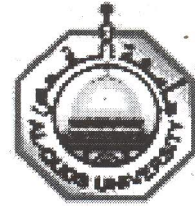




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**Assessment of Primary Health Care Professionals'
Knowledge and Practices Regarding the Integrated
Management of Childhood Illness-Gaza Strip**

Younis Ramadan Awadallah

Master Thesis

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for the Degree of Master of Public Health.**

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Fall 2004/2005

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 been submitted for a higher degree to any other universities or institutions.

Signed 

Younis Ramadan Awadallah

Date: 27/11/2004

DEDICATION

I would like to dedicate this work to my parents, and to my wife Sawsan whose energy and intellect are inspirations, To my daughters (Dalia, Heba, Aya and Nour), to my brother Dr. Yousif who gratefully supported me, to his son Dr. Issam, to all other members of my big family, and to all the Palestinian children.

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Abstract

Acute respiratory infections and diarrhoeal diseases affecting the children under age five are considered the most causative diseases correlating to mortality and morbidity. As a reflection on that, the World Health Organization/United Nations Children's Fund standardized protocols were activated by many countries including Palestine to improve the standard case management implementation. Therefore, the overall aim of this study is to assess knowledge and practices of the primary health care physicians in Ministry of Health and United Nations Relief and Works Agency about the integrated management of childhood illness, mainly acute respiratory infections and childhood diarrhoeal diseases protocols.

This study is a descriptive, correlational, cross-sectional one conducted in the years "2003-2004". A sum of 185 physicians represented the entire study population were asked to complete a structured interviewed questionnaire and 540 randomly selected facility prescriptions were reviewed, with a response rate of 100%.

The study revealed low level of compliance with the implementation of the protocols in general, especially with the classification step (25%) and the treatment step (40%) according to the protocols. Of the study population, 49% reported currently using the protocols in their practice. Only 15% of the physicians were had copies of protocols and 53% had received training on the protocols. There were obvious variations in practices and compliance with protocols among physicians in relation to their organizational and demographic characters such as female physicians were more compliant than males ones and physicians from United Nations Relief and Works Agency were more complaint than physicians from the Ministry of Health. The study showed inadequacy of the material and equipment needed for implementation of the protocols such as wall charts, timers, ENT sets and so on. Moreover, the study pointed to the main obstacles preventing physicians from following the protocols such as inadequate training, lack of resources required, work overload, lack of supervision and feedback.

The study provided several tentative recommendations that could improve physician's practices such as, designing and implementing more in-service training, provision of the needed equipment and supplies, empowering the management capacity of the health care system such as follow up, supervision and referral services. Conscious efforts are needed to tackle the conclusions of this study in order to support the implementation and the adherence to the concerned protocols.

Summary (Arabic)

الملخص العربي للدراسة

تعتبر الأمراض التنفسية الحادة وأمراض الإسهال التي تصيب الأطفال الأقل من خمس سنوات من العمر أكثر الأمراض المسببة للوفيات والمرض. ونتيجة لذلك قامت كثير من الدول ومن بينها فلسطين بتفعيل بروتوكولات معيارية وضعتها منظمة الصحة العالمية واليونسيف بقصد تحسين تدبير الحالة المرضية بطريقة معيارية.

إن هدف الدراسة هو تقويم المعرفة والممارسة لأطباء الرعاية الصحية الأولية العاملين بالقطاع الحكومي ووكالة غوث وتشغيل اللاجئين بتطبيق إستراتيجية التدابير العلاجية المتكاملة لأمراض الطفولة تحت سن الخمس سنوات وخاصة بروتوكولات الأمراض التنفسية الحادة وأمراض الإسهال.

الدراسة وصفية إرتباطية مقطعية نفذت في السنوات 2004 - 2005 وكان حجم العينة 185 طبيباً مثلوا مجتمع الدراسة والذين تمت مقابلتهم لتعبئة استبانة، وكذلك أخذ عدد 540 وصفة طبية تم اختيارها عشوائياً من المراكز الصحية ومراجعتها، وكانت نسبة الاستجابة مئة بالمئة.

أظهرت نتائج الدراسة بشكل عام، انخفاض مستوى الالتزام بتطبيق البروتوكولات، وخاصة فيما يتعلق بتطبيق خطوة التصنيف (25%)، وخطوة المعالجة (43%) حسب البروتوكولات. تبين أن 49% من مجتمع الدراسة لا يزالون يستخدمون البروتوكولات أثناء ممارستهم. فقط 15% من الأطباء لديهم صور مطبوعة من البروتوكولات، وأن 53% قد تلقوا تدريباً على البروتوكولات. هناك تباين واضح في الممارسة والالتزام بالبروتوكولات بين الأطباء حسب مؤسساتهم وخصائصهم الديموغرافية مثلاً، الطبيبات كن أكثر التزاماً من الأطباء، والأطباء العاملين بوكالة الغوث وتشغيل اللاجئين أكثر التزاماً من نظرائهم بوزارة الصحة. أظهرت الدراسة أيضاً عدم توفر المستلزمات والأجهزة اللازمة لعملية تطبيق البروتوكولات مثل اللوحات الجدارية، ساعات التوقيت، جهاز فحص الأنف والأذن والحنجرة وهكذا، إضافة إلى ذلك، أشارت الدراسة إلى أهم المعوقات التي تعيق الأطباء من إتباع البروتوكولات مثل عدم كفاية برامج التدريب، نقص الإمكانيات اللازمة، الزحام في العمل، غياب برامج المراقبة والردود.

وقد خلصت الدراسة إلى وضع بعض التوصيات المقترحة والتي قد تساهم في تحسين الممارسة لدى الأطباء مثل اعتماد و تنفيذ مزيد من برامج التدريب المستمر أثناء الخدمة، تزويد المراكز الصحية بالمستلزمات والأجهزة اللازمة، دعم وتقوية النظام الصحي لبرامج المتابعة والإشراف وخدمات الإحالة، الحاجة لمزيد من الجهود الواعية والمخطط لها واللازمة لدعم التطبيق و الإلتزام بهذه البروتوكولات.

ABBREVIATION

ANOVA	Analysis of Variance.
ARI	Acute Respiratory Infection.
BSc	Bachelor of Science.
CAH	Child and Adolescent Health and Development.
CARI	Control of Acute Respiratory Infections.
CDD	Childhood Diarrhoeal Diseases.
CDR	Diarrhoeal and Acute Respiratory Diseases.
CVI	Content Validity Index.
DTUs	Diarrhoeal Training Units.
ENT	Ear, Nose, Throat Set.
GNI	Gross National Income.
GP	General Practitioner.
GS	Gaza Strip.
HMIS	Health Management Information System.
ICHM	International Center for Health Services Management.
IMCI	Integrated Management of Childhood Illness.
IMR	Infant Mortality Rate.
KAP	Knowledge, Attitudes and Practices.
KSA	Kingdom Saudi Arabia.
MOH	Ministry of Health.
NGOs	Non Governmental Organizations.
ORS	Oral Rehydration Solution.

ORT	Oral Rehydration Therapy.
PA	Palestinian Authority.
PCBS	Palestinian Central Bureau of Statistics.
PCH	Palestinian Council of Health.
PHC	Primary Health Care.
PHCC	Primary Health Care Center.
SPSS	Statistical Package for Social Sciences.
TOT	Training of Trainers.
U5MR	Under Five Mortality Rate.
UNICEF	United Nations Children Fund.
UNRWA	United Nations Relief and Works Agency.
WB	West Bank.
WHO	World Health Organization.

CONTENTS

Declaration.....	I
Dedication.....	II
Acknowledgements.....	III
Abstract.....	IV
Summary (Arabic).....	V
Abbreviations.....	VI
Contents.....	VIII
List of Tables.....	X
List of Figures.....	XI
List of Annexes.....	XII
Chapter 1 Introduction.....	1
Main objective.....	4
Specific objectives.....	4
Justification.....	4
Feasibility and cost.....	5
Socio-economic and demographic context.....	6
Health care services.....	8
Background information about ARI and CDD protocols.....	10
Chapter 2 Literature review.....	12
Conceptual framework.....	13
Dimensions of physicians' use/ and compliance with protocols.....	14
Demographic characters.....	14
Training.....	14
Availability of protocols.....	15
Health system.....	15
Monitoring and supervision.....	16
Presence of barriers to implementation.....	16
What is compliance.....	16
Factors affecting physicians' use of protocols/compliance.....	18
Assessment of compliance with guideline or protocols.....	22
Impacts of using protocols.....	24
Impact of using/compliance on community.....	24
Impact of using/compliance on primary health care services.....	25
Impact of using/compliance on families.....	26
Impact of using/compliance on individual.....	26
Acute respiratory infections.....	27
Childhood diarrhoeal diseases.....	33
Integrated Management of Childhood Illness.....	41
What is IMCI.....	41
Introduction of IMCI into different countries.....	43
IMCI and CDD/ARI.....	44
Experience of the implementation of IMCI in different countries.....	46
Chapter 3 Methodology.....	50
Study design.....	50
Study population.....	50
Study setting.....	50
Sample size.....	50
Response rate.....	51
Inclusion criteria.....	51

Exclusion criteria.....	51
Study dependent variables.....	51
Physician.....	51
Protocol.....	51
Compliance.....	51
Classification step.....	52
Treatment Step.....	52
Knowledge.....	53
Instruments.....	53
Construction of the instruments	53
Content related validity.....	54
Content validity index.....	55
Pilot study.....	55
Ethical matters.....	55
Training of data collectors.....	56
Data collection.....	56
Data management and statistical analysis.....	56
Constraints and limitations of the study.....	57
Chapter 4 Results.....	58
I Finding derived from physicians' responses (questionnaires).....	59
Descriptive analysis.....	59
Characteristic of study population.....	59
Requirement for ARI, CDD protocols implementation.....	65
Training.....	65
Protocols.....	67
Equipment.....	68
Management support.....	69
Knowledge and practice.....	71
Inferential analysis.....	75
Subjects characteristic.....	75
Training.....	77
II Protocols uses/compliance indicators(finding derived from prescriptions).....	93
III Open ended questions findings.....	97
Chapter 5 Discussion and Implications.....	99
PHC Physician characteristics.....	100
Knowledge and Training.....	103
Availability of Protocols.....	106
Health system.....	107
Monitoring and supervision.....	111
Barriers of implementation.....	112
Compliance indicators.....	113
Chapter 6 Conclusion and Recommendations.....	117
Recommendations.....	120
Research recommendations.....	122
Chapter 7 References.....	123
Annexes.....	129

List of Table

Table 1	Summary table of characteristics of the study population	59
Table 2	Distribution of the study population by work related variables	64
Table 3	Distribution of the study population by learning about ARI and CDD protocols	65
Table 4	Distribution of study population by the training related variables	66
Table 5	Distribution of the study population by the perceived problems that facing the implementation of ARI & CDD protocols	67
Table 6	Availability of equipment items and facilities needed for implementation and other related variables	68
Table 7	Distribution of study population by the availability of supportive measures for protocols implementation	69
Table 8	Physicians' knowledge about the diagnosis of ARI and CDD according to the protocols	71
Table 9	Knowledge about drugs used according the protocols	72
Table 10	Distribution of study population by counseling related variables	73
Table 11	Distribution of using ARI, CDD protocols and selected variables	75
Table 12	Distribution of receiving training courses on ARI and CDD protocols by different variables	77
Table 13	Distribution of the study population by the need for more training on ARI, CDD protocols and the ownership of the center , sex and province	79
Table 14	Compression between level of subjects' knowledge about the protocols and selected variables	80
Table 15	distribution of PHC physicians by their knowledge about child case management according ARI,CDD protocols and ownership	82
Table 16	Distribution of PHC physicians by their knowledge about drugs used within the ARI, CDD protocols and ownership	84
Table17	Compression between level of subjects' knowledge about the protocols and selected variables	85
Table18	Distribution by the availability of equipment/facilities and the ownership of the center	88
Table 19	Distribution of the availability and amount of drugs used within the protocols by ownership of the center	90
Table 20	distribution of the reported reasons of not using the protocols by the ownership of the center	92
Table 22	Protocols uses compliance indicators comparing the health sector regarding the ARI, CDD protocol implementation by ownership	94
Table 23	Comparison between the applied classification and treatment steps according to the protocols in provinces of Gaza strip	95

List of Figures

Figure 1	Distribution of the Study Population by gender	60
Figure 2	Distribution of the Study Population by age	60
Figure 3	Distribution of the Study population by province	61
Figure 4	Distribution of the Study Population by professional title	62
Figure 5	Distribution of the Study Population by place of graduation (Last qualification)	63
Figure 6	Distribution of the Study Population by the ownership of the center	65
Figure 7	Overall protocol's compliance indicators	94
Figure 8	Distribution of the classification step according to the protocol by provinces	96
Figure 9	Distribution of the applied treatment step according to the protocols by provinces	97

List of Annexes

Annex (1) Map of West Bank and Gaza Strip	129
Annex (2) Distribution of population by age group and sex, Palestine	130
Annex (3) Map of Gaza Strip	131
Annex (4) Diagram of ARI protocol	132
Annex (5) Diagram CDD protocol	135
Annex (6) Questionnaire (English version)	137
Annex (7) Questionnaire (Arabic version)	146
Annex (8) Helsinki Committee approval letter	154
Annex (9) Questionnaire explanatory letter	155
Annex (10) Ministry of Health permission letter	156
Annex (11) Primary Health Care permission letter	157
Annex (12) UNRWA permission letter	158
Annex (13) Table (21) Distribution of the problems facing the implementation of ARI, CDD protocols by the ownership of the center	159

Chapter 1

Introduction

The focus of this research study is assessment of primary health care physicians' knowledge and practices compliance with the integrated management of childhood illnesses (IMCI) strategy mainly acute respiratory infections (ARI), childhood diarrhoeal diseases (CDD) protocols in Ministry of Health (MOH) and United Nations Relief and Works Agency (UNRWA) health sectors-Gaza Strip (GS). The researcher alternatively uses the words compliance and practices to describe physicians' uses and adherence to protocols.

For the last 15 years, World Health Organization (WHO) efforts to combat diarrhoeal diseases and ARI the two childhood killers focused on translating relevant research the practical tools and actions needed by countries, then on working with countries to introduce, monitor, and evaluate their use (WHO, 1999).

In 1990, the WHO Division of Diarrhoeal and Acute Respiratory Disease Control (CDR) was formed and brought together the work of the WHO program for the control of CDD, established in 1980, and the WHO program on ARI established in 1984. In many countries mainly in developing ones, and with the support of WHO, United Nations Children Fund (UNICEF), programs have been set up to address single diseases such as CDD and ARI and others, such as malaria, nutrition programs as separate entities. Each ARI, CDD program develops its own guidelines and conducts its own training activities, all of these programs aimed to reduce mortality and morbidity in children below five years of age.

Although, studying physicians' practices regarding the ARI, CDD protocols is very important to assess the progress of these programs through the achievement of the

main objectives and to assess the factors affecting the compliance and to ascertain the main challenges encountering the implementation of these protocols, most studies examined the compliance with IMCI strategy in general with all its components. However, given the modesty of IMCI strategy (started recently in 2001), adoption and implementation in Palestinian context, this research focuses only on, ARI, CDD protocols, which already implemented in the Palestinian health context since 8 years ago.

The value of studying compliance is higher in GS, which is considered one of the highest population density in the world where 3,505 inhabitants per one square kilometer, (MOH, 2003). In addition to that, the children less than 5 years old represent about 20% of the total GS population (1,261,909) (MOH, 2003). Most of them are refugees living in poor families and bad housing conditions. Generally, the Palestinian health facilities lack adequate resources, lack of standardization of care, inadequate staffing, and overloaded health workers. Moreover, physicians study medicine in different countries using different languages, different curriculum, different health care systems, which makes standardization of the health services is a top priority.

According to the epidemiological status updated in the Annual Report July 2003, the ARI, mainly pneumonia, and infections including diarrhea are still represent one the causes of death in children less than five years, which was considered 7 years ago as the main causes of death. So, in GS, it is worth pointing that a disease specific control programs such as ARI, CDD protocols were introduced into the health system in 1996 by the collaboration with WHO, UNICEF at the level of primary health care (PHC) in governmental and UNRWA sectors where much has been learned, but has not yet been investigated, followed up evaluated and monitored.

As a part of continuous development and evaluation of primary interventions, the WHO Department of Child and Adolescent Health and Development (CAH) formed in 1998 is building upon the work of CDD and ARI, to develop innovative new approaches to improve the health of world's children. Before this, in 1990 CDD and the WHO programming on ARI, established in 1984, were combined to form the division of Diarrhoeal and Acute Respiratory Disease Control (CDR). The shared goal of these programs continued to be the maximum reduction in worldwide childhood mortality especially through the implementation of the new approach which is the IMCI strategy (WHO, 1999).

