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كلية الصحة العامة – فلسطين
School of Public Health
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Deanship of Graduate Studies
Al-Quds University

Knowledge, Attitude and Practice Among Women Attending Primary Health Care Clinics Toward Environmental Sanitation In Middle Governorate, Palestine

PREPEARD BY:

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M.P.H Thesis

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Dedication

I dedicate this simple work ….

TO my family;parents,brothers,sisters, my wife, sons and daughters for their help, encouragement and patience

To all those who gave me every opportunity of success

Ahmed Fouad Mansour

Al-Quds University
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Thesis Approval

Knowledge, Attitude and Practice Among Women Attending Primary Health Care Clinics Toward Environmental Sanitation In Middle Governorate, Palestine.

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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 ……..

Ahmed Fouad Mansour

Date: May / 2008

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Abstract

Education and increasing awareness of individuals and communities, specially women, about environmental issues should enable people to develop the knowledge, attitude and skills that increase the chance that they will be good environmental citizens and upgrade the quality of life at the individual, family and community levels.

The purpose of this study (Knowledge, Attitude and Practice Among Women Attending Primary Health Care in Middle Governorate of Gaza Strip, UNRWA and Governmental Clinics Regarding Environmental Sanitation) is to determine the level of knowledge, attitude and practice (KAP) and the relationship with age, type of clinic, level of education, and monthly income.

The study was implemented in the middle governorate of Gaza Strip. The sample of this study is composed of (160) married women, 120 from UNRWA and 40 from Governmental clinics. Women were chosen from every clinic by convenience sampling. SPSS (Statistical Package for Social Science) software version 11 was used to process the data. The results indicated that the study women have a high level of knowledge regarding environmental sanitation with a percentage level of 77.4, and a positive attitude toward environmental sanitation with a high percentage of 67.4. The findings showed that the level of practice was either high with a mean percentage of 71.5 of the points.

In addition, no significant differences were found in the women KAP based on type of clinic (Government and UNRWA) in middle governorate. Also, no significant differences were found in the women KAP regarding environmental sanitation according to their level of education, women age and their monthly income.

According to the findings, a high level of knowledge and attitude among women toward environmental sanitation could lead to developing the practice toward environmental sanitation by enriching and enhancing the relationship with the institutions of local

community. However, this study may be useful for improving women awareness and enriching their practice regarding environmental sanitation

ملخص الدراسة

التثقيف وزيادة وعى الأفراد والمجتمع، وخاصة المرأة، إزاء القضايا البيئية يمكنه م من اكتساب المعرفة والمواقف والمهارات التي تزيد من فرصة أن يكونوا مو اطنين جيدين نحو البيئة ورفع مستوى نوعية الحياة للفرد والأسرة والمجتمع. إن الغرض من هذه الدر اسة هو تحديد المعرفة والمواقف والممارسة بين النساء اللواتي يترددن على مراكز الرعاية الصحية الأولية (الوكالة– الحكومة) في المحافظة الوسط ي من قطاع غزة فيما يتعلق بالإصحاح البيئي ، وكذلك تحديد مستوى المعرفة والمواقف والممارسة (KAP) وعلاقتها مع العمر ، نوع العيادة، ومستوى التعليم، والدخل الشهري للأسرة.

ولقد كانت العينة في هذه الدراسة تتكون من (160) من النساء المتزوجات موزعين على النحو التالي: 120 من عيادات الوكالة و 40 من العيادات الحكومية، ولقد تم اختيار النساء بطريقة العينة المتاحة واستخدم برنامج الرزم الإحصائية للعلوم الاجتماعية (SPSS) لتحليل العينة.

ولقد أشارت نتائج الدراسة إلي إنه لدي النساء مستوى عال من المعرفة فيما يتعلق بالإصحاح البيئي يصل إلي 77،4 ٪ ، وأن اتخاذ موقف ايجابي تجاه الإصحاح البيئي كان مرتفعا بنسبة 67،4 ٪. وكذلك أظهرت النتائج أن مستوى الممارسة أيضا كان بنسبة مرتفعة 71.5 ٪ من النقاط التي تعكس مستوى الممارسة لدي النساء في المنطقة الوسطي.

وبالإضافة إلى ذلك، لا يوجد اختلافات ذات دلالة إحصائية لعلاقة مستوي المعرفة والاتجاهات والممارسة لدي النساء بالنسبة لنوع العيادة (الحكومة – الوكالة)لصالح النساء .

أيضا، لا يوجد أي اختلافات ذات دلالة إحصائية لعلاقة مستوي المعرفة والاتجاهات والممارسة لدي النساء وعلاقتهما بمستوى التعليم, سن المرأة, و الدخل الشهري للعائلة فيما يتعلق بالإصحاح البيئي.

واستنادا إلى النتائج التي توصل إليها، فإن النساء كن على مستوى عال من المعرفة والاتجاهات مما يمكن إن يؤدي إلي تطوير الممارسة لدي النساء فيما يتعلق بالإصحاح البيئي عن طريق أغناء وتعزيز العلاقة مع مؤسسات المجتمع المحلي. إن هذه الدراسة قد تكون مفيدة لتحسين وعى النساء وإثراء خبراتهن فيما يتعلق بالإصحاح البيئي

List of Tables

List of Figures

List of Annexes

List of abbreviations

KAP	Knowledge, Attitude, Practice.
EQA	Environmental Quality Authority.
UNEP	United Nations Environmental Program.
UNICEF	United Nations Children's Fund
UNRWA	United Nation Relief And Work Agency
WHO	World Health Organization
MOH	Ministry Of Health
SPSS	Statistical Package Of Social Science
GOV	Governmental
PHC	Primary Health Center
PCBS	Palestinian Center Bureau Of Statistics
ARIJ	Applied Research Institute of Jerusalem
USA	United States of America
UN	United Nations
KRWS&SA	Karnataka Rural Water Supply and Sanitation Agency
ANOVA	Analysis of Variance
JMP	Joint monitoring programme
GS	Gaza Strip
NGOS	Non Governmental Organizations

Terms definition

Environmental Health: Is the systematic development, promotion, and conduct of measures which modify or otherwise control those external factors in the indoor and outdoor environment which might cause illness, disability, or discomfort through interaction with the human system. This includes not only health and safety factors, but also aesthetically desirable conditions in accordance with community demands and expectations (Milne, 1998)

Knowledge: Is what is known. Also, knowledge acquisition involves complex cognitive processes: perception, learning, communication, association, and reasoning. The term knowledge is also used to mean the confident understanding of a subject, potentially with the ability to use it for a specific purpose (Wikipedia, 2007).

Attitude: Attitude is an emotion that all people get when they have other emotions. Attitudes are positive, negative or neutral views of an object like; a person, behavior or an event (Wikipedia, 2007).

Practice: The observation, description, evaluation, interpretation, or modification of human behavior by the application of psychological principles and methods (Nebraska DHHS, 2005)**.**

Environmental awareness: The attitude of having consciousness about the consequences of the human intervention on the environment and the performances of appropriate behavior to reduce negative effects (Nunez, 2000).

Sanitation: Interventions to reduce people's exposure to diseases by providing a clean environment in which to live, or measures to break the cycle of disease. This usually includes disposing of or hygienic management of human and animal excreta, refuse, and wastewater, the control of disease vectors and the provision of washing facilities for personal and domestic hygiene. Sanitation involves both behaviors and facilities which work together to form a hygienic environment (Mayling , et al, 1998)

Wastewater: Is any water that has been adversely affected in quality by anthropogenic influence. It comprises liquid waste discharged by domestic residences, commercial properties, industry, and/or agriculture and can encompass a wide range of potential contaminants and concentrations. In the most common usage, it refers to the municipal wastewater that contains a broad spectrum of contaminants resulting from the mixing of wastewaters from different sources(Wikipedia, 2007).

Pollution: An undesirable change in the physical, chemical or biological characteristics of air, water and land that may or will harmfully affect human life, the lives of the desirable species, our industrial processes, living conditions and cultural assets, or that may or will waste or deteriorate our raw material resources. (Kumar, 2002).

Solid waste: A simplified definition of solid waste would include garbage, trash, recyclable materials, yard waste, and waste from industrial and commercial sources. It does not include hazardous waste from businesses. Solid waste is any garbage, refuse, sludge, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations or from community activities (Wikipedia, 2007).

Primary health care: First contact and continuing comprehensive health care, including basic or initial diagnosis and treatment, health, supervision, management of chronic conditions and preventive health services. The provision of primary care does not necessarily require highly sophisticated equipment or specialized resources (PCBS, 2006).

Chapter One

Introduction

Chapter one

Introduction

1.1 Background

Environmental health comprises those aspects of human health, including quality of life, that are determined by physical, chemical, biological, social land psychological factors in the environment. It also refers to the theory and practice of assessing, correcting, controlling and preventing those factors in the environment that can potentially affect adversely the health of present and future generations. Environmental health comprises diverse areas including water management, infectious disease control and health education (Macarthur and Bonnfy, 1997).

Knowledge of health related environmental conditions such as basic sanitation and housing are of unique importance for establishing measures designed to upgrade the quality of life at the individual, family and community levels (Azerdo, et al, 2007).

Problems of the environment and of domestic hygiene are always related to poverty of population and the sanitation of settlements. Most cities and towns in developing countries are characterized by over-crowding, congestion, inadequate water supply and inadequate facilities of disposal of human excreta, waste water and solid wastes(Nath, 2003).

Nath added, Personal and domestic hygiene practices cannot be improved without improving basic amenities, such as water supply, waste water disposal, solid waste management and the problems of human settlements. But even under the prevailing conditions, there is significant scope of improving hygiene practices at home to prevent infection, cross-infection and health problems (Nath, 2003). According to world health organization(WHO) and united nations children's Fund(UNICEF) Joint Monitoring

Programme for Water Supply and Sanitation (JMP), despite the intensive efforts of many institutions at the national and international levels, nearly1.1 billion people still remain without access to improved sources of water, and about 2.4 billion have no access to any form of improved sanitation services. As a consequence, 2.2 million people in developing countries, most of them children, die every year from diseases associated with lack of safe drinking water, inadequate sanitation and poor hygiene. The majority of these people live in Asia and Africa, where fewer than one-half of all Asians have access to improved sanitation and two out of five Africans lack improved water supply (WHO& UNICEF, 2000).

The Palestinian environment is in a critical state manifested by shortages and pollution of resources, coupled with long-term environmental degradation that has accumulated over previous years of occupation. Israeli aggression exacerbates the current fragile state of the Palestinian environment. Continuous closure of the Palestinian territories and the presence of permanent checkpoints disrupt civil society and aggravate the present pollution and resource depletion problems in Palestine. In an already densely populated area, there is rapid population growth, scarcity of water, limited access to water resources, denial of the right of way, a long term refugee problem, and desertification and land degradation resulting from the climate change (PEQA, 2004).

The huge number of people living in the Gaza Strip poses a high pressure on the environment and subsequently a high risk of resource depletion. Therefore, the amount of waste generated by the inhabitants, institutes and companies is growing. In Gaza strip access to sewerage facilities at present varies from areas where more than 80% of the households are served by well-functioning sewerage systems, to areas where there is no sewerage system at all. On average, it is estimated that about 60 % of the population is

connected to a sewerage network. Cesspits and boreholes are the other wastewater disposal systems in the area. The larger urban centers, with the exception of Khan Yunis, are equipped to some extent with a sewerage network. The densely populated refugee camps of El Nuseirat, El Bureij, El Maghazi and El Zawida do not have any sewerage facilities, whereas the Jabalia camp is well served (UNEP, 2003).

Educating and increase awareness of individuals and community, specially women, about environmental issues should enable people to develop the knowledge, attitude and skills that increase the chance that they will be good environmental citizens (Vadala, 2004).

So, Environmental education should be promoted, targeting students at the primary and secondary school levels through curricula, and also by including appropriate modules in university courses. The general public, especially women, should be sensitized using various media and other channels. It is essential that all Palestinians are fully aware of the value of the environment and the need to protect it, as well as the risks of damage (PEQA, 2004).

1.2. Problem statement

Women are very important agents of change in the education and awareness and their children are most vulnerable victims of poor sanitation. Evaluation of the level of knowledge and attitudes and practice among women toward environmental sanitation can be considered as the key indicator in evaluating the present status of environmental sanitation knowledge attitude and practice among women in middle zone of Gaza-Strip (GS). So the study results will help in evaluating the level of knowledge, attitude and practice among women, and in generating the necessary information that will allow policy

makers to take appropriate decisions and to design appropriate intervention plans according to the results obtained.

1.3. Justification of the study

Human beings are at the centre of concern for sustainable development. They are entitled to a healthy and productive life in harmony with nature. Women have an essential role to play in the development of sustainable and ecologically sound consumption and production patterns and approaches to natural resource management, women provide sustenance to their families and communities. As consumers and producers, caretakers of their families and educators and play an important role in promoting sustainable development through their concern for the quality and sustainability of life for present and future generation, women are generally the most stable members of the community, as men often pursue work in distant locations, leaving women to safeguard the natural environment and ensure adequate and sustainable resource allocation within the household and the community （United Nations, 1995). Women are the primary participants in agriculture, food processing, and water and fuel collection. They can play a vital role in environmental education at the household and community level and in the integration of sustainable practices. However, their effectiveness is impeded by their low social status and low access to education and information. There is a severe shortage of formal and non formal education programs for women (Chatherine, 1991). Therefore it is considered crucial and important to increasing women's awareness and reinforcing their positive health behavior. Encouraging and reinforcing positive attitudes and equipping them with proper knowledge to influence their desired positive healthy behaviors may achieve this. So, establishing this study to evaluate women attitudes and knowledge regarding environmental sanitation and its influence on their life practice. For this it is considered

important to investigate the positive and negative knowledge, attitude, and practice of women toward environmental sanitation in order to change their attitude and behavior. For these reasons the researcher, to highlight this topic, has implemented this study, hoping that it will benefit society and colleges and other persons in Ministry of Health.

1.4. Aim of the study

The overall aim of the study is to evaluate the level of knowledge and attitudes toward environmental sanitation and its practice (KAP) among women in middle zone of Gaza-Strip (GS). Thus, the overall goal of this study is to generate the necessary information that will allow policy makers to take appropriate decisions and to design appropriate intervention plans to improve environmental sanitation.

1.4.1 Specific Objectives:

1. To know the level of knowledge on environmental sanitation among the women in the middle zone of Gaza Strip.
2. To determine attitudes toward environmental sanitation among the women in the middle zone of Gaza Strip.
3. To describe women practices regarding environmental sanitation in the middle zone of Gaza Strip.
4. To examine the relationship between KAP and socio demographic characteristics.
5. To enable decision makers to develop future plans and programs on the basis of the findings of this study.

1.5. Research Questions

1. What is the level of knowledge on environmental sanitation among women in the middle zone of Gaza-Strip?
2. What is the attitude of women regarding environmental sanitation in the middle zone of Gaza-Strip?
3. What are the actual practices of women attending primary health care clinics in the middle zone of Gaza Strip regarding environmental sanitation?
4. Is there a relationship between women (KAP) towards environmental sanitation and their level of education?
5. Is there a relationship between women (KAP) towards environmental sanitation and their age?
6. Is there a relationship between women KAP towards environmental sanitation and the household income?
7. Are there differences in KAP regarding environmental sanitation between woman attending UNRWA and GOVERNMENT clinics?
8. What are the conclusion and recommendations drawn from the study that can positively influence women attitudes and practices

1.6. Research Hypothesis

1. Women in middle zone of Gaza Strip have low level of knowledge toward environmental sanitation.
2. Women in middle zone of Gaza Strip have low attitude toward environmental sanitation.
3. Women attending primary health care clinics in middle zone of Gaza Strip have low level of actual practices regarding environmental sanitation**.**

4. There is a statistically significant relationship between level of education among women in middle zone area and their KAP towards environmental sanitation.
5. There is a statistically significant relationship between KAP among women in middle zone area and their age towards environmental sanitation.
6. There is a statistically significant relationship between KAP among women in middle zone area and their household income towards environmental sanitation
7. There is a statistically significant difference in KAP regarding environmental sanitation between women attending UNRWA and GOVERNMENT clinics.

1.7. Demographic Characteristics of Gaza Strip

17.1 Geography:

Palestinian National Authority (PNA) territories comprise tow geographically separated areas: West Bank and Gaza Strip. Gaza Strip is a narrow piece of land lying on the eastern coast of the Mediterranean Sea. Its position on the crossroads between Africa and Asia which had made it a target for occupiers and conquerors over the centuries. The last of these is Israel who occupied the Gaza Strip from Egyptian administration in 1967. Gaza Strip is a very crowded place with area 378 Km2 and constitutes 6.1% of total area of the Palestinian territory. Mid-Zone constitutes about 15% (58 km2) of the total area of Gaza Strip and about 1.0% of the total area of the Palestinian territory. (MOH, 2006).

