoryi and colleagues also reported that increasing the level of knowledge of parents of celiac disease patients regarding all clinical and dietary aspects of celiac disease could improve parents' attitudes and practices and thus improve the patient's adherence to a gluten-free diet. In contrast, poor compliance with a gluten-free diet can have adverse health outcomes including persistent symptoms and the development of complications (Elsahoryi et al., 2020).

A study conducted by Al-raee, El-sakka, & Al-wahaidi in 2012 showed that the more knowledge of the disease among patients and mothers, the better adherence to treatment. The results also showed that most patients lack knowledge of the gluten-free diet logo. In contrast, another study by Tomlin et al in 2014 showed that 98% of parents recognized that following a gluten-free diet was a cure for celiac disease. 95% know this treatment is for life.

A study conducted by Isaac et al. in 2016 showed that mothers knowledge was significantly improved when they received counseling from health care providers, particularly dietitians and nurses. Before counseling, about 71.7% were able to identify gluten-free or gluten-containing food, after counseling, about 88.2% were able to identify gluten-free or gluten-containing food. 80% of the mothers were aware that a gluten-free diet was the treatment for CD Before counseling while rising to 100% after counseling. Before counseling, only 57% of mothers realized that treatment requirement was an absolute GFD, and 37% were unaware whether gluten intake was acceptable. After counseling, 92% correctly identified that the requirement was for an absolute GFD.

A study by Bagri, Gupta, and Mathur in 2016 showed that a mother's education and knowledge is an important factor in compliance. This may be because the mother is only responsible for preparing the child food and is able to identify foods that are gluten-free.

The results also showed that 24.62% of parents of children in the compliant group hardly felt a burden on their budget. 94.28% and 75.38% of parents with children in non-compliant and complaint groups respectively felt a heavy burden on their budget.

In compliant group, 72.31% of parents believed that special diet was hardly a burden to the family, whereas in non-compliant group 57.14% parents felt it as a burden. 64.62% of parents of compliant children and 71.73% parents of non-compliant children believed that the disease will interfere with their child's marriage. 93.28% and 71.43% of parents of children in the non-compliant and compliant group respectively felt a financial burden by a gluten-free diet. 71.43% of parents with children in the non-compliant group cooked more than once for their children as compared to 87.69% of parents with children in the compliant group.

A study by Chishty, Bissu, and Singh in 2016 showed that strict lifelong adherence to a gluten-free diet is essential for celiac disease. The knowledge and practices of parents of children with celiac disease play a very important role. Education about the disease for both parents and children may lead to increased adherence to a gluten-free diet, especially in low socioeconomic families. It was also reported in previous studies that parental knowledge was a major factor affecting compliance and treatment of celiac disease. The results also showed that the mean knowledge scores among the parents of patients aged 7-9 years were 9.57 ± 3.04 (out of score 20). Knowledge among parents of patients aged 10-12 years was roughly the same as that of the parents of the younger group (9.58 ± 2.88). Eight percent of parents were categorized under the poor category, average scores were found in 86% of parents whereas only 6% of parents attained good knowledge scores.

A study by Garg and Gupta in 2014 showed that parents' knowledge and awareness of the disease is closely related to compliance because they are responsible for feeding the child. Maternal education was also found as an important factor associated with compliance. This may be because the mother is responsible for purchasing and preparing food. With her knowledge, she was able to better identify gluten-free foods. The study also showed statistically significant differences between the parents of compliant and noncompliant children regarding their knowledge of the celiac disease. Parents of the children in the compliance group had a better understanding of the nature of the disease and were also more aware of the treatment and the gluten-free food items were recognized better.

This study also showed that by comparing parents' attitudes toward their child's disease, there was a significant difference between compliant and non-compliant groups. About 47.83% of the parents of the non-compliant children found that a gluten-free diet was a burden on their budget while 19.32% was in the compliant group. Dietary noncompliance was significantly more in children whose parents felt that preparing a special diet every day was a (psychological) burden on them (54.35% in the non-compliant group).

A study by Charalampopoulos et al in 2013 showed that parental knowledge independently and significantly correlates with dietary compliance. Also, no statistically significant relationship was demonstrated between dietary compliance and other clinical or demographic variables. Most parents think they know enough about their children's disease. Regarding their ability to handle a gluten-free list, 87.8% of parents were able to correctly select all six of the gluten-free products from a list of 12 products; However, about a third of parents (32.2%) made at least one mistake either by not choosing a gluten-free ingredient or by accidentally choosing a gluten-containing ingredient to suit their children. With regard to parents' knowledge of the celiac disease, most parents (48.9%) made at least one mistake, while 43.4% answered all questions correctly.

2.2.13 Role of Nursing

In poor communities, nurses who are involved in primary patient care are usually the first health-care professionals to come into contact with the general public. They are employed in a variety of health settings and thus are uniquely positioned to play an important role in promoting health. When access to healthcare is limited, these nurses are often the first to connect poor communities with the medical care of some kind. This is often also the only source of information parents have about health matters. Nurses are expected to have knowledge of a wide range of issues and should be at the forefront of prevention overall (Mohamed, 2015).

Nurses play an important role in the early identification and diagnosis of CD, and nurses should pay attention to the varied and nonspecific features of CD in children. Symptoms like these can be recognized when children go to the hospital or clinics for unrelated reasons or when the nurse performs routine checkups (Fok et al., 2016 & Paul et al., 2016). Besides, the main consideration for nursing is to help the child to adhere to the diet. Explaining the disease process to the child and parents takes a long time, the specific role of gluten in exacerbating the disorder, and which foods should be restricted. It is difficult to keep a diet indefinitely when a child has no symptoms and temporary excesses lead to no difficulties (Hockenberry & Wilson, 2015).

Regardless of the practice setting, the nurse may be the first healthcare provider to identify children at risk of developing CD. Nurses can educate parents regarding both gastrointestinal and non-gastrointestinal symptoms and appropriate tests that lead to early diagnosis and treatment. As an advocate for the child and the family, nurses can encourage testing while the child is still on a diet containing gluten, thus reducing false negatives. Nurses should have basic knowledge about the gluten-free diet to help provide education for parents and children regarding diet adherence along with referrals to a registered dietitian and social worker (Gallegos and Merkel, 2019).

Nursing and other medical staff play an important role in supporting the dietary management of children with CD by monitoring dietary intake and highlighting any concerns about not adhering to a GFD. A completed nutritional examination upon admission can help identify any signs of malnutrition that may be indicative of persistent mucosal damage due to non-adherence to a GFD. Palatability issues of gluten-free foods or parents who are unable to prepare culturally appropriate foodstuffs with gluten-free flour can lead to non-adherence to a GFD and consequently the development of malnutrition and/or nutritional deficiencies in children. Nurses should highlight these or similar issues to the pediatric dietitian so that all family members can receive more education and support (Paul et al., 2016).

However, the majority of individuals who slack in their diet will experience a relapse of their disease. Although the main source of gluten is grains and baked goods, grains are often added to processed foods as thickeners or fillers. To compound the difficulty, gluten is added to many foods as hydrolyzed vegetable protein, which is derived from cereal grains. Many of the children's favorite foods contain gluten, including bread, cake, cookies, crackers, donuts, pies, spaghetti, pizza, prepared soups, hot dogs, luncheon meats, and some prepared hamburgers. the nurse should advise parents of the necessity of reading all label ingredients carefully to avoid hidden sources of gluten (Hockenberry & Wilson, 2015).

2.2.14 Summary

Celiac disease is an immune-mediated disorder triggered by the ingestion of gluten (Gluten proteins and related prolamins found in wheat, barley, and rye) that occurs in genetically susceptible individuals, which leads to intestinal inflammation, villous atrophy, and malabsorption. At present, the prevalence of CD remains unknown in most countries. In addition, about 90% of CD cases remain undiagnosed due to a lack of awareness among the population and health professionals. However, the global prevalence of the CD is estimated to be between 1% and 3% of the general population worldwide. CD is a multisystem disorder that affects different age groups, where the patient may develop gastrointestinal and extraintestinal manifestations. Symptoms vary from mild to severe among patients, but the most common symptoms include diarrhea, poor appetite, bloated or painful belly, and weight loss, or difficulty gaining weight. These symptoms appear between 6 and 24 months of age after adding gluten-containing content to the diet. Diagnostic criteria for CD are based on a combination of typical signs and symptoms, positive serological tests, bowel biopsy to detect (mucosal inflammation, crypt hyperplasia, and villous atrophy), and clinical response to a gluten-free diet. The cornerstone of CD management is lifelong adherence to a GFD, which has been shown to alleviate symptoms, normalize serological markers, and heal the intestinal mucosa. Education is a very important part of any dietary change, not only for health care providers but also for the environment around patients with CD (including nannies, school staff, and family). To the greatest extent possible, the patient and his/her family should be allowed to actively participate in decisions regarding the care of CD. This awareness helps the patients to adapt to the new lifestyle better and faster, and it may improve symptoms in patients with celiac disease. Mothers of children with CD play an important role in providing a GFD and encouraging adherence to treatment. Lack of knowledge among mothers about the disease and GFD for children who suffer from CD is an important cause of poor adherence to a GFD.

Chapter Three

Methodology

This chapter presents the methods used in this study. It describes the study design, sample selection, and sampling methods and process, and how the data was collected and analyzed. Moreover, the description was provided to the pilot process, in addition to the study period and the response rate. Disclosure of information about study instruments, their reliability, and validity, as well as ethical and administrative considerations of the study.

3.1 Study Design

This design was implemented through a quantitative descriptive cross-sectional study. This design was appropriate to the nature of the variables included in the study. On the other hand, this design was time-saving, inexpensive in terms of money, and was relatively functional and manageable. It was chosen because the researcher was able to achieve the goal of the study in a short time.

3.2 Study Population

The target group of this study was mothers of children with celiac disease in the GS who are attending and registering at Ard El Insan Palestinian Benevolent Association in Gaza and Khan Younis. the total number of mothers of children with celiac disease under the age of 18 who are attending and registering at Ard El Insan Palestinian Benevolent Association is approximately 350 in the Gaza Strip.

3.3 Study Setting

This study was carried out in the governorates of Gaza, especially in the centers of Ard El Insan Palestinian Benevolent Association in Gaza and Khan Younis.
3.4 Study Period

The study was conducted during the period from June, 2019 until the end of October, 2020.

3.5 Sample and Sampling

A convenient sample of 174 mothers of children with celiac disease was selected to participate in the study. The sample consisted of 120 mothers of children with CD who attended the Ard El Insan Association in Gaza and 54 mothers of children with CD who attended the Ard El Insan Association in Khan Yunis.

3.6 Eligibility Criteria

3.6.1 Inclusion criteria

- Mothers of children with CD and registered at Ard El Insan Palestinian Benevolent Association.
- Mothers of children under 18 years of age.

3.6.2 Exclusion criteria

- Mothers with mental or psychological problems.
- Mothers who are not interested to participate in the study.

3.7 Study instruments

A structured interviewer questionnaire (Annex 1 & 2 shows the English and Arabic versions) was developed by the researcher himself after reviewing relevant previous studies. The questionnaire was also approved by distributing this questionnaire to a panel of experts. The questionnaire consists of four parts. The first part included socio-demographic data; which included mother's age, child's age, child's gender, occupation, level of education, number of children, family income, and place of residence. The second part included a scale to assess the mother's level of knowledge regarding celiac disease and

the gluten-free diet. The third part included a scale to assess the level of the mother's attitude toward the celiac disease. The fourth part included a scale to assess the level of a mother's practice towards a child with celiac disease.

3.8 Validity and Reliability of the instrument

3.8.1 Validity

The questionnaire was evaluated by experts to validate the questions and their relation to the domains that reflect the study and their comments were taken into consideration and modification was performed accordingly annex (3) shows the list of arbitrators. A pilot study was also conducted before collecting actual data to examine mothers' responses to the questionnaire and how they understood it. This improved the validity of the questionnaire after it was modified to better understand it.