The Palestinian MOH planned and agreed with the collaboration of UNICEF and WHO to adopt that new approach (IMCI as a priority intervention to improve the child health in Palestine). The ARI, CDD protocols represent the main and the most important part of the IMCI strategy therefore, the continuous development and evaluation plan of the primary interventions related to strengthening and supporting the ARI, CDD protocols are very helpful for the adoption of the new strategies.

Therefore, this is study designed to assess the PHC physicians' practices regarding these protocols in governmental and UNRWA as the main health providers. The study also considers the assessment of the factors affecting these practices and ascertains the main challenges encountered in the implementation of the protocols in order to provide recommendations to the policymakers and professionals that assist them in strengthening the implementation process of ARI, CDD protocols as a step in order to cope with the international relevant wider strategies.

Main objective:

Assessment of PHC physicians' knowledge and practices regarding the main component of IMCI strategy, ARI and CDD protocols in MOH and UNRWA's health sectors GS

Specific objectives:

1. To assess the PHC physicians' knowledge and practices/compliance with ARI, CDD protocols in MOH and UNRWA health sectors in GS.
2. To assess the factors affecting compliance and practice of PHC physicians with ARI, CDD protocols in MOH and UNRWA health sectors
3. To ascertain the main challenges encountered in the implementation of the ARI, CDD protocols.
4. To set up recommendations for policy makers and physicians that would improve the protocols implementation process, and provide lessons for the wider implementation of the international relevant strategies such as IMCI.

Justification:

The demographic status of GS shows that 50% of the total population are below the age of 15 years and about 65.5% of the population are refugees living in poor houses with bad infrastructure status. In addition, the total number of live births in 2003 was around 42226 (MOH, 2004), with crude birth rate equals 30.8 per 1000 and infant mortality rate 24 per 1000. Beside that, the population density in GS is very high which equals about 3806.5 inhabitants per one square kilometer (MOH, 2004). All of the above factors made the children of GS more subjected to infection diseases where pneumonia and respiratory diseases, diarrhoea and gastroenteritis are still considered as causes of deaths (MOH, 2004). In addition, attention to the quality of care has been growing in the child health field, as specific disease protocols were implemented

in order to improve the standard case management to reduce the mortality and morbidity among children mainly under fives. These protocols were started in the year 1996, but the determinants of quality of implementation such as compliance with the protocols, knowledge, skills of the health providers, availability of basic supplies and equipment, the efficiency of the referral system, were not scientifically investigated before. Moreover there is a scarce of data about physicians' compliance and practices with ARI, CDD protocols. Therefore, this research represents a baseline study, providing information about factors contributing to physicians' compliance in this regards in the Palestinian context. The researcher considers the physicians' compliance and use of protocols in GS is one of the core components in child health quality management. Therefore, this study could help the policy makers to be more aware of factors affecting the physician's compliance with the protocols and about the challenges facing its implementation. Additionally, the findings of the study might provide recommendations to the policy makers that could be used to improve the quality of case study management to match with updated international relevant strategies such as IMCI for the aim of reducing the mortality and morbidity among children under fives.

Moreover, the study may provide tentative guidelines for other researchers to conduct further studies in this field. Also, the study may give the researcher broader opportunities to be an expert in this field, in which, he is currently highly involved.

Feasibility and cost:

This research study is self funded, coordinated and supervised by the School of Public Health, Al Quds University. MOH, School of Public Health and UNRWA has offered the necessary research support, which included the ethical approval and administrative requirement to conduct the study and to have an access to the study

population. The researcher succeeded to arrange all the logistics required such as transportation, papers, photocopying and so on.

Socio-economic and demographic context:

Palestine is situated on eastern coast of the Mediterranean Sea. It is ancient and of strategic important location between Asia, Africa, Europe. The history of Palestinian people in twentieth century consisted of successive waves of colonization and occupation, all of which left specific traces on social life and culture, as a result of the complicated historical and political events (Annex 1).

The West Bank (WB) and GS are physically separated by the Israeli occupation, so mobility between the WB and GS remains very difficult. The total area of WB and GS is 6,187 square kilometers, almost of which is land, but also includes a quarts of the Dead Sea, 94% "5,822" square Kilometers lies in WB and six percent "365" square kilometers lies in GS (MOH, 2004). Water is a scarce resource in the WB and very scarce resource in GS where the ground water resources are over-exploited and becoming increasingly contaminated (UNICEF, 2000). The overall environmental situation is in a disastrous state and further deteriorating. Pollution and shortage of water are among the most urgent problems, but also solid waste management, including the handling of industrial wastes is of major concern. These problems are particularly directly affecting the health and the wellbeing of children. The estimated number of Palestinian population all over the world by the mid of 2002 is 9,209,773 (MOH, 2003). The population whose living in Palestinian Territories amounted to 3,464,550 with a proportion of 37,6% of total Palestinian all over the world distributed between the WB 2,202,641 (63.6%) of total population in Palestine and GS 1,261,909 (36.4%) of total population in Palestine (MOH, 2003), out of which 41% are refugees. More than half of population is children aged less than 18 years.

The median age of the population, which is the age dividing a population into two numerically equal groups is 16 years. Thus, the current Palestinian population is overwhelmingly young. Moreover, age structure in Palestine (Annex, 2) is similar to that in many developing countries, where nearly half of the total population is under 15 years old (20% in UK) (World Bank, 1997). Demographic reports indicated that the Gaza Strip is the second most densely populated area on earth after Hong Kong (World Bank, 1997). The overall population is high with an average of 380 persons per one square kilometer in WB, to extremely high in GS with approximately 3,505 persons per one square Kilometers (1,261,909 people living on 365 km²) (MOH, 2003), (Annex 3).

The general situation of Palestinian economy has been deteriorated since longtime but became more deteriorated since 1990 after the Gulf War in 1991 where remittances from family members working abroad decreased and many workers returned to the WB and GS minus their saving as well as their jobs (UNICEF, 2000). The Intifada witnessed a further steady decline in all Palestinian economic indicators. Gross National Income (GNI) in 2002 declined by 40 percent less than what it was in 2000 (MOH, 2003). Real per capital incomes are now only half of their September 2000 level. Employment now stands at 40% less than in 2000. The economic crisis has seriously compromised household welfare. Using a poverty line of US\$ 2.1 per individual per day, the World Bank estimated that by December 2002, 60% of Palestinian population was poor; the average daily consumption of poor person now is US\$ 1.32. More than 75% of populations in GS are now considered poor (MOH, 2003).

Health care services:

Health care services in Palestine, depends on three levels, Primary health care services as the first contact with the community, providing promotive, preventive, curative and rehabilitative services. The second level is general hospitals services which are perceived to be more developed, more equipped, with more qualified and specialized personnel. The third level is tertiary health service which is not widely available and replaced by purchasing it from the nearby countries (MOH, 2003).

The health care services passed in different stages before the peace agreement. The health services in the GS and WB were controlled by civil administration where showed inappropriate performance and outcomes. After the peace agreement, the Palestinian Council of Health (PCH) was established in July, 1992 which was responsible for producing policies for initiation of different health sectors.

Health services in Palestine are provided through different health sectors which are governmental sector represented by MOH which is the main health provider, followed by UNRWA sector which provides health services mainly to refugees. The third sector is the non governmental organizations (NGOs) that cover part of the health services of the population, and lastly by private sector (MOH, 2004). The enrollment in governmental health insurance grew from 50% in 1998, to 53.2% in 1999. It declined to 34% in 2000, in 2001 to 31%, then to 34.6% in 2002, and 38.6% in 2003. The decrease in the enrollment since 2000 was due to the impact of current political and economic crisis facing Palestinian community (MOH, 2004).

The primary health care services is the basic level of care almost provided equally to every one and is considered as the backbone of the health system which provides essential health services (MOH, 2003).

The total number of PHC centers in Palestine is 619 (103 PHC center in GS and 516 in WB). According to the health providers, 391 centers are owned and supervised by MOH (63.1 %), 51 centers by UNRWA (8.2 %) and NGOs have 177 centers (28.6%) of the total centers (MOH, 2004). The PHC centers in Palestine are available in 3 levels in Gaza, and 4 levels in WB due to prevalence of different remote areas.

The overall ratio of persons per center was 5,746 in 2000, 5,417 in 2001 and 5,628 in 2003 (MOH, 2004). But in GS, although PHC system is unique, well established and functioning, but due to high population density and over crowding of population, the ratio of persons per center was 13,304 and ranged between (8,217 to 18,146 persons) (MOH, 2004).

Recently, the secondary health care delivery system increasingly becomes more responsive to population needs and over come the prevailing emergency situation in the Palestinian Territories. In Palestine, MOH owns and operates 23 hospitals with 2,614 beds which represent 55.9% of the total beds (MOH, 2004). There are 11 hospitals with 1,152 beds represent 44.1% of total MOH beds in WB and the rest in GS. The NGOs own and operate 31 hospitals with 1,489 beds, constituting 31.8% of the total hospital bed pool in Palestine. The private sector owns and run 23 hospitals with total beds capacity of 518 beds, constituting 11.1% of the total beds in Palestine. Only 58 beds (1.2%) of total hospital beds is owned and operated by UNARWA (MOH, 2004). For instance, until recently, Palestinian physicians were trained outside Palestine and in more than 100 countries. Each country has its own philosophy in teaching and in medicine therefore standardization of service delivery is a real challenge to the health care system.

Compared to other countries at the similar level of economic development, the Palestinian population's overall health status is relatively good (World Bank, 1997).

The infant mortality rate is estimated at 24 per 1000 live births, (62 in Turkey, 41 in Egypt, 40 in Tunisia, 21 in Jordan and 7 in Israel) (MOH, 2004). The leading causes of adult death are similar to developed countries including cardiovascular disease and cancers with a high prevalence of stress and psychological trauma related diseases (MOH, 2004). On the other hand, diseases of poverty are still prevalent, such as ARI and CDD that remain important causes of child mortality and morbidity (MOH, 1999). The later conditions are due to a large extent, to the widespread poor sanitary and environmental conditions.

Background information about ARI and CDD protocols:

As the ARI mainly (pneumonia) and diarrhoeal disease are leading causes of childhood illness and deaths in most developing countries. They are considered one of the most causes of illness and deaths among children below 5 years in Gaza Strip before the years 1977 (MOH, 2001). ARI and diarrhoeal diseases are the most important causes of hospitalization in infants and are responsible for about half of post neonatal deaths (Abed, 1983). Because of that, MOH and UNRWA agreed to collaborate with UNICEF, in order to lower child mortality. Memorandum of understanding was signed between MOH and UNICEF to cooperate in conducting the activities of ARI and CDD in Gaza Provinces (MOH /UNICEF, 1995). The specific objectives were, promoting the adoption of the protocols mainly by 106 physicians, working in MOH clinics. The second objective was, developing a standardized structure for implementation, supervision, and evaluation of the programs (MOH / UNICEF, 1995). Another agreement was reached with UNRWA with same objectives (UNRWA, 1996).

Most activities were started in the year 1996 after making orientation for policy makers from all health sectors. Training of trainers (TOT) workshop was held in

Jerusalem to train 6 trainers to be ready for training of the PHC physicians and other staffs. MOH completed 10 workshops as around 160 health workers (physicians and nurses) were trained.

In UNRWA, 54 Medical Officer, 33 Senior Staff Nurses, 51 Midwives, 22 Assistant Pharmacist, 7 Health Education Worker and 96 Practical Nurses were also trained through 10 workshops started in December/1995 and end in march/1996 (UNARWA, 1996).

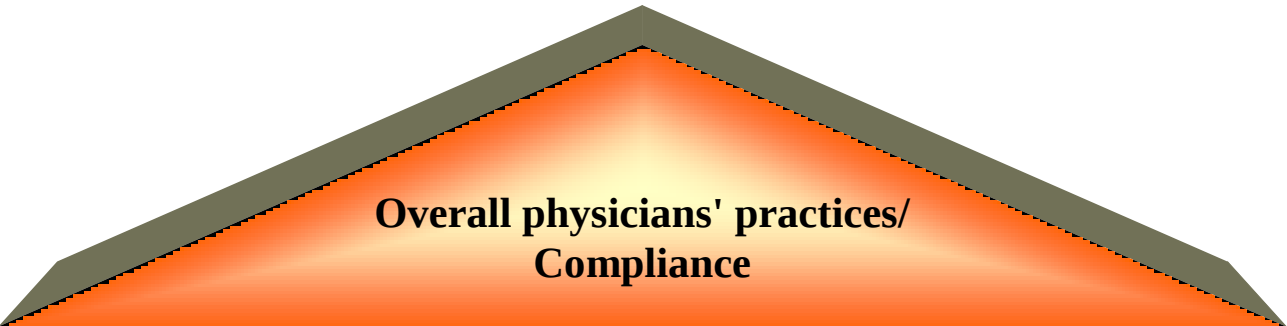
Regarding CDD protocol, MOH and UNARWA were collaborated to implement further training for health providers in the subsequent years.

In MOH, the other activities, such as follow up, supervision, monitoring and evaluation of the programs were done for a short time only, but then later the interest has declined (field observation). Similarly, in UNRWA, health workers deal with the concepts of these protocols, but without documentation or formal evaluation. In general, there are scares of official references about the activities of both ARI and CDD protocols.

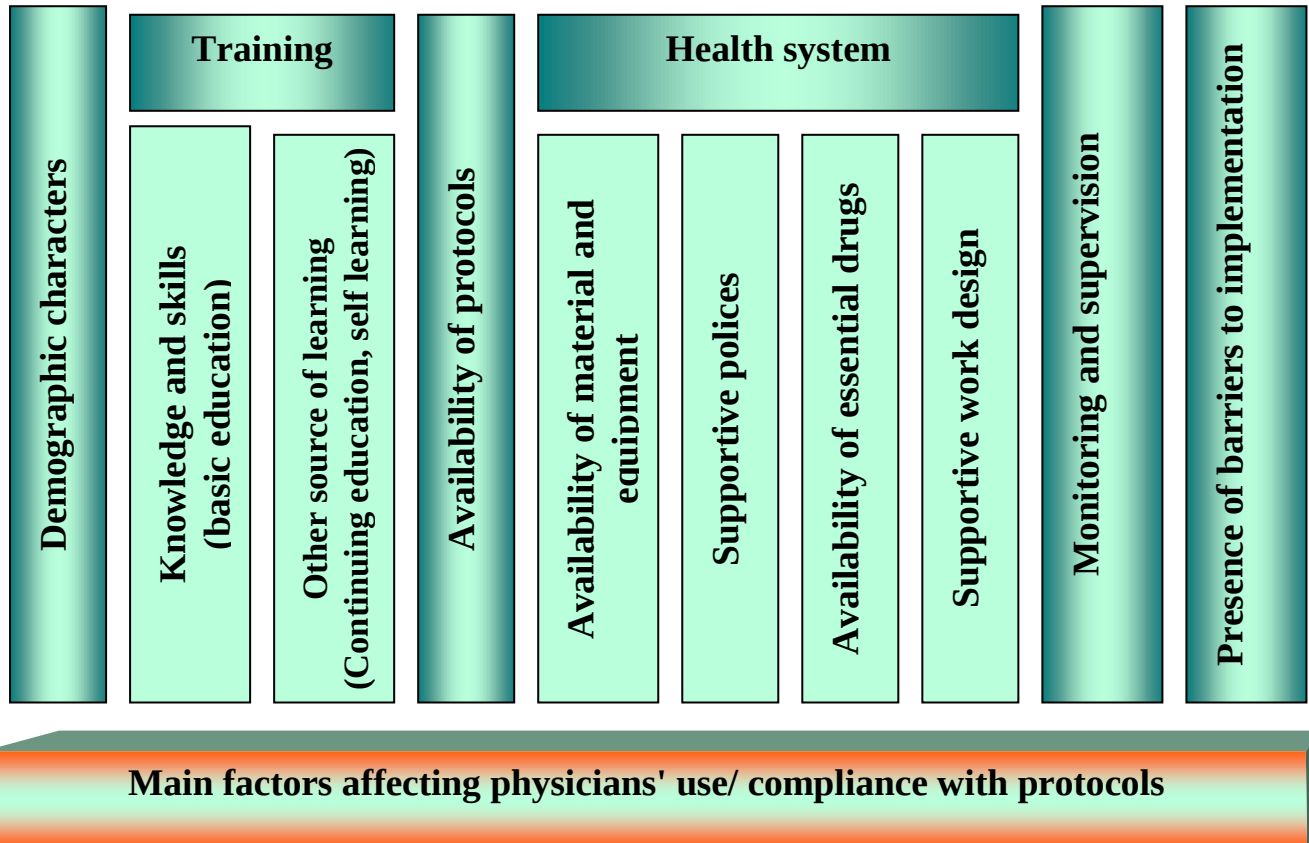
Chapter 2

Literature Review

This chapter reviews the literature that clarifies different issues related to the physicians' knowledge and practices. It begins with the conceptual framework of the study, which is considered as a guide/ blueprint for the research process. The framework includes different factors that affect physician's practices / compliance as demographic characters, training, protocols, health system, monitoring and supervision and finally the barriers to implementation. Then, this chapter presents the impact of using protocols on the community, PHC services, and families and on the individuals. Additionally, it presents the studies that discussed the ARI, CDD protocols and the achievements gained due to health workers implementation of these protocols. Lastly, it presents the assessment of the protocol's compliance and recommendations for further enhancement to protocols compliance.