1.7.2. Population:

Total number of Palestinian people at the end of 2006 was estimated at 10.1 million, of which 3.95 million have usual residence in the Palestinian Territory, Gaza Strip and West Bank including Jerusalem, (39.2%), 1.1 million (11.2%) live in Israel, 2.8 million (27.7%) in Jordan, 1.6 million (16.2%) in other Arab states, and 573 (5.7%) thousands live in other

countries. The estimated number of the Palestinian population in historic Palestine (Palestinian territory and Israel) was estimated at 5.1 million at end of 2006 compared with 5.4 million Jews according to the Israeli Central Bureau of Statistics. The Palestinian population is projected to reach 5.3 million at the end of 2007 against 5.5 million Jews. Population dichotomy at 5.7 million is expected at the end of 2010. The population of the Palestinian Territory is estimated at about 4 million at the end of 2006 thereof 2.5 million (63%) in the West Bank and 1.5 million (37%) in Gaza Strip. According to the distribution of the population by Governorates, Hebron Governorate has the largest population size where 14% of the total population lives in Hebron. Gaza Governorate hosts13%; Jerusalem Governorate comes third at 10.5%. On the other hand, Jericho and Al-aghwar Governorate has the lowest rate of population at the end of 2006 at 1.1%. According to the most recent estimates, 45.7% of the population in the Palestinian Territory is under 15 years; 43.9% in the West Bank and 48.8% in Gaza Strip. The percentage of Palestinians who are above 65 years in the Palestinian Territory is 3.0%; this figure reached 3.3% in the West Bank and 2.6% in Gaza Strip (PCBS, 2006).

1.7.3. Palestinian economy:

According to the World Bank, the Gross National Product (GNP) in Palestine has been subjected to high fluctuations during the last five years. Gross National Product (GNP) was 5,454 million US$ in 1999 and decreased to 4,169 million US$ in 2005. Gross Domestic Product (GDP) was 4,517 million US$ in 1999 and decreased to 3,832 million US$ in 2005. Gross National product per capita (GNP/capita) was 1,806 US$ in 1999 and decreased to 1,039 US$ in 2005. Gross Domestic Product per capita (GDP/capita) was 1,496 US$ in 1999 and decreased to 955 US$ in 2005. The number of Palestinian workers in Israel decreased from 135,000 in 1999 to 36,000 in 2005. The World Bank reported the

unemployment rate sharply increased from 11.8% in 1999 to 32% and the poverty rate in Palestine was 44% in 2005. This situation is a result of Israeli enforced restriction on Palestinian movement, military operations, land confiscation and leveling and the construction of Barrier in addition to other escalating activities imposed on Palestinian people (MOH, 2006).

17.4. Education:

The main findings of the Educational Institutions census 2005/2006 showed that there are 2,276 schools in Palestine (1,715 in W B and 561 in GS). The average number of students per teacher at schools in Palestine is 22 (WB 20 and 27 in G S). It varies according to supervising Authority; it is 21.6 students/teacher in the government schools 30 in the UNRWA schools and 12.8 in the private schools. The average number of students per class by supervising authorities is about 34.3 in government schools, 41.5 in UNRWA schools, and 24 students per class in private schools. (P, MOH, 2006).

In 2006, the illiteracy rate among individuals 15 years and over in the Palestinian Territory reached 6.5%, it varies considerably between males and females, it is 2.9% for males and 10.2% for female. The highest illiteracy rate among individuals 15 years and over in 2006 was in GS Rafah governorate (8.2%), and the lowest rate was in Gaza governorate (4.7%) (PCBS, 2006)

1.8. Health Services in Palestine

The health services in the Palestinian territory can be divided into two key types; primary health care including comprehensive and continuous health services, which also includes diagnosis, primary cure, health supervision, preventative health service management, and chronic diseases. The second type is secondary healthcare services including hospitals,

which provide diagnostic and cure services as well as surgeries. Most hospitals provide outpatient services especially emergencies. There are four parties that provide health services in the Palestinian territory**,** Ministry of Health, United Nations Relief and Works Agency (UNRWA), Non Governmental Organizations (NGOs), and Private Sector. (PCBS, 2006).

1.8.1 Hospitals in Palestine:

There are 76 hospitals in Palestine (54 in W B and 22 in GS)**.** The MOH is responsible for a significant portion of the secondary healthcare delivery system (60-70% of general and specialized hospital beds) and more than this proportion in hospital services (about 70% of hospital services). In 2005, there were 43 general hospitals with 3,726 beds, 10 specialized hospitals with a total bed capacity of 812 beds, 19 maternity hospitals at a total bed capacity of 322 beds and four rehabilitation centers with a total bed capacity of 165 beds. In the mid zone area there is only one hospital furnished with 97 beds (MOH, 2006).

1.8.2 Primary Health care system (PHC):

Primary health care system (PHC) is a major component of Palestinian health care system. This system has provided health care to all Palestinian people especially for children and other vulnerable groups. The total number of registered PHC centers in Palestine is 731 centers (125 in GS and 606 in WB). Distribution by providers shows that, there are 413 centers owned and supervised by the MOH, 53 centers by the UNRUAW and the (NGOs) have 265 centers. In GS there are 125 centers (56 MOH, 18 UNRUAW, 51 NGOs).In the mid –zone there are 32 centers. The highest ratio of population per center was recorded in Rafah with 41,310 persons per centre and the lowest ratio in Mid-Zone with 12,570 (MOH, 2006).

1.8.3 UNRWA Health services:

UNRWA health program focuses on comprehensive preventive and primary health care. Services cover medical care, family health, disease control and prevention, and health education. These services are provided directly and at no cost to Palestinian refugees through the Agency's network of 53 primary health care facilities which are located both inside and outside refugee camps (18 in Gaza Strip and 35 in the West Bank). In the Palestinian territories the number of registered refugees is 1,649,187 distributed 687,542 in the West Bank and 961,645 in the Gaza Strip; therefore, the ratio of refugees per center was 31,117 in Palestine, (53,425 in Gaza and 19,644 in West Bank). Furthermore, all refugees in Gaza Strip and West Bank have the right of accessibility to the governmental health care services. In Gaza Strip: In 2005, 2,761,256 visits were reported to general UNRWA clinics and about 131,021 visits to specialized clinics (MOH, 2006).

One of the services provided by UNRWA, environmental health services, focus on maintaining acceptable standards of water and sanitation in refugee camps to reduce morbidity and risks of disease outbreaks associated with poor environmental conditions and practices in refugee camps and contributing to sustainable development in the sub-sectors of water, sewerage and solid waste management(UNRWA, 2005)

Chapter two

Literature Review

Chapter two

Literature review

2.1 Introduction

This chapter is divided into different sections. It begins with the history of sanitation and definition of environmental sanitation, hygiene, waste water pollution, solid waste in Gaza Strip. It highlights the importance of environmental education and awareness among people specially women and explores the relationship between their knowledge, attitude and practice toward environmental sanitation , and the studies that have been done to determine the level of KAP environmental problems among different women age, and the efficiency of environmental education. The level of environmental knowledge and attitude and their relationship with education will be discussed.

2.2 History of Sanitation

Global advocacy for water and sanitation has been attempted since the UN Water, Conference in Mar del Plata, Argentina, in 1977. This contributed to the launch of the UN International Water Supply and Sanitation Decade (1981-1990) under the slogan Water and Sanitation for all by 1990. The number of people served in the Decade was impressive, but the number of unserved hardly decreased. During the Decade the basic provision of a hand pump and latrine had become four times cheaper, which can only partly be contributed to advocacy work. In fact, during the Decade funding for water and sanitation actually decreased.

Two quotes at the end of the Decade illustrate how little progress was made in advocacy for water. In 1990 the working group on information recommended to the Collaborative Council (1990) that it should: “Resolve to collaborate in the preparation of a coordinated

public information strategy for the water supply and sanitation sector in the 1990's and commit resources for a sustained public information campaign at national and international level". Jack Ling in water as a vital wellspring for human development (1990), said: "With the close of the Water Decade it cannot be assumed that public interest and financial support will continue, without a planned programme of communication. It is axiomatic that a public information and promotion programme should be designed to support national efforts in the developing countries."

The Global consultation for safe water 2000 in New Delhi in September 1990 drew lessons from the Decade, resulting in the New Delhi Statement, some for all rather than more for some. The 1992 International Conference on water and environment and development in Dublin put integrated water management on the political agenda and was the bridge to the Earth Summit, UN Conference on environment and development, held in Rio de Janeiro in June 1992. There, world leaders endorsed Agenda 21 section on the protection of freshwater resources (Dick de, 2003).

2.2.1 Environmental sanitation:

Environmental sanitation is a term that includes issues like safe excreta disposal, solid waste management, medical waste management, wastewater management, site drainage, personal hygiene facilities, vector and pest control and food hygiene**,** which are vital for the dignity and health of all people. It is especially important in ensuring the healthy development of children. Yet every year around 2.2 million children die from diarrheal related diseases. The majority of these diseases are contracted as a result of poor quality drinking water, inappropriate hygiene practices or inadequate sanitary facilities (WHO & UNICEF, 2000).

Proper sanitation promotes health, improves the quality of the environment and thus, the quality of life in a community. Sanitation refers to the safe collection, transportation, treatment and disposal of human wastes. In developing countries, improvements in practices of disposing of human excreta are crucial to raising levels of public health. An increasing amount of literature suggests that health problems result from the lack of sanitation facilities, especially among the urban poor living in overcrowded informal settlements. Invariably, it is the poor who suffer the most from the absence of safe water and sanitation because they lack not only the means to provide such facilities but also the information on how to minimize the ill-effects of the unsanitary conditions.

As a result, the negative effects of unsanitary living conditions lower the productive potential of the people who can least afford it(John, 1998).

2.2.2 Hygiene:

Hygiene refers to practices associated with ensuring good health and cleanliness. The scientific term "hygiene" refers to the maintenance of health and healthy living. The term appears in phrases such as personal hygiene, domestic hygiene, dental hygiene, and occupational hygiene and is frequently used in connection with public health. The term "hygiene" is derived from Hygieia, the Greek goddess of health, cleanliness and sanitation. Hygiene is also a science that deals with the promotion and preservation of health. Also called hygienics(Wikipedia, 2008). A number of studies have attempted to examine the role of personal and domestic hygiene, although in many cases some of the 'hygiene' measures or interventions could also impact on sanitation, and hygiene interventions may also interact with water quality.

Six studies examined by Esrey et al. 1991 identified reductions in diarrhoea morbidity associated with hygiene interventions; these ranged from 14% to 48%, with a median

reduction of 33%. Curtis and Cairncross (2003) conducted a systematic review and meta-analysis of the impact of hand washing with soap on diarrhoea morbidity. They found studies from diverse locations including the USA, Bangladesh, India, Myanmar, Guinea, Indonesia and Brazil and the results of the meta-analysis suggested that hand washing with soap could reduce diarrhea morbidity by 47%. Similar results for all hygiene interventions were reported by Fewtrell & Colford (2004) in their meta-analysis.

The temporal adoption of hygiene measures can be illustrated by the study by (Ahmed et al. 1993). This group compared cleanliness and diarrhoea levels in villages with and without hygiene education interventions. Higher adoption rates of the intervention were associated with a better cleanliness state, which was paralleled by a decrease in diarrhoea and malnutrition rates. The differences were found to increase over time as more villagers adopted the intervention.

A review by Feachem (1984) documented the presence of pathogens on the hands following toilet activities, as did Hoque (2003), who also found that different hand washing practices affected the residual bacterial contamination of the hands.

2.2.3 Sanitation and health:

Sanitation facilities interrupt the transmission of much faecal oral disease at its most important source by preventing human faecal contamination of water and soil. Epidemiological evidence suggests that sanitation is at least as effective in preventing disease as improved water supply. Often, however, it involves major behavioral changes and significant household cost. Sanitation is likely to be particularly effective in controlling worm infections. Adults often think of sanitation in adult terms, but the safe

disposal of children's faces is of critical importance. Children are the main victims of diarrhoea and other faecal oral disease, and also the most likely source of infection.

Child-friendly toilets, and the development of effective school sanitation programmes, are important and popular strategies for promoting the demand for sanitation facilities and enhancing their impact. Adequate quantities of safe water and good sanitation facilities are necessary conditions for healthy living, but their impact will depend upon how they are used. Three key hygiene behaviors are of greatest likely benefit, Hand washing with soap, Safe disposal of children's faces, Safe water handling and storage
(WHO & UNICEF, 2000).

2.2.4 Relationships between water, sanitation hygiene and diseases:

Diseases primarily transmitted through the faecal-oral route include infectious diarrhoea, typhoid, cholera and infectious hepatitis. Faecal-oral diseases are associated with acute symptoms with a probability of death and in some cases with delayed sequelae. Transmission may occur through a variety of mechanisms, including consumption of contaminated water and food as well as through person-person contact (Bradley, et al, 1977). These are dealt with together here, in order to emphasize the importance of local disease patterns rather than applying generic models. The available evidence from health studies suggests that interventions are likely to be locality-specific and are determined by timing and the interaction between different factors. As noted by Vander slice and Briscoe (1995) as all the interventions deliver some improvement, the relative impacts of each may have limited relevance for policy.

Other factors apart from water and sanitation facilities and hygiene behaviours may significantly influence diarrhoeal disease. For example breast-feeding has been noted in

several studies as being protective against diarrhoeal disease independently of other interventions (Vanderslice & Briscoe, 1995).

Children bear the greatest health burden associated with poor water and sanitation. Diarrhoeal diseases attributed to poor water supply, sanitation and hygiene account for 1.73 million deaths each year and contribute over 54 million Disability Adjusted Life Years, a total equivalent to 3.7% of the global burden of disease (WHO, 2002). This places diarrhoeal disease due to unsafe water, sanitation and hygiene as the 6th highest burden of disease on a global scale, a health burden that is largely preventable. Other diseases are related to poor water, sanitation and hygiene such as trachoma, schistosomiasis, ascariasis, trichuriasis, hookworm disease, malaria and Japanese encephalitis and contribute to an additional burden of disease (WHO, 2002).

The evidence from the literature suggests that water availability has an important influence of health and diarrhoea incidence in particular, although as noted by both Esrey et al (1991) and Herbert (1985) this is not necessarily true for all age groups. Esrey (1996) suggests that it is only when the water supply is delivered on-plot that health gains are found. It is also noted that this may be due to a number of factors, not least of which is the better socio-economic status of households with this level of service and possibly better quality of water supplied (Esrey, 1996).

In relation to hygiene practices, a review by Huttly et al. (1997) suggested that targeting Programmes on a single behaviour was more effective than addressing several behaviours when promoting hygiene. They suggest that a median reduction of 35% in diarrhoeal disease morbidity from improved hand-washing is achievable through well-designed hygiene education programmes, with a range of 30-89 %(Huttly, 1997).

Sanitation is directly related to water quality and water pollution. Water quality usually describes the level of certain compounds that could present a health risk. The quality of water is usually defined by guideline values of what is suitable for human consumption and for all usual domestic purposes, including personal hygiene. In relating sanitation to water pollution, one must examine both point and non point source pollution, as these are the two routes of entry of the pollution into the water supply. Point-source pollutants enter the waterways at well-defined locations, such as a pipe or a sewer outflow. The discharges are usually even and continuous. Industrial factories, sewage treatment plants, and storm sewer outflows are common point sources of pollution. Non point sources enter the water system from broad areas of land. It is estimated that 98 percent of the bacterial contamination and 73 percent of biological oxygen demand are due to non point sources (McKenzie & Pinger, 1997).

2.3 Wastewater Pollution in Gaza Strip

The lack of operational and efficient wastewater treatment plants makes wastewater the main source of pollution of the coastal zone of Gaza Strip. Most of the wastewater is discharged untreated or partially treated along the shoreline. In addition to the treatment plants effluents, there are more than 20 individual sewage drains, ending either on the beach or a short distance away in the surf zone. High percentage of the wastewater that is generated in Gaza city is currently discharged without treatment into the sea (50,000 cubic meters per day). Only about 40% of the sewage generated in the Gaza Strip is properly treated. The percentage of population served by sewerage systems is 60%. The insufficient number of sewage treatment plants in operation, combined with poor operating conditions of available treatment plants, and the present disposal practices are likely to have an adverse effect on the quality of seawater. The population of Gaza Strip continues

to grow rapidly, thus increasing the amounts of poorly treated or untreated sewage wastewater being discharged into the coastal water. (MEnA, DECEMBER 2001).

The discharge of sewage into seawater can cause public health problems either from contact with polluted waters or from consumption of contaminated fish or shellfish. The discharge of untreated sewage effluents also produces long-term adverse impacts on the ecology of critical coastal ecosystems in localized areas due to the contribution of nutrients and other pollutants. Pollution due to inadequate sewage disposal causes nutrient enrichment around population centers, and high nutrient levels and even eutrophication near sewage outfalls. Increased nutrient concentrations promote algal and bacterial growth, degradation of sea grass, decreased fisheries production, along with risks to human health. There are considerable efforts underway in the Gaza Strip to increase the proportion of population served by communal sewerage systems. The existing wastewater treatment plants use biological methods of treatment. Unfortunately, in most instances, sewage does not only contain human excreta, but also various environmentally unfriendly compounds that are used in households, such as detergents. The problem is further exacerbated by the common practice of discharging untreated or inadequately treated industrial wastewater into the domestic wastewater stream. As a result, sewers could contain a variety of toxic and non-biodegradable substances, which make their treatment less effective. The sewage outfalls are usually very short, contributing to the pollution of near shore waters. Annex (3) shows the location of wastewater outlets in Gaza strip (MEnA, 2001).

2.3.1 Impact of wastewater on environment in Gaza Strip:

The three water treatment plants in the Gaza Strip do not function effectively. Approximately 70-80% of the domestic wastewater produced in Gaza is discharged into

the environment without treatment, either directly, after collection in cesspits, or through leakage and over loaded treatment plants. Most wastewater is discharged into the Mediterranean via 18 different pipelines). The effluent from the Gaza and Rafah treatment plants is discharged into the Mediterranean, while a substantial quantity of wastewater infiltrates into the ground, contaminating soil and ground water in the area of the Beit Lahia treatment plant (UNEP, 2003).