3.8.2 Reliability

Reliability refers to the consistency of the scale. A test is reliable if we get the same result repeatedly. To measure the internal consistency of the instruments, the researcher conducted the "Cronbach Alpha coefficient". The Cronbach alpha reliability coefficient usually ranges from 0 to 1. However, there is actually no minimum parameter. The closer the Cronbach's alpha the coefficient is 1.0, the greater the internal consistency of the elements on the scale. This study instrument was revised accordingly and internal consistency reliability was calculated statistically and Cronbach alpha above 0.7 obtained from which 15 as a pilot study considered an acceptable value for instrument reliability. Table (3.1) shows the reliability estimated of the derived factors for the questionnaire.

 Table 3.1: Reliability Statistics (Cronbach alpha test)

	Percentage Coefficient	No. of items
Cronbach Alpha	0.827	48

3.9 Pilot Study

A pilot study was conducted on 15 participants from the study sample before starting data collection. This was done to test clarity, indicate weaknesses in wording, predict response rate, determine the actual time required to fill out questionnaires and identify areas of ambiguity, and test questionnaire reliability, validity, and appropriateness. All participants assigned to the pilot study fulfilled the sample selection criteria. The pilot study lasted for two weeks and revealed that the time required to complete the questionnaire was 20-30 minutes. The 15 participants were selected from among the first 10 mothers of children with CD who attended the Ard El Insan Association in Gaza, and the remaining five mothers were selected from the Ard El Insan Association in Khan Yunis. Since no modifications were required for the data collection questionnaire, the 15 pilot study participants were included within the study sample.

3.10 Data Collection

Data were collected by the researcher himself through a face-to-face interview questionnaire with mothers of children with celiac disease. The researcher collected questionnaires from the mothers of children with celiac disease who attended the Ard El Insan Association in Gaza and Khan Yunis. A consent form was added to each questionnaire and the participating mothers were asked to freely participate in the study and fill out the questionnaire form distributed. The average time to complete the questionnaire was 20-30 minutes.

3.11 Data Management and Analysis

The collected data were entered into the computer software "Statistical Package for Social Sciences" SPSS program by the researcher after coding of the questions and then cleaning of the entered data. Data were analyzed using the SPSS program version (20). The research examined all data to avoid any inconsistencies, and the data were checked for coding and input errors. Numerical data were expressed as mean, medians, and standard deviations. Quantitative data were expressed as frequency and percentage. The stages of data analysis were included: coding the questionnaire, entering data, cleaning the data, creating iterative tables for all study variables, testing the reliability of each classified question, and forming a cross-tabulation. The researcher used standard methods for statistical analysis of the questionnaire data, including frequencies and descriptive summaries of categorical data, means, ranges, and standard deviations. Data cleaning was done by reviewing the frequency tables and choose questionnaires randomly to ensure that data is entered accurately.

3.12 Response Value

The researchers have used a questionnaire to measure the responses of questionnaire's items as in the following, where 5 represented "the lowest scale" and 1 represented "the highest scale", as the case might be. Table (3.2) shows the response value.

Ta	ble	3.2:	Response	Valu	ue
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Response	Very low	Low	Moderate	High	Very high
Degree	5	4	3	2	1
Mean	1<1.80	1.81<2.60	2.61<3.40	3.41<4.20	4.21-5
RII%	20-<36%	37-<52%	53-<68%	69-<84%	85-100%

3.13 Ethical and Administrative Considerations

The researcher maintained all ethical and administrative requirements to conduct this study. Approval of the College of Health Professions at Al-Quds University, the Helsinki committee (Annex 4), and the General Directorate of the Ard El Insan Association (Annex 5) were obtained before conducting the study. To guarantee the rights of the participants, a cover letter (consent form) was added in front of the questionnaire to indicate that participation was voluntary, and to ensure the confidentiality of the information and the right to refuse participation or withdraw at any time. Consent received from each participant. Mothers were reassured that the results were confidential.

Chapter Four

Results of the Study

4.1 Introduction

This chapter illustrates the results of a 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 simple statistics including frequencies, means, and percentages, also independent sample t-test, One-way ANOVA, as well as Pearson correlation test were used.

4.2 Socio-demographic characteristics of participants

Variables	Number	%
Age groups		
Below 30 years	45	25.9
30- <40 years	85	48.9
> 40 years	44	25.2
Residence		
North	29	16.7
Middle area	20	11.5
Rafah	23	13.2
Gaza	72	41.5
Khan Younis	30	17.2
Employment		
Housewife	163	93.7
Employed	11	6.3
Education		
Primary	31	17.8
Secondary	90	51.7
University	53	30.5

 Table 4.1: Sample distribution according to the participants' age, residence, employment, and education (n=174)

Table 4.1 shows the distribution of study participants according to their age groups, residence, employment, and educational level. The table shows that the participants who are $30 - \langle 40 \rangle$ years constitute 48.9% of the study sample, age of 25.9% of them is below 30 years old, while 25.3% of them are more than 40 years. Regarding their residence, 41.4%

of them are living in Gaza, 17.2% of them are living in Khan Younis, while 16.7% are living in the North area.

On the other hand, the majority (93.7%) of the study participants are housewives, while 6.3% are employees. Regarding the educational level, more than half (51.7%) of the study participants have a secondary school, while 30.5% of them have a university degree.

Table 4.2: Sample distribution according to the participants' family numbers, number of children, income and other children with celiac disease (n=174)

Variables	Number	Percentage (%)
Family numbers		
2 – 5 members	54	31.0
6 – 9 members	97	55.8
< 9 members	23	13.2
Number of children		
1-3	60	34.5
4-6	87	50.0
>6	27	15.5
Income		
Below 1000 Shekel	95	54.5
1000 – 1500 Shekel	44	34.3
>1500 Shekel	20	11.2
Have other children with celiac disease		
Yes	13	7.5
No	161	92.5

Table 4.2 shows the distribution of study participants according to their family members, number of children, income, and if they have other children with celiac disease. The table shows that more than half (55.7%) of the study participants have 6-9 members, and 31.0% of the 2-5 members. Regarding the number of children, half (50.0%) of the study participants have 4-6 children, 34.5% of them have 1-3 children, while 15.5% of them have more than 6 children. In addition, more than half (54.6%) of the participants have an income of below 1000 Shekel, while 25.3% of them have income between 1000 – 1500 Shekel. Moreover, the majority (92.5%) of the study participants do not have other children with celiac disease.

4.3 The level of knowledge among mothers of children with celiac disease

Knowledge in general	Correct	%
1. Do you know what is celiac disease	163	93.7
2. Is there a cure for celiac disease?	102	58.6
3. Celiac disease can it be cured completely?	54	31.0
4. Celiac disease is a disease that affects the digestive system in response to exposure to gluten	160	92.0
5. The most affected part of celiac disease is the small intestine	152	87.4
6. Genetic factors contribute to celiac disease in children	57	32.8
7. Infant feeding and early weaning practices contribute to celiac disease in children	57	32.8
8. Immunodeficiency contributes to celiac disease in children	73	42.0
9. Gastrointestinal infection contributes to celiac disease in children	39	22.4

Table 4.3: Participants' knowledge about celiac disease (n=174)

Table 4.4. I al delpants knowledge about signs and complications of diseas	Table 4.4: P	'articipants'	knowledge	about signs	and com	plications of	of disease
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Knowledge about signs and complications of disease	Correct	%
10. Chronic diarrhea is considered from signs and symptoms of celiac disease	154	88.5
11. Pain and flatulence are considered from signs and symptoms of celiac disease	165	94.8
12. Delayed growth is considered from signs and symptoms of celiac disease	162	93.1
13. Weight loss is considered from signs and symptoms of celiac disease	167	96.0
14. Anemia is considered from signs and symptoms of celiac disease	149	85.6
15. Fatigue is considered from signs and symptoms of celiac disease	156	89.7
16. Malnutrition is a complication of celiac disease	157	90.2
17. Osteoporosis or rickets is a complication of celiac disease	102	58.6
18. Bowel cancer is a complication of celiac disease	70	40.2
19. Seizures or epilepsy are complications of celiac disease	38	21.8

Knowledge about food containing gluten	Correct	%
20. Wheat and its flour	167	96.0
21. Barley and its flour	118	67.8
22. Oats and its flour	105	60.3
23. All kinds of bread, sweets, and pastries	156	89.7
24. Pasta - vermicelli - freekeh - Maftoul	155	89.1
25. Corn, rice, their flour, and starch	23	13.2
26. Sausages - canned meat - mortadella	119	68.4
27. Bulgur - semolina - falafel	127	73.0
28. fruits and vegetables	170	97.7
29. Soup - broth cubes - sauce	111	63.8
30. Natural food dyes and flavors	112	64.4
31. Milk and its derivatives - eggs	21	12.1
32. Spices and yeast powder	78	44.8
33. Chicken, meat, and fish	29	16.7

 Table 4.5: Participants' knowledge about food containing gluten

Table 4.6:	Participants	' knowledge	about	celiac	disease

Knowledge about other issues	Correct	%
34. The best criterion for treating celiac disease is a gluten-free diet	163	93.7
35. Does a gluten-free diet have to last a lifetime	128	73.6
36. Can complications of celiac disease be prevented	157	90.2
37. Adherence to a gluten-free diet can prevent the complication of disease	170	97.7
38. Follow up with a doctor regularly to monitor the condition can prevent the complication of disease	162	93.1
39. Take supplements that contain vitamins and minerals	160	92.0
Total mean score of knowledge26.1	$2 \pm \overline{4.7(\%66.99)}$	

Table 4.3, 4.4, 4.5, and 4.6 illustrate the frequency and percentage of correct answers about questions within the knowledge domain for the study participants. The total mean for participant' knowledge was calculated the mean of correct answers in this domain, in which the higher mean score is 39 (39 questions), while the lowest mean score is 0. Mean percentage for the participants' knowledge was calculated as a percentage. The mean score of participants' knowledges about celiac disease is 26.12 out of 39 with mean percentage 66.99%. The majority of correct answers were showed in the questions 1, 4, 11,

12, 13, 16, 20, 28, and 37, in which more than 90.0% of the participants know the correct answer.

Fable 4.7: Sources of participants	s' knowledge about celiac disease
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Knowledge about other issues	Frequency	%
Health care providers	100	57.5
Newspapers, publications, and magazines	18	10.3
Another person with celiac disease	26	14.9
Elderly people in the family/community	6	3.4
Media or internet	21	12.1
Other	3	1.8

The table shows that the source of information of more than half (57.5%) of the participants regarding celiac disease is healthcare providers, followed by Another person with celiac disease (14.9%), while the least source is other sources followed by elderly people in the community.

4.4 The level of attitude among mothers of children with celiac disease

Attitude	Mean	SD
I believe that celiac disease is a serious disease and harms a child if	4.35	0.87
left untreated		
I believe the celiac disease cannot be completely cured, but the	4.29	0.83
disease can be controlled by adhering to a gluten-free diet		
believe that a gluten-free diet leads to the demise of symptoms	4.35	0.68
believe that following a gluten-free diet is effective in preventing	4.39	0.62
complications		
I think following a gluten-free diet is expensive and a burden on the	4.61	0.70
family		
I believe that following a gluten-free diet improves a child's life	4.43	0.66
I believe that following a gluten-free diet improves my child's	4.17	0.79
academic achievement		

Table 4.8.b: Participants' attitude toward celiac disease

Attitude	Mean	SD
I believe that dietary restrictions in place to control the celiac disease	4.44	0.59
are essential for a child's normal development		
I think knowing others about my child's illness causes some	2.93	1.42
embarrassment		
I believe that a mother and a child, in particular, need to provide the	4.27	0.76
necessary psychological support to help cope with the disease		
I think that the mother and the child, in particular, need health	4.41	0.55
education about this disease		
I believe that the follow-up of the child medically and	4.45	0.54
psychologically, providing assistance, guidance and periodic medical		
examination is an essential and necessary part of treatment		
Total	4.25	0.37

The table shows the mean level and SD of the study participants' attitudes regarding celiac disease. The table shows that the total mean of participants' attitudes regarding celiac disease is 4.25 out of 5.0, which considered a positive attitude. The item "I think following a gluten-free diet is expensive and a burden on the family" got the highest mean level in the above table (4.61), followed by "I believe that the follow-up of the child medically and psychologically, providing assistance, guidance and periodic medical examination is an essential and necessary part of treatment" (4.45). While the item "I think knowing others about my child's illness causes some embarrassment" got the lowest mean.