**Overall physicians' practices/
Compliance**



Conceptual framework:

This framework guides the research process and represents blueprint for the research.

The dimensions illustrated in the framework represents the scope of the research and identifies its boundaries.

Dimensions of physicians' use/and compliance with protocols:

Demographic characters:

Individual differences could affect the uses of protocols; therefore the researcher included some demographic variables that could affect the compliance such as gender, last academic qualification, years of experience, previous work in other field before PHC one, place of graduation and organizational ownership.

Training:

Training is an important factor that directly affects the individual's compliance towards any activity that he/she trained on. The training is defined as a planned process to modify knowledge, attitudes skills or behaviors through learning experience to achieve effective performance in an activity or range of activities (Foot and Hook, 1999).

a. Knowledge and skills:

Physicians' knowledge about ARI and CDD and skills for early detection of pneumonia, and dehydration and other serious illness that affect young children by using and following three important steps which are assessment, classification and treatment could affect his/her compliance and use of protocols.

b. Other sources of learning:

Learning in Oxford Dictionary means knowledge got by study, also learning is shown by a relatively permanent change in behavior that occurs as a result of practice or experience (1966) (Foot and Hook, 1999). Physician may learn about ARI, CDD protocols as a part of the study in the college through continuous education program or through self learning.

Availability of Protocols:

ARI, or CDD protocols is a standard case management tool mainly depends upon highly sensitive and highly specific sign, and symptoms of illnesses, rather than radiology and laboratory investigations which may not be available at the time.

Training courses for ARI, CDD protocols were designed to teach the case management process to health workers (WHO, 1994). Handout protocol must be available and used by the trained physicians (WHO, 1999). Availability of the protocols could affect the physician's compliance

Health system:

a. Availability of materials and equipment:

Physicians need the basic requirements for the implementation of ARI, CDD protocols at PHC level such as handout protocols, wall chart of protocols, timer for respiratory rate, ear, nose, throat set (ENT set), ORT corner facilities, referral forms and records and mother card (WHO, 1999).

b. Supportive policies:

Policies needed to sustain the implementation of ARI, CDD protocol such as including all health providers to be more closely involved in standard case management and preventive activities of the protocols, or policies regarding to the follow up and supervision programs. These policies are crucial as they could affect the compliance.

c. Essential drug availability:

The drugs that must be available all the time such as Amoxicillin, Contrimoxazole, ORS, Paracetamol affect the use of protocols.

d. Supportive work design:

Issues such as team work, availability of essential drugs, and materials needed, supervisory system, facility for referring any emergency cases to nearest hospital, administrative management. Having management systems in place is a key factor in productivity, commitment, satisfaction and compliance (MOH Egypt, 2002).

Monitoring and supervision:

Follow up visits to health facilities for supervising the work, evaluation and collecting data, beside the reinforcement of knowledge and skills of the staffs, defining the problems facing the implementation for solving, may affect the compliance.

Presence of barriers to implementation:

The literatures points that, shortage of training programs, non endorsement of the protocols in the health system, non acceptance of the community, work over land, lack of motivation and restriction of the implementation in two health sectors only are common barriers for the protocols implementation.

What is compliance?

As mentioned earlier, the researcher used the term compliance alongside the physician practices. Many definitions of compliance have come up by different authors; some of these definitions are illustrated below.

The term compliance in medical practice is generally defined as following the instruction of the health care providers (Cramer, 1991). The term compliance is generally used in medical trials to describe the adherence of patient or any person to take their medicines or follow orders as explained by Spiker 1991 (Spiker, 1991).

The desire to take medicines or applying protocols is the characteristic that distinguishes man from animals; this germ of philosophy was firstly proposed by William Osler 1891, a great physician at that time, in his famous book "Recent Advances in Medicine" (Lawson et al, 1982). The term compliance has been defined

by WHO as faithful adherence by patient (any person) to prescribed instructions WHO 1998 (Al Lilly, 2001). In replace of compliance, the term adherence or use can be used (Bryson et al, 1982) and (Alfonso, 1990). Similarly, physicians' compliance is the degree to which they adhere, follow and use the concerned protocols. Clinical practice guidelines or protocols are clinical tools designed to establish criteria for appropriate use of medical services and procedures, decrease inappropriate utilization of services and improve patient out-comes. Also protocol defined as, it is a binding reference covering procedures. It illustrates step by step the implementation of the procedures. Protocols are more detailed than guidelines (Maram, 2004).

Implementation of guidelines or protocols has decreased variation in practice patterns, reduced length of stay, lowered costs, and improved outcomes in patients with and without disease (Welke et al, 2003). Clinical practice guidelines have been available to clinicians for almost two decades, but the consistency of their implementation in practice remains highly variable. (Richman et al, 2000). The degree of guideline adherence (compliance) and its impact on clinical outcomes is measured through the plans quality improvement process. The results of that evaluation are used to revise guidelines recommendations as needed.

Clinical practice guideline is a form of education tool, have gained popularity as a means of influencing physicians' practices (Audet et al, 1993). Such guidelines are primarily educational, in that they attempt to inform practitioners about optimal strategies for diagnosis and management. Most studies of the effect of practice guidelines have examined changes in physicians' practices, not changes in patient outcomes. Even by this measure, clinical practice guidelines have been remarkably unsuccessful in influencing physicians (Kosecoff et al, 1987; Lomas et al, 1989).

Why are most physicians not influenced by practice guidelines?. Several explanations have been offered. First, some guidelines are not written for practicing physicians, but focus instead on the current state of scientific knowledge (Lomas et al, 1991). Physicians may have difficulty applying guidelines of this type to specific patients. Second, physicians may disagree with or distrust guidelines written by so-called national experts. Interviews with practicing physicians indicate that many rely primarily on their own experience or colleague's recommendations in deciding whether to adopt new techniques or interventions (Greer, 1988).

Finally, physicians may choose to ignore guidelines because of factors, such as financial incentives or the fear of malpractice litigation. Thus, despite the current enthusiasm, guidelines by themselves appear to have a limited role in influencing physician's practices. Although guidelines themselves may not change practice, providing such guidelines to "opinion leaders" (men and women named by their peers as trusted sources of clinical information) appears to offer great promise in altering physicians practices. Dissemination of guidelines through opinion leaders is probably more efficient than targeting individual physicians for education, a process referred to as academic detailing (Soumerai and Avorn, 1990).

Factors affecting physicians' use of protocols/ Compliance

Studies which investigate the factors of medical compliance can be helpful in determining factors for compliance problems, even these factors cannot be altered, and in suggesting variables that might be modified to improve compliance (Rapoff et al, 1991). Inconsistency of the definition of compliance and the difficulty of assessment may partly explain the compliance variations. There is only regularly documented fact that there is widespread of non-compliance regarding guidelines or protocols. Detection of medical non-compliance is more difficult, most of the

researchers in this field would agree that "none of the methods of detecting or studying non-compliance is without short comings or difficulties (Blackwell, 1976). The non compliance with usable protocols is a phenomenon, which occurs, but the compliance is affected by different factors. The following are some factors that could affect compliance:

- . Demographic characters: the individual differences could affect the compliance with the protocols, so some of the physicians' demographic variables as gender, age, years of experience, place of graduation, organizational ownership and its relations with the compliance were studied.

- . Training: from the start, the CDD and ARI programs demonstrated a strong commitment to developing methods and materials to improve case management. These training programs will give health workers the essential knowledge and skills related to case management. Improper or inadequate training given to physicians on the use of ARI, CDD protocols is a prim cause of non-compliance (WHO, 1999).

Lack of physicians' knowledge and practices leads to inaccurate classification of the cases, or missing many of severe or dangerous cases, losing time, and efforts to make X ray, lab investigation to depend on to classify or to decide the state of the case.

Also improper or inadequate training may lead to misuse of drugs which may causes interaction, resistance and irrationalization of drugs. All of that may lead to more morbidity and mortality in children less than five years. Regarding the availability of the basic supplies and equipment needed for implementation of ARI, CDD protocols, as the hand out protocols, wall chart of protocols, timing devices to count the respiratory rate, Ear, Nose, Throat Set (ENT) set, supplies to mix ORS (ORT corner facilities), Mother counseling cards must be available in all facilities to assist the physicians in the implementing process (WHO, 1999). A large majority of facilities

in Egypt which visited through a survey, 92 % were provided with the basic supplies and equipment (MOH Egypt, 2002).

Materials revised in 1991 to support joint CDD and ARI program management training is one of milestones in development of CDR program management tools (WHO, 1999).

. **Protocols:** Availability of adapted national protocols may affect positively on the physicians' compliance,

. **Health system:** Some aspects of health system are considered as important factors that affect the physicians compliance regarding ARI, CDD protocols or any guideline through support the provision of quality services and affect their utilization, namely; caretaker satisfaction with the services provided; organization of work at facility; availability of essential drugs recommended for ARI, CDD protocols, basic supply and equipment including immunization, facilities for referring an emergency (very severe disease) cases to the nearest hospital, training and supervision and records. Different studies concentrated on the organization of work system, as it is a major factor that influencing satisfaction, which reflect on the compliance (Kersnik, 2000; Lieberman et al, 1996). In Palestine health system need more improvement regarding provision of the services for children from 3 up to 5 years where free of charge health insurance covered only children less than 3 years only.

. **Monitoring and supervision:** After health workers complete clinical training, they often find it difficult to maintain their skills when they return to their health facilities. A follow up visit is now seen as an important for reinforcing the skills of physicians recently trained. In addition, information collected during follow up can help countries monitor the progress of implementation activities, and promote the physicians to be more adherent towards the protocols. Without information about

compliance with the guideline concerned, assessing the need for, and monitoring the success of, implementation will be impossible (Hutchinson and Barker, 1999).

The main purpose of the visit is to help physicians or any health workers transfer their newly acquired case management skills to clinical work in the facility. During the visit, the supervisor observes the health worker managing a case, gives feedback on the care given, and provides practice to strengthen and reinforce the health workers skills (MOH Egypt, 2002). All of that will increase the physicians' confidence on his practices/compliance with the protocols. Also, activities of the health facilities, and availability of drugs and other supplies needed to correctly managing sick children are viewed. The supervisor helps the physicians and other members of the health facilities to identify and solve problems that may prevent the trained physicians from implementing the protocols, promote them to be more adhere to implement and follow the protocols.

. Barriers to implementation: the literature indicates that, work over load, inadequate training, non availability of facilities needed, lack of follow up programs, no motivation, non acceptance from community, program not endorsed in the health system are barriers that negatively affect the implementation. So the physicians' practices/compliance will improve if the barriers solved.

The community acceptance or satisfaction with the health services provided regarding the management of childhood illness within ARI, CDD protocols will assist the physicians for more adherences to follow the protocols designed for that. As the aspects of care within the protocols were most appreciated by the caretakers if done includes the fact that, their children will assessed and examined by the providers and, standardized treatment will be given correctly (MOH Egypt, 2002). In addition, much

information will be given to them through good interaction as counseling is a prominent feature of clinical processes to increase their health awareness.

Assessment of guideline or protocols' compliance:

To ensure the successful application of guidelines or protocols within clinical practice, it is recommended that evaluation of guideline effectiveness be linked to the organization's quality improvement program (Kibbe et al, 1994). According to the National Committee of Quality Assurance, this evaluation can be either, population–bases or practice–based.

A population–based evaluation examines a sample of the Managed Care Organization members who have a particular clinical condition to determine whether the treatment provided to them was in accordance with the health plan's clinical guidelines.

Practices–based evaluations utilizes data from a sample of the Managed Care Organization practitioners and examine a sample of those practitioners medical records or prescription to determine the extent to which recommended guideline interventions were followed for patients with acute or chronic conditions. Sick children below 5 years managed for ARI or CDD will be pulled and evaluated for the two steps, classification and treatment. This evaluation method also provides the Managed Care Organization with data on individual practitioners that are useful in the physician profiling process. The data from both practice and population based evaluations used to determine the effectiveness of guideline implementation. Another mechanism by which guideline compliance is evaluated at an individual provider level is that of the plans primary care provider profiling system. This physician "report card" system provides practitioners with comparative information regarding their practice patterns relative to selected clinical guidelines, and some quality of care indicators. The guideline compliance cannot improve without physician support, as

the financial incentives are a powerful motivator of change in physician behavior (Nash, 1999).

Over the last one and half years, the average compliance with established usability guideline in United States increased by 4%. If we can sustain this level of improvement, we'll reach the ideal of 90 % guideline compliance in 2017 (Nielsen, 2002).

Whatever 50% guideline compliance was recorded in some countries as in France some 147 mandatory practice guidelines have been introduced fewer than 1993 statutes, loi teulade 93-8, covering investigations, prescribing, and certain medical procedures. Initially guideline, were developed by social security administration responsible for reimbursing private practitioners and the doctors unions, but this task has now been taken over by an independent organization (Hurwitz, 1999) .

While the guideline production has been spent learning how managed care can assist physicians to do the "right thing" these initial efforts must now be supplemented with work that addresses how physicians can do the "right thing in the right way (Kibbe et al, 1994). The ongoing development and utilization of computerized medical records, integrated data information systems and decision support software will exceptionally helpful in the achievement of effective guideline implementation and accurate evaluation. The providing of the services through guidelines makes this effort different from others as these guidelines are directly integrated into a multi-department database that will enable more accurate measurement of guideline compliance as well as provide clinical outcome data (McGivney, 1998). Another method of assisting physicians to "do right thing in the right way", is to make computer-based guidelines available at the point of care. Such system can be used to provide real time physician feedback. Several randomized trials have demonstrated

the effectiveness of computer assisted systems in enhancing guideline compliance. These studies dealt with compliance with guideline recommendations relative to issues such as diabetes (Lobach, and Hammond, 1997) and antibiotic administration (Evans et al, 1998).

Another mechanism, by which guidelines could be more effectively implemented in practice, may be to link them to another recently developed practice tool, the clinical pathway. Ellrodt, et al. (1997) suggested that clinical path ways be conceptualized as a series of linked practice guidelines (Ellrodt et al, 1997). While the guideline describe what to do, their sequencing in a clinical path way framework can provide the best order and timing of required care intervention (Hayward et al, 1998).

Impacts of using protocols:

Compliance with ARI, CDD protocols during management of sick children less than 5 years is an important health issues to be investigated because it has an impact or effect on, families, community, primary health care services, and individuals.

Impact of using/compliance on community:

Physicians' use of ARI, CDD protocols for the children fewer than five which represent the 20% of Palestinian community and in the presence of their caretakers (mother, father, etc...) would improve their knowledge and practice regarding their child care. The use of ARI and CDD protocols will reflect on reducing the misusing of antibiotics, decreasing the number of referred cases, reducing the morbidity and mortality among children, beside the growth and development of children will improve. All of these may contribute to improve the compliance among other sectors towards different programs as vaccination, well baby clinic, and other prophylaxis programs.

Impact of using/compliance on primary health care services:

Physicians' use of ARI, CDD protocols is one of the important priorities of health establishments. It has an intimate relation to promotive, preventive and curative purposes for which the primary health care services has been established, therefore the primary health care institute may not achieve the objectives of the organization in reducing the mortality and morbidity among children under five as well as losing much of its resources. The physicians' use of ARI, CDD protocols for children below five years may have an important contribution to achieve the goals of the MOH through the following points

- Cost–benefit of health services provided to the children under five may be improved through physicians' compliance, as in drug management. The high physicians' compliance rate leads to rationalization of antibiotics usage, reducing the misuse and wastage of resources spent for purchasing these drugs. Also physicians' compliance regarding the protocols reduces the number of referrals, so reduces the cost of the hospitalization (WHO, 1999).
- High rates of compliance may improve the self confidence of physicians and health staff, which may contribute into better performance and better outcomes.
- High rates of compliance may contribute in increasing the community awareness which may increase their compliance to physicians' instruction to achieve better outcome for caring of their sick children and increasing the trust of the community with the health services (MOH, 2000).
- High rate of physicians' compliance may reduce the mortality and morbidity rate and improve the health status, growth and development of children under five (MOH, 2000).

Impact of using/compliance on families:

As the physicians' use of ARI, CDD protocols increases, the value of increasing the communication between health workers and families will increase, besides increasing the knowledge of families about the danger signs and when to return and how to seek the sick child at home. Undoubtedly, these values may positively contribute for better health and economy and welfare of the families.