Untreated wastewater discharge causes public health risks through direct exposure, as well as through being reused in irrigating crops. The total annual wastewater production in the area is estimated to be 40 million m3, of which 30 million m3 passes into sewage networks and the rest into cesspits or pit latrines. Waste from vacuum tankers used to clean out cesspits should be transported to a treatment plant or disposal area designed specially to deal with liquid waste. The present practice is to dump the waste into the nearest wadi, into agricultural drainage channels, or onto open fields (EQA, 2002).

2.3.2 Wastewater treatment:

Wastewater treatment options (primary and secondary treatment), as are widely applied in Industrialized countries, have traditionally focused on the removal of suspended solids and pollutants that require oxygen in the receiving waters to decompose (biochemical oxygen demanding substances (BOD) and not on the reduction of pathogens and nutrients. These processes are usually difficult, and costly, to operate due to their high energy, skilled labour, infrastructure, and maintenance requirements. Tertiary treatments must be added to the process to effectively reduce pathogen and nutrient levels. A combination of different tertiary treatments such as filtration and chlorination must be used to reduce pathogen levels to very low or undetectable levels. Addition of such treatment steps, however, significantly increases the cost and complexity of the process. In developing countries,

they can be designed to provide partial treatment (i.e. the removal of helminthes eggs to protect farmers and their families who use the effluent for irrigation) or full treatment, which is equivalent to conventional tertiary treatment and achieves inactivation of viruses and pathogenic bacteria(Mara & Pearson,1998).

2.3.3 Existing wastewater treatment plants in Gaza Strip:

There are three treatment plants in Gaza Strip namely, Beit-Lahia, Gaza City and Rafah. The effluent of the treatment plants and Wadi Gaza are mostly discharged to the Mediterranean Sea. This affects the ecological life of flora and fauna, creates health diseases and deteriorates the water quality. The total annual wastewater production in the area is estimated at about more than 40 Million Cubic Meters (MCM), from which 22 MCM are disposed into the sewers and 18 MCM into cesspits or pit latrines. Due to low water consumption in the Gaza Strip, the produced wastewater is strong with an average biochemical oxygen demand (BOD) value of 560mg/l. It was reported that about 60% of the population in the area are connected to sewer networks. This percent is distributed as follows: Beit-Hanon 62%, Jabalia 77%, Gaza City 78%, Rafah 50%, Deir El-balah 50 % and 0% for the remainder. Cesspits and boreholes are the other wastewater disposal systems in the area, 75% of the industrial activities dispose their wastewater into the sewers while the rest use cesspits. The following table summarized wastewater generation and treatment in the Gaza Strip (MEnA, 2001).

Table (2.1): Wastewater Generation in Gaza Strip

Category	Unit	Quantity
Population connected to wastewater treatment	%	54
Total number of wastewater treatment plants	Number	3
Total wastewater generated	1000 m^3/d	109.58
Non-treated wastewater	1000 m^3/d	50.17
Treated in public treatment plants	1000 m^3/d	59.42
% Of Wastewater Discharge to the Sea (raw and treated)	1000 m^3/d	40%
% Of Wastewater Discharge to Environment (raw and treated)	1000 m^3/d	60%

2.4 Solid Waste:

A simplified definition of solid waste would include garbage, trash, recyclable materials, yard waste, and waste from industrial and commercial sources. It does not include hazardous waste from businesses. Solid waste is any garbage, refuse, sludge, or other discarded material, including solid, liquid, semisolid, or contained gaseous material resulting from industrial, commercial, mining, or agricultural operations or from community activities (Wikipedia, 2007).

2.4.1 Types of solid waste:

Solid waste can be classified into different types depending on their source:

* Municipal solid waste (Household Waste)

Municipal solid waste consists of household waste, construction and demolition debris, sanitation residue, and waste from streets.

* Hazardous wastes (Industrial and hospital waste)

Industrial and hospital waste is considered hazardous as they may contain toxic substances. Household wastes that can be categorized as hazardous waste include old batteries; shoe polish paint tins old medicines and medicine bottles.

* Hospital waste (Biomedical waste)

Hospital waste is generated during the diagnosis, treatment, or immunization of human beings or animals or in research activities in these fields or in the production or testing of biological. This waste is highly infectious and can be a serious threat to human health if not managed in a scientific and discriminate manner.

2.4.2. Health impacts of solid waste:

***** Exposure to hazardous waste can affect human health, children being more vulnerable to these pollutants. Many studies have been carried out in various parts of the world to establish a connection between health and hazardous waste.

***** Waste from agriculture and industries can also cause serious health risks. Waste dumped near a water source also causes contamination of the water body or the ground water source.

***** Disposal of hospital and other medical waste requires special attention since this can create major health hazards.

***** Waste treatment and disposal sites can also create health hazards for the neighborhood. Improperly operated incineration plants cause air pollution and improperly managed and designed landfills attract all types of insects and rodents that spread disease

* Direct handling of solid waste can result in various types of infectious and chronic diseases with the waste workers and the rag pickers being the most vulnerable. (ARIJ, 2006).

2.4.3 Solid waste generation and composition:

There are three main sources of solid waste. These are:

1) The household waste category, which accounts for 45-50% of the total waste. 2) The industrial waste category, which accounts for 20-25%. 3) The commercial sector, including offices, restaurants, places of business, hotels, and public services, which accounts for 25-30%. The combined solid waste (household, industrial, commercial) consists mostly of the following categories: Organic materials, such as food waste or weeds; paper and cardboard, including newspaper, magazines and cartons, glass, metals and plastics. In the West Bank and the Gaza Strip, 41-67% of the total volume of household solid waste is composed of organic materials (ARIJ, 2006). Paper and cardboard make up to 7-19% of the total solid waste in the West Bank, including only 1.5% in the Gaza Strip (ARIJ, 2006).

2.4.4 Solid waste collection and disposal:

Solid waste collection services in the Gaza Governorates are mostly done by municipalities, large towns, and villages, that provide collection services, either formally or informally and UNRWA provide collection and disposal service for refugee camps. In populated areas where collection services range from daily curb side collection in high

density areas to variable pick ups from centralized community containers located in mid to low density residential areas. In some areas of Gaza City where donkeys are commonly used for pulling carts – a house-to-house collection service is provided using donkey carts, from which the waste is transferred to a skip container. Most cities are served by rear-loading compactor trucks which empty wheeled bins with a capacity of about $1m^3$. A new system, which is used in conjunction with crane-tipper trucks, is a house-to-house collection using a small agricultural tractor, which has an attachment at the rear to enable it to carry one $1m^3$ container. When full, the container can be left at the roadside for a crane tipper to pick up and empty (Coad, 1997).

The current haulage distances are relatively small - waste is transported from cities to convenient dumpsites. Some of these cities and dumpsites may be located in groundwater recharge areas where the underground water resources are likely to be contaminated by these disposal sites. In such cases the waste may need to be transported some distance to an environmentally acceptable sanitary landfill and so more vehicles may be needed, or vehicles of different types.

2.4.5 Impact of Solid Waste Management:

Failure to appropriately manage and dispose of solid waste can negatively affect the quality of the environment in many ways, as well as the people's quality of life, which can result in the following:

* Pollution of groundwater by leachate: The solid waste dumping sites are not covered or lined from the bottom to protect the groundwater and surface water. The precipitation that falls into the ground, coupled with any disposed liquid waste, results in the subsequent formation of leachate. The release of hazardous and non-hazardous components of

leachate may present a major threat to the current and future quality of groundwater and may present several risks to human health.

* Pollution of the atmosphere and deterioration of air quality: The uncontrolled burning of solid waste in the open dumping emits acidifying and greenhouse gases (CH_4 and CO_2).

* The biological degradation of the remaining unburned organic waste adds to their emissions by generating landfill gases. Air pollutions associated with a variety of health problems, especially respiratory diseases and mortality (ARIJ, 2006).

2.5 Importance of Environmental Awareness and Education

According to Agenda 21, scientific literacy is one of the most relevant goals in schools in many nations. This literacy is an urgent need to improve the education system. Education is critical for promoting sustainable development and improving the capacity of the people to address environment and development issues (Nunez, 2000). Through scientific literacy in the education environmental field, people can interact more effectively in the enhancement of a new and more harmonic relationship with our habitat. Environmental literacy is a recent interdisciplinary curricular goal in our schools, and according to Nunez, (2000), it is the organized way to think about the environment. Cultural, gender, economic and other kinds of social and cultural differences are reported to be related to grade of awareness and amount of environmental concern (Blum, 1987; Arcury, 1990).

The lack of knowledge of the public in ecological topics has motivated many educators and institutions to improve environmental literacy (Nunez, 2000). Scientists are convinced that more knowledge is an important element to develop positive attitude in many fields (Arcury, 1990; Zimmerman, 1996). This idea is treated in many studies, which indicated that the role played by environmental education to the individual, societies and peoples'

lives is increasingly recognized. This is a result of man's misbehavior towards the environment (CAMRE & UNEP, 1996).

Different conferences have emphasized that protecting the environment is a complicated problem that cannot be ensured through laws only. Laws alone cannot change or develop the individuals' awareness, consciousness, attitudes and actions. Appropriate education can play a major role in changing environmental attitudes and promoting awareness and skills for the protection of the environment and the rational use of natural resources (CAMRE & UNEP, 1996).

Environmental education aids in creating deeper understanding, investigation, and decision-making skills among population. The goal of environmental education is to lead people to become effective environmental stewards. Also, the goal of environmental education is to develop a population that is aware of, and concerned about, the environment and its associated problems, and that has the knowledge, skills, attitudes, motivation and commitment to work individually and collectively toward solutions of current problems and the prevention of future ones (Flannery et al, 2003).

Mikami, (1999), In his study focuses on the importance of environmental education which can play a significant role as an effective means to change people awareness and behavior for their surrounding environment. He also indicated that the environmental pollution caused many people to injure their health, so environmental education is needed to increase awareness of people about their important sharing in protecting and improving their environment (Mikami, 1999).

Since, the environment is a major source of living for Palestinians, thus practicing how to protect it becomes inevitable (Abu Safieh, 2006). In her study, Abu Safieh focused on the

importance of environmental awareness, and education in preserving and protecting the environment, based on adjusting attitudes and supporting positive behaviors toward the environment. According to many key informants, environment in the Palestinian society, as a concept, is integrated within reticulation of social, health, and economic perceptions that embrace different aspects of life, and hence, environmental awareness and education for environment protection need to be approached through such channels (Abu Safieh, 2006).

2.6 Level of Environmental knowledge and awareness

Bob Frame & Bronwyn Newton, (2007), assessed the level of environmental knowledge among households in Selangor in Malaysia. They examine the sources of their environmental knowledge, determined factors that lead to different levels of knowledge and analysed the relationship between knowledge and environmental attitude, behaviour and participation. The results of the study indicated that, in general, respondents basic or general environmental knowledge was high. However, when questioned on various scientific environmental terms, the majority of the respondents were not familiar with most of them. Lower levels of education were reflected in the level of environmental knowledge. Participation in environmental activities had a positive influence on knowledge. The study also found that knowledge correlated positively with environmental attitudes, behaviours and participation.

A study was conducted by amal sarsuor (2005) to evaluate the environmental awareness among School-Age Children in Gaza city. The purpose of that study was to determine the level of environmental awareness and attitude among students of class 9 in the governmental high basic school in Gaza city. The results indicated that the study students have a relatively moderate level of environmental awareness, with a mean score of 16.85

(Total: 24 score) and the percentage of their environmental awareness level was 70.2. While their positive attitude toward the environment was low with a mean of 19.30 scores (total: 30 score) with a percentage of about 64.33. Males have a significantly higher environmental awareness than females, while females have shown more positive attitude toward environment than males (Sarsuor, 2005).

Mishra C. (1996) has studied the role of education with regard to environmental hygiene and promotional activities. The water supply is threatened both in quality and quantity, and 89.2% of households in India lack or fails to use latrines. Lack of proper management of solid wastes and lack of drainage has led to serious health risks, and the safety of the supply of edible food sold in shops and schools is far from satisfactory. A lack of proper hygiene associated with infant feeding contributes significantly to infant mortality. School children exhibit a lack of personal hygiene, and often play in dirt and muddy water. Other problems are associated with the environmental ill-effects of home-based industries, pollution of the air and rivers, and behavioral-related health problems such as alcoholism, drug addiction. Many innovative approaches exist as models for the development of the information, education, and communication programs necessary to improve the environment.

In their study, Hsu and Roth (1996), aimed to measure the level of environmental knowledge according to the study different variables. Multiple choice questions tool was developed to measure the level of environmental knowledge. Main results of the study emphasized that the level of environmental knowledge among the study population was 75.9%, and environmental attitude was 80%. Similar finding was In Hong Kong, which reported that, high levels of factual environmental knowledge are found amongst a sample of 1032 students (Chan, 1998).

Chris Buethe (2000), conduct a study to analyze the Indiana women' knowledge and attitudes about environmental problems and their solutions. A total of 267 women from urban and rural areas were surveyed. The measurement techniques included a list of 70 environmental terms, 25 multiple-choice statements on concepts. The study revealed that Indiana women possess inadequate environmental knowledge and awareness. The study suggests that statewide women training in environmental concepts and issues should be implemented to insure effective dissemination of environmental concepts and attitudes to community.

Thompson J, and Dixon R. (1998) studied women and the environment: the role of gender in effective natural resource management. The result of study is that men and women benefit unequally from project activities. Knowledge on natural resource management was absent, and sustainable development and environmental protection were less effective. Women use natural resources in the collection of water for cooking and cleaning, farming, fishing, and collecting food and firewood. Women affect the environment in their management of sanitation. Programs that succeed in addressing long term needs of communities and households must recognize women knowledge of the community economy and natural resource management as a constraint to sustainable use of natural resources.

Curtale F, et al (1998), conducted an operational research in Qena Governorate, Upper Egypt, to gather the information needed to design an integrated control programme for intestinal helminthes in the area. Mothers were questioned about their knowledge and perception of intestinal helminthes, their hygienic habits and health-seeking behavior.

The survey results showed that. Almost all the respondents considered worms harmful and were aware of the need for treatment. More than adequate knowledge was present on ways

to prevent infection. Good hygienic practices were associated with a low prevalence of infection in the household. Knowledge of the sources of infection and ways to prevent transmission was generally good. Bivariate analysis identified the following significantly correlates with reduction in risk of infection: hand washing after defecation, maternal literacy, household use of public health care facilities, and maternal attendance at health education sessions. Health education should seek to improve hygienic behavior, rather than knowledge of the disease, and use of television should be considered to reach illiterate mothers.

Kamla-Raj (2004), study was conducted in Punjab to assess the knowledge level of the mothers regarding environmental sanitation, nutrition and health. A standard test and schedule developed purposively for the study had been used. The multistage sampling technique was adopted to select sample respondents. The final stage involved the selection of 50 mothers having 1 preschool child of 1-3 years of age from the selected villages in each region. The total sample consisted of 150 mothers spreading over 24 villages, 12 blocks, 6 districts. On the whole the knowledge level of mothers with regard to various areas of environmental sanitation and nutrition, health in Punjab ranged between 12- 43 per cent with an average of 27 per cent. The majority of rural mothers (71%) had low level of knowledge followed by mothers (25%) having medium level of knowledge and merely 4 percent of mothers had high level of knowledge.

2.7 Level of Attitude Regarding Environmental sanitation

Young people's environmental attitudes are particularly important because young people ultimately will be affected by and will need to provide solutions to environmental problems arising from present-day actions. To effectively confront the growing environmental problems and make informed decisions about them, the citizenry must be

equipped with a fundamental knowledge of the problems that face the environment (Gambro and Switzky, 1999**).** Environmental attitudes are recognized as an indicator and component of environmentalism. Environmental attitudes are generally accepted as responses from respondents for given environmental issues. Environmental issues might be environmental degradation, environmental pollution, the relationship between society and environment, environmental politics. Positive or pro-environmentalist attitudes of respondents might be called environmentalism. The aim of environmentalism as an ideology is to change environmental attitudes to more pro environmentalist structure (Harper, 1996).

A study of Geok Chin et al. (1998) in Singapore, aimed to gather baseline data on the level of environmental knowledge, attitudes and behavior of secondary and junior college students in Singapore. For this purpose, an instrument of 55 items was designed and tested on a sample of 1256 secondary three (Grade 9) and junior college year one (Grade 11) students. The students' mean environmental knowledge score was 70.9%. The mean correct response rates for the environmental fact, concept and generalization subtests were 68.0%, 68.8% and 78.0% respectively. The mean environmental attitude and behavior scores were 66.0% and 70.5% respectively which are considered as low level.

Ebong R. (2002), had studied the appraisal of knowledge and attitude of Akwa Ibomites toward a sustainable environment in Nigeria. The research goal was to determine the knowledge base of men and women related to sanitation and environmental health in Akwa Ibom State. The study results revealed that the Akwa Ibomites residents knew little about activities toward a sustainable healthful environment. The residents also have negative attitudes toward involvement in activities that promote a sustainable healthful environment. However, more sanitation and environmental education is needed as part of

long-term strategy for abating sanitation and environmental health. Attitude has major influence on people's achievement in a particular program. People tend to have a positive attitude as their knowledge level increases; thus, lack of knowledge affects attitude.