4.5 The level of practices among mothers of children with celiac disease

Ta	ble	4.9.a:	Participants'	practices	toward	celiac	disease
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Practice	Mean	SD
Take care to avoid all foods that contain gluten	3.66	0.69
check my child's weight each month	3.64	0.70
I am keen to follow up with my child's doctor regularly	3.55	0.82
When buying food or medicine, I make sure it is gluten-free	3.67	0.77
Take care to avoid Canned or packaged foods unless they are	3.60	0.71
labeled gluten-free		
Products with a gluten-free label may contain gluten, but I am	3.01	1.13
reviewing the actual ingredient list		

Fable 4.9.b: Participants	' practices	toward	celiac	disease
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Practice	Mean	SD
I make a list of gluten-free foods	3.04	1.06
I make a list of foods that contain gluten	2.90	1.12
When preparing foods containing gluten, I clean the utensils well,	3.74	0.55
to avoid contamination of the affected child's food while preparing		
it		
When preparing food, wash the cookware thoroughly before	3.85	0.38
cooking		
I give my child food alternatives that contain vitamins and minerals	3.20	0.89
according to the doctor's recommendation that their ingredients		
should be gluten-free		
Take care to avoid foods that may contain hidden sources of	3.52	3.04
gluten, such as sauces or fried foods that may be cooked with other		
foods containing gluten		
I give my child a gluten-free meal when he goes out of the house	3.16	1.04
I inform officials about my child's illness in places he goes to, such	3.49	0.97
as kindergarten or school		
If my child's condition does not improve, I follow up with the	3.73	0.59
doctor		
I still give my baby food free of gluten, even when the symptoms	3.82	3.19
disappear		
I follow up with the doctor when any complications arise on the	3.72	0.57
child		
I fully adhere to the doctor's recommendations	3.82	0.45
I participate in social activities related to celiac disease with others	2.36	1.23
who have the same disease		
I allow my child to eat food containing gluten during social events	3.26	0.91
to ward off other people's curiosity		
I inform the doctor about my child's illness and suffering from	3.56	0.82
celiac disease to avoid giving him the treatment that contains		
gluten		
I am having difficulty obtaining gluten-free food items	3.36	0.86
Total	3.42	0.46

The table shows the mean level and SD of the study participants' practices regarding the celiac disease. The table shows that the total mean of participants' practices regarding celiac disease is 3.42 out of 4.0 (85.5%). The item "I think following a gluten-free diet is expensive and a burden on the family" got the highest mean level in the above table (4.61), followed by "I believe that the follow-up of the child medically and psychologically, providing assistance, guidance and periodic medical examination is an

essential and necessary part of treatment" (4.45). While the item "I think knowing others about my child's illness causes some embarrassment" got the lowest mean.

4.6 Differences in the participants' total level of knowledge with regard to their

demographic factors

Total Level of Knowledge	N	Mean	SD	F (df)	P value [*]
Age groups					
Below 30 years	45	65.86	15.14		
30- <40 years	85	68.47	10.03	1.290 (2, 171)	0.278
> 40 years	44	65.26	12.09		
Residence					
North	29	67.02	8.76		
Middle area	20	67.94	8.86	0.199 (4, 169)	0.939
Rafah	23	67.67	13.20		
Gaza	72	67.20	12.94		
Khan Younis	30	65.29	14.03		
Income					
<1000 Shekel	95	66.23	12.34		
1000 - 1500	44	68.18	13.76	0.382 (2, 156)	0.683
> 1500	20	67.30	9.10		
Education					
Primary	31	62.77	11.23		
Secondary	90	65.92	11.73	5.867 (2, 177)	0.003
University	53	71.26	12.05		

 Table 4.10.a: Differences in the participants' knowledge with regard to their demographic factors

^{*} One-way ANOVA

The table shows that there are no significant differences in the mean level of total participants' knowledge regarding celiac disease with regard to their age groups, residence, and income (p>0.05). On the other hand, there is a significant difference in the mean level of total participants' knowledge regarding celiac disease with regard to their educational level (p<0.05). Post hoc Tukey test showed that the difference is between those who have a primary school and university degree in favor of those who have a university degree

(p<0.05). Post hoc Tukey test also showed that the difference is between those who have a secondary school and university degrees in favor of those who have a university degree (p<0.05). meaning that the participants who have university degrees have significantly a higher level of knowledge regarding celiac disease.

Total Level of Knowledge	Ν	Mean	SD	F(df)	<i>P</i> value [*]
Number of family members		•	•		
2 – 5 members	54	67.04	13.66		
6 – 9 members	97	67.56	10.94	0.622 (2, 171)	0.538
>9 members	23	64.43	12.85		
Children in the family					
1 – 3 children	60	67.69	13.20		
4 – 6 children	87	67.78	11.09	1.884 (2, 171)	0.155
> 6 children	27	62.86	12.07		
*					

 Table 4.10.b: Differences in the participants' knowledge with regard to their demographic factors

One way ANOVA

The table shows that there are no significant differences in the mean level of total participants' knowledge regarding celiac disease with regard to the number of family members and the number of children in the family (p>0.05).

 Table 4.10.c.1: Differences in the participants' knowledge with regard to their demographic factors

Total Level of Knowledge	Ν	Mean	SD	t (df)	P value [*]
Marital status					
Married	171	66.89	12.12	0.919(172)	0.414
Others (divorced/widow)	3	72.64	7.83	-0.818 (172)	
Employment					
Housewives	163	66.76	12.33	0.066(172)	0.335
Employed	11	70.39	6.52	-0.966 (172)	

Total Level of Knowledge	Ν	Mean	SD	t (df)	P value [*]		
Have other children with celiac disease							
Yes	13	68.63	12.25	0511 (172)	0.610		
No	161	66.85	12.08	.0511 (172)	0.010		

 Table 4.10.c.2: Differences in the participants' knowledge with regard to their demographic factors

^{*} Independent Sample t test

4.7 Differences in the participants' attitude with regard to their demographic factors

 Table 4.11.a: Differences in the participants' attitude with regard to their demographic factors

Total Level of Attitude	Ν	Mean	SD	F (df)	P value [*]
Age groups				·	
Below 30 years	45	4.27	0.37		
30- <40 years	85	4.26	0.36	0.221 (2, 171)	0.802
> 40 years	44	4.22	0.41		
Residence					
North	29	4.30	0.31		
Middle area	20	4.35	0.38	-	0.041
Rafah	23	4.27	0.46	2.557 (4, 169)	
Gaza	72	4.29	0.32		
Khan Younis	30	4.06	0.43		
Income				·	
<1000 Shekel	95	4.21	0.36		
1000 - 1500	44	4.33	0.39	1.484 (2, 156)	0.230
> 1500	20	4.25	0.33	-	
Education				·	
Primary	31	4.18	0.32		
Secondary	90	4.24	0.39	1.705 (2, 177)	0.185
University	53	4.33	0.37	1	

* One-way ANOVA

The table shows that there are no significant differences in the mean level of total participants' attitudes regarding celiac disease with regard to their age groups, income, and educational level (p>0.05). On the other hand, there is a significant difference in the mean level of total participants' attitudes regarding celiac disease with regard to their residence

(p<0.05). Post hoc Tukey test showed that the difference is between those who are living in Gaza and who are living in Khan Younis in favor of those who are living in Gaza city (p<0.05).

Total Level of Attitude	Ν	Mean	SD	F(df)	P value [*]
Number of family members					
2 – 5 members	54	4.26	0.39		
6 – 9 members	97	4.25	0.35	0.005 (2, 171)	0.996
>9 members	23	4.25	0.41		
Children in the family					
1 – 3 children	60	4.2279	0.36		
4 – 6 children	87	4.2557	0.38	0.840 (2, 171)	0.421
> 6 children	27	4.3423	0.36		

 Table 4.11.b: Differences in the participants' attitude with regard to their demographic factors

*One way ANOVA

The table shows that there are no significant differences in the mean level of total participants' attitudes regarding celiac disease with regard to the number of family members and the number of children at home (p>0.05).

 Table 4.11.c: Differences in the participants' attitude with regard to their demographic factors

Total Level of Attitude	Ν	Mean	SD	t (df)	P value [*]
Marital status					
Married	171	4.25	0.37	-0.342 (172)	0.733
Others (divorced/widow)	3	4.33	0.43		
Employment					
Housewife	163	4.25	0.38	0.018 (172)	0.986
Employed	11	4.25	0.32		
Have other children with celiac di	isease				·
Yes	13	3.96	0.40	-3.047 (172)	0.003
No	161	4.28	0.36		

^{*} Independent Sample t test

The table shows that there are no significant differences in the mean level of total participants' attitudes regarding celiac disease with regard to their marital status and employment. On the other hand, there is a significant difference in the mean level of total

participants' attitudes regarding celiac disease with regard to having other children with celiac disease (p<0.05). Participants who do not have other children with celiac disease have a significantly higher level of an attitude than those who do.

4.8 Differences in the participants' practices with regard to their demographic factors

Total Level of Practices	Ν	Mean	SD	F (df)	<i>P</i> value [*]
Age groups					
Below 30 years	45	3.52	0.42		
30- <40 years	85	3.44	0.50	2.659 (2, 171)	0.073
> 40 years	44	3.30	0.39		
Residence					
North	29	3.38	0.34		
Middle area	20	3.41	0.32		0.164
Rafah	23	3.22	0.48	1.652 (4, 169)	
Gaza	72	3.47	0.42		
Khan Younis	30	3.51	0.64		
Income					
<1000 Shekel	95	3.39	0.53		
1000 - 1500	44	3.49	0.28	1.110 (2, 156)	0.332
> 1500	20	3.52	0.316		
Education					
Primary	31	3.26	0.43		
Secondary	90	3.46	0.50	2.351 (2, 171)	0.098
University	53	3.45	0.37		

 Table 4.12.a: Differences in the participants' practices with regard to their demographic factors

One-way ANOVA

The table shows that there are no significant differences in the mean level of total participants' practices regarding celiac disease with regard to their age groups, residence, income, and educational level (p>0.05).

Table 4.12.b: Differences in the participants' practices with regard to their demographic factors

Total Level of Practices	Ν	Mean	SD	F(df)	<i>P</i> value [*]
Number of family members					
2 – 5 members	54	3.50	0.51		
6 – 9 members	97	3.39	0.44	1.058 (2, 171)	0.350
>9 members	23	3.39	0.40		
Children in the family					
1 – 3 children	60	3.54	0.46		
4 – 6 children	87	3.37	0.46	2.847 (2, 171)	0.061
> 6 children	27	3.34	0.42		

*One way ANOVA

The table shows that there are no significant differences in the mean level of total participants' practices regarding celiac disease with regard to the number of family members and the number of children at home (p>0.05).

Table 4.12.c: Differences in the participants' practices with regard to their demographic factors

Total Level of Practices	Ν	Mean	SD	t (df)	P value [*]
Marital status					
Married	171	3.42	0.46	0.211 (172)	0.922
Others (divorced/widow)	3	3.48	0.50	0.211 (172)	0.833
Employment					
Housewife	163	3.41	0.46	1 451 (172)	0.149
Employed	11	3.62	0.33	-1.431 (172)	
Have other children with celiac di	isease				
Yes	13	3.21	0.52	1 720 (172)	0.085
No	161	3.44	0.45	-1./30(1/2)	

Independent Sample t test

The table shows that there are no significant differences in the mean level of total participants' practices regarding celiac disease with regard to their marital status, employment, and having other children with celiac disease (p>0.05).