Impact of using/compliance on individual:

The impact of using protocols is more likely to be positive on the physicians' performance and his out come. If physician used to follow the ARI, CDD protocols regularly he/she may develop the habit of compliance with standards of quality.

The importance of compliance with ARI, CDD appears at any time of health services providing, but the non compliance with these protocols is wasting the time and efforts and possibilities of lacking the correct classification and correct decisions of treatment. As compliance with ARI, CDD protocols increases, the expected positive results most likely increases in term of correct assessment, classification and treatment of the cases. Non compliance may lead to incorrect classification which causes more complication and increasing the morbidity and mortality among children, beside increasing the cost of medication and developing of side effect due to misuse of antibiotics and other drugs.

Acute respiratory infections:

ARI has become a serious problem locally, regionally, and internationally due to the high rates of morbidity and mortality associated with, and the unnecessary amount of drugs and technical assistance (i.e. laboratory tests, x-rays, etc.) used in its diagnosis and treatment.

More than four million childhood deaths are caused each year by ARI, especially in developing countries (Cattaneo, 1994). More than 70 % of deaths and health facility visits are due to diarrhea, pneumonia, measles, malaria and malnutrition in children under 5 years of age in developing countries (WHO, 1995).

ARI mortality has been reported to be the highest in the neonatal and post neonatal period and ARI, mainly pneumonia, accounts for about 18 % of underlying causes of death in developing countries (Garenne et al, 1992). Berman (1991) stated that sufficient knowledge about ARI was available to support the WHO case management strategies (Berman, 1991).

ARI are the most common cause of death in children under five years of age. Most ARI deaths are due to pneumonia, a disease that can be effectively treated with low-cost oral antibiotics, most of these deaths could, therefore, be avoided (WHO, 1998a). Children all over the world suffer from frequent ARI, many episodes of which are self-limiting infections of viral origin such as coughs or colds. However, ARI are often associated with life-threatening pneumonia, which kills about 2 million children less than five years of age annually in developing countries (WHO, 1998). Many of these deaths occur during the first year of life, and at home. Such cases, never reach health facilities and the deaths are therefore never officially recorded. While viruses are the predominant causes of pneumonia in developed countries, there is strong evidence that bacteria cause a large proportion of childhood pneumonia in developing

countries (WHO, 1998a). The bacteria which are mostly commonly isolated in children between two months and five years of age are *Haemophilus influenza* and *Streptococcus pneumonia* (WHO, 1998a). Treatment of ARI also often involves the unnecessary or inappropriate use of antibiotics and other drugs in outpatient services (WHO, 1998a).

In October 1979, the Thirty-second World Health Assembly adopted a resolution requesting the involvement of Member States in the control of respiratory diseases and asked them to accord high priority to research activities for the development of simple and effective methods for the prevention of these diseases, their timely detection and diagnosis, and appropriate curative services (WHO, 1998a). As a result of the research activities the WHO ARI program was officially established at the global level in the year 1982. As on the basis of research and experience in Papua New Guinea and other countries, a standard method for case management has been developed to enable primary health workers to: recognize important signs and symptoms such as fast breathing and chest in-drawing; determine the nature of cases, whether mild, moderate or severe; and decide whether antibiotics should be given and whether patients should be referred to hospitals. The same information has been given to mothers through health education (WHO, 1998a).

As standard ARI case management mainly depends upon highly sensitive and highly specific signs and symptoms of acute respiratory infections and illnesses, rather than radiology and laboratory investigations which may not be available at the time, so the early detection of pneumonia and other serious illnesses that affect young children and according to the presenting signs and symptoms two types of chart or management outlines are used, first: Management of the child with cough or difficult

breathing, second: Management of child with an ear problem or sore throat. The management concepts for each outline are presented in the following order:

1. Assess the condition of the child
2. Classify the illness (by type or severity) and
3. Treat the child (Khoja et al, 1999).

Since the development of WHO's standard case management guidelines the program has concentrated on the establishment and expansion of national control programs. Priority has been given to train health workers on standard case management. At the same time, a number of training units have been established to provide suitable equipment and to train and supervise staff. WHO materials such as, training modules for health workers, flipcharts and treatment charts have been distributed to countries (WHO, 1998a).

In most cases, education on home care is delivered by health workers to caretakers. Efforts have therefore been made to improve the interpersonal communication skills of health workers.

WHO CDD and ARI programs were developed in different countries to increase the effectiveness of the treatment and management of these dangerous diseases. The main objective of both programs CDD, ARI are to reduce mortality and morbidity from acute respiratory infection, particularly pneumonia and diarrhoeal disease in children below five years of age, and to reduce inappropriate use of antibiotics and other drugs used in the treatment of major childhood illness.

ARI programs have been monitored and evaluated through field visits, surveys, program reviews and planning meeting in most countries where ARI implemented. All developing countries where ARI is considered as public health problems for children have now established national policies supporting program objectives and

strategies have been developed. To help monitoring and evaluation of the ARI programs, key indicators have been introduced. They include indicators of the process of program implementation e.g. proportion of facilities with trained staff, availability of antibiotics needed to treat pneumonia, and program outcomes at both the health facility level, e.g. proportion of cases correctly managed and at home, e.g. appropriate care seeking behaviors for ARI needing assessment.

Classification and treatment indicators were incorporated into ARI health facility surveys and household surveys. ARI health facility surveys were carried out from 1992 to 1996 in China, Malaysia, Papua New Guinea, the Philippines and Viet Nam. The results showed that a very high percentage of children were correctly classified as having pneumonia but that only 50%–60% were treated correctly (WHO, 1998a). In addition, from 1993 to 1995, household surveys were conducted in China, the Lao People's Democratic Republic, Mongolia, Papua New Guinea, the Philippines and Viet Nam. These household surveys indicated that caretakers' knowledge of when to seek care for coughs was low (WHO, 1998a).

The quality of standard ARI case management in Pakistan, ARI health facility survey, 1994 reveals that 38% of facilities with recommended oral antibiotics, 29% of health workers trained in standard case management , 25% of facilities capable of providing standard case management, 4% of pneumonia cases managed correctly and 7% of caretaker correctly advised (WHO, 1998a). The results from this survey showed a need for urgent action to improve several components of the programs activities where the federal ARI cell responded rapidly (WHO, 1998a).

The measurement of ARI program impact in terms of reduction of deaths in children below 5 years of age due to ARI mainly pneumonias remain beyond the reach of most national programs in developing countries (WHO, 1999). However, surveys that

conducted in some countries like Viet Nam showed a significant reduction in child mortality (60%) following the implementation of ARI case management protocol (WHO, 1998a). This indicates the effectiveness of the program and the compliance of health worker. Also the implementation of the program control (ARI) in the year 1987 in the Sultanate of Oman contributed heavily in reduction of infant mortality rate (IMR) and mortality rate in under five (U5MR) as U5MR has declined from 181 per 1000 in 1970 to 24.5 per 1000 live births in 1998 and also antibiotic use in ARI was rationalized (MOH Sultanate of Oman, 2002). The achievement above indicates the compliance of health provider.

The Kingdom of Saudi Arabia (KSA) is one of the leading countries of the Eastern Mediterranean Region of WHO with reduced under-5 and infant mortality rates 21/1000 live births and 29/1000 live births respectively. With this important achievement and high quality social indicators, the MOH developed long and short-term plans to continue expanding and implementing the child survival programs, including ARI, in the primary health care centers. The plans were aimed at improving the skills of the health workers by raising their knowledge, positive attitudes and practices. The establishment of basic infrastructures and the implementation of the national protocol of ARI will hopefully help the ARI program to succeed. The step taken therefore was to develop this national protocol using the WHO guidelines and recent relevant scientific references (Khoja et al, 1999).

The role of UNICEF in the reactivation of the governments control of ARI, in Iraq which started in 1993, for the drugs, supplies, materials and training modules that assessed to improve correct case management of health staff and home management of mother, moreover training in all medical and nursing colleges are also ensured by inclusion of CARI case management in college curricula. So the impact of that was

increased the knowledge, attitude and practice (KAP) of health worker and the awareness of the community about caring of the child but the insufficient availability of antibiotic and malnutrition have led to increased cases of respiratory infection (UNICEF, 1995). One of the main reasons for the persistence of ARI as a leading cause of death among children is the fact that children are brought for treatment too late therefore WHO continues to stress the need for caretakers to recognize the danger signs as soon as possible (WHO, 1998a). Health workers performance does not always reach expected targets, despite considerable training efforts, also health workers complained from overwork and how to cope with shortages of essential drugs (WHO, 1998a).

The overlapping signs and symptoms of ARI can make case management of ARI complex. Also, training courses in the countries did not always achieve the required standards. Logistical problem have often impeded follow up visits, which is considered highly important for newly trained health workers. Also all health providers from outside public sectors and NGOs sectors need to be more closely involved in standard case management and prevention activities of acute respiratory infection protocol (WHO, 1998a). For more orientation to the ARI see the attached diagram (Annex No. 4).

Childhood diarrhoeal diseases:

Diarrhoeal diseases are leading cause of childhood death and disease in the developing world. The finding of active surveillance studies analysis reveals that around 750 million episodes occur each year in children below 5 years of age in Asia, Africa and Latin America. It is also estimated that among 4-5 million children below 5 years, die annually from acute diarrhea. Eighty percent of these deaths occur in the first two years of life. Repeated attack of diarrhea will lead to malnutrition and growth retardation due to associated food restrictions by mothers, anorexia and malabsorption (WHO, 1992a). These deaths are caused by dehydration, dysentery, and persistent diarrhea. Dehydration from acute diarrhea of all etiologies and in all age groups can be treated safely and effectively by the simple method of oral rehydration therapy (ORT). ORT had made it possible to undertake a global effort to reduce deaths from dehydration and diarrhea-associated malnutrition.

Complete case management can also combat deaths from dysentery and persistent diarrhea (WHO, 1992a). The number of stools normally passed in a day varies with the diet and the age of the person. In diarrhea, stool contains more water than normal. They are often called Loose or watery stools (WHO, 1992a). They may also contain blood; in such case the diarrhea is called dysentery. By talking to mothers you can often find one or more useful local definitions of diarrhea. It is defined as 3 or more loose or watery stools in a day (24 hours) (WHO, 1992a). Between 1981 and 1985, 40 studies on the etiology of acute diarrhea in infants and young children were supported, most of these studies done out in China, India, Mexico, Myanmar and Pakistan. While there are numerous diarrheas-causing organisms, the studies showed that the majority of cases in virtually all settings are caused by several organisms:

- Rotavirus was shown to be the only frequent isolated viral enter pathogen.

- Enterotoxigenic E.Coli, Shigella and Campylobacter Jejuna were the most frequently isolated bacteria.
- Cryptosporidium was the most frequent protozoa cause of diarrhea (WHO, 1992b).

The epidemiology of specific organisms was also studied in large number of countries. All of these studies resulted as no cause-specific characteristics of diarrhea that would significantly influence the approach to case management or preventive strategies. The exception was the evidence that Shigella was the most important cause of bloody diarrhea (WHO, 1999). Cholera is a well known form of diarrhoeal disease. It became a disease of global importance in 1817, when a major out breaks occurred in India, spreading to other countries. Between 1817 and 1923, five pandemics followed, caused by the classical biotype of Vibrio Cholera serogroup 01. The seventh, ongoing cholera pandemic was due to the El Tor biotype of V. Cholera 01 and started in Sulawesi, Indonesia in 1961 and spread quickly through Asia. This pandemic intensified in 1993-1994, partly because of a new cause of Cholera, V. Cholera 0139 which emerged in India. Diarrhoea has long been known as a condition affecting many children in developing countries. However, accurate health statistics remain scarce and it was not until the 1960s that diarrhoeal diseases were identified as a major cause of morbidity and mortality in children less than five years of age. Before the year 1977, diarrhoeal disease were considered as serious public health problem in Gaza Strip, being the most important cause of hospitalization in infants and responsible for about half of post-neonatal deaths (Abed et al, 1983).

The development of oral rehydration salts (ORS), which are administered in solution consisting of a mixture of water, salts and glucose in specific proportions, was described by the lancet as the most significant medical advance in century.

In the 1960s, research work on oral rehydration therapy (ORT) took place in many parts of the world. A study in the Philippines showed physiological evidence that the use of an oral glucose electrolyte solution could help to replace fluid and electrolyte losses in diarrhea due to Cholera. This study helps to establish the final composition of oral rehydration solution.

Research studies which done in Calcutta, India and Dhaka Bangladesh in the year 1968 resulted in the development ORS, which seen as potential cure for dehydration which can be used in health facilities and also in every home. So ORS is considered the best means of rehydration and the best way to prevent dehydration (WHO, 1998b)

The physiological basis of ORS is during diarrhea, intestinal absorption of sodium is inhibited. Studies have shown that sodium absorption is maintained with the help of glucose even during purging. Thus, glucose if present in the proper proportion in the intestine during diarrhea will carry sodium into the mucous membranes from where it can enter into the blood; this will also lead to the absorption of other electrolytes.

Until the 1960s, intravenous infusion was the primary, treatment for dehydration. Studies in an adults and children with diarrhea demonstrated that oral therapy was just as effective as intravenous fluids while being much simpler to administer (Nalin et al, 1968). However, it was widely believed that rehydration therapy could only be administered by trained health care professionals within a hospital setting and should not be left in the hands of inexperienced health workers. In

1971, Mahalanabis who headed a refugee camp in which a severe cholera epidemic broke out, began giving oral re-hydration fluids to all patients not in urgent need of intravenous which is not in adequate supply at that time ORS was not administered by trained, experienced health care workers but by the mothers, grandmothers and any community members related to the patients, as a result the case fatality in the camp was dramatically decreased when compared to the camps that only used intravenous fluids from that the vast potential of ORT was demonstrated (Mahalanabis, 1973). So the benefits of implementation of ORT and ORS in various countries are universally recognized. In Bangladesh, India and Egypt, ORT programs reduced diarrhea-related mortality to significant proportion (WHO, 1998b). Global children deaths from diarrhea were estimated to decrease from 5 million per year in the 1970s to 1.8 million per year in early 2005, although other important interventions such as promotion of breast feeding, immunization against measles, improvements in socio-economic status, have contributed to the decline (WHO, 1998b).

Provision of vitamin A was likely to have had an impact on global diarrhoeal mortality and ORT is believed to have played the major role (Dean, 2003). In the year 1978, a global program for the prevention and control of diarrhoeal diseases was established by WHO/UNICEF CDD program. The goal of the CDD was to reduce mortality and morbidity due to diarrhoeal disease and associated conditions, particularly malnutrition in infants and young children. In 1990, the program was started to integrate with the program for ARI, in most countries this combination will improve the effectiveness and efficiency of the programs. Recently, collaboration between programs related to child health has further increased due to the new IMCI strategy, which draws heavily on experiences

gained through implementing CDD/ARI activities (WHO, 1998b). In 1980, guideline for trainers of community health workers on treatment and prevention of acute diarrhea was produced. This guideline described the simple approach to assessment and treatment of dehydration that still underlies the guideline used today. They introduced the use of three categories to classify hydration status: No dehydration, some dehydration and severe dehydration, and related treatment plans designated as (plan A, plan B, plan C). These guidelines soon became the approach recommended for first level health facilities. Once the CDD programs have been established in many countries, training of health workers on standard case management has been the priority activity in these programs. Standard diarrhoeal treatment guidelines have been developed to be used in the field. In recent years, special attention has been given to pre-service training of health professionals and WHO has collaborated with medical and nursing schools to incorporate CDD concepts into their curricula. In many of these activities, WHO has collaborated closely with UNICEF (WHO, 1998b).

Thousands of health staff has been trained in the management of programs to CDD and ARI. Between 1988 and 1995 more than 240 CDD courses were held in over 70 countries. Over 5600, senior health staff participated in ARI program management training during 1990-1995 (WHO, 1999).

By the end of 1995, more than 150 Diarrhoeal training units (DTUs) were functioned satisfactorily, as 7300 diarrhoeal disease clinical training courses were held, training over half a million health workers and more than 250,000 physicians, nurses took place. There was early recognition that supervision needed to be strengthened as 250 a supervisory skills training courses were held in

98 countries, with more than 10,000 participants between 1983 and 1987 for supervision and follow up to the programs' (WHO, 1999).

However, different studies and reports at national, global and international levels showed the effect of the implementation of the CDD programs which reflected different degrees of compliance of the health personnel. These studies or reports showed the achievements and the under achievements. Examples of achievements as in the countries of Western Pacific Region where diarrhea in children under five years is a major public health problem there has been continues downwards trend in case fatality rate in 1990s, which has been reduced from 6.8% in 1991 to 1.3% in 1996 (WHO, 1998b). Countries with strong CDD programs, trained health workers and health facilities supplied with essential drugs and equipment have been able to maintain case fatality rates below 1% (WHO, 1998b).