Affifi (2000), conducted a study to find out the environmental enlightenment level of sixth grade children in Rafah governorate and its relation with some variables. The researcher has studied many factors, such as, type of school (governmental or UNRWA), gender, children's level of achievement and place of residency. The study was conducted on 400 children. The study results showed that the average children's marks were (65.3%) which was below the accepted standard of the established study which is (80%). The results indicated that the level of the environmental enlightenment of the children was below the accepted standard. There were statistically significant differences between UNRWA and governmental schools toward UNRWA schools. While there were no statistically significant differences related to the place of residency (camp, town) through out Rafah governorate on the environmental enlightenment level. A strong relation was found with academic level achievement of the students in favor to excellent achievers, where the excellent students have more environmental enlightenment level than other student.

2.8 Level of Practice Regarding Environmental sanitation

Hoque B, et al (1996) conducted a study on sustainability of a water, sanitation and hygiene education project in rural Bangladesh: a 5-year follow-up. The study findings indicted that hygiene practices remained poor in 1993, but still higher than in the control area. Knowledge of the transmission of diarrhea was poor in 1992 and similar in control and intervention areas. Diarrheal morbidity in the previous 24 hours was significantly lower in the intervention area. Findings indicate that there is improvement in health

practices but little understanding of water sanitation and hygiene practices and improved health. The monitoring measures were useful in determining project sustainability.

Oyemade A, et al. (1998), had studied the environmental and personal hygiene practices: risk factors for diarrhea among children of Nigerian market women. The result indicated that the risk factors for diarrhea identified in this study were water and food bought from vendors, child defecation practices, mothers' cleaning up practices after child's defecation, and refuse-disposal practices. The inherent risk of sale of unwholesome food and water by vendors is a great concern for public health authorities in Nigeria. Efforts to control diarrhea must not only be focused on improving mothers' knowledge about food hygiene but also on environmental hygiene practices within the community.

Taha A, et al (2000) study on the assessment of water use and sanitation behavior of a rural area in Bangladesh, showed an improvement in use of household tube wells in the project area; however, significantly more mothers in the health development project area (45.7%) used tube well water for domestic purposes. Either hygienic practice of mothers was inadequate sanitary latrines there were no improvement in sanitation practices of families in the project area. Health education alone, without improvement of socioeconomic status, is not effective in changing behavior.

Bhattacharya, M (2004), conducted a baseline survey in the five Panchayat areas of Icchawar and Aastha blocks to document the existing level of knowledge and practices regarding health and environmental sanitation. The total population in the study was 1250 households, 250 households for each block. About 80% of households in study replied that family members wash hands before eating. Among the family members, especially children up to 10 years and mothers, who were asked about washing hands before eating food, around 70% responded yes. The practice of washing hands with water and soap was

56.5% in Icchavar block. Existing knowledge regarding safe water, sanitation and hygienic practice, behaviour in the community is very low in the study block. The major factor behind this is the low level of education among villagers.

In November 2002, the Karnataka Rural Water Supply & sanitation Agency (KRWS&SA) conducted a study that focused on the behavioural practices followed by children rather than gauging their knowledge or awareness levels with respect to hygiene and sanitation. The study covered more than 250 schools across all the project districts. About 11,470 students in classes 8, 9 and 10 were selected to participate in the study. The comparison revealed that there was considerable improvement in the hygiene practices among school children in terms of, use of latrines for defecation, washing hands with soap after defecation, washing hands with soap before meals, brushing teeth every day, bathing practices, wearing clean clothes, clipping nails regularly and using footwear. One significant revelation from the study was that, since most school children learned healthy hygiene habits from their mothers, educating mothers on safe hygiene and sanitation habits could bring about a behavioural change in children and the entire family. The School KAP Study also pointed to the need for formulating a detailed implementation plan for School Sanitation and hygiene education.

2.9 The Relation between KAP and Socio Demographic Factors

Ebong R D (1994), assessed the environmental sanitation of the school and the homes of a sample of the students. Observations were recorded on the sources of water, the methods of refuse and sewage disposal, and the hygienic condition of the toilets in both the school and the homes surveyed. The findings indicated that the students' knowledge of environmental hygiene was high for all classes and those students whose fathers and

mothers had primary, secondary, or post-secondary education scored higher than those fathers who illiterate.

Nancy and Nimish (2005), conducted a qualitative study to gain insight and understanding of factors that could motivate people to adopt safe hygienic practices. The sample consisted of 122 participants; 74 were males and 48 were females. The mean age of the participants was 40.1 years. The results indicated that there are cultural, educational, economic, institutional, environmental and psycho-social factors that could motivate people to adopt safe hygienic practices.

Abu Mourad,, T(2003) assess the socioeconomic-demographic, environmental health and hygiene conditions associated with intestinal parasites and diarrhoea in Nuseirat refugee Camp of Gaza Strip. Across-section of 1625 households were surveyed face-to-face interviews were administered for data collection. The result indicated that intestinal parasites were strongly associated with crowding, source of drinking water and the cleaning of water tanks, and were significantly higher among families with unclean homes. Diarrhoea was strongly associated with source of drinking water, a full-day water supply and cleaning of water tanks, and was significantly higher among families with a presence of mosquitoes and garbage around their homes. Poor socioeconomic-demographic, environmental health and hygiene conditions play a major role in the occurrence of intestinal parasites and diarrhoea. Children younger than 5 years are at higher risk. Real interventions, such as health education, environmental awareness, community involvement and raising funds for infrastructure development are urgently.

A Survey was conducted in Bangladesh (2004) to investigate individuals' exposure to indoor air pollution. Using new survey data from Bangladesh, the authors analyzed

exposure at two levels: differences within households attributable to family roles, and differences across households attributable to income and education. Within households,

Education and household per capita income have the expected effects on determinants of indoor air pollution. All estimated effects are large, highly significant, and have the expected negative sign. Women's education has a particularly large effect. Education of women and income strongly reduce the average of pollution. Female education, male education and family income all have large, highly-significant effects on pollution. Female education has an equivalent effect on the structural determinants, but male education and family income do not appear to be significant. The study indicated that young children and poorly-educated women in poor households face pollution exposures that are four times those of men in higher-income households organized by more highly-educated women (Kiran Pandey& David Wheeler, 2004).

Chapter Three

Conceptual Framework

Chapter Three

Conceptual Framework

3.1. Definition of Environmental Education

Environmental education is a concept, although not widely used until the 1960s, which has been influenced by some of the great philosophers and educators of the 18th and 19th Century (Palmer, 1998).

"Environmental education is the process of recognizing values and clarifying concepts in order to develop skills and attitudes necessary to understand and appreciate the inter-relatedness among man, his culture, and his biophysical surroundings. Environmental education also entails practice in decision-making and self-formulation of a code of behavior about issues concerning environmental quality." (Palmer, 1998). In the early to mid 1970, there was an increased perception of need for environmental education due to the rapid growth of world population, causing a sharp increase in energy consumption and pollution problem. According to Tbilisi Declaration,1977, "Environmental education is a learning process that increases people's knowledge and awareness about the environment and associated challenges, develops the necessary skills and expertise to address the challenges, and fosters attitudes, motivations, and commitments to make informed decisions and take responsible action". (UNESCO & UNEP, 1990).

Braus (1995), defined environmental education as the "education to acquire awareness, knowledge, attitudes, skills and participation toward the resolution of environmental problems".

3.2 Definition of Environmental Awareness

According to Tbilisi declaration, 1977, environmental awareness is defined as the way to help social group and individuals acquire an awareness and sensitivity to the total environment and its allied problems (UNESCO and UNEP, 1990).

Environmental awareness is the attitude of having consciousness about the consequences of the human intervention on the environment and the performances of appropriate behavior to reduce negative effects (Nunez, 2000).

3.3 Environmental Knowledge

Knowledge is seen as dynamic system, organized into certain structures forming an internal relationship between man and his environment, and learning is a change in this relationship occurring as a result of the individual interpretations often within the knowledge system (Brown, 1990)

The way to help social groups and individuals gain a variety of experience in, and acquire a basic understanding of, the environment and its associated problems (UNEP, 2006). The environmental knowledge aims to build a virtual storehouse of information about the environment, good relevant knowledge and best practices for the priority areas of works helps in a timely and efficient manner for the informed-decision making on the areas of assessment, policy development, planning, and implementation. **(**UNEP /INF, 2000).

3.4 Environmental Attitude

The Tbilisi Declaration, 1977, defined environmental attitude as, the way to help social groups and individuals acquire a set values and feelings of concern for the environment

and the motivation for actively participating in environmental improvement and protection. (UNESCO and UNEP, 1990).

To have an impact on the environment, action needs to be demonstrated at individual or community level through change in behavior or attitude. The environmental reporting process can contribute to behavioral change by providing information that has the power to influence the way individuals or communities look at their environment attitude. (Erick Litswa**,** 2007).

3.5 Definition of Practice

Practice: The observation, description, evaluation, interpretation, or modification of human behavior by the application of psychological principles and methods (Nebraska DHHS, 2005)**.**

3.6 The Role of Environmental Education

The role of Environmental education in the face of environmental problems and opportunities is therefore a crucial one. Environmental education should be integrated into the whole system of formal education at all levels to provide the necessary knowledge, understanding, values and skills needed by the general public and many occupational groups, for their participation in devising solutions to environmental questions. Non-formal education also has an extremely important role to play. The full utilization of mass media for truly educational purposes would also help create widespread awareness and understanding (Kovalchick, & Dawson2004).

3.7 Theoretical Framework

From the evidence of literature reviewed, environmental practice and attitude may be influenced by environmental knowledge. Moreover, all these may be also influenced by age, level of education, monthly income and type of health center of women in middle zone. Reviewing the different previous literature, the researcher has designed the theoretical framework in the following figure.

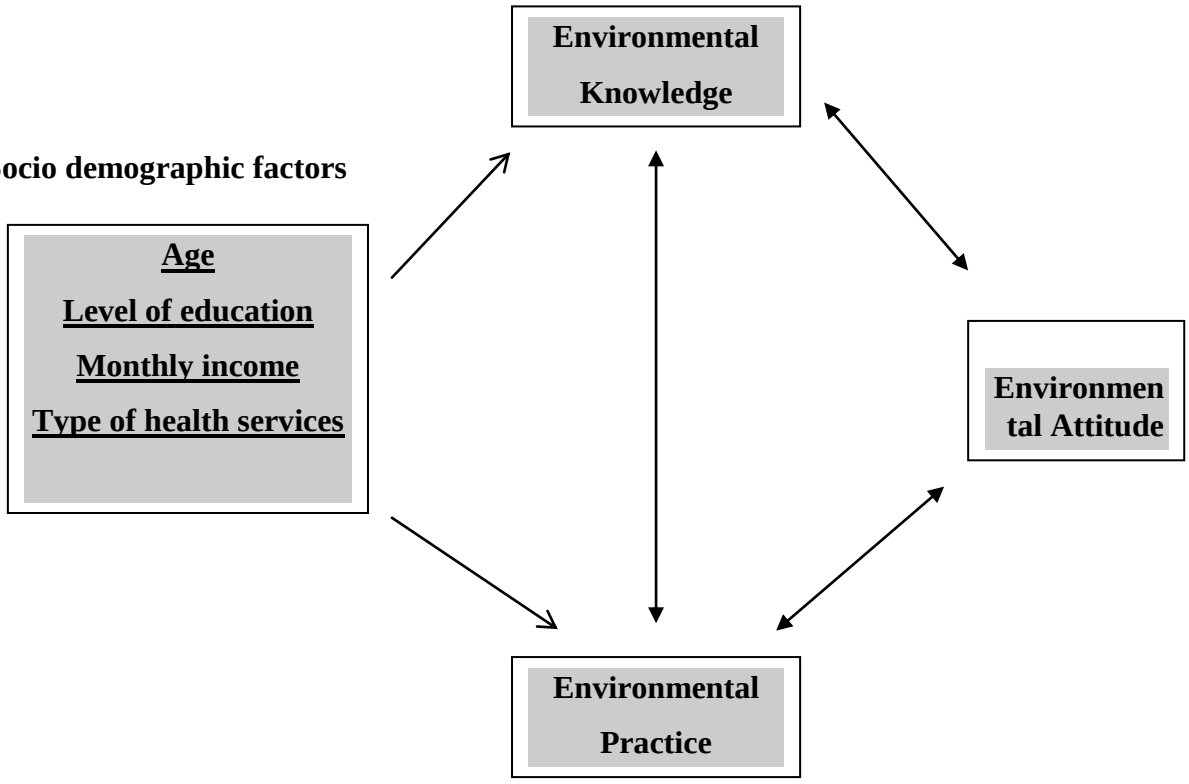

Fig.3.1. The relationship with environmental knowledge, attitudes and practice of women, with different socio demographic factors such as: age, level of education, type of health service, family background and socio economic factors.

Chapter Four

Methodology

Chapter Four

Methodology

4.1 Introduction

The aim of this study is to evaluate the level of knowledge and attitudes toward environmental sanitation and its practice (KAP) among women in middle zone of Gaza Strip (GS). And the possible factors influencing knowledge, attitude and practice such as, level of education, household income, women age in addition to the study of the correlation between women knowledge and attitudes and their practice.

To implement this study, the researcher followed the appropriate steps of the methodology mentioned in the thesis preparing guideline for students of high studies in Al Quads University; the guideline includes the study design, the study sample, the study instrument measurement tools, pilot study, data collection, and data processing and analysis. A pilot test was carried out prior to the start of data collection to check for any ambiguity or confusion in the questions statement. Ten subjects were selected from the nussirate UNRWA clinic and 10 subjects were selected from Deir Al –Balah MOH clinic. The researcher applied the study questionnaire after receiving an official approval letter from "Helsinki Committee" and also, official letters were obtained from the Ministry of health and UNRWA Administration Office at Gaza –Strip. Written consent was obtained from each participant, and every participant received complete explanation about the purpose of the study.

4.2 Study Design

A quantitative analytical descriptive design was used in this study to describe the present status of the level of knowledge, attitude and practice among women attending primary health care in middle zone of Gaza strip. This design is useful for descriptive purposes which is useful in conducting and evaluating this type of studies. It is less costly and save time and efforts and more easy for researcher and it will in able to meet the objectives of the study in short time. The dependent variables include knowledge, attitude and practice and the independent variables include socio demographic factors including level of education, household income, and women age.

4.3 Sample and Sampling

4.3.1 Study population:

The study population includes all women attending primary health care centers of middle zone in Gaza strip.

4.3.2 Eligibility criteria

*** Inclusion criteria**

All married women attending primary health care centers at the middle area of Gaza Strip.

*** Exclusion criteria**

All not married women as single, widow, divorce attending primary health care centers at the middle area of Gaza Strip.

4.3.3 Sample size:

The sample size was estimated by using Epi-info.6 program (epidemiological information statistical program, version 6). At expected frequency 10%, worse accepted frequency 5% and at confidence interval 95%, the sample size was 138 eligible subjects, but the researcher increased the sample, to be more representing to 160 subjects. Estimating the number of participants in each clinic was calculated proportionally according to the number of daily women attending to the clinic(GOV and UNRWA) in middle governorate.

4.3.4 Sampling process:

In the middle zone area there are 20 clinics, 16 governmental and 4 UNRWA. Most of the residents in the area are refugees (70%) living in four camps. So the researcher took the four clinics in his sample which are distributed in the four camps. From the 16 governmental clinics the researcher selected 4 clinics by simple random sampling. The number of participants from each clinic was calculated proportionally according to the number of daily women attending the clinic. (GOV 40 and UNRWA 120 subjects). The researcher used a convenience sample, and the interviews were conducted" between 12 to 25 January 2008".

4.4 setting of the study:

The place of the study is 8 primary health care centers of middle zone in Gaza strip, four UNRWA (Deir EL-Balah, EL-Maghazi, El- Bureij, and EL- Nussirate).

Four MOH (Deir EL-Balah, El- Zawida, waded slqa, EL-Zahra).

Table (4.1) Sample distribution according to Name & Type of Health Center

Health Center	Type of Health Center	Daily Study population	Percent%	Sample Size
Deir EL-Balah	UNRWA	313	20. 2	32
EL-Maghazi	UNRWA	197	12. 7	20
El- Bureij	UNRWA	289	18. 6	30
EL- Nussirate	UNRWA	367	23. 6	38
Deir EL-Balah	MOH	167	10. 8	17
El- Zawida	MOH	85	5.6	9
waded slqa	MOH	71	4. 6	8
EL-Zahra	MOH	61	3. 9	6
Total	**8**	**1550**	**100**	**160**

4.5 Ethical Considerations

An official letter was obtained from " Helsinki committee" at Ministry of health on 12th of December 2006 which permitted the researcher to carry out the study on women attending primary health clinics in the middle zone of Gaza strip. Also, two official letters were obtained from the Ministry of health and UNRWA administration office at Gaza -Strip on the 31st of October 2006 to facilitate the process of data collection. Written consent was also obtained from each participant. Every participant received a complete explanation about the purpose of the study, the time of the interview, the benefits of the study and the investigation agency, as well as the name of the researcher. They were assured that

information will be confidential and they have the right to participate or not. All ethical considerations were maintained, including respect of people, truth, and confidentiality.

4.6 Research Instrument

The study instrument is face to face structured questionnaires.

4.6.1 Questionnaire design:

A questionnaire was designed to cover areas of research topic, knowledge, attitude, and practice among women toward environmental sanitation that affect their awareness toward environment, and to meet the study objectives. The questionnaire was constructed and prepared in Arabic language. It is mostly composed of close ended questions and consists of five parts; the first part is personal information, second part socioeconomic information obtained from the subject. The Third part of the questionnaire includes knowledge measurement scale about environmental sanitation consisting of 17 questions. For each correct answer, 1 mark was awarded, and no marks were awarded or deducted for wrong answer. The Fourth part of the questionnaire includes an attitude measurement scale about environmental sanitation consisting of 19 questions rated on a Likert type scale. The responses to each statement are scaled into 5 possible responses, 5=strongly agree, 4=agree, 3= without opinion, 2=disagree, 1= strongly disagree. The Fifth part is nineteen questions testing the subjects practice about environmental sanitation. The questionnaire was introduced through face to face interviews between the researcher and the subject in order to avoid misunderstanding and difficulties of interpreting the questions.