4.9 Relationship between participants' knowledge, attitude and practices regarding celiac disease

	Knov	wledge	Attit	Attitude		tices
	r	p-value	r	p-value	r	p-value
Knowledge	-	-	-0.003	0.971	0.044	0.562
Attitude	-0.003	0.971	-	-	0.187	0.014
Practices	0.044	0.562	0.187	0.014	-	-

 Table 4.13: Relationship between participants' knowledge, attitude and practices regarding celiac disease

Pearson Correlation Test

The table shows that there is a significant positive week relationship between participants' attitude and their practices regarding celiac disease (p<0.05). Meaning that with an increase in the level of participants' attitude, their level of practice will increase. On the other hand, there is no significant relationship between participants' knowledge and their practices regarding celiac disease (p>0.05), and there is no significant relationship between participants' knowledge and their attitude regarding celiac disease (p>0.05).

Table 4.14: Relationship between participants' knowledge, attitude and practices and the child weight and height

	Knov	wledge	Attitude		Practices	
	r	p-value	r	p-value	r	p-value
Weight	0.098	0.197	0.106	0.164	-0.096	0.207
Height	0.055	0.471	0.146	0.054	-0.028	0.710

Pearson Correlation Test

The table shows that there is no significant relationship between participants' knowledge regarding celiac disease and the child weight and height (p>0.05). In addition, there is no significant relationship between participants' attitude regarding celiac disease and the child weight and height (p>0.05). Moreover, there is no significant relationship

between participants' practices regarding celiac disease and the child weight and height

(p>0.05).

4.10 Differences in the level of participants' knowledge, attitude, practices with

regard to organizational factors

	sessions
about the disease	

Participants' Knowledge	N	Mean	SD	t (df)	P value [*]				
Received educational sessions about celiac disease									
Yes	130	67.39	11.56	0.761 (172)	0.448				
No	44	65.79	13.53	0.701 (172)					
Received brochures about the disease									
Yes	127	67.15	11.50	0.287 (172)	0 77 4				
No	47	66.55	13.62	0.287 (172)	0.774				

^{*} Independent Sample t test

The table shows that there is no significant difference in the mean level of participants' knowledge regarding celiac disease between those who have received educational sessions and those who did not (p>0.05). in addition, there is no significant difference in the mean level of participants' knowledge regarding celiac disease between those who have received brochures about the disease and those who did not (p>0.05).

Table 4.16: Differen	ces in the particip	pants'	attitude w	ith regar	d to educational	sessions	about
the disease							

Participants' Attitude	Ν	Mean	SD	t (df)	P value [*]				
Received educational sessions about celiac disease									
Yes	130	4.28	0.39	1 621 (172)	0.107				
No	44	4.18	0.30	1.021 (172)					
Received brochures about the disease									
Yes	127	4.27	0.39	0.615(172)	0.540				
No	47	4.23	0.316	0.013(172)	0.540				

* Independent Sample t test

The table shows that there is no significant difference in the mean level of participants' attitude regarding celiac disease between those who have received educational sessions and those who did not (p>0.05). In addition, there is no significant difference in

the mean level of participants' attitude regarding celiac disease between those who have received brochures about the disease and those who did not (p>0.05).

Participants' Practices	N	Mean	SD	t (df)	P value [*]			
Received educational sessions about celiac disease								
Yes	130	3.43	0.45	0.262 (172)	0.793			
No	44	3.41	0.48					
Received brochures about the disease								
Yes	127	3.42	0.47	-0.365 (172)	0.716			
No	47	3.44	0.43					

 Table 4.17: Differences in the participants' practices with regard to educational sessions about the disease

^{*} Independent Sample t test

The table shows that there is no significant difference in the mean level of participants' practices regarding celiac disease between those who have received educational sessions and those who did not (p>0.05). in addition, there is no significant difference in the mean level of participants' practices regarding celiac disease between those who have received brochures about the disease and those who did not (p>0.05).

 Table 4.18: Differences in the participants' knowledge, attitude, and practices with regard to child complications

Have complications	Ν	Mean	SD	t (df)	P value [*]			
Participants' Knowledge								
Yes	75	65.74	10.18	-1.188 (172)	0.237			
No	99	67.93	13.30					
Participants' Attitude								
Yes	75	4.24	0.37	-0.358 (172)	0.721			
No	99	4.26	0.37					
Participants' Practices								
Yes	75	3.39	0.58	-0.824 (172)	0.411			
No	99	3.45	0.33					

^{*} Independent Sample t test

The table shows that there are no significant differences in the mean level of total participants' knowledge, attitude, and practices regarding celiac disease with regard to the occurrence of complications among children with celiac disease (p>0.05).

Chapter Five

Discussion of Results

5.1 Introduction

This chapter illustrates the discussion of the study results in all domains of the study results, they include participants' knowledge about celiac disease, sources of knowledge about celiac disease, factors associated with knowledge among participants. The current study results are compared to the previous studies, also the personal opinion of the researcher is illustrated based on experience in this field. There are very limited studies on the subject of the study, and thus the researcher faced difficulties in comparing the results of the current and previous study.

5.2 Participants' knowledge about celiac disease

The current study results revealed that the total mean for participants' knowledge was 26.12 out of 39 with a mean percentage of 66.99%, which is below the median score (67.94), which is considered not satisfactory. This indicates that the participants need awareness and guidance for celiac disease. Undoubtedly, the results of the study show that complications of celiac disease in children are the result of parents 'lack of knowledge about this disease, and to avoid this, institutions' efforts must be devoted to health education for this category of patients. And it is not just enough to provide gluten-free food, follow-up patients, and do routine tests.

The current study results are not consistent with the results of Tomlin et al. (2015), which showed that the parents were very knowledgeable about celiac disease, in which 95% of them knowing that this treatment is for life. And another study by Elsahoryi et al (2020) indicated that there was no significant relationship between the parent's knowledge regarding celiac disease definition, symptoms, diagnosis, and treatment such as allowed

food and not-allowed food and sociodemographic characteristics of the patients and their parent except for the information source of the family.

Garg and Gupta (2014), highlighted in their study that a higher degree of compliance is noted when parents have better knowledge about celiac disease and the gluten-containing items, understand the importance of gluten-free diet for their child's overall growth and development and are able to distinguish gluten-containing from gluten-free food. Another study by Charalampopoulos et al (2013) showed parental knowledge, parents of compliant children were more knowledgeable about coeliac disease and were better able to choose gluten-free products from the menu compared with parents of noncompliant children, although, no significant differences emerged.

5.3 Participants' attitudes and practices about celiac disease

The mean score of attitudes regarding celiac disease is 4.25, it is a very high degree, with an estimated relative weight of more than 85%, it is a very high degree, while the mean score of their practices is 3.50 'with an estimated relative weight of more than 70%. Regarding the level of participants' attitudes and practices regarding celiac disease, this level is considered satisfactory since the parents (either mother or father) conduct continuous follow up for their children in the centers which are specialized to provide this service, and since they told that the main source of information is healthcare providers, this could affect their attitude and practices because the healthcare providers give advice in regular basis for the parents, thus make their attitude and practices more positive.

There was no significant difference reported in the parents' attitudes and practices based on sociodemographic characteristics of Celiac Disease patients and their parents shows that there was a significant difference in the patient's adherence to the GFD based on the duration of disease, with those with a longer duration of the disease being likely to report better adherence. In study be Bagri et al (2016) found 24.62% of parents of children in compliant hardly felt a burden on their budget, and 72.31% of parents believed that special diet was hardly a burden to the family, whereas in non-compliant group 57.14% parents felt it as a burden. 36.92% of parents of children in compliant group were not hesitant to discuss the child's condition and were interacting with other parents of celiac disease in gastrology clinics.

In a study by Chauhan JC (2010) 60.7% of compliant parents believed that a special diet was hardly a burden. 84.6% in non-compliant felt it as a burden. Olsson et al in (2008) and Lee et al in (2007), both have shown that the availability of cheap gluten-free food was a significant factor affecting compliance. Increased availability of cheap food items is needed for celiac patients. Holli and Beto (2018) found the improved attitudes and practices of the patient's parents were considered as crucial social support that emphasized diet adherence and reduction of relapse.

Sources of knowledge about celiac disease

The current study results showed that more than half (57.5%) of the participants have their information about celiac disease from healthcare providers, followed by "another person with celiac disease" (14. 8%). So, the current results could be attributed to the fact that the parents especially those who are providing care to the children with celiac disease depend mainly on the healthcare providers when they got the information, they considered the healthcare providers as trusted persons to get health-related information. These results are not consistent with the results obtained by Elsahoryi et al. (2020), which showed that more than half of the parents reported that they received their information from the internet or social media (55.6% and 44.4%, respectively).

The current study results are also consistent with the results of Tomlin et al. (2015), which showed that more than half of the parents reported that they received their information from the internet or social media. The current study results also are not consistent with the results obtained from the US survey, which reported that 71% found information from books, support groups, family, friends, and the internet compared with 30% from physicians (Green et al., 2001). The results of the current study also not in agreement with the results of the study of Tomlin et al. (2015), which showed that the internet is a major influential source of the knowledge level of parents who have patients suffering from celiac disease.

5.4 Factors associated with knowledge among participants

Regarding participants' knowledge, there is a significant difference in the mean level of total participants' knowledge regarding celiac disease with regard to their educational level in favor of those who have a university degree. While there are no significant differences in the mean level of total participants' knowledge regarding celiac disease with regard to the number of family members, the number of children in the family, marital status, employment, and having other children with celiac disease.

Regarding participants' attitude, there are no significant differences in the mean level of total participants' attitude regarding celiac disease with regard to their age groups, marital status, and employment, income, number of family members, and the number of children at home and educational level. On the other hand, there is a significant difference in the mean level of total participants' attitude regarding celiac disease with regard to their residence in favor of those who are living in Gaza city, and there is a significant difference in the mean level of total participants' attitude regarding celiac disease with regard to having other children with celiac disease, in which participants who do not have other children with celiac disease, have a significantly higher level of an attitude than those who do. Regarding participants' practices, there are no significant differences in the mean level of total participants' practices regarding celiac disease with regard to their age groups, residence, income, educational level, number of family members and the number of children at home, marital status, employment, and having other children with celiac disease.

The current study results are consistent with the results of Bagri et al. (2016), which showed that a mother's education is an important factor in their knowledge regarding celiac disease, this could be explained by the fact the with an increase in the level of participants' education, their information regarding the disease increase due to their level of awareness. Moreover, it could be attributed to the fact that because the mother is only responsible for preparing the child's food and is able to identify foods that are gluten-free.

In addition, the results of the current study are consistent with the results of Taşkin et al. (2020), which showed that there was a significant proportion of highly educated subjects with celiac disease, there study also revealed that that illiterate people were less aware of the disease than the educated ones. Moreover, the results of the current study are consistent with the results of Simpson et al. (2011), which showed that the awareness of celiac disease increased as the level of education increased.

Moreover, the current study results are consistent with the results of Elsahoryi et al. (2020). Which showed that there were no significant differences in the mean level of knowledge categories in the sociodemographic characteristics of celiac disease patients and their parents. Regarding differences in the mean level of participants' attitude and practices regarding celiac disease, the current study results are not consistent with the results of Elsahoryi et al. (2020), which showed that there was no significant difference reported in the parents' attitudes and practices based on sociodemographic characteristics

of celiac disease patients and their parents. In addition, the results of the current study are not in agreement with the results of Taşkin et al. (2020), which showed that there was no significant difference observed regarding the awareness among the age groups of participants.

Moreover, the current results are not consistent with the results of Elsahoryi et al. (2020), which reported that there was no significant relationship between the parent's attitudes and practices and their sociodemographic characteristics. The absence of a significant association between the level of participants' knowledge, attitude, and practices and their demographic factors could be attributed to the type of sample, and the similarities between the mean score for each category in the study variables. A systematic review indicated that the effect of a patient's age at CD diagnosis is less clear in many studies and not associated with patient adherence (Hall et al, 2009).