Reported diarrhoeal disease mortality in Mexican children less than five years of age was reduced by 70% between 1984 and 1993. As the under five mortality due to diarrhoeal diseases in 1984 was 212.3 per 100,000 children and because CDD program becomes active at that time the under five mortality start to decline gradually but the particularly, dramatic decline in diarrhoeal mortality that occurred in 1990 U5MR was 137.4 per 100,000 children, but in 1992 U5MR was 67.4 per 100,000 children (WHO, 1999). During epidemics of Cholera and the intensified effort against it would not have been possible without the prior decade of effort by the national CDD program. This Mexican success in reducing diarrhoeal mortality is impressive and has served as a source of motivation for other national programs. Mexican CDD program led to rapid gains in proportion of mothers who reported correct home case management, and in the availability and use of ORS both at home and in health facilities (WHO, 1999).

The availability of trained health professionals, political commitment and leadership, adequate resources, and intensive use of the existing case management strategy are factors attributed for reduced mortality were achieved and even surpassed (WHO, 1999). A field test of the training course on management of childhood illness, Arusha, Tanzania to estimate the competence of participants in correct case management of sick child and to identify possible improvement in course materials or teaching procedures. The proportion of children for whom specific parts of case management were performed correctly by course participants during clinical practice sessions are as follows, assessment 93% classification 88 %, treatment 77 %, counseling 86 % (WHO, 1999).

In Iraq, impressive progress has taken place in the CDD program during the first quarter of 1995 in terms of training of 2850 health staff and other supportive groups on the application of ORT in the treatment of children diarrhea, and raising community awareness through advocacy and communication.

Observation and follow up for all PHC centers, day every month for ORT has proved instrumental in the dissemination and acceptance of the ORT approach. Moreover, four diarrhea training units (DTUs) have been identified in three governorates (UNICEF, 1995). Another significant achievement has been the percentage use of ORS in the treatment and struggle against diarrhea, and subsequent fatal dehydration, which was the number one killer among children in Iraq. Results of KAP study indicate that 78 % of mothers were applying ORS in the treatment of infantile diarrhea. This is at threshold of target of 80 % universal application of ORS in the treatment of all diarrhea cases in children.

Implementation of CDD program in the Sultanate Oman resulted in reduction of IMR and U5MR as the incidence of diarrheal disease declined from 0.7 per child

per year in 1998. This indicates a good compliance of health worker regarding these protocols (MOH Sultanate of Oman, 2002).

In Gaza Strip a 3-year program was started in 1979, encompassing all community health centers and including intensive community education in the use of ORS. Compared with the pre-study year 1977, diarrhoeal hospital admissions were reduced by 35.3% in 1980 and 42.0% in 1981(Abed et al, 1983). Hospital deaths from diarrhoeal diseases were reduced 34.4% and 37.4% in 1980 1981, respectively. Total deaths in the 0-3 year age group were reduced by 28.7% in 1980 and by 41.7% in 1981. This study succeeded in establishing active community and family participation (Abed et al, 1983).

CDD program was integrated within each health center in KSA, where ORS corner standard hospital/health center treatment protocols for CDD still implemented strictly by health workers (Baldo et al, 2000).

A study for examining the possibility of reducing the drug costs, through rationalization of the antibiotics used in CDD and ARI case management, in urban areas in Bangladesh indicates that, the use of standard protocols may reduce the drug cost for treating cases of ARI and CDD, as the drug cost of treating diarrhoeal disease declined by 12% per client after the introduction of the protocols. For the ARI cases, the drug cost was reduced by 53% per client. This has helped reduce the total drug cost for diarrhea and ARI by about 32 % for the clinics in the six month period (Quayyum et al, 2002). As aforementioned in Gaza Strip, both ARI and CDD protocols were implemented in MOH and UNRWA sectors through WHO/ UNICEF collaboration. Health workers in both sectors were trained to gain skills to implement the ARI, CDD protocols (MOH and UNICEF, 1995). Diagram of CDD protocols are attached (Annex 5).

Integrated management of childhood Illness

Every year, about 12 million children die before reaching their fifth birthday, many during the first year of life. Over 10 % of these deaths, the vast majority occurring in the developing countries are due to acute respiratory infections (mainly pneumonia), diarrhoeal diseases, malaria, measles and malnutrition, and often by a combination of these conditions (WHO, 1997).

Since long time, major efforts and progress has been made to reduce childhood mortality and morbidity through universal childhood immunization, CDD and ARI, nutrition programs (including breast feeding promotion) and through implementation of other primary health care activities. In spite of these achievements, major challenges remain, as mortality rates are still unacceptably high, especially in the sub Saharan Africa and south Asia (IMCI a joint WHO/UNICEF Initiative, 2002). Projections made in 1996 indicated that these five conditions will continue to be the major cause of child mortality in the year 2020, unless significantly greater efforts are made to control them (WHO, 1997). Much has been learned from disease specific control programs in the past 15 years. Today's challenges is to apply the lessons learned from these programs to strategies that bring together activities so as to improve the prevention and management of childhood illness and to deal with the sick child as a whole instead of single disease. So, the WHO Division of Child Health and Development (WHO/CHD), with UNICEF, has responded by developing the strategy known as IMCI where ARI and CDD programs are the main component of it (WHO, 1997).

What is IMCI?

IMCI is a strategy for reducing the mortality and morbidity associated with the major causes of childhood illness. Its development by WHO and UNICEF started

in 1992 (IMCI a joint WHO/UNICEF Initiative, 2002). It was decided to initially focus on improving care at the first level health facilities, where millions of children arrive sick each day, most of them with one or more of the major causes of illness and death. A set of generic guidelines for management of childhood illness at this level was completed in 1996 and is ready now to be used as basis for introducing this component of IMCI in countries. These generic materials cannot be used without substantial adaptation of country level, based on the country-specific situation (IMCI a joint WHO/UNICEF Initiative, 2002).

The current focus is on improving the quality of care of children at first level health facilities (Health centers and out patient services) in both rural and urban areas through the use of standardized procedures and on integrated approach to health care. The curative component of IMCI was adapted to address the most common life-threatening conditions for children in each country focusing on diarrhea, pneumonia, measles and malaria (where applicable) as well as the management of severe malnutrition and nutrition counseling. IMCI also has health promoting and preventive element including, reducing defaulters for vaccination, breast feeding and other nutrition counseling. It should be noted that all children, not only sick children, should be targeted with these preventive and promotive interventions. IMCI pays particular attention to improving the communication and counseling skills of health workers (IMCI a joint WHO/UNICEF Initiative, 2002).

The IMCI strategy, therefore, seeks to reduce childhood mortality and morbidity by adopting a broad and cross-cutting approach with the following components:

- . Improving case management skills of health workers through the provision of guidelines on IMCI, adapted to the local context, and activities to promote their use.
- . Improving the health system by:-
 - a. Ensuring the availability of essential drugs and other supplies.
 - b. Improving organization of work at health facility level.
 - c. Improving monitoring and supervision.
- . Improving family and community practices through education of mothers, fathers, other child caretakers and members of community with focus on health seeking behavior, compliance, care at home and on overall health promotion (IMCI a joint WHO/UNICEF Initiative, 2002).

IMCI IS NOT A VERTICAL PROGRAMME. It is an integrated strategy that incorporates many of the elements of diarrhoeal disease and ARI control programs and other related programs of child health (IMCI a joint WHO/UNICEF Initiative, 2002).

Introduction of IMCI into different countries:

The first step in the introduction of IMCI in a country is thorough, orientation of all relevant stakeholders as to what this strategy entails. This process seeks consensus on the priority problems to be addressed, based on the country specific situation, and on how to proceed with implementation of the integrated approach, and a statement of national commitment to the strategy (IMCI a joint WHO/UNICEF Initiative, 2002). Following a decision to work towards integration of management of childhood illness, the first step is to define standard guidelines for care specifically tailored to the country. Sometimes aspects of this will need to be modified for different regions of a country. A convenient and cost-effective way of achieving this step is to start with

the generic WHO/UNICEF guidelines and adapt them (IMCI a joint WHO/UNICEF Initiative, 2002). This adaptation process must involve program managers of all relevant sections of the MOH as well as relevant partners from other relevant sectors/institutions, pediatricians and their professional associations, NGOs and potential partners in funding and technical support. It provides the opportunity to review policies and practices related to child health care and to revise them in a way that allows integration and avoids contradiction. In parallel with the process of adapting the case management guidelines, it is essential to start planning for the introduction of the IMCI approach. Hence, an IMCI implementation plan that addresses the various elements, including a training plan, should be developed. Consideration must also be given to factors enabling trained health workers to apply their skills, including the availability of the necessary essential drugs and supplies (IMCI a joint WHO/UNICEF Initiative, 2002).

IMCI and CDD/ARI:

As IMCI activities expand in countries, it is anticipated that single disease programs focused on CDD and ARI will be phased out. It is important however that, support to these programs continue in countries and districts where IMCI is not yet implemented so as not to lose the considerable gains already made. In those countries where IMCI implementation has not yet started, efforts should be made toward greater integration in the planning and implementation (including training) of CDD and ARI programs. Such integration will enable countries to be in a better position to implement IMCI (IMCI a joint WHO/UNICEF Initiative, 2002).

As part of this early preparatory phase, policy makers and program managers should strengthen the foundation for IMCI introduction, by addressing key issues such as

improving the availability of essential drugs, organization of services and on-going support for preventive and promotive child health action including, communication activities for CDD, ARI and other programs (IMCI a joint WHO/UNICEF initiative, 2002). Implementation of IMCI involves three phases, discussed below: introduction, early implementation, and expansion. Every phase includes different activities according to IMCI guide plan. By June/1999, 63 countries were at different stages of implementation and at least 12 others had expressed interest but had not yet started activities:

- The Introduction phase, 20 countries were in the process of introducing IMCI these countries are Belarus, Benin, Bhutan China, Colombia, Georgia, China, India, Iran, Kenya, Kyrgyzstan, Laos, Myanmar, Namibia, Syria, Tajikistan, Turkey, Turkmenistan, Uzbekistan and Yemen) (IMCI, 1999).
- The early implementation phase, 31 countries have successfully introduced IMCI and had moved on to preparation for and implementation of initial activities in selected districts. These countries were (Argentina, Armenia, Azerbaijan, Bangladesh, Botswana, Cambodia, Cote D'Ivoire, El Salvador, Egypt; Eritrea, Ethiopia, Haiti, Honduras, Kazakhstan, Paraguay, Madagascar, Malawi, Mali, Moldova, Morocco, Mozambique, Nicaragua, Niger, Nigeria, Pakistan, Senegal, South Africa, Sudan, Togo and Venezuela, Zimbabwe) (IMCI, 1999) .
- The expansion Phase, 12 had moved from early implementation to expansion of activities and geographic coverage countries. These include, (Bolivia, Brazil, Dominican Republic, Ecuador, Indonesia, Nepal, Peru, Philippines, United Republic of Tanzania, Uganda, Viet Nam, and Zambia) (IMCI, 1999).

- In Palestine Oct /2001, MOH agreed to adopt the IMCI strategy with collaboration of UNICEF where national coordinators from GS and WB were nominated.

In GS mainly, according to the IMCI planning guide, the national coordinator started the implementation of this strategy in steps through the 3 phases:

The introduction phase, where orientation about IMCI for the policy-makers of all health providers was completed, and the IMCI management structure was established, where the working groups started to manage the processes of introduction and early implementation phases (MOH, 2004).

In the early implementation phase, the adapting group work in the adaptation of the IMCI generic guideline and training package which completed, as a national Palestinian IMCI guideline and training package (7 modules), and a Palestinian mother card were produced, then a project with UNICEF collaboration for capacity building of primary health care setting through training of health care providers at PHC level in 3 districts were completed. Fifteen trainers were prepared through 11 days TOT course, then 125 health workers physicians have been trained in 9 courses of 11 days duration per each. Although there were some shortages of patients, training at district hospital was feasible. The performance of the trainees at the end of the course was satisfactory due to skills gaining; the training course was felt to be intensive but practicable education of mothers, fathers, other child caretakers and members of the community with focus on: health seeking behavior, compliance, care at home and on overall health promotion (MOH, 2004).

Experience of the implementation of IMCI in different countries:

The first Global Review and Coordination Meeting of IMCI was held in Santo Domingo, Dominican Republic 9-12 September 1997, around 130 public health

practitioners, pediatricians and researchers from 26 countries and a number of international and non-governmental organization met to review progress and to make recommendations for research, development and implementation related to IMCI (WHO, 1997).

From the experience of the first group of countries has emerged a practical process for the introduction and implementation of IMCI. This allows countries first build up the coordination and consensus that they need to implement the strategy effectively, then to gain experience gradually by focusing initially on limited area, and eventually to use that experience to expand activities in a controlled fashion. The Dominican Republic was one of the first countries to begin IMCI implementation at global level, where activities started in 1996 (WHO, 1997). IMCI has gained political support, also an inter-country IMCI project between the Dominican Republic and Haiti with the ministries of health and societies of pediatrics to implement jointly IMCI activities in border towns. In Dominican Republic the plans for the immediate future call for closer involvement of NGO community and put emphasis on developing IMCI teaching in medical and nursing schools (WHO, 1997).

Uganda was the first country to go through all phases of the strategy described before. Where, a strategy for implementation and expansion of IMCI is in place. Findings on follow up visits of health workers 4-6 weeks after training showed that 80% were implementing IMCI in their health facility. The plan was made for phasing out CDD/ARI training gradually while IMCI was being introduced; no CDD/ARI courses have been conducted since the introduction of IMCI (WHO, 1997).

Sudan building consensus on clinical guidelines which adapted through involvement of a wide range of institutions and authorities, including particularly pediatricians and medical schools, can facilitate consensus (WHO, 1997).

Indonesia and Bolivia having an experience with in service training, as in Indonesia decision was taken early in the implementation to have only one set of national guidelines which would be translated into Indonesia, also the Indonesian MOH was in the process of developing guidelines and methodology for incorporating IMCI into preserves medical and nursing training in collaboration with the pediatric society, but in Bolivia the training has gone well, although some participants have had difficulty with reading the materials and some changes have been made to accommodate this as the 11 days training course has been used exclusively, with an average of 15 participants, each of whom dealt with about 35 cases (WHO, 1997). Tanzania has experience with follow up of trained health workers and plans for preserves training where follow-up after training is necessary because IMCI is complex, and past experience shows that health workers are unlikely to implement their newly acquired skills if they are not followed up. The objectives of follow-up include to support and reinforce transfer of IMCI skills to clinical work in facilities also to identify and solve problems faced by health workers, and the third objective is to identify health facility support/constraints in IMCI implementation, lastly is the use of information collected to monitor and improve IMCI implementation in the country. In Tanzania the follow-up visits find that 82% and 84% of trained health workers were found to be managing children correctly at the first and second visits respectively, also 79 % of care takers showed good understanding of how to manage drugs at home (WHO, 1997)

In Egypt, IMCI was introduced in 1997 to integrate vertical child health care programs under the primary health care program. Since that, it has been expanded to cover some 600 health facilities in 10 governorates (MOH Egypt, 2002).

The health facility survey which done in March 2002 in Egypt indicated that, the caretakers highly appreciated the child health care services provided, and the

management of sick children seen by providers trained in IMCI followed a systematic approach in most cases, and drugs were used rationally. The IMCI strategy therefore seems to act as a powerful channel to improve the quality of services. Also IMCI elements have also been introduced in the teaching at seven medical schools in Egypt, to address the issue of long-term sustainability. In addition, medical graduates from the first batch of medical students exposed to IMCI are currently going through their one-year internship as house officers and will soon be ready to enter the health system (MOH EGYPT, 2002).

Chapter 3

Methodology

Study design:

The design of this study is descriptive correlational cross-sectional. It has been selected because this design is simple and useful for descriptive and evaluative purposes. Cross-sectional study helps to assess the cause and effect at the same point of time as well as it gives some insights into the possible association between variables (Cogon, 1993). Furthermore, cross-sectional studies are relatively quick and economical to conduct as the researcher's time and resources were limited (Polit and Hungler, 1999).

Study population:

The target population consists of all the officially employed physicians at all the primary health care facilities which belong to the MOH and UNRWA health sectors in GS provinces at the time of conducting the study. Additionally, the researcher selected certain number of prescriptions from each health facility (10 prescriptions).

Study settings:

This study was carried out in all PHC centers which belong to MOH and UNRWA health sectors. At the time of conducting the study, the MOH and UNRWA owned 54 PHC centers in all Gaza provinces, out of them UNRWA owned 17 PHC centers mostly located in the refugee camps.

Sample size:

The sample frame of this study was all physicians who were employed at PHC at the time of conducting the study. Accordingly, the sample size was 185 physicians.

Additionally, 10 prescriptions were randomly selected from the pharmacy stock at each health facility.

Response rate:

Extra ordinary response rate were reached, as it reached 100%.