4.6.2 Validity of the Questionnaire:

Two types of validity were maintained: the first is the criterion related validity; the study instrument was constructed after reviewing the literatures related to the subject of the study. The second is content validity; by sending the constructed questionnaire with enclosed covering letter about the objective of the study to 7 experts working in the same field in order to give their views on the dimensions of the statements of the questionnaire . According to their suggestions and advice, the researcher added, modified, excluded and changed some of the questions to be more suitable for achieving the objectives of the study.

4.7 Pilot Study

A pilot test was carried out prior to the questionnaire distribution to check for any ambiguity or confusion in the questions statement. Ten subjects were selected from the Nussirate UNRWA clinic and 10 subjects were selected from Deir Al –Balah MOH clinic. By a convenient method the researcher selected the subjects and interviewed face to face. The pilot study subjects were excluded from the study sample. After piloting, some necessary adjustments on the questionnaire were made.

4.8 Data Collection

Data were collected by the researcher and one assistant, who was trained and prepared well to interview the women and fill the questionnaire, using face to face meetings with the subjects at the health care clinics. The average time for each interview was 20 minutes; the data were collected in the same day for each clinic during the period from January 12 to 24, 2008

4.9 Data Entry and Analysis

Data were carefully checked to screen out any incompletely answered questions. One hundred sixty tilled questionnaires were processed and entered into the computer by the researcher after designing an entry model using the computer software Statistical Package for the Social Science (SPSS) version 11. In the study, the dependent variables were knowledge, attitude and practice among women, and the independent variables were level of education, type of clinic, monthly income, and age of the women.

In reporting the results of the study, population distribution, descriptive statistics in term of means, percentage were measured for each dependent and independent variables. Further to this, tables were used to present the data in an organized way as being easier for readers to understand. The researcher conducted independent sample T-Test to explore the differences in means between the two types of clinics, and one way ANOVA to test differences between KAP as dependent variables, and other socio-demographic factors as independent variables.

4.10 Limitations of the Study

- The current instability situation in Gaza Strip is an important constraint in conducting the study.
- Lack of relevant financial resources.
- Available related studies and research resources were limited.

Chapter Five

Results

Chapter five

Results

5.1. Introduction

In this chapter, the researcher will present the main study results based on the results of the statistical analysis including the personal and socio demographic charcheterstics of the study subjects, such as level of education, age, monthly income, the level of knowledge, attitude and practices of women regarding environmental sanitation, as well as the effect of different independent variables on them. The researcher conducted frequencies, and one way ANOVA to test the differences between knowledge, attitude and practices as dependent variables, and socio demographic factors as independent variables.

5.1.1. Characteristics of the participants:

The participants in this study were 160 married women attending primary health care clinics UNRWA and Government in the middle area of Gaza Strip.

5.1.2. Socio demographic Characteristics:

The study subjects showed some variations in the socio demographic characteristics:

The number of sample from the UNRWA in the sample is(120), which accounts (75%)is more than the number of sample from the government (40), which accounts (25%) of the study sample. The percentage of sample in nusirate UNRWA clinic is the highest (24%), while Elzwida Government clinic is the lowest one (4%).

Most of the sample civil status is refugees, (73.8%) while (26.2%) are indigenous. The largest number of the study age groups is 20-29 years, which accounts for 45%, followed

by age group 30-39 years, which accounts for 38.1%, the more than 39 years 15.6% and less than 20 years 1.3%.

Most of the study sample which accounts for 41% are mothers who have secondary educational level, then 29% of the sample are mothers who have first university degree and over and 24% have preparatory educational level, while the lowest 6% are those mothers who have elementary educational level.

Table(5.1) below summarizes the socio demographic characteristics of the study subjects including age, educational level, civil status, type of service.

Table (5.1) Socio- demographic Characteristics of the Participants

Independent variables	Frequency	Percent%
1. Type of health center		
Government	40	25.0
UNRWA	120	75.0
Total	160	100.0
2. Civil status		
Refugee	118	73.8
Citizenship	42	26.3
Total	160	100.0
3. Age		
Less than 20 years	2	1.3
20-29 yrs	72	45.0
30-39 yrs	61	38.1
More than 39 yrs	25	15.6
Total	160	100.0
4. Education		
Elementary School	10	6.3
Preparatory	38	23.8
secondary	65	40.6
Ist University degree and over	47	29.4
Total	160	100.0

5.1.3. Socio- Economic Characteristics:

Most of the subjects were unemployed (143), which represented (89.4%) of the sample. The rest (17) were working with the percentage of (10.6) of the sample.

The highest percentages 58.1% of study sample live in camps, and 23.8% in cities, while 18.1% in villages. The highest number of participants (58) said that their family income is less than 1000 shekels per month. This number represents 36.3% of the study sample, while 33.1% of subjects said to have more than 2000 shekels per month, and 30.6 % of subjects between 1000- 2000 shekels.

Concerning the family size, most of participants live in families that consist of 5-10 members, this represents about51.3% of the sample, followed by 39.4% who live in small families of less than 5 members and 9.4% in big families of more than 10 members.

Most of the subjects 66.9% live in houses made of concrete, while (33.1%) of subjects are living in houses made of asbestos. The largest number of the subjects' houses 41.3% consists of 3 rooms followed by 26.3% with three rooms, while 24.4% live in houses consisting of two rooms, and 8.1% with one room only.

Table(5.2) in the next page summarizes the socio economic characteristics of the study subjects including monthly family income, number of family members, type of house, work status, housing place and number of rooms in the house.

Table (5.2) Socio –economic Characteristics of Participants

Independent variables	Frequency	Percent%
1. Type of house		
concrete	107	66.9
asbestos	53	33.1
Total	160	100.0
2. Work status		
Yes	17	10.6
No	143	89.4
Total	160	100.0
3. Housing place		
City	38	23.8
Camp	93	58.1
Village	29	18.1
Total	160	100.0
4. Monthly income		
Less than 1000 shekel	58	36.3
1000-1499	21	13.1
1500 -2000	28	17.5
More than 2000 shekel	53	33.1
Total	160	100.0
5. Number of rooms in the house		
single room	13	8.1
two rooms	39	24.4
three rooms	66	41.3
over three rooms	42	26.3
Total	160	100.0
6. Number of people living in the house		
Less than 5	63	39.4
5 - 10	82	51.3
more than 10	15	9.4
Total	160	100.0

5.2 Level of Knowledge

To determine the level of knowledge among women attending clinics in middle zone area, Gaza, Palestine, descriptive statistics including measures of mean, standard deviation and percentage, reflecting the level of women knowledge, was developed to show the current level of women knowledge towards environmental sanitation of these women.

Table (5.3) Mean, Standard Deviation and Percentage of the Level of Knowledge Among Study Population.

Item	N	Mean	Standard deviation	%
knowledge	160	13.23	1.95	77.4

The first part of the questionnaire contained 17 questions on sanitation to measure the level of women knowledge. For each correct answer 1 points; I don't know 0, wrong answer 0, after that the researcher took score of correct value.

As shown in table 5.3, out of the 17 points reflecting the level of knowledge among women, the mean was 13.23 with standard deviation of 1.95 and the percentage of women with correct answers was 77.4. These results indicate that the majority of subjects have good knowledge regarding environmental sanitation. So, the null hypothesis is accepted and the researcher hypotheses are rejected.

5.3 Environmental Sanitation Knowledge Categories

In this analysis the women were classified into two categories according to their scores, more than 75% is high and less than 75% is low. From the total of score point 17 reflecting the level of environmental sanitation knowledge, there were women with

relatively low scores of 12.8 points and less, in addition to women with relatively high scores of 13 points and above.

Table (5.4) Distribution of Study Population According To Level of Knowledge Categories

Item	Categories	Frequency	%
Level of knowledge categories	**Low**	41	25.6
	High	119	74.4
	Total	160	100.0

As shown in table (5.4), the number of women who got 13 points and above was 119 of 160 women with a percentage of 74.4, while there were 41 of 160 women with a percentage of 25.6 who got 12.8 and below on the scale for environmental sanitation knowledge . These results indicate that, according to the above mentioned categorization, the number of women who have got relatively high scores in the level of knowledge was more than those who have got relatively low scores.

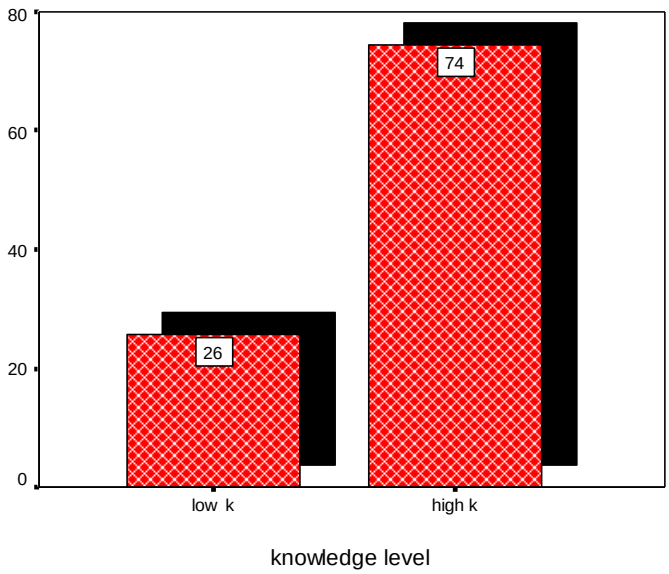

Figure (5.1) Distribution of Study Population by Level of Knowledge Categories.

Table (5.5) Distribution of Study Population Response about Environmental Sanitation Knowledge items According to Answers for each item.

Items	% Yes	% I do not know	% No	Mean	Std. Deviation
Functions of environmental sanitation dealing with household waste and sewage water.	68.80	16.20	15.00	2.54	0.74
The best way to get rid of household waste is collection and burning in the open air.	20.60	0.00	79.40	1.41	0.81
Of the damage caused by the dumping of waste near the waste containers on the street is spread of diseases, insects and rodents.	97.50	0.63	1.90	2.96	2.40
Microbes can be transmitted to humans by the lack of hygiene and not washing vegetables well before eating.	99.40	0.00	0.60	2.99	0.16
One of the most important ways of preventing and resisting the spread of diseases and epidemics is more attention to general personal hygiene.	100.00	0.00	0.00	3.00	0.00
It is necessary to wash our hands good so as not to be injured by diseases.	100.00	0.00	0.00	3.00	0.00
Municipal water is the best source to get drinking water.	28.13	5.63	66.25	1.62	0.90
We add the chlorine to drinking water to disinfect it from microbes.	71.88	13.75	14.38	2.58	0.73
The sewage water can reach groundwater and pollute it.	73.13	9.38	17.50	2.56	0.77
Drinking contaminated water can lead to diarrhea in children.	98.13	0.00	1.88	2.96	0.27
There is a relationship between the incidence of kidney diseases and increased salinity of drinking water.	93.75	2.50	3.75	2.90	0.41
The best way to get rid of the sewage water, general network for sanitation.	94.38	3.13	2.50	2.92	0.35

There are three treatment plants for sewage water is in the Gaza Strip.	20.00	61.25	18.75	2.01	0.62
Treated Water can be used in the domestic purposes.	47.50	9.38	43.13	2.04	0.95
Environmental pollution is due to human activity which leads to damaging the natural environment surrounding the man.	88.13	2.50	9.38	2.79	0.60
The responsible body for environmental protection is the Ministry of Environment only.	23.75	1.25	75.00	1.49	0.85
A day when the world celebrates the environment is called World Environment day is held on 5 / 6 / each year.	53.75	44.38	1.88	2.52	0.54
Total	**69.34**	**10.00**	**20.66**	**2.49**	**0.65**

Table no. (5.5), shows that about 69.34% of the subjects answers were yes, and 20.66% were no, while 10% I don't know. The mean for all answers was 2.49.

5.4 Level of Attitude Toward Environmental Sanitation

The second part of the questionnaire included 19 questions that reflect the environmental attitude among the women of the study population. Lickert scale, a positive question scale, strongly agree 5 points; agree 4, without 3, disagree 2, strongly disagree1, a negative questions scale, strongly disagree5, disagree 4, without 3, agree2, strongly agree1 were used to measure the attitude toward the environment.

In this part the researcher tries to answer the question: What is the level of attitude toward environmental sanitation among women in the middle zone in Gaza Strip.

To measure the level of attitudes toward environmental sanitation, the percentages of subjects' responses to each item in the scale were calculated, especially the ratings of strongly agree and agree. Then the mean percentage of the total scores was also calculated, and it was 67.4% the results are presented in the table below:

Table (5.6) Mean, Standard Deviation and Percentage of the Level of Attitudes Among Study Population.

Item	N	Mean	Standard deviation	% strongly agree & agree
Environmental Attitudes	160	3.97	0.83	67.4

As shown in table(5.6), out of the 19 points reflecting the level of positive environmental attitude among women , the mean of the scores was 3.97with standard deviation of 0.83 and a percentage of women strongly agree and agree scores reflecting the level of their positive attitude toward their environment was 67.4 %. These results indicate that the level of positive environmental attitude among the women in the middle zone in Gaza Strip was good attitude. So, the null hypotheses are accepted and the researcher hypotheses are rejected.

Table (5.7) Distribution of Study Population Response about Environmental Sanitation Attitude items According to Answers for each item

Items	Strongly agree %	Agree %	Sum %	Mean	Std. Deviation
Many sewage cesspits in some areas contaminate groundwater.	63.1	21.3	84.4	3.97	0.82
Must clean drinking water reservoir at home at least once a year.	58.1	25.00	83.1	3.89	1.03
All sources of drinking water in the area are of reasonable quality and do not cause any health problems.	26.3	2.5	28.8	3.46	1.05
The best way to solve the problems of sanitation in the area is discharging into the sea.	28.1	0.00	28.1	3.61	1.09
Waste water treatment and re-use is a correct and necessary idea.	58.8	9.4	68.2	3.53	1.02
There is no danger of sewage collected in open space at streets.	1.3	1.9	3.2	4.50	0.75
Wastewater can be used after treatment in agriculture.	56.3	6.9	63.2	3.48	0.92
The use of sewage to irrigate crops is a good way to increase soil fertility.	22.5	1.3	23.8	2.52	1.03
Collection of waste and dealing with it is the responsibility of the municipality and not the responsibility of the citizens.	20.0	1.9	21.9	3.70	1.04
We can not prevent waste production, but we can reduce them.	80.6	5.7	86.3	3.82	0.71
The best means to reduce solid waste is the recycling of waste paper, glass and metals.	61.2	22.5	83.8	4.01	0.76
It is better to use plastic bags in the collection of waste.	25.0	71.3	96.3	4.63	0.71
The best way to get rid of the waste is burning in the interior of the container.	28.1	3.1	31.2	3.53	1.19
Waste containers near homes affect the health of the community.	52.5	44.4	96.9	4.38	0.66

The best way to eliminate the insect is spraying with insecticide.	48.1	38.1	86.2	4.13	0.93
There is a relationship between environmental pollution and spread of diseases.	47.5	50.6	98.1	4.48	0.56
Better cleaning and hand-washing after using the toilet.	8.1	91.3	99.4	4.90	0.36
The community must be involved in voluntary days to clean the environment.	52.5	46.9	99.4	4.46	0.54
The society needs more environmental awareness by specialists in this field.	50.6	48.8	99.4	4.48	0.54
Total	**41.5**	**25.9**	**67.4**	**3.97**	**0.83**

Table (5.7) shows that, that the largest percentage (98.1%) of the subjects believe, that there is a relationship between environmental pollution and spread of diseases,(99.4%) better cleaning and hand-washing after using the toilet, the community must be involved in voluntary days to clean the environment and society needs more environmental awareness by specialists in this field. About 3.2% believe that there is no danger of sewage collected in open space in the streets, 21.9% believe that the collection of waste and dealing with it is the responsibility of the municipality and not the responsibility of the citizens.

5.5 Level of Practice Toward Environmental Sanitation

To measure the level of practice, the mean, stander deviation, frequencies and percentages of subjects' responses on the practice scale were calculated. The questionnaire includes17 questions that reflect the level of practice among the women of the study population. The questionnaire has two types of questions, the fist part, answers by yes, no, some times, and the other part multiple choice questions.

Table (5.8) Distribution of Study Population Response about Environmental Sanitation Practice items According to Answers for each item

Items	% of Yes	% some time	% of No	Mean	Std. Deviation
Do you separate solid waste in a special box?	16.2 0	11.90	71.90	1.44	0.76
Do you clean the bathroom and toilet with cleaning materials?	99.40	0.00	0.60	2.99	0.16
Do you combat insects in the house as they emerge?	96.30	3.10	0.60	2.96	0.23
Do you use pesticides in the fight?	79.40	15.00	5.60	2.74	0.55
Do you wash hands before doing household chores, especially cooking?	100.0	0.00	0.00	3.00	0.00
When you wash your hands do you use soap?	86.2 0	11.90	1.90	2.84	0.41
Does a family member throw garbage from the windows?	1.20	5.00	93.80	1.08	0.31
Do children wash hands after coming out of the toilet?	96.90	1.90	1.20	2.96	0.26
Do children wash hands when they return from the street or school?	70.60	27.50	1.90	2.69	0.50
Do you clean up water tanks in your house?	85.0	-	15.0	1.85	0.35
Does a box garbage at home has covered?	70.6	-	29.4	1.70	0.45
Mean percentage	71.5	8.4	20.1	2.38	0.36

As shown in table (5.8), out of the 11 questions reflecting the level of women practice towered environmental sanitation, the mean of the scores was 2.38with standard deviation of 0.35 and a percentage of women yes answers scores was 71.5% which reflects the level of their practice toward environmental sanitation. These results indicate that the level of practice among the women in the middle zone in Gaza Strip was good practice. So, the null hypothesis is accepted and the researcher hypotheses are rejected.