A study by Bagriet al (2016) shows the education and knowledge of the mother as an important factor in compliance. This might be because the mother is only responsible for the preparation of food items for the child and she is able to identify gluten-free foodstuff. PSC scores increase as the age increases, more in non-compliant children. A study by Russo (2019) found the mothers had high levels of education which may have been a factor in their encouragement of their child to learn as much as possible about their celiac disease diagnosis. Parents were skilled in identifying gluten in foods, reading articles and navigating online forums, and checking labels, which they modeled for their children. Children whose parents may be less educated or may not be native English speakers may be the ones to decipher labels or translate medical information. Furthermore, additional research on more diverse families, particularly varying socioeconomic status, is critical to understand more of the challenges facing families with celiac disease.

5.5 Relationship between participants' knowledge and attitude regarding celiac disease

The current study results revealed that there was a significant positive week relationship between participants' attitude and their practices regarding the celiac disease. Meaning that with an increase in the level of participants attitude, their level of practices will increase. His could be attributed to the fact that the attitude affects the practices of the people, and when the Pearson is convinced about some issue, he/she will practice this issue in daily life. As when the participants have a positive attitude regarding celiac disease, they would have positive and correct practices regarding the disease.

A study by Chishty et al (2016) shows that knowledge scores were positively correlated and increasing awareness about celiac disease, gluten-free diet, the importance of follow-up, framing, and implementing guidelines on Gluten content and gluten-free labeling laws will definitely improve the disease condition. another study by Elsahoryi et al (2020) found providing an educational program for parents of CD patients had a significant effect on increasing knowledge and awareness regarding CD symptoms, diagnosis, and treatment diet restrictions. This intervention also improved their patients' attitudes and practices and consequently affected children's adherence positively. but in a study by TAŞKIN and Nazlı SAVLAK (2020) showed that the public's awareness, knowledge, and sensitivity towards celiac disease was scarce in Turkey. Knowledge of 'celiac' needs to be raised. celiac people feel asocial and depressed as their friends and family do not emphasize with them. Providing emotional and social support for celiac individuals is becoming an important requirement.

Another study by Charalampopoulos et al (2013) shown that reported compliance to GFD is significantly low in children with coeliac disease. Moreover, the problem of low compliance is becoming more intense, especially among adolescents whose parents think that their level of knowledge is not adequate to manage the disease. Age of the pediatric patient and estimation of the level of perceived parental knowledge are two factors that a clinician can utilize as a 'prognostic tool' in order to identify children who run a high risk of being non-compliant to GFD.

Chapter Six:

Conclusion and Recommendations

6.1 Conclusion

The central point of the spotlight of this study was mothers' knowledge, attitude, and practice towards the celiac disease of children. In this study, the socio-demographic characteristics, knowledge, attitude, and practice of mothers of children with celiac disease were assessed. Hence the finding of this study is concluded in a way that mothers' knowledge towards children with celiac disease was unsatisfactory. On the other hand, mothers 'attitudes toward celiac disease were positive attitudes and good practices. The study also showed that there were statistically significant differences in the mean level of mothers' total knowledge of the celiac disease with respect to educational level (P < 0.05). There was also a significant difference in the mean level of total mothers 'attitudes towards celiac disease with respect to their place of residence (p < 0.05). On the other hand, there is a significant difference in the mean level of total mothers' attitudes towards celiac disease with regard to having other children with celiac disease (p < 0.05). In addition, there was a significant positive weak relationship between mothers' attitudes and their practices regarding celiac disease (p<0.05). This result also indicated the lack of sufficient knowledge of the disease among mothers, which needs more attention and effort by the concerned authorities.

6.2 Recommendations

Based on the findings of this study the following recommendations were mentioned to make situations more conducive for mothers on their knowledge, attitude, and practice of children with celiac disease.

6.2.1 Recommendations for policy makers and healthcare providers

- Effective and strong health education should be provided by strengthening the health counseling program for mothers with support to local educational materials to enable them to recognize the causes of celiac disease, early detection of signs of risk of celiac disease, urgent medical care, and supportive care for cases of celiac disease.
- Organizing celiac disease screening programs, especially for individuals at high risk.
- Develop educational programs to enhance awareness at the community and institutional level about celiac disease and the gluten-free diet.
- Development of programs in AEI and other health organizations to support patients and their families psychologically.

6.2.2 Recommendations for mothers

- Mothers should seek ongoing education about celiac disease and a gluten-free diet from reliable sources.
- Regular follow-up visits to mothers in health centers, are very important for patients with celiac disease.
- Instruct mothers about the importance of adherence to a gluten-free diet in preventing unhealthy consequences of celiac disease.

6.2.3 Recommendations for future research

- Conducting a study to explore the reasons for the high number of children with Celiac
 Disease in the Gaza Strip.
- Conducting a study to examine the quality of life of children with celiac disease in the Gaza Strip.
- Conducting a study to determine the risk factors for developing celiac disease in the Gaza Strip.
- Conducting future studies to find out the prevalence of the celiac disease among our children in the Gaza Strip.

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Annexes

Annex (1) English version of the questionnaire

Dear participating mother.....

After Greetings.....

I am the researcher / Mahmoud Issam Abu Eida, a master student in the program of pediatric nursing at the Faculty of Health Professions at Al-Quds University - Abu Dis - Gaza Branch, I am doing a research study entitled "Knowledge, Attitude and Practice among Mothers of Celiac Disease Children in Gaza Strip". This research is a prerequisite for obtaining a master's degree.

This study aims to assess the level of knowledge, attitudes, and practices of mothers of children with celiac disease in the Gaza Strip. Knowing that participation in this questionnaire is optional, it may take to fill this questionnaire about 20-30 minutes, so please answer all the questions as much as possible, as you see fit, taking into account that there is no right or wrong answer. With our keenness and assurance to you that the data you have provided is strictly confidential and intended for scientific research purposes only.

Thank you for your cooperation with us

Yours sincerely

Researcher:

Mahmoud Issam Abu Eida

Mobile number:

0599617733

	Record the interview													
1)	Serial Number													
2)	Interview date													
3)	Do you agree to par	ticipate i	n the st	tudy?		□ Agree					Disagree			
]	Part 1	l: Sociod	len	nograj	phie	c data						
	Relevant data to the mother													
1)	Mother's age							Year						
2)	Place of residence	NortGaza	th Gove a Gove	ernorate rnorate		Al wu Khan	ısta Yuı	Governo nis Gove	orate rnorate		Rafah Governorate			
3)	Marital Status	🗖 Mar	ried			Divo	rced				Widow			
4)	Educational level	🗖 Eler	nentary C			Seco	ndar	у			University			
5)	Occupation status	🛛 Hou	sewife			Empl	oyee	è			Worker			
6)	Number of family n	nembers		□ 2-5				6-9			> 9			
7)	Number of children	in the fa	mily	□ 1-3	1-3 4-6				> 6					
8)	Average monthly he	ousehold	income	9	Shekels					hekels				
9)	Do you have anothe	er child w	ith celi	ac disease	e?	C	יב	Yes			□ No			
10)	If yes, how many ch	uildren ha	ve celia	ac disease	?									
			J	Relevant	da	ta to tl	ne c	hild						
1)	Child's age						Mo	onth / Ye	ear					
2)	Child's gender		D M	ale					D F	emale				
3)	Physical measurem	ents of th	e Child	1 1 . W	Veig	ght		kg	2. H	leight/	Length cm			
4)	child's birth weight			□ < □ 1.	1.5 .5 –	5 kg - < 2.5 k	g		\square 2 \square >	.5 – 4. 4.5 kg	5 kg g			
5)	Arranging the child	among h	is brot	thers		First Seco	nd			Tł	nird ther (specify)			

6)	Has your child attended scho	ol?		Ye	S		□ No				
7)	If yes, what is the highest leve	ducation	n atta	ined?		Ele Pre	ement eparat	tary tory		Secondary	
8)	The child's age when diagnos	ed wit	th celiac	e disea	ase	Month / Year					Month / Year
9)	Duration of celiac disease	□ <	1 year		□ 1-	- 4 yea	ars		5 – 8 :	years	\square > 8 years
10)	Does your child suffer from c	omor	bidities	?	Yes No					Ιο	
11)	If yes, what is this disease?		Dia Dia Dia	abetes thma		Growth Other (s				ormone ecify) .	e deficiency
12)	Does your child have any con	nplica	tions?		۲ D	les					Ιο
13)	If yes, what are the complicat	ions?				Anemi Osteop	a oorosi	is			Ialnutrition other (specify)
14)	Has your child been admitted	tal in 1	the pas	st?	[– Y	Zes		□ No		
15)	If yes, how many times was h			$\Box \leq 3$				□ >3			
16)	What is the reason for hospit	alizati	ion?		Digest Respir	ive di atory	isorde disor	er rder		Urin Othe	ary tract disorder er (specify)
			Org	aniza	ationa	l data	a				
1)	Did you get educational sessio	ons ab	out the	the disease?			□ Yes				□ No
2)	If yes, then this educational s	ession	has bee	en pro	ovided	by	PediatricDietitian			an	NurseOther
3)	The time period of the educat	tional	session		□ <1	0 mir	n C] 1() – 20) min	□ >20 min
4)	Have brochures been distribu	ited a	bout the	e dise	ase?			Yes			□ No
	Part 2: Assessing the level	of kno	owledge	e am	ong m	othei	rs of	chilo	dren	with	celiac disease
1)	Do you know what is celiac d	isease	? 🗆	Yes	5 –	l No) - If <u>:</u>	yes, n	nove	on to t	he next questions
2)	Is there a cure for celiac dise	ase?			Yes						0
3)	Can it be cured completely?				Yes						0
4)	Celiac disease is a disease tha	t affe	cts the d	digest	ive sys	tem i	n res	ponse	e to e	xposu	re to gluten
	□ Yes			No						I don	't know

5)	The most affected part of celiac disease is the small intestine										
	□ Yes		□ No			I do	on't know				
6)	What are the factors	that cau	se celiac disease i	n children?							
1.	Genetic factor			□ Yes	□ No		□ I don't know				
2.	Infant feeding and ear	ly weanir	ng practices	□ Yes	□ No		□ I don't know				
3.	Immunodeficiency			□ Yes	□ No		□ I don't know				
4.	Gastrointestinal infect	ion		□ Yes	□ I don't know						
7)) What are the signs and symptoms of celiac disease that may occur in children?										
1.	Chronic diarrhea		Yes	□ No		[I don't know				
2.	Pain and flatulence		Yes	D No		[I don't know				
3.	Delayed growth		Yes	□ No		[I don't know				
4.	Weight loss		Yes	□ No	□ No □						
5.	Anemia		Yes	□ No	I don't know						
6.	Fatigue		Yes	□ No		[I don't know				
8)	What are the compli	cations o	f celiac disease?		-						
1.	Malnutrition			□ Yes	□ No		□ I don't know				
2.	Osteoporosis or ricket	S		□ Yes	□ No		□ I don't know				
3.	Bowel cancer			□ Yes	□ No		□ I don't know				
4.	Neurological complication epilepsy	ations suc	ch as seizures or	□ Yes	□ No		□ I don't know				
9)	The best criterion fo	r treating	g celiac disease is	a gluten-free diet	t						
	□ Yes		□ No				don't know				
10)	Does a gluten-free di	et have t	o last a lifetime?								
	□ Yes		□ No				don't know				
11)	Can complications of	f celiac d	isease be prevent	ed?							
	□ Yes		□ No				don't know				