Inclusion criteria:

All physicians who were officially employed (permanent job) and practicing medicine at PHC centers at the time of the study and working in MOH and UNRWA were included in the study and all PHC centers which belonged to the MOH and UNRWA.

Exclusion criteria:

- All physicians who not officially employed (not permanent job), or don't practice medicine (at PHC centers), in the same circumstances was excluded.
- PHC doctors working outside MOH and UNRWA.

Study dependent variables:

The definitions of terms used in this study are as follows.

Physician:

Any licensed general practitioner or pediatrician, who can deal and manage children at primary health care centers in government and UNRWA sectors, with formal employment status.

Protocol:

It is a binding reference covering procedures. It illustrates step by step the implementation of the procedures. Protocols are more detailed than guidelines (Maram, 2004).

Compliance:

According to methods used for physicians' compliance use assessment, the level to which the physician follow and be adherent in his/her clinical application to the ARI and CDD protocols in managing the sick children under fives. These terms are used only in this study and cannot be generalized. As an aforementioned, the term compliance is used synoptically with practice and/or use. Subsequently, the compliant physician is the one who behaves towards management of sick children under fives with cough or diarrhea in line with ARI and CDD protocols. In contrast, the non compliant physician is the one who do not follow or adhere to ARI and CDD protocols in managing the sick children under fives with cough or diarrhoea.

Classification step:

It means determination of the type and severity of the disease of the child by using the data collected through the previous assessment step of the protocol. In ARI protocol, there are many classifications which are very severe disease; severe pneumonia, mild pneumonia and no pneumonia cough or cold. Also there are different classifications

for ear and throat problems. In CDD protocol, there are many classifications which are severe dehydration, some dehydration and no dehydration (Khoja et al, 1999). Prescription were assessed to weather they follow the classification step of the protocol or not using yes and/or No. Then summation was made to estimate the percent of prescription that were written according to the protocol and those that were not written according to the protocols.

Treatment Step

In this step, decision will be taken to treat the case at PHC center by the treatment plan of the protocol, or referring the case to the hospital. All of that depending on the previous classification step of the protocol (Khoja et al, 1999).

Prescription were assessed to weather they follow the treatment step of the protocol or not using yes and/or No. Then summation was made to estimate the percent of prescription that were written according to the protocol and those that were not written according to the protocols.

Knowledge:

In this study the subject's knowledge were studied and presented in two ways:

Firstly, as a descriptive tool to clarify areas that subjects know and areas that subjects don't know. The judgment is made based on the concepts as illustrated in the protocols.

Secondly the total knowledge; the correct answers were assigned certain values such as knowing (1) not knowing (0) and then the total knowledge is calculated and scores were given. Those who know more according to the protocols were given higher scores depending on their answers. The sum score is then used for comparisons as we do in Likert scale. The literature indicates the validity of this approach in changing

the qualitative (categorical) data into quantitative numerical data (Burns and Grove, 1997)

Instruments:

Two instruments were used in this study. The first instrument was interviewed structured questionnaire, designed and used for data collection (Annex 6, English version) and (Annex 7, Arabic version).

The second instrument was extraction sheet designed for reviewing some of medical prescriptions relevant to the study purpose, as 10 prescriptions were randomly selected from the pharmacy stock at each health facility.

Construction of the instruments:

The researcher constructed the questionnaire based on his review of the literature, his knowledge and practices in PHC and his experiences in ARI, CDD protocols field.

The developed questionnaire consisted of different parts and took approximately 20 minutes to complete.

Firstly, the questionnaire explored the requested information on demographic and socio-economic profile of the physicians including age, sex, place of work, level of education and last qualification, years of experiences and so on. Then items that explored the physicians' training condition, factors affecting the physicians' knowledge and practice/ compliance regarding the protocols were also included.

Lastly, the questionnaire included two opened questions to give the physicians a full chance and encouragement to mention their opinions or any additional comments.

The second instrument was extraction sheet, designed for reviewing some of medical document relevant to the study purpose, as ten prescriptions were taken from each health care facility and evaluated for the extent to which they reflect physicians'

compliance in reference to the two main steps of protocols (classification and treatment).

The validity of the two instruments were measured by getting opinions of experts in the health, public health, management and other relevant profession, after that pilot study was conducted which added a good contribution to the validity of the instrument.

Content related validity:

Content related validity examines the extent to which the method of measurement includes the entire major relevant to the construct being measured (Messick, 1989; Burns and Grove, 1997). Content related validity obtained from three sources: the literature, representatives of the relevant populations, and content experts (Hamad, 2001).

Content Validity Index:

Ten different experts from different background including researchers, public health practioners management and experts in health were chosen to evaluate the initial research instruments. Specific information was given to all of them, including objectives of the study, and operational definition. The researcher adopted the content validity index (CVI) developed by Waltz and Bausell (1981) as a tool to determine the validity of the items provided in the questionnaire. Using this instrument, experts rated the content relevance of each item using a 4 point rating scale. The following scale was adopted: 1= not relevant item and should be omitted; 2= not relevant unless major changes are introduced; 3= relevant but needs minor modifications; 4= very relevant and succinct (Waltz and Bausell, 1981; Burns and Groves 1997).

The experts rated the content relevance of each item, as a result many item were added, modified or deleted.

Pilot study:

Ten physicians (who work as managers rather than physicians) were chosen abruptly from both health sectors and interviewed, and then pilot data entry and analysis were done. All the subjects who were included in the pilot study were cooperative with the researcher who conducted himself the interview. The average time for each interview was about 20 minutes. At the end of the pilot study, comprehensive revision of the questionnaire was made. Some changes and modification were considered and introduced.

Ethical matters:

The researcher maintained throughout the research an adherence and commitment to the ethical principals developed by Helsinki Declaration. An approval to conduct the study was obtained from Helsinki Committee (ethical committee in Gaza–Strip), (Annex 8). Every physician included in the study was given an explanatory form about the research (Annex 9). Confidentiality of information was emphasized and maintained. An official letters was sent to MOH (Annexe10) and UNRWA. A permission letters were secured from PHC Directorate (Annex 11) and UNRWA (Annex 12) and sent to all PHC centers in MOH and UNRWA health sectors.

Training of data collectors:

Ten interviewers (non physicians), whom work is relevant to study from governmental and UNRWA health sectors, were trained by the researcher in the presence of his supervisor and advisor who were actively participated. Every question was reviewed and understood by the interviewers. A set of papers and copies of official permissions and Arabic translated copy of questionnaire to avoid questions

variations between interviewers, list of subjects and health facilities names were prepared by the researcher and given for every interviewer.

Data collection:

The questionnaire was administered through face to face interview by the data collectors who were trained to ensure they were able to use the questionnaire properly during data collection. The team of data collection briefly explained the purpose of the study to the physicians before starting the interview, then, those physicians who agreed to participate voluntarily were interviewed. At the end of the interviews, the questionnaires were checked by the researcher and data collector.

Data management and statistical analysis:

The researcher himself conducted the analysis with consultation and assistance from his supervisors, using the statistical Package for Social Sciences (SPSS version 10).

The researcher followed the following steps:

1. Over-viewing the field questionnaire
2. Coding the questionnaires
3. Designing data entry model.
4. Defining variables.
5. Data entry.
6. Cleaning of data
7. Frequency tables for all the study variables.
8. Cross tabulation and other relevant statistical tests.

Constraints and limitations of the study:

- The current political conflict and instability in Gaza Strip is an important constrain in conducting the study.
- Available related studies and research resources were limited.

- Lack of relevant financial resources.
- Time limitation.
- NGOs and Private physicians were not involved.
- The study focused only on ARI and CDD the main component of IMCI rather than taking the entire structure of IMCI strategy as recommended by the WHO. However, the lesson learned from this study could be used in future in implementing the entire IMCI strategy.
- The researcher focused on physicians because they are the main stakeholder in this issue. Although other categories important, they were excluded from this study because ARI and CDD focused more at physicians.

Chapter 4

Results

This chapter presents the results of the statistical analysis of the collected data.

Descriptive analysis presents the characteristics and distribution of physicians in both governmental and UNRWA's PHC settings in all Gaza provinces.

The sources of the data were the received medical prescriptions and the structured interviewed questionnaires for all the study population. The descriptive analysis includes factors which identify the main dimensions of the physicians' compliance regarding the ARI and CDD protocols implementation. The inferential statistics reveal the results of statistical procedures that clarify the nature of the relationships between physicians' compliance and selected variables using relevant statistical testes such as Chi-square, the one way ANOVA, and Independent t-test.

I. Finding derived from physicians' responses (questionnaires):

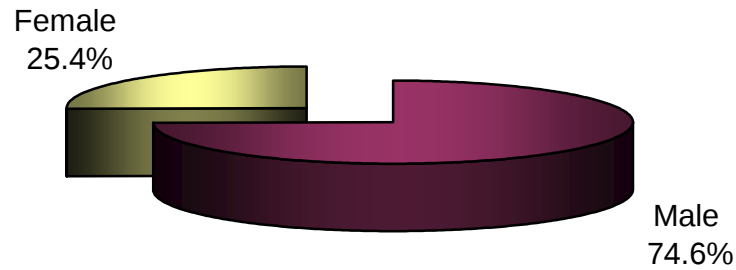
Descriptive Analysis:

Characteristic of study population:

Table 1: Summary table of the characteristics of the study population

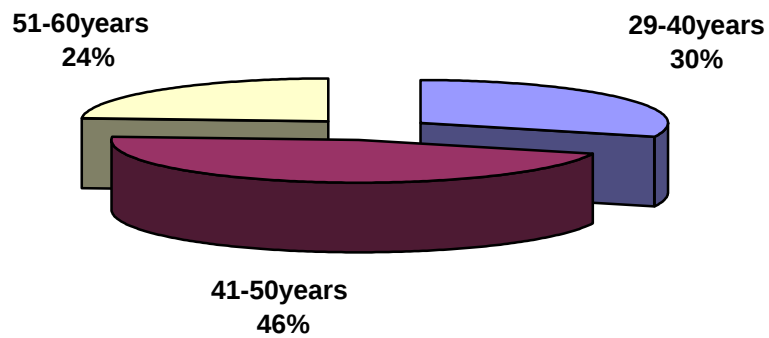
Variables	Number	%
Sex		
Male	138	74.6
Female	47	25.4
Total	185	100
Age categories		
29-40 years	56	30.3
41-50 years	85	45.9
51-60 years	44	23.8
Total	185	100
Province		
North Gaza	31	16.8
Gaza	69	37.3
Mid-Zone	34	18.4
Khan younis	30	16.2
Rafah	21	11.4
Total	185	100
Professional title		
General Practioner	83	44.9
Pediatrician	76	41.1
Others(F.D, GPSp)	26	14.1
Total	185	100
Last academic qualification		
BSc	138	74.6
Post graduate	44	23.8
Others	3	1.6
Total	185	100
Years since graduation		
1-10 years	66	35.7
11-20 years	67	36.2
21-30 years	52	28.1
Total	185	100
Place of graduation (Last qualification)		
Palestine	18	9.7
Arab countries	92	49.7
Foreign countries	75	40.5
Total	185	100

Figure 1: Distribution of the study population by gender



As shown in Table1 as well as Figure 1, most of the study populations (74.6%) were male, where female physicians represent 25.4 % of the study population

Figure 2: Distribution of the study population by age



As shown in Table 1, as well as Figure 2 nearly, half of the study population (46%) age was between 41-50 years followed by the age group between 29-40 years which

represented 30.3 %. The third and the last age group were between 50-60 years and represented 23.8%. The mean age of the study population was $44.55 \pm \text{SD } 8.14$ years.

Figure 3: Distribution of the study population by province

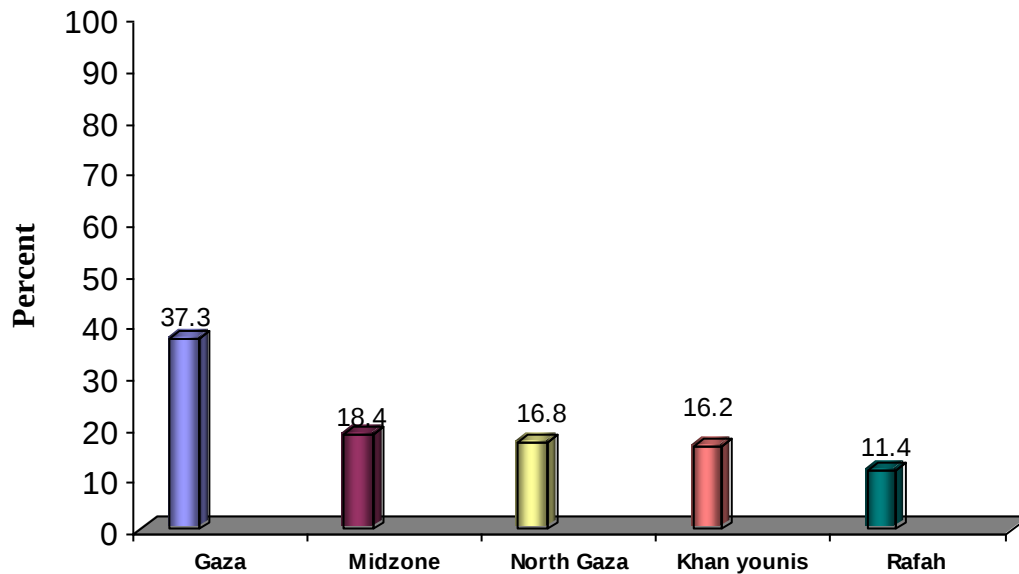
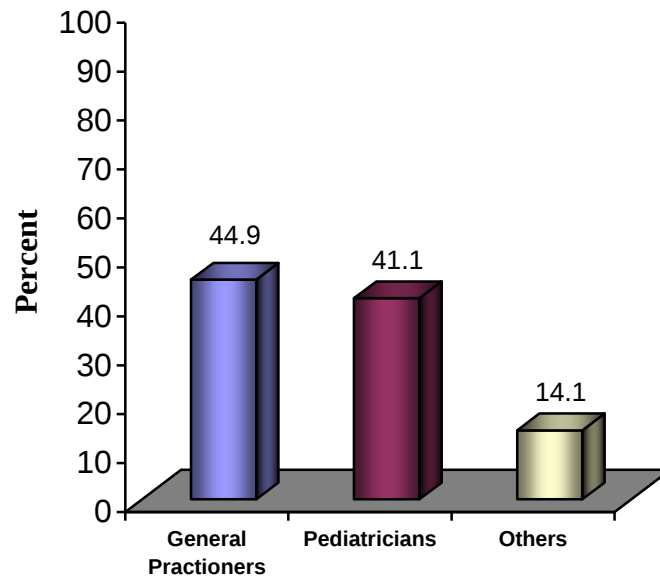


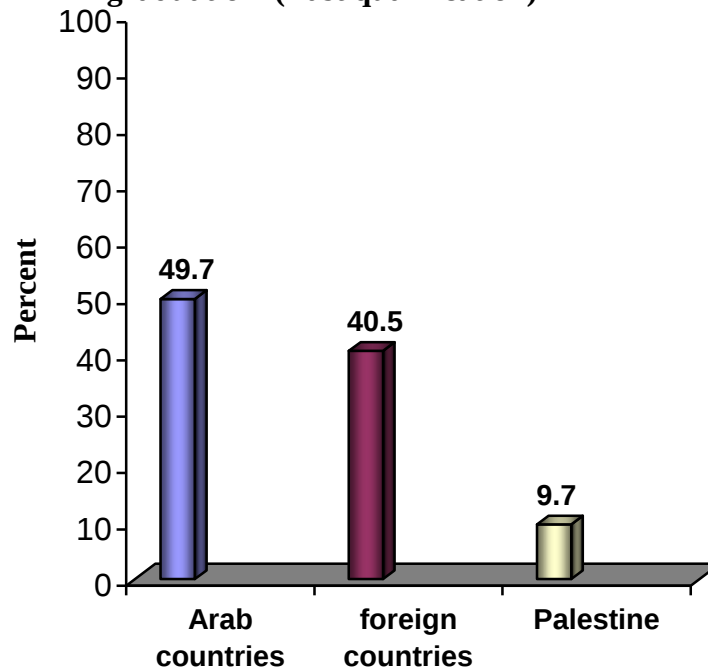
Table 1, Figure 3 shows that more than one third (37.3 %) of the study population worked in Gaza province, followed by those who worked in Mid-zone (18.4 %). Then, North Gaza represented 16.8 %, the forth province was khan-Younis which represented 16.2 % and the least figure was from Rafah province which represented 11.4 % of the study population.

Figure 4: Distribution of the study population by professional title



As shown in Table 1 as well as Figure 4, the General practitioner (GP) represented the highest percentage among the study population (44.9 %), followed by pediatrician which represented 41.1 % of the study population, while the least group was family medicine and other specialists (14.1 %).