Table (5.9) Distribution of Study Population by their Practice about Environmental Sanitation Practice Questions.

Questions	Frequency	Percent%
Q.2. How many times do you clean reservoirs in the year?		
once	40	25.0
twice	54	33.8
three	29	18.1
Four	37	23.1
Total	160	100.0
Q.3. Does a box garbage at home has covered?		
No	47	29.4
Yes	113	70.6
Total	160	100.0
Q.4. How do you collect waste in the interior of the house?		
plastic bag	121	75.6
garbage box	33	20.6
In the yard of the house	6	3.8
Total	160	100.0
Q.5. Where do you collect garbage in the house?		
in the kitchen	54	33.8
in yard house	13	8.1
outside the home	93	58.1
Total	160	100.0
Q.6. Who often do you transfer deported garbage in your home?		
Father	64	40.0
mother	32	20.0
children under 9 years	23	14.4
children more than 9 years	41	25.6
Total	160	100.0

Q.16. Do you participate in educational symposia on the health of the environment?		
No	104	65.0
Yes	56	35.0
Total	160	100.0
Q.17. Do you need more information about the health of the environment?		
No	21	13.1
I do not know	2	1.3
Yes	137	85.6
Total	160	100.0

Table (5.9) shows the following results:

When subjects asked about cleaning water tanks in their houses, 85% of the study population answered yes, while 15% answered no.

The majority of the study populations clean the water reservoirs two times in the year with a percentage of 33.8%, while the lowest was 18.1% three times.

When the study sample is asked, if domestic garbage box are covered or not, the majority answered yes 76.6 % while (26.4%) answered no.

The great majority (75.6%) of the study population collects the waste in the interior of the house in plastic bags, while 3.8% in the yard of the house.

When subjects asked**,** how often they transfer garbage in their houses the responses were 40% father, 25.6% children more than 9 years, 20% mother, while children under 9 years was 14.4%.

About 65% of the subjects did not participate in educational symposia on the health of the environment, while 35% did participate.

When subjects asked**,** do you need more information about the health of the environment the majority answered yes, 85.6% while 13.1% answered no, and1.3% answered I don't know.

5.6 Relationship Between Socio-Demographic Variables and Subjects Level of Knowledge, Attitude, and Practice Toward Environmental Sanitation.

5.6.1. Level of KAP and level of education:

To test the hypothesis **"There is a statistically significant relationship between level of education among women in middle zone area and their KAP towards environmental sanitation"** subjects were divided into four groups (elementary school- preparatory school – secondary –university and more). One way ANOVA test was used to test the differences in means between groups. The results are presented in table (5.10)

Table (5.10) Differences in KAP Means Related to Level of Education (n =160)

Level of education	N	Mean	Std. Deviation	Std. Error
Elementary School	10	2.4911	.09930	.03140
Preparatory	38	2.4736	.10726	.01740
secondary	65	2.4849	.11634	.01443
University and over	47	2.4597	.14099	.02057
Total	160	2.4752	.12067	.00954

F = 0.453 **P – Value = 0.715**

The results show in table (5.10) that there are no significant relationship between subjects' level of education and their Knowledge, Attitude and practice differences in means among the four groups**.**

Table (5.11) Differences in KAP means Square related to level of education (n =160)

Dependent Variables	level of education	Sum of Squares	Mean Square	F	Sig.
Knowledge	Between Groups	.157	.052	1.129	.339
	Within Groups	7.227	.046		
	Total	7.384			
Attitude	Between Groups	.092	.031	.388	.761
	Within Groups	12.332	.079		
	Total	12.424			
Practice	Between Groups	.084	.028	1.138	.335
	Within Groups	3.819	.024		
	Total	3.902			

From the table (5.11), the results show that there are no significant relationship between subjects' level of education and their Knowledge, Attitude and practice, differences in means among the four groups. The mean square between groups in knowledge is (.052) and within groups (.046) (F= 1.129) and significance value is (.339) which is not significant. The attitude mean square between groups is (.031) and within groups (.079) (F=.388) significance value is (.761). The practice mean square between groups is (.028) and within groups (.024) (F=1.138) significance value is (.335)

This means that different levels of education do not affect KAP regarding environmental sanitation so, the null hypothesis is accepted and the researcher hypotheses are rejected.

To support this result, multiple comparisons ***(Scheffe test)*** were performed to see the mean differences between different levels, and their non significance.

Table (5.12).Scheffe Post Test for KAP and Women Educational Level

Dependent Variable	(I) Education	(J) Education	Mean Difference (I-J)	Std. Error	Sig.
KAP	Elementary School	Preparatory	.0175	.04311	.983
		secondary	.0061	.04120	.999
		University and over	.0313	.04224	.908
	Preparatory	Elementary School	-.0175	.04311	.983
		secondary	-.0113	.02477	.976
		University and over	.0139	.02646	.965
	secondary	Elementary School	-.0061	.04120	.999
		Preparatory	.0113	.02477	.976
		University and over	.0252	.02322	.759
	University and over	Elementary School	-.0313	.04224	.908
		Preparatory	-.0139	.02646	.965
		secondary	-.0252	.02322	.759

The results show that the mean differences between the four levels of education are not statistically significant, which supports the above result.

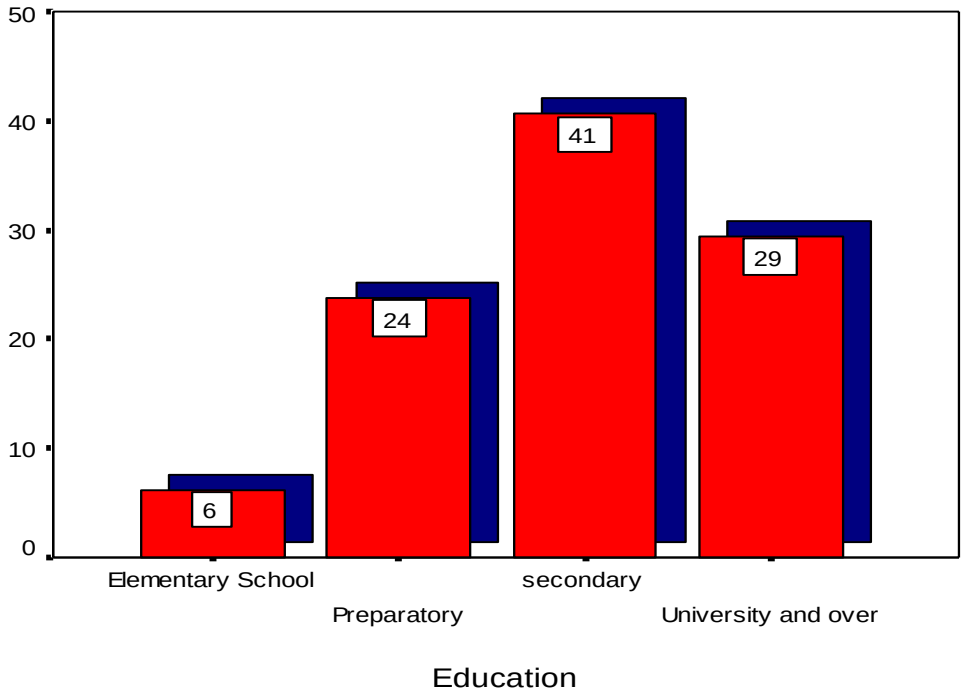

Figure No. (5.2): Distribution of Study Population Regarding Education Level

5.6.2. Level of KAP and Women Age:

The mean, standard deviation, and one – way ANOVA tests were used to explore if the level of KAP towards environmental sanitation among women in middle zone area differs due to their age.

Table (5.13) Mean, Standard Deviation, Level of KAP Among Women Regarding Their Age.

Age groups	N	Mean	Std. Deviation	Rank
less than 20years	2	2.3511	.05523	1
20 - 29 y	72	2.4744	.13571	2
30 -39 y	61	2.4859	.11533	3
more than 39 y	25	2.4613	.08260	4
Total	160	2.4752	.12067	

F=0 .978 **P=0.405**

As shown in table (5.13), the results reflect slightly a difference in the mean of the level of KAP among women in middle zone area according to their age. The highest (2.48) was for age group between 30-39years, while the lowest (2.35) was for age group less than 20 years. In order to study the differences between level of KAP and women age one way analysis of variance (ANOVA) was used. According to test results, F=0.978, and the results indicate that there is no statistically significant difference in the level of KAP towards environmental sanitation among women in middle zone area and their age P= 0.405). So, the null hypothesis is accepted and the researcher hypothesis is rejected.

To support this result, multiple comparisons ***(Scheffe test)*** were performed to see the mean differences between different age groups, and their non significance**.**

Table (5.14) .Scheffe Post Test for KAP Among Women Regarding Their Age.

Dependent Variable	(I) Age	(J) Age	Mean Difference (I-J)	Std. Error	Sig.
KAP	less than 20years	20 - 29 y	-.1233	.08652	.567
		30 -39 y	-.1348	.08673	.493
		more than 39 y	-.1102	.08869	.673
	20 - 29 y	less than 20years	.1233	.08652	.567
		30 -39 y	-.0115	.02100	.960
		more than 39 y	.0131	.02802	.974
	30 -39 y	less than 20years	.1348	.08673	.493
		20 - 29 y	.0115	.02100	.960
		more than 39 y	.0247	.02866	.863
	more than 39 y	less than 20years	.1102	.08869	.673
		20 - 29 y	-.0131	.02802	.974
		30 -39 y	-.0247	.02866	.863

The results show that the mean differences between the four age groups are not statistically significant, which support the above result.

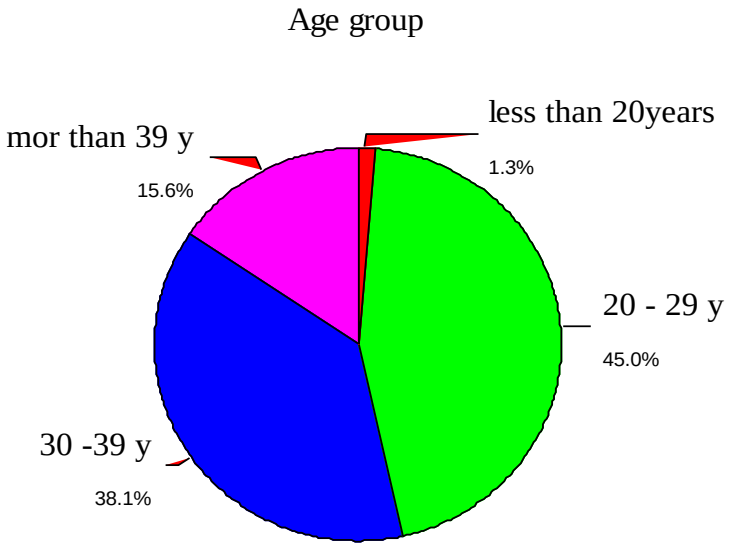

Figure No. (5.3): Distribution of Study Population Regarding Age

5.6.3. Level of KAP and Household Income:

Participants were divided into four groups in relation to their family income(less than 1000 shekel -1000 - 1499sh, 1500-2000sh – more than 2000sh).

One way ANOVA test was used to test the relationship between KAP among women in middle zone area and their household income. The results are presented in table (5.15).

Table (5.15) Differences in KAP Means Related to Family Income (n =160)

Dependent variables	Income groups	Sum of Squares	Mean Square	F	Sig.
knowledge	Between Groups	.083	.028	.594	.620
	Within Groups	7.300	.047		
	Total	7.384			
Attitude	Between Groups	.005	.002	.022	.996
	Within Groups	12.418	.080		
	Total	12.424			
practice	Between Groups	.056	.019	.760	.518
	Within Groups	3.846	.025		
	Total	3.902			

Table (5.15) shows no statistically significant relationship between total family income per month and subject knowledge, attitude and practice. This means that the different levels of income do not affect KAP regarding environmental sanitation. So, the null hypothesis is accepted and the researcher hypothesis is rejected. To support this result, multiple comparisons ***(Scheffe test)*** was performed to see the means for each group of family income, mean differences between each group, and their significance.

Table (5.16).Scheffe Post Test for KAP Among women Regarding Family Income

Dependent Variable	(I) Monthly income of the family	(J) Monthly income of the family:	Mean Difference (I-J)	Std. Error	Sig.
KAP	less than 1000 sh	1000- 1499 sh	.0057	.03102	.998
		1500-2000 sh	-.0008	.02803	1.000
		more than 2000 shekel	-.0019	.02314	1.000
	1000- 1499 sh	less than 1000 sh	-.0057	.03102	.998
		1500-..2000 sh	-.0065	.03516	.998
		more than 2000 shekel	-.0076	.03141	.996
	1500-2000 sh	less than 1000 sh	.0008	.02803	1.000
		1000- 1499 sh	.0065	.03516	.998
		more than 2000 shekel	-.0011	.02846	1.000
	more than 2000 shekel	less than 1000 sh	.0019	.02314	1.000
		1000- 1499 sh	.0076	.03141	.996
		1500-2000 sh	.0011	.02846	1.000

The results show in (table5.16) that the mean differences between the four levels of monthly income are not statistically significant, which supports the above result

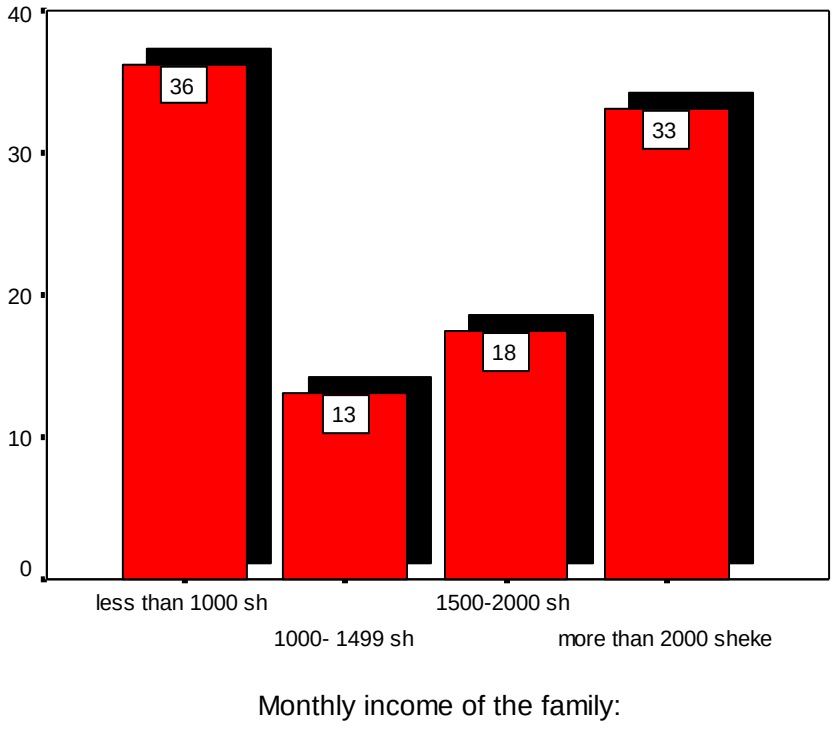

Figure no. (5.4): Distribution of Study Population Regarding Monthly Income

5.6.4. Level of KAP Between Woman Attending UNRWA and Government Clinics:

To test the hypotheses" **There is a statistically significant difference in KAP regarding environmental sanitation between woman attending UNRWA and Government clinics"** independent sample (T-test) was used to test the differences in means between UNRWA and Government clinics. The results are presented in table (5.17).

Table (5.17): Differences in KAP means between UN & GOV clinics (n =160)

Type of clinic	n	m	t	P value
UN	120	2.47	- .754	.532
GOV	40	2.46		

From the table (5.17), the results show that there is no significant difference at 0.01 significance level between UNRWA clinics (m =2.47) and GOV clinics (m =2.46),

t- Value was (-.754) and significance value was (0.532) which is not significant. This means that there is no relationship between KAP regarding environmental sanitation and clinic type. Therefore, the researcher will accepted the null hypothesis and reject the researcher hypotheses.