12) What are the means of preven	ntion that prevent complie	catio	ons?					
1. adherence to a gluten-free diet			Yes			No		I don't know
2. Follow up with a doctor regularly	to monitor the condition		Yes			No		I don't know
3. Take supplements that contain vi	tamins and minerals		Yes			No		I don't know
13) Which of these foods contain								
1. Wheat and Its Flour			Yes			No		I don't know
2. Barley and Its Flour			Yes			No		I don't know
3. Oats and Its Flour		Yes			No		I don't know	
4. All Kinds of Bread, Sweets, Ar		Yes			No		I don't know	
5. Pasta - Vermicelli - Freekeh - M		Yes			No		I don't know	
6. Corn, Rice, Their Flour, And S		Yes			No		I don't know	
7. Sausages - Canned Meat - Mor		Yes			No		I don't know	
8. Bulgur - Semolina - Falafel			Yes			No		I don't know
9. Fruits and Vegetables			Yes			No		I don't know
10. Soup - Broth Cubes - Sauce			Yes			No		I don't know
11. Natural Food Dyes and Flavors			Yes			No		I don't know
12. Milk and Its Derivatives - Eggs			Yes			No		I don't know
13. Spices and Yeast Powder			Yes			No		I don't know
14. Chicken, Meat, and Fish			Yes			No		I don't know
14) From what sources did you o	btain information about c	eliac	e disea	ase i	n ch	ildren?	(Yo	u can choose
more than one answer)								
□ Health care providers	Newspapers, publicat: and magazines	ions,	,		Anc dise	other per	son	with celiac
Elderly people in the	□ media or internet				Oth	er (spec	ify).	
ranning/community								

Part 3: Assessing	Part 3: Assessing the level of attitudes among mothers of children with celiac disease										
1) I believe that celia	1) I believe that celiac disease is a serious disease and harms a child if left untreated										
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
2) I believe the celi adhering to a gl	iac disease canno uten-free diet	ot be completely cu	red, but the diseas	e can be controlled by							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
3) I believe that a	gluten-free diet l	eads to the demise	of symptoms								
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
4) I believe that for	llowing a gluten-	free diet is effectiv	e in preventing co	mplications							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
5) I think following	g a gluten-free di	iet is expensive and	d a burden on the f	family							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
6) I believe that fo	llowing a gluten-	free diet improves	a child's life								
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
7) I believe that for	llowing a gluten-	free diet improves	my child's acaden	nic achievement							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
8) I believe that di child's normal d	etary restrictions levelopment	s in place to contro	ol the celiac disease	e are essential for a							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
9) I think knowing	others about m	y child's illness cau	ises some embarra	ssment							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
10) I believe that a support to help	mother and a chi cope with the dis	lld, in particular, r sease	need to provide the	e necessary psychological							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
11) I think that the	mother and the	child, in particular	, need health educ	ation about this disease							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							
12) I believe that th guidance and po	e follow-up of th eriodic medical e	e child medically a xamination is an e	and psychologically essential and necess	y, providing assistance, sary part of treatment							
□ Strongly Agree	□ Agree	□ Not sure	Disagree	□ Strongly Disagree							

	Part 4: Assess	ing	the level of pra	ctic	e among mothe	ers o	of children with	celi	ac disease
1)	Take care to av	oid a	all foods that con	itain	gluten				
	Always		Often		Sometimes		Rarely		Absolutely
2)	I check my chile	d's v	veight each mont	th				-	
	Always		Often		Sometimes		Rarely		Absolutely
3)	I am keen to fol	low	up with my child	l's d	octor regularly	-		-	
	Always		Often		Sometimes		Rarely		Absolutely
4)	When buying fo	ood o	or medicine, I ma	ake s	sure it is gluten-f	ree			
	Always		Often		Sometimes		Rarely		Absolutely
5)	Take care to av	oid (Canned or packa	nged	foods unless the	y ar	e labeled gluten-	free	
	Always		Often		Sometimes		Rarely		Absolutely
6)	Products with a g	gluter	n-free label may co	ontai	n gluten, but I am	revie	ewing the actual in	gred	ient list
	Always		Often		Sometimes		Rarely		Absolutely
7)	I make a list of	glute	en-free foods					-	
	Always		Often		Sometimes		Rarely		Absolutely
8)	I make a list of	food	s that contain gl	uten	I				
	Always		Often		Sometimes		Rarely		Absolutely
9)	When preparin	g foc	ods containing gl	luter	n, I clean the uter	nsils	well, to avoid co	ntan	nination of the
	affected child's	100d	while preparing	git				1	
	Always		Often		Sometimes		Rarely		Absolutely
10)	When preparin	g foo	od, wash the cool	kwa	re thoroughly be	fore	cooking		
			Often		Sometimes		Rarely		Absolutely
11)	I give my child	food	alternatives tha	t co	ntain vitamins ar	nd m	inerals accordin	g to	the doctor's
	recommendatio	n th	at their ingredie	nts s	should be gluten-	free	1		
	Always		Often		Sometimes		Rarely		Absolutely

12) Take care to	o avoid foods tha	t may contain hidden	sources of gluter	n, such as sauces or					
fried foods	that may be cook	ed with other foods c	ontaining gluten.						
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
13) I give my chi	ld a gluten-free mo	eal when he goes out of	the house						
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
14) I inform offic	cials about my chil	d's illness in places he g	goes to, such as kind	dergarten or school					
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
15) If my child's condition does not improve, I follow up with the doctor									
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
16) I still give my	y baby food free of	gluten, even when the	symptoms disappea	ar					
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
17) I follow up	with the doctor v	when any complication	ns arise on the ch	ild					
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
18) I fully adhere	e to the doctor's re	commendations							
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
19) I participate	in social activities	related to celiac disease	e with others who h	ave the same disease					
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
20) I allow my ch curiosity	nild to eat food con	taining gluten during s	ocial events to ware	d off other people's					
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					
21) I inform the	doctor about my c	hild's illness and sufferi	ng from celiac dise	ease to avoid giving him					
the treatmen	t that contains glu	ten							
□ Always	D Often	□ Sometimes	□ Rarely	□ Absolutely					
22) I am having	difficulty obtain	ing gluten-free food i	items						
□ Always	□ Often	□ Sometimes	□ Rarely	□ Absolutely					

عزيزتي الأم المشاركة ...

بعد التحية ...

أنا الباحث / محمود عصام أبو عيدة، طالب ماجستير في برنامج تمريض الأطفال في كلية المهن الصحية بجامعة القدس - أبو ديس - فرع غزة، أقوم بدراسة بحثية بعنوان "المعرفة والتوجهات والممارسات بين أمهات الأطفال المصابين بالداء الزلاقي (حساسية القمح) في قطاع غزة " ويعتبر هذا البحث شرطًا أساسيًا لنيل درجة الماجستير.

تهدف هذه الدراسة إلى تقييم مستوى المعرفة والتوجهات والممارسات بين أمهات الأطفال المصابين بالداء الزلاقي في قطاع غزة. مع العلم أن المشاركة في هذا الاستبيان اختيارية، فقد يستغرق ملء هذا الاستبيان حوالي 20-30 دقيقة، لذا يرجى الإجابة على جميع الأسئلة قدر الإمكان، على النحو الذي ترينه مناسبا، مع العلم بأنه لا توجد إجابة صحيحة أو خاطئة، مع حرصنا وتأكيدنا لك أن البيانات التي قدمتها سرية للغاية ومخصصة لأغراض البحث العلمي فقط.

شكرا لتعاونكم معنا

تفضلوا بقبول فائق الاحترام

الباحث:

محمود عصام أبو عيدة

رقم الجوال:

059961773

سجل المقابلة											
								الرقم التسلسلي	(1		
]/[تاريخ المقابلة	(2		
فقة	🔲 غیر موا				موافقة		ىيە؟	هل توافقين على المشاركة في الدرا	(3		
الجزء الأول: البيانات الاجتماعية والديموغرافية											
البيانات المتعلقة بالأم											
عمر الأم											
🗖 محافظةرفح	لوسطی خان یونس	محافظة محافظة .			لشمال غزة	محافظة ا محافظة ع		مكان الإقامة	(2		
أرملة	مطلقة 🛛 أرملة					متزوجة		الحالة الزوجية	(3		
🗖 جامعة		ثانوي				أساسي		المستوى التعليمي للأم	(4		
🗖 عامله] موظفة] ربه منزل			حالة المهنة	(5		
🗖 أكثر من 9		9-6				5-2		عدد أفراد العائلة	(6		
🗖 أكثر من 6		6-4				3-1		عدد الاطفال في العائلة	(7		
	I			شيكل				متوسط دخل العائلة الشهري	(8		
ם צ	م	zi 🔲				ي؟	الداء الزلاقم	هل لديك طفل آخر يعاني من مرض	(9		
				ي الداء	من مرض	، يعانون ا	أطفال الذين	إذا كانت الإجابة بنعم، كم عدد الا الزلاقي؟	(10		
			Ċ	، بالطفا	المتعلقة	البيانات					
		سنة	شهر/					عمر الطفل	(1		
] أنثى]				ذكر		جنس الطفل	(2		
سنتيمتر	لطول	.2	کجم _.			زن	1. الوز	القياسات الجسمية للطفل	(3		
م جم] 2.5 – 4.5 كج] أكثر من 4.5 ك		-	2 کجم	1.1 کجم ل من 2.5	أقل من 5 1.5 – أة		وزن الطفل عند الولادة	(4		
آخر(حددي)	ئالث	ili 🗖		الثاني		ل	🗖 الأو	ترتيب الطفل بين اخوته	(5		
	ע					نعم		هل التحق طفلك بالمدرسة؟	(6		
□ ثانوي	🗖 إعدادي	ي	ابتدائ		إليه؟	يمي وصل	مستوی تعا	إذا كانت الإجابة بنعم، فما هو أعلى	(7		

 عمر الطفل عند تشخيصه بمرض الداء 	داء الزلاقي				شب	.شهر / سنة			
 مدة مرض الداء الزلاقي 			 أقل من 1 س 4 – 1 	سنة وات		 5 – 8 سنوات أكثر من 8 سنوات 			
 هل يعاني طفلك من أمراض مصاحبة؟ 	ક્વ		🗖 نعم		ו	ם צ			
 إذا كانت الإجابة بنعم، فما هذا المرض 	<u>ن</u> ؟		 السكري نقص هرمو 	مون النمو]	 الربو آخر(حددي) 			
 هل يعاني طفلك من أي مضاعفات؟ 			🗖 نعم		1	ם צ			
 إذا كانت الإجابة بنعم، ما هي المضاعف (1) 	عفات؟		 ا فقر الدم الين أو هشان 	باشة عظام]	 سوء التغذية آخر (حددي) 			
 هل تم إدخال طفلك إلى المستشفى في ا 	ي الماضي؟		🗖 نعم		ו	ם צ			
 إذا كانت الإجابة بنعم، فما هو عدد مرا 	كانت الإجابة بنعم، فما هو عدد مرات دخول المستشفى			اوي من 3]	🗖 أكثر من 3			
1) ما هو سبب دخول المستشفى؟		 اضطر اضطر 	اب في الجهاز الهض اب في الجهاز التنفير	لهضمي □ اضطراب في الجهاز لتنفسي البولي □ آخر					
		البيانات التن	ظيمية						
) هل حصلت على جلسات تثقيفية حول ا	ل المرض؟		🗖 نعم			ע ע			
 إذا كانت الإجابة بنعم، تم تقديم هذه الج 	الجلسة التثقيفي	يية من خلال	طبيب المعائم	الأطفال ئي تغذية		 ممرضة آخر 			
 الفترة الزمنية للجلسة التثقيفية 	أقل م دقائق	اقل من 10 دقائق				أكثر من 20 دقيقة			
 هل تم توزيع منشورات عن المرض؟ 	٩.		🗖 نعم			ע 🗆			
الجزء الثاني: تقييم مستوه	وى المعرفة	، بین أمهات ا	لأطفال الذين يعان	انون من مر	ىرض الد	الداء الزلاقي			
) هل تعرفين ما هو مرض الداء الزلاقي	ني؟ 🗆] نعم	- צ	إذا كانت الإج	جابة بنعم،	عم، انتقلي إلى الأسئلة التالية			
 هل يوجد علاج لمرض الداء الزلاقي؟ 	ې؛ 🗆] نعم			لا				
.) هل يمكن شفاؤه تماما؟] نعم			لا				
 مرض الداء الزلاقي هو مرض يصيب 	ب الجهاز الهض -	ضمي كردة فعل	عند التعرض لمادة ا	التعرض لمادة الغلوتين					
🗖 نعم		ע 🗆		ل لا	لا أعرف	<u>ن</u>			
 الجزء الأكثر تضررا من مرض الداء ا 	ء الزلاقي هو الا	الأمعاء الدقيقة							
🗖 نعم		ע 🗆			لا أعرف	ف			