Figure 5: Distribution of the study population by place of graduation (Last qualification)



Regarding the place of graduation (Last qualification) of the study population Table 1, Figure 5 shows that, about half of the study population was graduated from Arab countries followed by those who were graduated from foreign countries (40.5 %). The least reported place of graduation was Palestine which represented only 9.7 % of the study population.

Additionally, the same table (1) illustrates the last academic qualification of the study population. Most of study populations (74.6%) were holding BSc followed by those who had post graduate qualifications (23.8 %), the least group (1.6%) had other qualifications such as family medicine specialty.

Regarding years since graduation, the same table shows that 36.7% of subjects were graduated since 11-20 years followed by those who were graduated since 1-10 years whom represented 25.7% and the least group were those who graduated since more than 21years as they represented 28.1% of the total population.

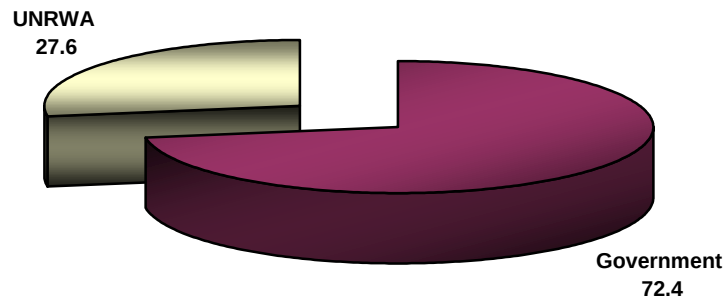
Table 2: Distribution of the study population by work related variables

Variables	Number	%
Working in other fields before working in PHC sector		
Yes	116	62.7
No	69	37.3
Specific sites of working before working in PHC sector		
General hospitals	65	56.0
Pediatric hospitals	25	21.5
Specialized departments	20	17.2
Others(private, clinic, NGOs)	30	25.8
Duration of work		
0-5 years	93	80.2
6-10 years	17	14.7
11+ years	6	5.2
Total	116	100
Years of experience		
1-10 years	80	43.2
11-20 years	78	42.2
21-31 years	27	14.6
Total	185	100
Ownership of the health facility		
Government	134	72.4
UNRWA	51	27.6

Table 2 shows that 62.7% of study population have had worked in other fields before working in PHC sector, while 37.3% had not. Specifically, of the study population, 56% worked in general hospitals followed by those who worked in other places as shown in the above table.

In respect to the duration of the work in the other fields other than PHC sector as shown in the table the years of duration of work was categorized into three groups: less than 5 years, 6-10 years, 11 years and more. The highest duration of work was the group of less than 5 years and represented 80.2% followed by 6-10 years and represented 14.7% and the lowest group was 11 year and more and represented 5.2%. Regarding to years of experience of the study population it was categorized into three groups. The highest group was from 1-10 years and represented 43.2 % and the lowest group was 21-31 years and represented 14.6 %.

Figure 6: Distribution of the study population by the ownership of the center



As shown in Table 2, as well as Figure 6, the majority of the study population was working in governmental sector (72.4%) while the remaining (27.6%) were working in UNRWA.

Requirements for ARI, CDD Protocols Implementation:

Training:

Table 3: Distribution of the study population by learning about ARI and CDD protocols

Variables	No.	%
Studying curriculum that included IMCI mainly ARI and CDD		
Yes	43	23.2
No	142	76.8
Learning the concepts of IMCI		
Yes	81	43.8
No	104	56.2
Source of learning the concepts of IMCI		
Learned as apart of study in the college	17	21.0
learned through continuous education program	48	59.3
Self learning	16	19.7

Table 3 describes the distribution of study population by learning about ARI, CDD protocols. About 23.2% of the total population reported studying curriculum that included IMCI mainly ARI, and CDD. However, 43.8% of subjects learned the

concept of IMCI which is considered a newly developed strategy that dose not only including ARI, CDD protocols but also deal with the child as one comprehensive unit. The majority of subjects (59.3 %) reported that they learned the concepts through continuous education program followed by those who learned the concepts as a part of their study in the college (21 %) and those who learned the concepts by self learning represented 19.7% of the study population.

Table 4: Distribution of the study population by training related variables

Variables	No.	%
Receiving any training courses on ARI and CDD protocol or any of them		
Yes	98	53.0
No	87	47.0
Perceived need for more training on ARI and CDD protocols		
Yes	150	81.1
No	35	18.9
The duration of the training courses on-ARI or CDD protocol		
1-5 days	51	52.0
6-10 days	19	19.4
11+ days	28	28.6
Total	98	100
Timing of receiving the training		
<1995	5	5.1
1995-2000	89	90.8
2001-2004	4	4.1

As shown in table 4, nearly half (53%) of the study population reported receiving any training courses on ARI and CDD protocols, where, the majority of the study population (81.1%), expressed their desire for attending more training. Regarding the duration of the training courses on ARI or CDD protocol, half of the study population (52 %) trained for 1-5 days followed by 28.6 % who had been trained for more than 11 days, and the last group, those who trained in courses for 6-11days and represented 19.4%.

Regarding the date of receiving the training, 90.8% of the study population who received training, reported that they received it between the years 1995-2000, while

5.1% received their training before the year 1995, and 4.1% received the training between 2001 and 2004.

Protocols:

Table 5: Distribution of the study population by the perceived problems that facing the implementation of ARI & CDD protocols

Variable	No.	%
Work Over load	117	65.0
No follow up from program management	85	47.2
Facilities needed are not available	72	40.0
No motivation	57	31.8
No acceptance from community	54	30.0
No adequate training	53	29.4
Not endorsed by the health system	47	26.1
Health workers are not interested	34	18.9

As shown in table 5, the majority of study population (65%) reported that work overload was the main problem preventing the implementation of ARI, and CDD protocols. The second cited problem was the absence of follow up from program management (47.2%) followed by the lack of facilities and resources (40%), lack of motivation (31.8%) and the acceptance of the program from the community (30%). Other cited reasons included inadequate training (29.4) and the lack of endorsement of the program by the health system. It is worth putting into consideration that some of the study population reported more than one response/ problem.

Equipment:**Table 6: Availability of equipment items and facilities needed for implementation and other related variables**

Variables	Available	
	No.	%
Availability of essential equipment items		
ENT set	121	65.4
Referral forms and records	74	40.0
Wall chart of protocols	60	32.4
Handout protocols	28	15.1
Mother card	23	12.4
Timer for respiratory rate	10	5.4
ORT corner facilities	4	2.2
Having essential drug list in the health facility		
Yes seen	79	42.9
Yes not seen	43	23.4
No	62	33.7
Knowing the essential drugs needed for primary health care		
Yes	160	86.5
No	25	13.5
Prescribing any medication according to the family request		
Yes mostly	29	15.7
Yes sometimes	26	14.1
No	130	70.3

Table 6 provides a general picture about the availability of equipment and facilities needed for implementation of ARI, CDD, where 65.4% of study population reported that they had ENT set in their center, 40% of subjects reported the availability of referral form and 32.4% indicated the presence of wall chart of protocols. Only 15.1% mentioned that Handout protocol was available, while the least percent of study population (2.2%) indicated the availability of ORT corner facilities. Similarly, regarding the availability of essential drug list in the health facility, nearly half (42.9%) of the study population reported that they had the list (was seen by the collectors). In contrary, one third (33.7%) reported that they did not have the essential drug list. Regarding the knowledge about the essential drugs needed for

PHC, the majority of study population (86.5%) reported that they were aware about that and only 13.5% reported their lack of knowledge in this regard.

The same table illustrates that the majority of study population (70.3%) reported that they did not prescribe medicines according to the family request. In contrast, 15.7% reported that they mostly prescribed drugs according to family requests and 14.1% of study population mentioned that they sometimes prescribed medications according to the family request.

Management support:

Table 7: Distribution of study population by the availability of supportive measures for protocols implementation

Variable	No.	%
Thinking that the current health system regarding the management of childhood illness needs improvement		
Yes to high extent	97	52.4
Yes to some extent	86	46.5
Not at all	2	1.1
Having facilities for referring an emergency (very severe disease) cases to the nearest hospital		
Yes regularly	126	68.1
Yes sometime	56	30.3
No	3	1.6
Sending monthly reports about the activities of ARI, CDD protocols to the supervisor at district level		
Yes	11	5.9
No	174	94.1
Receiving a feedback about the monthly report		
Yes	1	9.1
No	10	90.9
Visiting of the supervisor or program manager to the health facilities regularly		
Yes	2	1.1
No	183	98.9
Discussing with the management the problems encountered in the implementation of ARI, CDD and possible corrective strategies.		
Yes	40	21.6
No	145	78.4

The results presented in table 7 about the management system related variables indicated that 52.4% of the study population considered to high extent and 46.5% to

some extent that the current health system regarding the management of childhood illness needs improvement.

Concerning the presence of facilities for referring an emergency cases to the nearest hospital, about 68.1% of the study population reported that the referral system was regularly present, while about one third (30.3%) reported that it is available sometimes.

Regarding monthly reporting about the activities of ARI, CDD protocols to the supervisor at district level, the majority of the study population (94.1%) reported that they did not send any reports. However, about 91% of the study population who send monthly report, were not receiving feedback about their reports. Regular visiting of the supervisor or program manager to the health facilities were reported only by 1.1%. Regarding discussing the problems encountered in the implementation of ARI, CDD and possible corrective strategies with the management level, the majority of the sample (78.4%) reported that these issues were not discussed, while 21.6% of them reported that they have discussed the problems with the management.

Knowledge and Practices

Table 8: Physicians knowledge about the diagnosis of ARI and CDD according to the protocols

Variable	Yes		No	
	No.	%	No.	%
The clinical signs used to classify pneumonia				
Stridor in calm	97	52.4	88	47.6
Chest indrawing	142	76.8	43	23.2
<i>Fast breathing</i>	170	91.9	15	8.1
All of the above	98	53.0	87	47.0
The dangerous signs that forced the PHC physician to refer urgently the sick child with any of the following signs:				
Unable to drink or breastfeed	172	93.0	13	7.0
Vomiting every thing	172	93.0	13	7.0
History of convulsions	170	91.9	15	8.1
Lethargy or unconsciousness	175	94.6	10	5.4
If the child is convulsing now	174	94.6	11	5.4
<i>All of the above</i>	163	88.1	22	11.9
None of the above	0	0.0	185	100
The signs that classify dehydration.				
Fever and vomiting	0	0.0	185	100
Puffiness, hypertension and an irregular rapid pulse	1	0.5	184	99.5
<i>Sunken eyes, skin retracting slowly, dry mouth and tongue and restless, irritable condition</i>	184	99.5	1	0.5
Other specify	0	0.0	185	100
The advice that is given to the mother to deal with diarrhea at home				
Give more fluid than usual, discontinue feeding and look for signs of dehydration	5	2.7	180	97.3
Give more fluid than usual, continue feeding and give anti-diarrhoeal agents	10	5.4	175	94.6
<i>Give more fluid than usual, continue feeding, look for signs that indicate child should be taken to a health worker</i>	168	90.8	17	9.21
Reduce fluid intake discontinue feeding, look for signs of dehydration	1	0.5	184	99.5
Steps used for the standard case management in ARI, CDD				
Assessment	3	1.6	182	98.4
Classification	0	0.0	185	100
Treatment	3	1.6	182	98.4
<i>All of the above</i>	171	92.4	14	7.6
None of the above	8	4.3	177	95.7

NB: data presented in *Italic Roman writing letters within the table reflect the true answers according to the protocols.*

As shown in table 8, the majority (91.9%) of the study population was knowledgeable about fast breathing as the significant sign used to classify a case of pneumonia and only 8.1% did not know that. Regarding the knowledge about the dangerous signs that force the PHC physicians to refer urgently the sick child, about 88% of the study population reported the correct answer of the dangerous sign as cited in the protocols. Similarly, 99.5% of study population chooses the true answer regarding the signs used to classify dehydration in infants (see table 8).

Congruently, about 91% of the study population selected the correct answer regarding the advice that is given to the mother to deal with child with diarrhea at home (Give more fluid than usual, continue feeding, look for signs that indicate that child should be taken to health worker).

Lastly, 92.4% of study population, answered correctly the question regarding the steps used for the standard case management in ARI, CDD (all of the above, which include assessment, classification and treatment).

Table 9: Knowledge about drugs used according to the protocols

Variable	Yes		No	
	No.	%	No.	%
Type of treatment given to a child classified with cough as no pneumonia cough or cold				
Antipyretic, antibiotic, cough syrup	10	5.4	175	94.6
<i>Don't give antibiotics, treat fever and wheeze if present, cough more than 30 days refer the child to hospital</i>	162	87.6	23	12.4
Immediately refer the child to hospital	3	1.6	182	98.4
Other specify	10	5.4	170	94.6
The drug/s of choice used to manage a case of pneumonia in the health facilities.				
Amoxicillin	157	84.9	28	15.1
Cotrimoxazole	62	33.5	123	66.5
Gentamycin	23	12.4	162	87.6
Tetracycline	3	1.6	182	98.4
Plan of treatment used in case of severe dehydration				
Teach the mother how to mix and give ORS	6	3.2	197	96.8
Show the mother how much fluid to give in addition to the usual fluid intake	3	1.6	187	98.4
<i>Start IV fluid immediately if possible, or</i>	180	97.3	5	2.7

<i>refer urgently to the hospital for IV or nasogastric rehydration</i>				
Other specify	0	0.0	185	100

NB: Data presented in *Italic Roman writing letters* within the table reflect the true answers according to the protocols.

As shown in table 9, most of study population (87.6%) had chosen the correct answer

about the type of treatment prescribed in a case no pneumonia cough or cold. Also,

similar findings revealed regarding the drugs of choice that is used to manage a case

of pneumonia in the health facilities. Of the study population 85% had chosen one of

the correct drugs (Amoxicillin) and 33.5% of them had chosen Contrimoxazole which

is also the alternative drug of choice.

Similarly, 97.3% of the study population were knowing the correct answer about the

plan of treatment that should be used in severe dehydration according to the protocols.

Table 10: Distribution of study population by counseling related variables

Variables	No.	%
Providing counseling to the clients on ARI and CDD in the health facilities.		
Yes regularly	77	41.6 %
Yes sometimes	59	31.9 %
Not at all	49	26.5 %
Having enough time to talk to the clients		
Yes	73	53.7 %
No	50	36.8 %
Yes sometime	13	9.6 %
Causes of not providing counseling		
Work over load	16	32.6 %
No facilities or audio visual aids for counseling.	16	32.6 %
No protocols about counseling were available	13	26.5 %
Lack of trained or skilled personnel for providing counseling services	12	24.5 %
Clients not showing any interest in counseling session	3	6.1 %
Presence of suitable place for counseling in the health facilities		
Yes	106	57.3 %
Believing that counseling is valuable to the clients		
Yes	180	97.3 %
Sometime	1	0.5 %
No	4	2.2 %
Community's behaviors regarding ARI, CDD needs improvement		
Yes to high extent	116	62.7 %
Yes to some extent	65	35.1 %
Not at all	4	2.2 %

Table 10 illustrates the distribution of study population by counseling related variables, where about 42% reported providing counseling regularly to the clients about ARI and CDD in the health facilities. In contrast, 27% of study population did not provide counseling at all. Additionally, slightly more than half of the study population (53.7%) reported that they had enough time to talk with the clients, while 36.8% reported not having the required time.

Also the table illustrates the causes for not providing counseling, as 32.6% of study population reported that, work over load and the absence of facilities or audio-visual aids for counseling were one of the main reasons for not providing counseling. Other cited reasons included, lack of protocols about counseling 26.5% and clients not showing any interest in counseling (6.1%). Congruently, the presence of suitable place for counseling in the health facilities was reported by 57.3% of study population.

Regarding the attitudes towards the value of counseling, the majority of the study population (97.3%) reported that it is valuable. Moreover, about 62.7% of the study population considered that the community behaviors regarding ARI, CDD needs improvement to high extent.