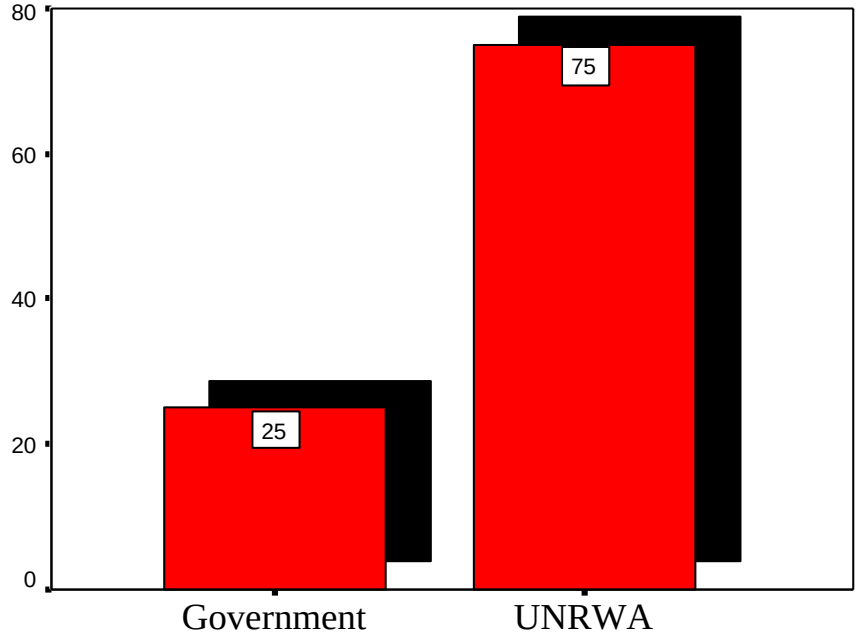

Figure No. (5.5): Distribution of Study Population Regarding Type of Health Center

Chapter Six

Discussion

Chapter Six

Discussion

6.1. Introduction

In this chapter, the results of the study will be discussed and compared with the results of other studies in the same field. The purpose of this study was to know and explore the level of knowledge, attitude and practice (KAP) of women attending primary health care centers (government and UNRWA) regarding environmental sanitation in middle zone area of Gaza Strip, and to investigate the relationship between the KAP and the socio demographic factors including, age of women, type of health service, level of education and monthly income of the study population.

6.2 Level of Knowledge Regarding Environmental Sanitation

The mean of scores for the 160 women knowledge regarding environmental sanitation was 13.23 (total score is17), with a percentage of 77.4%. About 74.4% N=119 of these women were found to have a high level of knowledge regarding environmental sanitation, while 25.6% N=41 of them have a low level of knowledge regarding environmental sanitation. These results indicated that the level of knowledge among women in middle zone area was relatively high. From the total 17 scores reflecting the level of environmental sanitation knowledge, where women with relatively low scores have got 12.8 points and less, in while women with relatively high scores have got 13 and above. This finding agrees with the study of Hsu and Roth (1996), where main results of the study have shown that the level of environmental knowledge among the study population was 75.9%, and environmental attitude was 80%. Similar finding was in Hong Kong, which reported that, high levels of factual environmental knowledge were found amongst a sample of 1032

students (Chan, 1998). While a local study in Gaza conducted by Sarsour (2005), revealed that awareness among school age children in Gaza city relatively agrees with this study. The results indicated that the students have a moderate level of environmental awareness with a mean score of 16.85 out of 30 points, and the percentage was 70.2 of the study population concerning the level of environmental awareness.

Also, the findings of this study agree with the study by Bob Frame & Bronwyn Newton, (2007), which assesed the level of environmental knowledge among households in Selangor in Malaysia, examined the sources of their environmental knowledge, determined factors that lead to different levels of knowledge and analysed the relationship between knowledge and environmental attitude, behaviour and participation. The results of the study indicated that, in general, respondents basic or general environmental knowledge was high. In addition, the study results disagree with the results of Chris Buethe (2000). The Study analyzed Indiana women ' knowledge and attitudes about environmental problems and their solutions. A total of 267 women from urban and rural areas were surveyed. The study revealed that Indiana women possess inadequate environmental knowledge and awareness.

Also, another study results disagree with our results, Kamla-Raj (2004), where the study in Punjab assessed the knowledge level of the mothers regarding environmental sanitation and nutrition, health was assessed. His study indicated that the knowledge level of mothers with regard to various areas of environmental sanitation and nutrition health in Punjab ranged between 12- 43 per cent with an average of 27 per cent. The majority of rural mothers (71%) had low level of knowledge followed by mothers (25%) having medium level of knowledge and merely 4 percent of mothers had high level of knowledge.

6.3 Level of Attitude Regarding Environmental Sanitation

Out of the 19 points reflecting the level of environmental attitude among the women attending primary health care in middle zone area the mean for the 160 women of the study was 3.97, with a percentage of strongly agree and agree 67.4 %. These results indicated that the level of positive environmental attitude among those women was relatively high. These findings disagree with the study of Ebong R. (2002), study appraisal of knowledge and attitude of Akwa Ibomites toward a sustainable environment in Nigeria. The study results revealed that the Akwa Ibomites have negative attitudes toward involvement in activities that promote a sustainable healthful environment. Attitude has major influence on People's achievement in a particular program. People tend to have a positive attitude as their knowledge level increases; thus, lack of knowledge affects attitude.

Sarsour (2005) study, conducted on 400 students in Gaza city revealed that students had low positive attitude toward the environment with mean score of 19.30 (total= 30 scores).This result does not agree with the result of our study. These variations in attitude towards environmental issues and problems are due to differences between developed and developing comminutes on how they look at environment and if they consider it as a priority or not.

6.4 Level of Practice Regarding Environmental Sanitation

The results indicated that the level of practice among the women attending primary health care in middle zone area regarding environmental sanitation was relatively high. The mean percentage was 71.5%of 11 points reflecting the level of women practice towered environmental sanitation. These results agree with the study of Bhattacharya, M (2004) on the existing level of knowledge and practices regarding health and environmental

sanitation survey which was carried out in the study block Icchavar. His study indicated that the practice level of households member were 63.5%. In the current study hundred percent of the study population wash their hands before doing household chores, especially cooking, and 86.20% wash their hands using soap. In study of Bhattacharya, M, where the practice of washing hands with water and soap, had 56.5%, the family members especially children up to 10 years and mothers washing their hands before eating food around 70%. However, our findings are approximately similar to the Karnataka Rural Water Supply & sanitation Agency study which revealed that there were considerable positive hygienic practices among school children in terms of, use of latrines for defecation, washing hands with soap after defecation, washing hands with soap before meals, brushing teeth every day, bathing practices, wearing clean clothes, clipping nails regularly and using footwear. One significant revelation from the study was that, since most school children learned healthy hygiene habits from their mothers, educating mothers on safe hygiene and sanitation habits could bring about a behavioural change in children and the entire family. In our study 70.60% of children wash hands when they return from the street or school and 96.90%of the children wash hands after they come out of the toilet. The difference in level of practice regarding environmental sanitation in some countries is attributed to the different habits and due to variation in knowledge and attitudes toward environmental problems.

6.5 KAP Regarding Environmental Sanitation and Level of Education

The results show that there is no significant relationship between subjects' level of education and their knowledge, attitude and practice, there are differences significant in means among the four groups. The mean square between groups in knowledge was (.052) and within groups (.046) (F= 1.129) and significance value was (0.339) which is not

significant. In attitude mean square between groups was (.031) and within groups (.079) (F=.388) significance value was (.761). In practice mean square between groups was (.028) and within groups (.024) (F=1.138) significance value was (.335). This means that different levels of education do not affect KAP regarding environmental sanitation so, the null hypothesis is accepted and the researcher hypotheses are rejected.

Similar results were not obtained in the previous studies which could be attributed to the different community cultures. In study Bob Frame and Brouwyn Newton (2007) indicated that the lower levels of education were reflected in the level of environmental knowledge.

In the study of Ebong R D (1994), Knowledge of environmental health was assessed in a sample of 192 students at Ja'afaru Secondary School, Zaria, Nigeria. The findings indicated that the students' knowledge of environmental sanitation and hygiene was high among students whose fathers and mothers had primary, secondary, or post-secondary education and higher than those whose fathers were illiterate. These results disagree with our study.

However, in the study of Sarsour (2005), conducted on 400 students, the result indicated that there was a direct proportional relation between the level of environmental awareness and the attitude with students' grade.

6.6 KAP Regarding Environmental Sanitation and Women Age

The results reflect slightly a difference in the mean of the level of KAP among women in middle zone area according to their age. The highest (2.48) was for age group between 30 and 39years, while the lowest (2.35) was for age group less than 20 years. In order to study the differences between level of KAP and women age one way analysis of variance (ANOVA) was used. According to test results, F=0.978, and the results indicate that there

is no statistically significant difference in the level of KAP towards environmental sanitation among women in middle zone area and their age (P= 0.405). So, the null hypothesis is accepted and the researcher hypothesis is rejected.

6.7 KAP Regarding Environmental Sanitation and Household Income

The result shows no statistically significant relationship between total family income per month and subjects' knowledge, attitude and practice. This means that different levels of income don't affect KAP regarding environmental sanitation. So, the null hypothesis is accepted and the researcher hypothesis is rejected. Our findings are in contrast to the results of Kiran Pandey & David Wheeler, 2004, who investigated individuals' exposure to indoor air pollution. Using new survey data from Bangladesh, where the authors analyzed exposure at two levels: differences within households attributable to family roles, and differences across households attributable to income and education. Within households' Female education, male education and family income all have large, highly-significant effects on pollution. Also the study indicated that young children and poorly-educated women in poor households face pollution exposures that are four times those of men in higher income households organized by more highly educated women.

6.8 KAP Regarding Environmental Sanitation and Type of Clinic

The results show that there is no significant difference at 0.01 significance level between UNRWA clinic (m =2.47) and GOV clinic (m =2.46), t value was (-.754) and significance value was (0.532) which is not significant. This means that there is no relationship between KAP regarding environmental sanitation and clinic type. Therefore, the researcher accepted the null hypothesis and rejects the researcher hypotheses. The previous studies mentioned in the literature review did not support or agree with this

finding. This may be due to the specialty of the area (Gaza strip) where there is no variation in the culture, i.e. it has the same culture. Our findings are in contrast to the results of affifi (2000), who conducted his study on 400 children in Rafah. Affifi has studied many factors, such as, type of school (governmental or UNRWA), gender, children's level of achievement and place of residency. There were statically significant differences between UNRWA and government schools in favor of UNRWA schools. That result may be explained by the variation between sample populations

Chapter Seven

Conclusion and Recommendations

Chapter seven

Conclusion and recommendations

7.1 Introduction

In this chapter, the major findings of the present study will be reviewed and answers to the research questions will be given, in addition, recommendations and suggestions for further investigation will be provided.

The study findings may help in increasing and developing KAP among women attending primary health care in middle zone area in Gaza Strip regarding environmental sanitation and conducting suitable environmental education programs to achieve this goal.

7.2. Conclusion

According to the study results obtained in chapter 5 and interpretation in chapter 6, the following conclusion can be obtained.

7.2.1 Knowledge Regarding Environmental Sanitation:

In general the mean of scores for the 160 women knowledge regarding environmental sanitation was 13.23 (total score is17), with a percentage of 77.4%. About 74.4% (N=119) of these women were found to have a high level of knowledge regarding environmental sanitation, while 25.6% (N=41) of them have a low level of knowledge regarding environmental sanitation. These results indicated that the level of knowledge among women in middle zone area was relatively high.

7.2.2 Attitude Regarding Environmental Sanitation:

The women attending primary health care in the middle zone area have generally high level of positive attitude toward environmental sanitation. The mean of percentage among the 160 women of the study population that has positive attitude was 67.4%. However there are many previous studies that reported low attitude and others reported high toward environmental issues, including that of environmental sanitation.

7.2.3 Practice Regarding Environmental Sanitation:

The results indicate that the level of practice among women attending primary health care in middle zone area regarding environmental sanitation was high, 71.5 % of them have high level of practice. These findings revealed that the women knowledge, attitude and practice in the study results were high.

7.2.4 Relationship Between KAP Regarding Environmental Sanitation and Other Variables:

(Level of Education, Type of Clinic, Age, Monthly income).

There were no significant differences found in the level of KAP regarding environmental sanitation and the different variables of study, level of education, type of clinic, UNRWA or Government, women age, family monthly income. That maybe due to the population living in the middle area who has the same social and economic conditions and the same customs and traditions.

7.3 General Recommendations

1- Promote the education of girls and women of all ages in science, technology, economics and other disciplines relating to the natural environment.

2- Involve women in the communication and activities to raise their awareness regarding environmental issues, especially on the environmental sanitation and their impacts on human health.

3- Organization of regular training programs and seminars to discuss the problems of the environment and pollution which occur in the community, by the relevant governmental and non governmental institutions and the civil society organizations.

4- Government, institutions and agencies should develop strategies to educate people on the importance of environmental sanitation.

5- Efforts should be made to organize seminars for health workers to effectively educate the general population on programs for healthful environment.

6- The government should establish environmental health policies to reduce pollution and environmental degradation

7- The government should develop programs and provide facilities so that garbage and waste can safely be removed from homes and streets.

7.4 Further research recommendation

According to the study results and limitations, the researcher recommends the following further researches and studies:

1- Further research is necessary to measure the level of environmental sanitation knowledge, attitude and practice of women from all different Gaza governorates to be more generalized, and more representative.

2- As, the researcher conducted his study on the governmental and UNRWA clinics only, it is recommended that further researches for household surveys to investigate the level of knowledge, attitude and practice among the community in Gaza Strip .

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Annexes

Annex 1

Map of Palestine

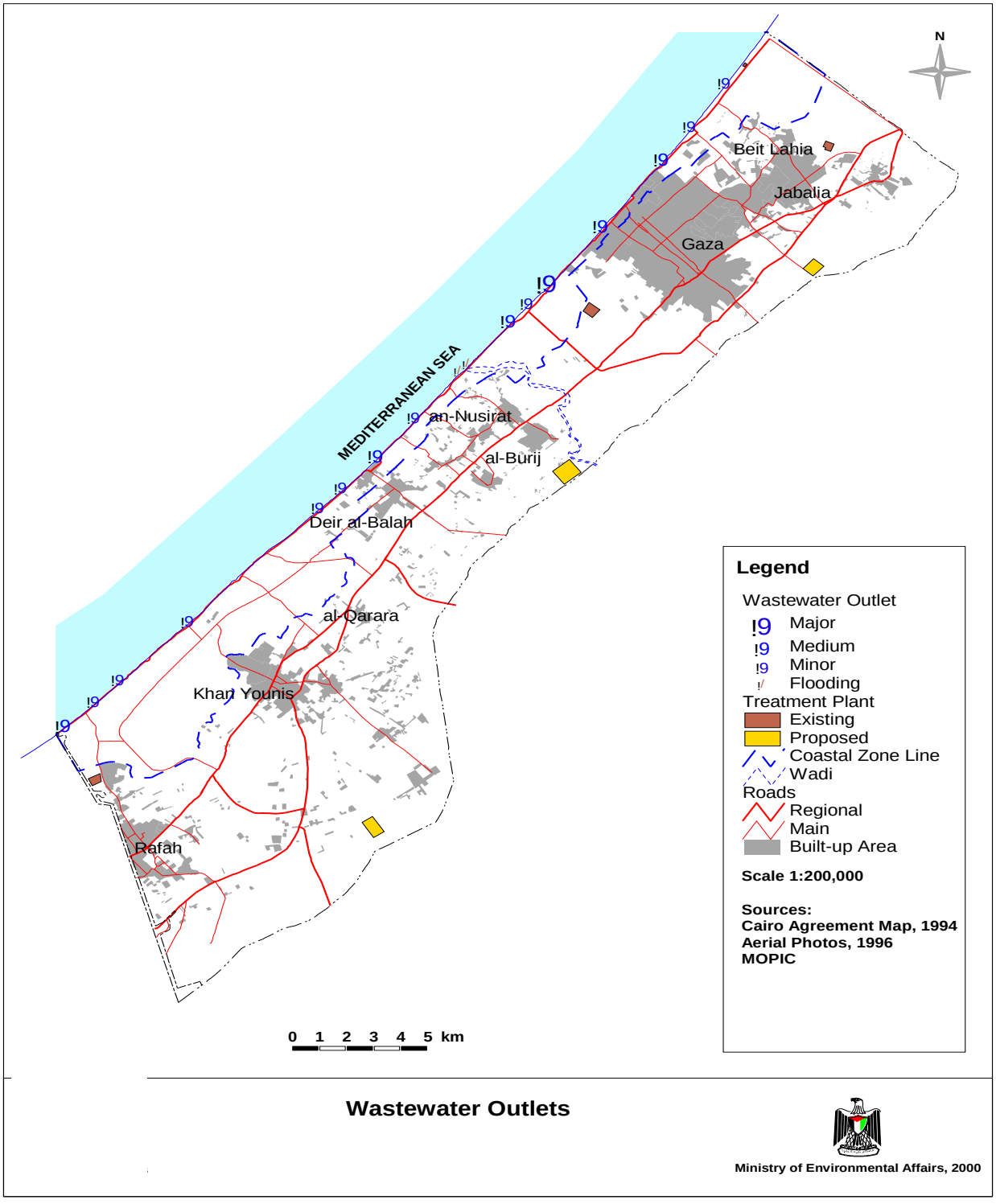
Source: MOH, 2000

Annex 2

Map of Gaza Strip

Source: www. Islamonline.net

Annex 3
Wastewater outlet



Location of the wastewater out falls along Gaza coast

Annex 4

بسم الله الرحمن الرحيم

دعـوة

أختي المشاركة:

أنا الطالبة/ **أحمد فؤاد منصور** أدرس بكلية الصحة العامة جامعة القدس–أبو ديس، أقوم بإعداد **البحث** بعنوان **المعرفة والاتجاهات والممارسات المتعلقة بالإصحاح البيئي لدي النساء اللواتي يحضرن إلي مراكز الرعاية الأولية (حكومة –وكا في المحافظة الوسطى**، اعتباره متطلب للتخرج والحصول على درجة الماجستير وتم اختيارك بناءاً لمطابقتك شروط اختيار العينة.