	ما هي العوامل المسببة لمرض الداء الزلاقي عند الأطفال؟								
🗖 لاأعرف	ע		🗖 نعم		العامل الور اثي	.1			
🗖 لاأعرف	ע		🗖 نعم		ممارسات تغذية الرضع والفطام مبكرا	.2			
🗖 لاأعرف	ע		🗖 نعم		نقص المناعة				
🗖 لاأعرف	ע		🗖 نعم		العدوى المَعدية المعوية	.4			
			. تحدث عند الأطفال؟	في التي قد	ما هي علامات وأعراض مرض الداء الزلا	(7			
🗖 لاأعرف	ע		🗖 نعم		الإسهال المزمن	.1			
🗖 لاأعرف	צ		🗖 نعم		ألم وانتفاخ البطن	.2			
🗖 لاأعرف	ע		🗖 نعم		تأخر النمو	.3			
🗖 لاأعرف	ע		🗖 نعم		فقدان الوزن	.4			
🗖 لاأعرف	ע		🗖 نعم		فقر الدم	.5			
🗖 لاأعرف	لا		🗖 نعم		الإرهاق	.6			
					ما هي مضاعفات مرض الداء الزلاقي؟	(8			
🗖 لاأعرف	لا		🗖 نعم		سوء التغذية	.1			
🗖 لاأعرف	لا		🗖 نعم		لين العظام	.2			
🗖 لا أعرف	لا		🗖 نعم		سرطان الامعاء	.3			
🗖 لاأعرف	لا		🗖 نعم	سر ع	مضاعفات عصبية مثل نوبات التشنج أو الد	.4			
			، غذائي خالٍ من الغلوتين	اتباع نظاء	أفضل معيار لعلاج مرض الداء الزلاقي هو	(9			
ىرف	🛛 لاأء		У		🗖 نعم				
			ر مدى الحياة؟	ب أن يستم	هل اتباع نظام غذاني خالٍ من الغلوتين يج	(10			
ىرف	🗆 لاأء		У		🗖 نعم				
				ء الزلاقي؟	هل يمكن الوقاية من مضاعفات مرض الدا	(11			
ىرف	🗆 لاأء	_	لا		□ نعم				

			اعفات؟	ما هي وسانل الوقاية التي تمنع المض	(12
🗖 لاأعرف	ע צ	🗖 نعم		الالتزام بنظام غذائي خالٍ من الغلوتين	.1
🗖 لاأعرف	ע ע	🗖 نعم	حالة	مراجعة الطبيب بشكل منتظم لمتابعة اا	.2
🗖 لاأعرف	ע 🛛	🗖 نعم	ملى الفيتامينات والمعادن	تناول المكملات الغذائية التي تحتوي ع	.3
			يتين؟	أي من هذه الأطعمة تحتوي على الغلو	(13
🗖 لاأعرف	ם צ	🗖 نعم		القمح وطحينُه	.1
🗖 لاأعرف	ם צ	🗖 نعم		الشعير وطحينُه	.2
🛛 لاأعرف	ם צ	🗖 نعم		الشوفان وطحينُه	.3
🗖 لاأعرف	ם צ	🗖 نعم	ت	جميع أنواع الخبز والحلويات والمعجنا	.4
🗖 لاأعرف	ם צ	🗖 نعم	ل	المعكرونة الشعرية ـ الفريكة- المفتو	.5
🗖 لاأعرف	ם צ	🗖 نعم		الذرة والأرز وطحينهما والنشا	.6
🗖 لاأعرف	ע ע	🗖 نعم		النقانق -اللحوم المعلبة - المارتديلا	.7
🛛 لاأعرف	ם צ	🗖 نعم		البرغل- السميد- الفلافل	.8
🗖 لاأعرف	ם צ	🗖 نعم		الفواكه والخضروات	.9
🗖 لاأعرف	ם צ	🗖 نعم		الشوربات، مكعبات المرق- الصلصة	.10
🗖 لاأعرف	ם צ	🗖 نعم		صبغات الأطعمة والنكهات الطبيعية	.11
🗖 لاأعرف	ם צ	🗖 نعم		الألبان ومشتقاتها ـ البيض	.12
🗖 لاأعرف	ם צ	🗖 نعم		التوابل ومسحوق الخميرة	.13
🗖 لاأعرف	ע ע	🗖 نعم		الدجاج واللحوم والأسماك	.14
حدة)	يار أكثر من إجابة وا	عند الأطفال ؟ (يمكنك اخت	حول مرض الداء الزلاقي ع	من أي مصادر حصلت على معلومات	(14
· مرض الداء الزلاقي	ے شخص آخر لدیہ ے آخر (جردی)	ات والمجلات بدنن زن	 الصحف والمنشور مسائل الاعلام أو ا 	مقدمي الرعاية الصحية	
	∟ حر (حددي)		ם وسان ، مِ عارم , د ,	کبار انسن کي الاسره / المجتمع	Ц

ن الداء الزلاقي	الجزء الثالث: تقييم مستوى التوجهات بين أمهات الأطفال الذين يعانون من مرض الداء الزلاقي											
		ي الطفل إذا ترك دون علاج	الزلاقي مرضًا خطيرًا ويؤذ) أؤمن أن مرض الداء	(1							
غير موافقة بشدة	🗖 غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
) أوّمن أن مرض الداء الزلاقي لا يمكن الشفاء منه تماما، ولكن يمكن السيطرة على المرض من خلال الالتزام بنظام غذائي خالٍ من الغلوتين												
غير موافقة بشدة	غیر موافقة	🗖 لست متأكدة	🗖 موافقة	موافقة بشدة								
		ي الى زوال الاعراض	فذائي خالٍ من الغلوتين يؤده) أؤمن أن اتباع نظام غ	(3							
غير موافقة بشدة	غير موافقة	🗖 لست متأكدة	🗖 موافقة	موافقة بشدة								
		، في منع المضاعفات	لذائي خالٍ من الغلوتين فعال) أوْمن أن اتباع نظام غ	(4							
عير موافقة بشدة	🗖 غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
		ف وعبء على الأسرة	فذائي خالٍ من الجلوتين مكا) أعتقد أن اتباع نظام غ	(5							
غير موافقة بشدة	🗖 غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
		س حياة الطفل	فذائي خالٍ من الغلوتين يحم) أعتقد أن اتباع نظام غ	(6							
غير موافقة بشدة	🗖 غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
	طفلي	س من التحصيل الدر اسي ل	فذاني خالٍ من الغلوتين يحس) أؤمن أن اتباع نظام غ	(7							
غير موافقة بشدة	🗖 غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
	لنمو الطفل بشكل طبيعي	ض الداء الزلاقي ضرورية	ية المتبعة للسيطرة على مر) أعتقد أن القيود الغذائ	(8							
غير موافقة بشدة	غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
	1	ف الإحراج	ين بمرض طفلي يسبب بع) أعتقد أن معرفة الآخر	(9							
غير موافقة بشدة	غير موافقة	🗖 لست متأكدة	🗖 موافقة	موافقة بشدة								
ايش مع المرض	, اللازم للمساعدة على التع	ان إلى توفير الدعم النفسي	على وجه الخصوص يحتاج	 أؤمن أن الأم والطفل 	0							
عیر موافقة بشدة	غير موافقة	🗖 لست متأكدة	🗖 موافقة	🗖 موافقة بشدة								
	ض	ثقيف صحي حول هذا المره	بشکل خاص يحتاجان إلى تا	 أعتقد أن الأم والطفل 	1							

غير موافقة بشدة	غير موافقة	🗖 لست متأكدة	□ موافقة	🔲 موافقة بشدة	
12) أؤمن أن متابعة الطفل طبياً ونفسياً وتقديم المساعدة والتوجيه والفحص الطبي المنتظم أمر ضروري وجزء أساسي من العلاج					
غير موافقة بشدة	🗖 غير موافقة	🗖 لست متأكدة	🗖 موافقة	موافقة بشدة	
الجزء الرابع: تقييم مستوى الممارسة بين أمهات الأطفال الذين يعانون من مرض الداء الزلاقي					
 أحرص على تجنب جميع الأطعمة التي تحتوي على الغلوتين 					
🗖 بتاتاً	🗖 نادراً] أحياناً	🗖 غالباً	🗖 دائماً	
			ي کل شهر	 أقوم بفحص وزن طفا 	
🗖 بتاتاً	🗖 نادراً] أحياناً	البأ	🗖 دائماً	
	 أحرص على متابعة طبيب طفلي بشكل منتظم 				
🗖 بتاتاً	🗖 نادراً] أحياناً	البأ	🗖 دائماً	
4) عند شراء المواد الغذائية أو الأدوية، أتأكد من خلوها من الغلوتين					
🗖 بتاتاً	🗖 نادراً] أحياناً	البأ	🗖 دائماً	
5) أحرص على تجنب الاطعمة المعلبة أو المغلفة ما لم يتم تسجيل انها خالية من الغلوتين على الملصق الخاص بها					
🗖 بتاتاً	🗖 نادراً	□ أحياناً	ا غالباً	🔲 دائماً	
 6) قد تحتوي المنتجات التي تتضمن ملصقاً خالٍ من الغلوتين على مادة الغلوتين، لكنني أراجع قائمة المكونات الفعلية 					
				- (
🗖 بتاتاً	🗖 نادراً	🗖 أحياناً	🗖 غالباً	ً دائماً	
ل بناتاً	🗖 نادراً	أحياناً	غالباً غالباً عالماً في غالباً عمة الخالية من الغلوتين	 دائماً دائماً أقوم بعمل قائمة بالأط 	
بتاتاً بتاتاً	 نادر آ نادر آ 	 أحياناً أحياناً 	 غالباً عمة الخالية من الغلوتين غالباً 	 دائماً ۲) أقوم بعمل قائمة بالأط دائماً 	
بتاتاً	 نادر أ نادر أ 	 أحياناً أحياناً أحياناً 	 غالباً عمة الخالية من الغلوتين غالباً لأطعمة التي تحتوي على الغ 	 دائماً (7) أقوم بعمل قائمة بالأط دائماً 8) أقوم بعمل قائمة من المائمة من مائمة من المائمة من م	
بتاتاً بتاتاً بتاتاً	 نادر آ نادر آ نادر آ 	 أحياناً أحياناً أحياناً أحياناً 	 غالباً عمة الخالية من الغلوتين غالباً لأطعمة التي تحتوي على الغ غالباً 	 دائماً دائماً دائماً دائماً دائماً دائماً دائماً 	
بتاتاً بتاتاً بتاتاً حين إعداده	 نادر آ نادر آ نادر آ فیآ لتلوث طعام الطفل المصاب 	 أحياناً أحياناً أحياناً أحياناً أحياناً مر بتنظيف الأواني جيدًا، تلا 	 غالباً عمة الخالية من الغلوتين غالباً غالباً غالباً غالباً غالباً عالباً 	 دائماً 	
 بتاتاً بتاتاً بتاتاً بتاتاً بتاتاً بتاتاً 	 نادر أ 	 أحياناً أحياناً أحياناً أحياناً أحياناً أحياناً أحياناً أحياناً أحياناً 	 غالباً عمة الخالية من الغلوتين عالباً غالباً غالباً عالباً ي تحتوي على الغلوتين، أقو عالباً 	 دائماً دائماً أقوم بعمل قائمة بالأط دائماً أقوم بعمل قائمة من الله دائماً دائماً عند إعداد الأطعمة التاحدانماً 	
ا بتاتاً بتاتاً مین إعداده بتاتاً	 نادر آ نادر آ نادر آ فياً لتلوث طعام الطفل المصاب نادر آ 	 أحياناً أحياناً أحياناً أحياناً م بتنظيف الأواني جيدًا، تلا أحياناً جيدًا 	 غالباً عمة الخالية من الغلوتين غالباً 	 دائماً دائماً أقوم بعمل قائمة بالأظ أقوم بعمل قائمة من الله أقوم بعمل قائمة من الله عند إعداد الأطعمة التا دائماً دائماً عند إعداد الطعام، اغ 	
 بتاتاً بتاتاً بتاتاً بتاتاً بتاتاً بتاتاً بتاتاً 	 نادر أ 	 أحياناً 	 غالباً عمة الخالية من الغلوتين عملة الخالية من الغلوتين غالباً غالباً عالباً غالباً 	 دائماً دائماً أقوم بعمل قائمة بالأط أقوم بعمل قائمة من الألم أقوم بعمل قائمة من الألمحة من الألمحة التاريماً دائماً دائماً دائماً دائماً دائماً دائماً 	