تهدف هذه الدراسة إلى التعرف على المعرفة والتوجهات والممارسات لدى السيدات حول الإصحاح البيئي والخروج بتوصيات تساعد في حل المشاكل البيئية في المنطقة.

وشكرا لك علي مشاركتك في هذه الدراسة بالإجابة على بعض الأسئلة خلال المقابلة، مع العلم أن المقابلة لن تستغر أكثر من 15 دقيقة تقريباً.

مشاركتك تطوعية يمكنك رفض الإجابة على أي سؤال وأرغب أن أؤكد لك أن المعلومات التي تذكريها ستكون مصدر ثقة وسرية وستستخدم فقط لغرض البحث العلمي وبدون ذكر الأسماء ولذا أرجو أن تكون الإجابات دقيقة.

- قبل البدء في المقابلة هل تودين الاستفسار حول أي شيء عن الدراسة؟
- هل من الممكن أن نبدأ المقابلة الآن؟ 1- نعم 2- لا

وشكراً لك على حسن تعاونك

Annex 5

استبيان حول التعرف علي مدي المعرفة والاتجاهات والممارسات المتعلقة بالإصحاح البيئي لدى السيدات اللواتي يحضرن إلي مراكز الرعاية الأولية (حكومة- وكالة) في المحافظة الوسطي, قطاع غزة

*** تاريخ تعبئة الاستبيان:**_____ □ **رقم الاستبيان**_____

*** نوع المركز الصحي:** □ حكومة □ وكالة

*** اسم المركز الصحي:**_____

---

1 - معلومات شخصية:

*** الحالة المدنية:** □ مواطنه □ لاجئه

*** العمر** _____

***** مكان **السكن:** □ مدينة □ مخيم □ قرية

2-المعلومات الاجتماعية والاقتصادية:

*** الحالة الاجتماعية:** _____

*** التعليم:** □ ابتدائي □ إعدادي □ ثانوي □ جامعي فما فوق

*** هل تعملين:**

□ نعم □ لا

*** عدد الأفراد الذين يعيشون في المنزل:**

□ أقل من 5 □ 5 – 10 □ أكثر من 10افراد

*** الدخل الشهري للعائلة:**

□ اقل من 1000 ش □1000-1499ش □ 1500 -2000 ش

□ أكثر من2000 ش

*** نوع المنزل:**

□ باطون مسلح □ اسبست □ أخري حددي _____

*** عدد الغرف في المنزل:**

□ غرفة واحدة □ غرفتين □ ثلاثة غرف □ أكثر من ثلاثة غرف

3- المعرفة:

م	السؤال	نعم	لا	لا أعرف
1-	من مهام الإصحاح البيئي(السنتيشن)التعامل مع النفايات المنزلية ومياه الصرف الصحي.			
2-	أفضل طريقة للتخلص من النفايات المنزلية تجميعها وحرقها في الهواء الطلق؟			
3-	من الأضرار الناتجة عن إلقاء النفايات بالقرب من حاويات النفايات في الشوارع انتشار الأمراض والحشرات والقوارض.			
4-	يمكن أن تنتقل الميكروبات إلي الإنسان نتيجة قلة النظافة وعدم غسل الخضروات جيدا قبل أكلها			
5-	من أهم طرق الوقاية ومقاومة انتشار الأمراض والأوبئة الاهتمام بالنظافة الشخصية العامة			
6-	من الضروري أن نغسل أيدينا جيدا لكي لا نصاب بالأمراض.			
7-	تعتبر مياه البلدية أفضل مصدر للحصول منه علي مياه الشرب.			
8-	يضاف عنصر الكلور إلي مياه الشرب لتطهيرها من الميكروبات.			
9-	يمكن لمياه الصرف الصحي أن تصل إلي المياه الجوفية وتلوثها.			
10-	شرب المياه الملوثة يمكن أن يؤدي إلي الإسهال عند الأطفال.			
11-	هناك علاقة بين الإصابة بإمراض الكلي وزيادة ملوحة مياه الشرب.			
12-	أفضل طريقة للتخلص من مياه الصرف الصحي هي شبكة عامة للصرف الصحي.			
13-	يوجد محطات معالجة لمياه الصرف الصحي في قطاع غزة.			
14-	يمكن استخدام المياه التي يتم معالجتها في للأغراض المنزلية.			
15-	التلوث البيئي هو النشاط البشري الذي يؤدي إلي إلحاق الضرر بالبيئ ة الطبيعية المحيطة بالإنسان.			
16-	المسئول عن حماية البيئة هي وزارة البيئة فقط.			
17-	هناك يوم يحتفل فيه العالم بالبيئة يسمى يوم البيئة العالمي وذلك يوم 6/5/ من كل عام.			

4 الاتجاهات

م	السـؤال	أوافق بشد	أوافق	بدون رأي .	أعارض	أعارض بشد
1	كثرة أبار المجاري في بعض المناطق تلوث المياه الجوفية.					
2	يجب تنظيف خزان مياه الشرب المنزلي علي الأقل مرة في السنة.					
3	جميع مصادر مياه الشرب في المنطقة ذات جودة معقولة ولا تسبب أي مشاكل صحية.					
4	أفضل طريقة لحل مشاكل الصرف الصحي في المنطقة هو تصريفها إلي البحر.					
5	معالجة مياه الصرف الصحي وإعادة استخدمها فكرة صائبة وضرورية.					
6	لا يوجد خطر من تجمع مياه الصرف الصحي في آماكن مفتوحة كالشوارع.					
7	يمكن إن يستفاد من المياه العادمه بعد المعالجة في الزراعة.					
8	استخدام مياه المجاري في ري المزروعات وسيلة جيدة لزيادة خصوبة التربة.					
9	تجميع النفايات والتعامل معها هو مسئولية البلدية ولا دخل للمواطن فيها.					
10	لا يمكن منع إنتاج النفايات ولكننا نستطيع التقليل منها.					
11	افصل وسيلة للحد من النفايا ت الصلبة هو إعادة تصنيع النفايات كالورق والزجاج والمعادن.					
12	أفضل استخدام الأكياس البلاستيكية في جمع النفايات.					
13	أفضل طريقة للتخلص من النفايات هو حرقها في داخل الحاوية.					
14	قرب حاويات النفايات من المنازل يؤثر علي صحة المجتمع.					

15	أفضل وسيلة للقضاء علي الحشرات هي برشها بالمبيدات الحشرية.					
16	يوجد علاقة بين تلوث البيئة والأمراض المنتشرة.					
17	أفضل تنظيف وغسل الأيدي بعد استخدام المرحاض.					
18	لابد من إشراك المجتمع في أيام تطوعية لتنظيف البيئة.					
19	المجتمع بحاجة إلي المزيد من التوعية البيئية من قبل المختصين في هذا المجال.					

5 - الممارسات

1-هل تقومي بتنظيف خزانات المياه في منزلك؟

□ نعم □ لا □ إذا كانت الإجابة نعم

2-كم عدد مرات التنظيف للخزانات في السنة؟

□مرة واحدة □ مرتين □ ثلاثة مرات □ أربع مرات

3-هل صندوق القمامة في المنزل له غطاء؟

□ نعم □ لا

4-كيف تقومي بجمع النفايات في داخل المنزل ؟

□ في أكياس بلاستكية □ في الأسطل □ في ساحة المنزل

5-أين تجمعي القمامة في المنزل؟

□ في المطبخ □ في ساحة المنزل □ خارج مبني المنزل(علي الباب)

6-من يقوم غالبا بترحيل قمامة منزلك؟

□ الأب □ الأم □ الأبناء دون 9 سنوات □ الأبناء اكبر من 9 سنوات

7-هل تقومي بفصل النفايات الصلبة في صندوق خاص؟

□ نعم □ لا □ أحيانا

8-هل تقومي بتنظيف الحمام والمرحاض بمواد تنظيف؟

□ نعم □ لا □ أحيانا

9-هل تقومي بمكافحة الحشرات في المنزل عند ظهورها؟

□ نعم □ لا □ أحيانا

10-هل تستخدمين المبيدات الحشرية في المكافحة؟

□ نعم □ لا □ أحيانا

11-هل تقومي بغسل الأيدي قبل القيام بالأعمال المنزلية وخصوصا الطبخ؟

□ نعم □ لا □ أحيانا

12-عندما تغسلي الأيدي هل تستخدمي الصابون؟

□ نعم □ لا □ أحيانا

13- هل يقوم أحد أفراد الأسرة بإلقاء القمامة من النوافذ؟

□ نعم □ لا □أحيانا □ غير متوفر

14- هل يقوم الأطفال بغسل الأيدي بعد الخروج من المرحاض؟

□ نعم □ لا □ أحياناً □ غير متوفر

15- هل يقوم الأطفال بغسل الأيدي عند العودة من الشارع أو المدرسة؟

□ نعم □ لا □ أحياناً

16-هل سبق وأن شاركتي في ندوات تثقيفية حول صحة البيئة؟

□ نعم □لا

17-هل أنت بحاجة إلي المزيد من المعلومات حول صحة البيئة ؟

□ نعم □لا

Annex 6

Questionnaire on the Identification of the knowledge, Attitudes and Practices relating to Environmental Sanitation to the Women who attend Primary Health care Centers (Government -UNRWA) in the middle Zone Governorate Gaza Strip

* Date: _____ Serial No. _____
*Type Health Centre: □ Government □ UNRWA
* Name of the health centre: _____

---

1 – Personal information:

***civil status**: □ Citizenship □ refugee

*** Age _____**

* **Housing place** □ City □ camp □ village

2 - Social and economic information:

*** Marital status: _____**

*** Education:**
□ Elementary School □ Preparatory □ secondary □ University and over

* **Do have been working:**
□ Yes □ No

- **Number of people living in the home:**

  □ Less than 5 □ 5 - 10 □ more than 10 individuals

- * **Monthly income of the family:**

  □ Less than 1000 shekel □1000-1499 □ 1500 -2000 shekel
  □ More than 2000 shekel

- **Type of home:**
  □ concrete □ asbestos □ other _____

- **Number of rooms in the house**:
  □ single room □ two rooms □ over three rooms

3- Knowledge

NO	Question	Yes	No	I don't know
1	Functions environmental sanitation dealing with household waste and sewage water			
2	The best way to get rid of household waste is collecting and burning in open air.			
3	Of the damage caused by the dumping of waste near the waste containers on the street spread of diseases, insects and rodents			
4	Microbes can be transmitted to humans by the lack of hygiene and not washing vegetables well before eating			
5	One of the most important ways of preventing and resisting the spread of diseases and epidemics is more attention to general personal hygiene			
6	It is necessary to wash our hands good so as not to be injured by diseases			
7	Municipal water is the best source to get it to drinking water.			
8	We Add the chlorine to drinking water to disinfect it from microbes.			
9	The sewage water can be reach groundwater and pollute it.			
10	Drinking contaminated water can lead to diarrhea in children.			
11	There is a relationship between the incidence of kidney diseases and increased salinity of drinking water.			
12	The best way to get rid of the sewage water, general network for sanitation.			
13	There are three treatment plants for sewage water is in the Gaza Strip.			
14	Treated Water can be used in the domestic purposes			
15	Environmental pollution is due to the human activity which leads to damaging the natural environment surrounding the man.			
16	The responsible body for environmental protection is the Ministry of Environment only.			
17	A day when the world celebrates the environment is called World Environment day is held on 5 / 6 / each year			

4-Attitude

NO	Question	Strongly Agree	Agree	Without Opinion	Disagree	Strongly Disagree
1	Many sewage cesspits in some areas contaminate groundwater.					
2	Must clean drinking water reservoir at home at least once a year.					
3	All sources of drinking water in the area are of reasonable quality and do not cause any health problems.					
4	The best way to solve the problems of sanitation in the area is discharging into the sea.					
5	Waste water treatment and re-use is a correct and necessary idea.					
6	There is no danger of sewage collected in open space at streets.					
7	Wastewater can be used after treatment in agriculture.					
8	The use of sewage to irrigate crops is a good way to increase soil fertility.					
9	Collection of waste and dealing with it is the responsibility of the municipality and not the responsibility of the citizens.					
10	We can not prevent waste production, but we can reduce them.					
11	The best means to reduce solid waste is the recycling of waste paper, glass and metals.					
12	It is better to use plastic bags in the collection of waste.					

13	The best way to get rid of the waste is burning in the interior of the container.					
14	Waste containers near homes affect the health of the community.					
15	The best way to eliminate the insect is spraying with insecticide.					
16	There is a relationship between environmental pollution and spread of diseases.					
17	Better cleaning and hand-washing after using the toilet.					
18	The community must be involved in voluntary days to clean the environment.					
19	The society needs more environmental awareness by specialists in this field.					

5 - practices:

1 – Do you clean up water tanks in your house?

□ Yes □ No □ If Yes

2 - How many times do you clean reservoirs in the year?

□ Once □ twice □ three times □ four times

3 - Does a box garbage at home have cover?

□ Yes □ No

4 - How do you collect waste in the interior of the house?

□ Plastic bag □ in garbage box □ in the yard of the house

5 – Where do you collect garbage in the house?

□ in the kitchen □ in yard house □ outside the home (at the door)

6 - Who often do transfer garbage in your home?

□ Father □ mother □ children under 9 years
□ Children more than 9 years

7 – Do you separate solid waste in a special box?

□ Yes □ not □ sometimes

8 - Do you clean the bathroom and toilet with cleaning materials?

□ Yes □ not □ sometimes

9 - Do you combat insects in the house as they emerge?

□ Yes □ not □ sometimes

10 –Do you use pesticides in the fight?

□ Yes □ not □ sometimes

11 - Do you wash hands before doing household chores, especially cooking?

□ Yes □ not □ sometimes

12 – When you wash your hands do you use a soap?

□ Yes □ not □ sometimes

13 – Does a family member threw garbage from the windows?

□ Yes □ not □ sometimes

14- Do children wash hands after coming out of the toilet?

□ Yes □ not □ sometimes

15 – Do children wash hands when they return from the street or school?

□ Yes □ not □ sometimes

16 –Do you participate in educational symposia on the health of the environment?

□ Yes □ No

17 - Do you need more information about the health of the environment?

□ Yes □ no □ I do not know

Annex 7

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

Date: 18 / 12 /2006

التاريخ: 2006/ 12/ 18

Mr./ Ahmed Mansour

I would like to inform you that the committee has discussed your application about:

السيد: أحمد منصور

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

Knowledge, attitude, and practice among women attending primary health care clinics toward environmental sanitation in the middle governorate, Palestine .

In its meeting on December 2006
and decided the Following:-
To approve the above mention research study.

و ذلك في جلستها المنعقدة لشهر ديسمبر 2006
و قد قررت ما يلي:-
الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member	Member	Chairperson
عضو	عضو	

Ministry of Health Helsinki Committee

Conditions:-

- Valid for 2 years from the date of approval to start.
- It is necessary to notify the committee in any change in the admitted study protocol.
- The committee appreciate receiving one copy of your final research when it is completed.

Gaza Etwam – Telefax 972-7-2878166

Annex 8

وزارة الصحة

السلطة الفلسطينية

كليــة الصحــة العامــة

School of Public Health

القدس ـ فلسطين

جامعة القدس

2006/10/31

الأخ/ د. أيوب العالم المحترم

مدير برامج الصحة– وكالة الغوث

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب أحمد منصور

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Knowledge, attitude and practice among women attending primary health care clinics toward environmental sanitation in Middle Governorates, Palestine "

كمتطلب للحصول على درجة الماجستير في الصحة العامة–مسار صحة البيئة علماً بأن الطالب قد حصل على موافقة لجنة هلسنكي لأخلاقيات البحوث و ستكون المعلومات متوفرة لدى الباحث فقــط. و عليــه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات الخاصة.

موافقتكم دعماً للمسيرة الأكاديمية

و تفضلوا بقبول فائق الاحترام ،،،

د. سوزان شعشاعه

عميد كلية الصحة العامة المساعد

كلية الصحة العامة / غزة
رقم الصادر: 123
تاريخ الصادر: 31/10/2006

نسخة: الملف

Dr. Ayoub EL Alem
Chief Field Health Programme

Annex 9

وزارة الصحة

كليــة الصحــة العامـــة

School of Public Health

القدس - فلسطين

جامعة القدس

2006/10/31

الأخ/ د. علي قويدر المحترم

مدير عام الرعاية الأولية- وزارة الصحة

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب أحمد منصور

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Knowledge, attitude and practice among women attending primary health care clinics toward environmental sanitation in Middle Governorates, Palestine "

كمتطلب للحصول على درجة الماجستير في الصحة العامة-مسار صحة البيئة علماً بأن الطالب قد حصل على موافقة لجنة هلسنكي لأخلاقيات البحوث و ستكون المعلومات متوفرة لدى الباحث فقـــط. و عليـــه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات الخاصة.

موافقتكم دعماً للمسيرة الأكاديمية

و تفضلوا بقبول فائق الاحترام ،،،

د. سوزان شعشاعه

عميد كلية الصحة العامة المساعد

نسخة: الملف

كلية الصحة العامة / غزة
رقم الصادر: 121
تاريخ الصادر: 2006/10/31

Annex 10

Panel of experts

The questionnaire was examined by a group of experts. Some items were added, modified or excluded as a results of their comments.

1- **Dr. Yehia Abed**
2- **Dr. Mohammed Eila.**
3- **Dr. Khamis Mahallawi.**
4 **Dr. Khalid Qahman**
5- **Mr. Saadi Abu Awad**
6- **Dr. Manal Mohsn**
7- **Mr. abed Elrahim Abu El-qumboz.**