🗖 بتاتاً	🗖 نادراً] أحياناً	🗖 غالباً	🗖 دائماً	
12) أحرص على تجنب الاطعمة التي قد يكون بها مصادر خفية من الغلوتين مثل الصلصات او الاطعمة المقلية التي قد تكون مطبوخة مع غيرها من الاطعمة التي تحتوي على الغلوتين					
🗖 بتاتاً	🗖 نادراً] أحياناً	🗖 غالباً	🗖 دائماً	
	 أقوم بإعطاء طفلي وجبة خالية من الغلوتين عند خروجه من المنزل 				
🗖 بتاتاً	🗖 نادراً] أحياناً	🗖 غالباً	🗖 دائماً	
14) أقوم بإبلاغ المسئولين بمرض طفلي في الاماكن التي يرتادها كالروضة أو المدرسة					
🗖 بتاتاً	🗖 نادراً] أحياناً	🗖 غالباً	🗖 دائماً	
15) إذا لم يتحسن طفلي، اقوم بمراجعة الطبيب					
🗖 بتاتاً	🗖 نادر أ] أحياناً	🗖 غالباً	🗖 دائماً	
16) أواصل إعطاء طفلي الطعام الخالي من الغلوتين عندما تختفي الأعراض					
🗖 بتاتاً	🗖 نادر أ] أحياناً	🗖 غالباً	🗖 دائماً	
17) أراجع الطبيب عند ظهور أي مضاعفات على الطفل					
□ بتاتاً	🗖 نادر أ	□ أحياناً	🗖 غالباً	🗖 دائماً	
			ب بالکامل	18) ألتزم بتوصيات الطبيب	
□ بتاتاً	🗖 نادراً	🗖 أحياناً	🗖 غالباً	🗖 دائماً	
19) أشارك في الأنشطة الاجتماعية المتعلقة بمرض الداء الزلاقي مع الآخرين الذين لديهم نفس المرض					
□ بتاتاً	🗖 نادر أ	أحياناً	🗖 غالباً	🗖 دائماً	
20) أقوم بالسماح لطفلي بتناول الغذاء المحتوي على الجلوتين أثناء المناسبات الاجتماعية درءاً لفضول الآخرين					
□ بتاتاً	🗖 نادراً	🗖 أحياناً	🗖 غالباً	🗖 دائماً	
21) أقوم بإبلاغ الطبيب عند مرض طفلي بمعاناته من الداء الزلاقي تفادياً لإعطائه علاجاً محتوياً على الغلوتين					
🗖 بتاتاً	🗖 نادر أ	□ أحياناً	🗖 غالباً	🗖 دائماً	
22) أواجه صعوبة في الحصول على المواد الغذائية الخالية من الغلوتين					
□ بتاتاً	🗖 نادراً] أحياناً	ا غالباً	🗖 دائماً	

Annex (3) List of arbitrators

No	Name	Position
1.	Dr. Adnan Al-Wahidi	Executive Director of the Ard Al Insan Association
2.	Dr. Ali AlBelbeisi	University College of Applied Sciences
3.	Dr. Hamza Abdeljawad	Al- Quds University
4.	Dr. Mohammed Al-Dardasawi	Al-Rantisi Pediatric Hospital
5.	Dr. Mohammed Aljerjawy	Palestine College of Nursing
6.	Dr. Ragheb Warsh Agha	Al-Rantisi Pediatric Hospital
7.	Dr. Shireen Abed	Al Nassr Pediatric Hospital

Annex (4) An official letter of approval from Helsinki Committee in the Gaza Strip

المجلس الفلسطيني للبحث المحسي **Palestinian Health Research Council** تعزيز النظام الصحى الفلسطيني من خلال مأسسة استخدام المطومات البحثية في صنع القرار Developing the Palestinian health system through institutionalizing the use of information in decision making Helsinki Committee For Ethical Approval Date: 2019/10/7 Number: PHRC/HC/618/19 الاسم: Name: Mahmoud Issam Abu Eida نفيدكم علماً بأن اللجنة قد ناقشت مقترح در استكم We would like to inform you that the committee had discussed the proposal of حول: your study about: Knowledge, Attitude and Practice among Mothers of Celiac Disease Children in **Gaza Strip** و قد قررت الموافقة على البحث المذكور عاليه The committee has decided to approve mentioned بالرقم والتاريخ المذكوران عاليه above research. the Approval number PHRC/HC/618/19 in its meeting on 2019/10/7 Signature Member Member -10 60 **Specific Conditions:-**Genral Conditions:-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. The committee appreciates receiving a copy of your final research when completed. E-Mail:pal.phrc@gmail.com غزة - فلسطين Gaza - Palestine شارع النصر - مفترق العيون

Annex (5) Administrative approval from the Ard El-Insan Palestinian Benevolent Association in the Gaza Strip

Al Quds University Faculty of Health Professions Nursing Dept. -Gaza



usall arala كلية الممن السدية حائدة التمريض- غرة

التاريخ: 2019/10/19

حفظه الله حضرة الأخ/ د. عدنان الوحيدي المدير التنفيذي لجمعية أرض الإسان الفلسطينية السلام عليكم ورحمة الله وبركاته

الموضوع: تسهيل مهمة الطالب/ محمود عصام أبو عيدة

تهديكم كلية المهن الصحية بجامعة القدس أطيب التحيات، ونرجو من حضرتكم مساعدة الطالب المذكور بخصوص جمع معلومات خاصة بموضوع:

Knowledge, Attitude, and Practice among Mothers of Celiac Disease Children in Gaza Strip

وذلك من خلال مقابلة الأمهات ذوات أطفال مرض الداء الزلاقي (حساسية القمح) لتعبئة استبانات تتعلق بموضوع الدراسة من مركزي حمعية أرض الإنسان بغزة وحانيونس وذلك ضمن رسالة الماجستير الخاصة به لبرنامج تمريض الأطفال.

جمعيسة أرض الإنسسان وتفضلوا بقبول وافر الاحترام والتقدير init interesti 10 19 10 زة محمد عبد الجواد د م ursing Deparime ماعد في عاوم التمريض ں بغزة منسق برامج ماجستير التمري كلية المعن الصحية - جامعة القدس فانتم ملمی با منولد خانتم من می استولد hamjawad1@gmail.com تلفاكس: 972 8 2644220 \$ 972 خلوي: 852755 899 852755 خلوي: فالمالم Tel: 08 2644210+08 2644220

Tel. Fax: 08 2644220

تلفون: 08 2644210+08 2644220 تلفاكس: 082644220

Annex (6) Arabic abstract

عنوان الدراسة: المعرفة والتوجهات والممارسات بين أمهات الأطفال المصابين بالداء الزلاقي (حساسية القمح) في قطاع غزة

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> > ملخص الدراسة:

يعد مرض الاضطرابات الهضمية مشكلة صحية عامة رئيسية في العالمين المتقدم والنامي، وهو أحد أكثر الاضطرابات مدى الحياة شيوعًا التي تؤثر على عامة السكان في جميع أنحاء العالم، وقد انتشر على نطاق واسع على مدار العشرين عامًا الماضية. مرض الاضطرابات الهضمية هو مرض مناعي ذاتي معقد ينتج عن تناول الغلوتين (الموجود في الحبوب بما في ذلك القمح والذرة والشعير) في الأفراد المهيئين وراثيًا. لقد هدفت هذه الدراسة إلى تقييم المعرفة والتوجهات والممارسات لدى أمهات الأطفال المصابين بمرض الداء الزلاقي في قطاع غزة.

باستخدام المنهج الوصفي التحليلي، وباستخدام استبيان تم جمع البيانات من قبل الباحث من خلال مقابلة وجهاً لوجه مع أمهات الأطفال المصابين بمرض الداء الزلاقي. حيث تكونت عينة الدراسة من 174 أم لأطفال يعانون من مرض الداء الزلاقي للمشاركة في الدراسة. حيث كان 120 أم لأطفال يعانون من مرض الداء الزلاقي يتابعون بجمعية أرض الإنسان في فرع مدينة غزة و54 أم لأطفال يعانون من مرض الداء الزلاقي يتابعون بجمعية أرض الإنسان في مدينة خان يونس.

وكشفت نتائج الدراسة أن المتوسط الحسابي لمعرفة المشاركين حول الداء الزلاقي كان 26.12 من 39، وبنسبة مئوية 66.99٪ وهي أقل من متوسط الدرجة (67.94) وهو ما يعتبر غير مرض. اما بالنسبة للتوجهات فبلغ المتوسط الحسابي 4.25 من 5.0، مما يعتبر موقفا إيجابيا، في حين أن متوسط درجات ممارساتهم هو 3.42 من 4.0 (85.5٪). كما أظهرت النتائج عدم وجود فروق ذات دلالة إحصائية عند مستوى دلالة $lpha \leq 0.05 = lpha$ في مستوى المعرفة الكلية للمشاركين فيما يتعلق بمرض الداء الزلاقي من حيث الفئات العمرية، ومكان الإقامة، والدخل الشهري، وعدد أفراد الأسرة، وعدد الأطفال في الأسرة، والحالة الاجتماعية، والوظيفة، وإنجاب أطفال آخرين يعانون من مرض الداء الزلاقي. من ناحية أخرى، هناك فرق كبير في متوسط مستوى المعرفة الإجمالية للمشاركين فيما يتعلق بمرض الاضطرابات الهضمية فيما يتعلق بمستواهم التعليمي. من ناحية أخرى، هناك فرق كبير في المستوى المتوسط لإجمالي لتوجهات المشاركين فيما يتعلق بمرض الداء الزلاقي فيما يتعلق بمكان إقامتهم. من ناحية أخرى، هناك فرق كبير في متوسط مستوى التوجهات الإجمالية للمشاركين فيما يتعلق بمرض الداء الزلاقي فيما يتعلق بإنجاب أطفال آخرين يعانون من مرض الاضطرابات الهضمية. كما أوضحت النتائج أن هناك علاقة ضعيفة إيجابية معنوية بين توجهات المشاركين وممارساتهم تجاه مرض الداء الزلاقي. بمعنى أنه مع زيادة مستوى سلوك المشاركين، سيزداد مستوى ممارستهم. من ناحية أخرى، لا توجد علاقة ذات دلالة إحصائية بين معرفة المشاركين وممارساتهم فيما يتعلق بمرض الاضطرابات الهضمية، ولا توجد علاقة ذات دلالة إحصائية بين معرفة المشاركين وموقفهم تجاه مرض الاضطرابات الهضمية. خلصت الدراسة إلى أن أمهات الأطفال المصابين بمرض الداء الزلاقي في قطاع غزة لديهم مستوى منخفض من المعرفة فيما يتعلق بمرض الداء الزلاقي. ويوصى الباحث بإجراء جلسات تثقيفية صحية لأمهات الأطفال المصابين بمرض الداء الزلاقي. بالإضافة إلى ذلك، هناك حاجة إلى تنظيم ورش عمل تدريبية لتعزيز ممارسات الأمهات فيما يتعلق بمرض الداء الزلاقي وكيفية الوقاية من مضاعفات المرض.

الكلمات المفتاحية: المعرفة، التوجهات، والممارسة، الداء الزلاقي