Inferential analysis:

Subjects characteristic:

Table 11: Distribution of using ARI, CDD protocols and selected variables

Variable	Using ARI,CDD protocols in practice								P. Value
	Yes		Not in use		Not applicable		Total		
	still in use								
	No	%	No	%	No	%	No.	%	
Sex									0.53
Male	64	90.1	2	2.8	5	7.0	71	70.3	
Female	27	90.0	2	6.7	1	3.3	30	29.7	
Total	91	90.1	4	4.0	6	5.91	101	100	
Province									0.244
North Gaza	7	87.5	0	0.0	1	12.5	8	7.9	
Gaza	37	92.5	1	2.5	2	5.0	40	39.6	
Mid-zone	14	82.4	0	0.0	3	17.6	17	16.8	
Khan younis	17	89.5	2	10.5	0	0.0	19	18.8	
Rafah	16	94.1	1	5.9	0	0.0	17	16.8	
Total	91	90.1	4	4.0	6	5.9	101	100	
Ownership of the center									0.09
Government	50	86.2	2	3.4	6	10.3	58	57.4	
UNRWA	41	95.3	2	4.7	0	0.0	43	42.6	
Total	91	90.1	4	4.0	6	5.9	101	100	
Last academic qualification									0.745
BSc	66	89.2	4	5.4	4	5.4	74	73.3	
Post graduate	22	91.7	0	0.0	2	8.3	24	23.8	
Others	3	100	0	0.0	0	0.0	3	3.0	
Total	91	90.1	4	4.0	6	5.9	101	100	
Age in years									0.407
29-40	23	92.0	2	8.0	0	0.0	25	24.8	
41-50	49	89.1	2	3.6	4	7.3	55	54.5	
51-60	19	90.5	0	0.0	2	9.5	21	20.8	
Total	91	90.1	4	4.0	6	5.9	101	100	
Place of graduation (last qualification)									

Palestine	10	83.3	0	0.0	2	16.7	12	11.9	0.235
Arab countries	47	88.7	2	3.8	4	7.5	53	52.5	
Foreign countries	34	94.4	2	5.6	0	0.0	36	35.6	
Total	91	90.1	4	4.0	6	5.9	101	100	

Table 11 illustrates the relationships between the using protocols in practice and different selected variables. The relationships between using protocols and gender showed no obvious differences between males and females. In the same table, most of physicians working in Rafah (94%) still using protocols, followed by 92.5% of those in Gaza, 89.5% in KhanYounis, 87.5% in North Gaza, and finally 82.4% of those in Mid-zone. The differences among groups in this regard were not statistically significant (P value= 0.244). Congruently, the table shows that the percentage of physicians working at UNRWA facilities who were using the protocols (95.3%) is highest than the MOH (86.2%) ones. The variations among the two sectors although obvious were not statistically significant (P value=0.09). Regarding the age, the younger physicians aged 29-40 years were using the protocols more than the others, followed by those 51-60 years old, and least in use those 41-50years old. The differences between the different age categories were not statistically significant (P value= 0.407). Physicians who trained in foreign countries were using the protocols more than those who graduated from Arab countries and/or Palestine. The variations among groups in this regard were statistically not significant (P value= 0.235). (See Table 11).

Training:**Table 12: Distribution of receiving training courses on ARI and CDD protocols by different variables**

by different variables

Variable	Receiving training courses on ARI and CDD protocols or any of them						P. Value
	Yes		No		Total		
	No	%	No	%	No	%	
Sex							
Male	72	52.2	66	47.8	138	74.6	0.738
Female	26	55.3	21	44.7	47	25.4	
Total	98	53.0	87	47.0	185	100	
Province							
North Gaza	10	32.3	21	67.7	31	16.8	0.034 *
Gaza	34	49.3	35	50.7	69	37.3	
Mid-Zone	23	67.6	11	32.4	34	18.4	
Khan-Younis	17	56.7	13	43.3	30	16.2	
Rafah	14	66.7	7	33.3	21	11.4	
Total	98	53.0	87	47.0	185	100	
Ownership of the center							
Government	56	41.8	78	58.2	134	72.4	0.001 *
UNRWA	42	82.4	9	17.6	51	27.6	
Total	98	53.0	87	47.0	185	100	
Did you use those protocols in your practice							
Yes	76	75.2	25	24.8	101	54.6	0.001 *
No	21	25.3	62	74.7	83	44.9	
Sometime	1	100	0	0.0	1	.5	
Total	98	53.0	87	47.0	185	100	
Prescribing any medication according to the family request							
Yes mostly	12	41.4	17	58.6	29	15.7	0.379
Yes sometimes	15	57.7	11	42.3	26	14.1	
No	71	54.6	59	45.4	130	70.3	
Total	98	53.0	87	47.0	185	100	
Providing counseling to the clients on ARI and CDD protocols in the clinic							
Yes regularly	40	51.9	37	48.1	77	41.6	0.651
Yes sometimes	34	57.6	25	42.4	59	31.9	
Not at all	24	49.0	25	51.0	49	26.5	
Total	98	53.0	87	47.0	185	100	

* Statistically significant

As shown in table 12, attendance training courses on ARI and CDD protocols or any of them was similar among males and females. The results revealed that there were no statistically significant differences between receiving training and sex (P. value= 0.738).

Regarding the relationship between receiving training and province, 67.6% of physicians who worked in Mid-zone were received training, followed by 66.7% of those from Rafah, then 56.7% of those from Khan-Younis, and 49.3% of those from Gaza, the least group, those from North Gaza and represented (32.3%). There were significant statistical differences among the different physicians from the different provinces in attending training courses (P. Value= 0.034).

Similarly, the table illustrates the relationship between receiving any training on ARI, CDD protocols or any of them and the ownership of the center, where 82.4% of study population who belonged to UNRWA were received training and this was more than those belonged to MOH (41.8%). The results showed strongly statistical significant differences between attending training and ownership of the organizations (P. value= 0.001). Additionally, the same table illustrates the relationships between receiving training or ARI and CDD protocols and the usage of the protocols in the practice.

Among physicians who received training, three quarters of those were using the protocols in their practice which was obviously more than those who did not attend training (25.3%). On line with that, among those who did not receive training, 74.7% of did not use the protocols in the practice. This means that, usage of protocols in practice were more among those who received training. The results showed strongly significant statistical differences between the two above mentioned variables (P. value= 0.001). The table also illustrates the relationships between prescribing any medication according to the family request and receiving training on ARI, CDD

protocols. Among physicians who received training, more than half of them do not prescribe any medications according to the family request which higher than those who did receive training and tend to prescribe drugs according to family request in a higher proportion than those who received training. This means that physicians who were trained prescribed medications according the protocols' standards rather than based on family request. The differences among the two groups in this regard were not statistically significant (P. Value= 0.379).

The same table shows the relationships between receiving training and providing counseling to the clients and indicates that, no obvious differences in the provision of counseling were noticed among those who have been trained or not (P. value= 0.651).

Table 13: Distribution of the study population by the need for more training on ARI, CDD protocols and the ownership of the center, sex and province

ARI, CDD protocols and the ownership of the center, sex and province							
Variable	Needing more Training on ARI, CDD protocols						P. Value
	Yes		No		Total		
	No	%	No	%	No	%	
Ownership of the center							
Government	109	81.3	25	18.7	134	72.4	0.883
UNRWA	41	80.4	10	19.6	51	27.6	
Total	150	81.1	35	18.9	185	100	
Sex							
Male	110	79.7	28	20.3	138	74.6	0.415
Female	40	85.1	7	14.9	47	25.4	
Total	150	81.1	35	18.9	185	100	
Province							
North Gaza	25	80.6	6	19.4	31	16.8	0.269
Gaza	57	82.6	12	17.4	69	37.3	
Mid-Zone	26	76.5	8	23.5	34	18.4	
Khan-Younis	26	86.7	4	13.3	30	16.2	
Rafah	16	76.2	5	23.8	21	11.4	
Total	150	81.1	35	18.9	185	100	

As shown in table 13, the respondents' responses which reflect the need for more training were almost identical at the two studied providers. The statistical analysis

indicates that there were no significant statistically differences between the two groups (P. Value= 0.883).

Congruently the relationships between the need for more training and gender shows that, 85.1% of females expressed their need for more training, while 79.7% of male expressed the need for more training. The statistical analysis indicates that there were no significant statistical differences between the two mentioned variables (P. Values= 0.415). The same table shows the relationships between the need for more training and province where 86.7% of the study population who worked in Khan-Younis reported their need for more training, followed by 82.6% of those who working in Gaza, then 80.6% of those who worked in North Gaza followed by 76.5% of those who worked in Mid-zone, and finally 76.2% of those who worked in Rafah. The results shows that, there were no significant statistically differences between the need for more training and the province (P. value= 0.824).

Table 14: Compression between level of subjects' knowledge about the protocols and selected variables

Dependent Var.	Independent Variable		No.	Mean	S.D	t	P. value
Knowledge	Sex	Male	138	6.7971	1.0192	-1.224	0.223
		Female	47	7.0000	.8597		
	Ownership of the center	Govern.	134	6.6418	.9841	-4.924	0.001*
		UNRWA	51	7.3922	.7504		
	Working in other fields before PHC field	Yes	116	6.8966	.9814	.859	0.392
		No	69	6.7681	.9873		
	Learning the concepts of IMCI	Yes	81	7.0494	.9988	2.486	0.014*
		No	104	6.6923	.9459		
	Receiving training courses on ARI,CDD	Yes	98	7.0306	.9995	2.718	0.007*
		No	87	6.6437	.9273		
	The need of more training on ARI,CDD	Yes	150	6.8067	.9603	-1.204	0.230
		No	35	7.0286	1.0706		

	Using the protocol in the practice	Yes	101	7.1287	.9661	4.597	0.001*
		No	83	6.4940	.8886		
	Believing that the counseling is valuable	Yes	180	6.8778	.9552	1.292	0.198
		No	4	6.2500	1.2583		

* Statistically significant

Table 14 shows the comparison between the knowledge of participants about protocols and selected variables. The results revealed that the knowledge regarding the protocols showed differences among sex categories. Female showed more knowledge (7) than male (6.79). However, the differences did not reach statistical significant level among the two categories (P. value= 0.223).

Also in comparing the knowledge among study population in both governmental and UNRWA sector, the result showed that the study population working in UNRWA were have more knowledge (7.39) than those in governmental sector (6.64). The mean differences revealed statistically significant differences between the two variables (P. value= 0.001).

By comparing the knowledge and working in other fields before PHC field, the table 14, showed that the study population who worked in other fields before PHC were more knowledgeable (6.89) than those did not work (6.76). And there were no statistically significant differences between the two variables (p. Value= 0.392).

Similarly the relationships between knowledge about ARI, CDD and the learning of the concepts of IMCI clarifies that those who learned the concepts of IMCI have more knowledge (7) than those who did not (6.69). Results showed that there were statistical significant differences between the two variables (P. value= 0.014).

Congruently the relationships between knowledge and receiving any training courses on ARI, CDD indicated that those who received training had higher level of

knowledge (7) than those who did not (6.64). Results showed that there were statistically significant differences between the two variables (P. value= 0 .007).

Interestingly, the table shows that those who had lower knowledge requested more training than their counter part with a higher level of knowledge. The results revealed that there were no statistical differences between the two categories (P. value= 0.230).

In the same table, the study population who used the protocols in the practice had higher level of knowledge (7.128) than those who do not (6.494) with statistically significant differences between the two variable (P. values= 0.001). The table also shows that those believed that counseling is valuable having higher level of knowledge (6.877) than those who do not believe on that (6.25), but no statistically significant differences between the two variable (P. value= 0.198) were revealed.

Table 15: Distribution of PHC physicians by their knowledge about child case management according ARI, CDD protocols and the ownership

Variable	Ownership of the Center						P. Value
	Government		UNRWA		Total		
	No	%	No	%	No	%	
Knowing the clinical sign to classify pneumonia							
Yes	120	89.6	50	98.0	170	91.9	0.06 *
No	14	10.4	1	2.0	15	8.1	
Total	134	72.4	51	27.6	185	100	
Knowledge about the dangerous signs that require urgent referral							
Yes	114	85.1	49	96.1	163	88.1	0.04 *
No	20	14.9	2	3.9	22	11.9	
Total	134	72.4	51	27.6	185	100	
Knowing the proper signs that classify dehydration							
Yes	133	99.3	51	100	184	99.3	0.536
No	1	0.7	0	0.0	1	0.5	
Total	134	72.4	51	27.6	185	100	
Knowing the proper management of diarrhea at home							
Yes	118	88.1	50	98.0	168	90.8	0.04 *
No	16	11.9	1	2.0	17	9.2	
Total	134	72.4	51	27.6	185	100	
Knowing the standard steps that is used for management							
Yes	121	90.3	50	98.0	171	92.4	0.75
No	13	9.7	1	2.0	14	7.6	

Total	134	72.4	51	27.6	185	100
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- *Statistically significant*

As clear from the table 15, the study population were cross-tabulated by their knowledge about management, according the protocols. About 98% of those working in UNRAWA sector, answer correctly the question about the clinical signs used in order to classify a case of pneumonia, in the same time 89.6% of those worked in government answered the question correctly. The results showed that there were marginally statistically significant differences between government and UNRWA in this regard (P. Value= 0.06).

Furthermore, most of the physicians (96%) in UNRWA sector answered correctly the question about the danger signs that push the PHC physicians to refer urgently the sick child; meanwhile 85.1% of physicians in governmental sector answered that question correctly with statistically significant differences between the two groups (P. value= 0.04).

Regarding physicians' knowledge how to classify dehydration, approximately both government and UNRWA physicians were almost all of them answered correctly the question.

Congruently the level of knowledge at the study population about the advice given to the mother about how to deal with diarrhea at home, 88.1% of those in governmental sector reported their knowledge while the most (98%) of those in UNRWA answered correctly the same question. There were statistically significant differences between the two sectors (P. Value= 0.04). The study population's knowledge about the standard steps of the protocol's management, shows that the majority (90.3%) of physicians who worked in government were answered the true answer, meanwhile most (98%) of those physicians working at UNRWA were answered this question

correctly also. The results showed that the differences among physicians in their knowledge were about to reach statistical significance (P. Value= 0.075).

Table 16: Distribution of PHC physicians by their knowledge about drugs used Within the ARI, CDD protocols and ownership of the PHC centers

	Ownership of the Center						P. Value
	Government		UNRWA		Total		
	No	%	No	%	No	%	
Knowing the proper treatment prescribed in a case of no pneumonia cough or cold							
Yes	113	84.3	49	96.1	162	87.6	0.03 *
No	21	15.7	2	3.9	23	12.4	
Total	134	72.4	51	27.6	185	100	
Knowing the drugs of choice used to manage a case of pneumonia in the clinic							
Yes	30	22.4	28	54.9	58	31.4	0.001 *
No	104	77.6	23	45.1	127	68.6	
Total	134	72.4	51	27.6	185	100	
Knowing the correct plan of treatment used in a case of severe dehydration							
Yes	129	96.3	51	100	180	97.3	0.162
No	5	3.7	0	0.0	5	2.7	
Total	134	72.4	51	27.6	185	100	

**Statistically significant*

As illustrated in the table 16, 84.3% of those who worked in government were answered truly the question about the proper treatment that is prescribed in case of no pneumonia cough or cold, whilst most of physicians from UNRWA (96.1%) reported the true answer also. The differences between both groups regarding their knowledge in this regard, showed statistically significant differences (P. Value= 0.030).

As shown in the same table, the knowledge of the study population regarding the drug of choice used to manage a case of pneumonia in the health facilities was lower (22.4%) among the physicians who worked in government, than their counterparts from UNRWA (54.9%). The statistical analysis demonstrates that there were highly statistically significant differences between the two categories in this regard (P. Value= 0.001).

Whilst , most (96.3%) of study population from MOH had chosen the correct answer about the plan of treatment used in case of severe dehydration, all of the study population from UNRWA (100%) had chosen the correct answer. However, from the statistical analysis, it could concluded that there were no statistical significance differences between the physicians' knowledge in both government and UNRWA sector about the plan of treatment used in case of severe dehydration (P. value= 0.162).

Table 17: Comparison between level of subjects' knowledge about the protocols and selected variables

and selected variables									
Dep. Var.	Independent Variables		Mean	Sum of Square		df	Mean Sqr.	F	P. Value
Knowledge	Age	29-40	6.67	Between groups	2.554	2	1.277	1.33	0.268
		41-50	6.95	Within Groups	175.208	182	.963		
		51-60	6.86	Total	177.762	184			
	Province	North Gaza	6.58	Between groups	14.187	4	3.547	3.90	0.005 *
		Gaza	7.00	Within Groups	163.575	180	.909		
		Mid-zone	7.17	Total	177.762	184			
		Khan Younis	6.80						
		Rafah	6.28						
	Last Academic qualification	BSc	6.89	Between groups	2.629	2	1.315	1.37	0.258
		Post graduate	6.65	Within Groups	175.133	182	.962		
		Other	7.33	Total	177.762	184			
	Days of training	1-5	7.41	Between groups	17.909	2	8.954	10.77	0.001 *
		6-10	6.89	Within Groups	79.000	95	.832		
		11+	6.42	Total	96.908	97			

	Prescribing any medication according to Family request	Yes mostly	6.96	Between groups	.481	2	.241	.25	0.781
		Yes sometime	6.84	Within Groups	177.281	182	.974		
		No	6.82	Total	177.762	184			
	Providing counseling to clients on ARI and CDD protocols in the clinic	Yes regularly	6.93	Between groups	2.089	2	1.044	1.08	0.341
		Yes Sometimes	6.69	Within Groups	175.674	182	.965		
		Not at all	6.89	Total	177.762	184			
	Thinking that the Current health system regarding the Management childhood illness needs improvements	Yes to high	6.72	Between groups	11.382	2	5.691	6.23	0.002 *
		Yes to some extent	7.03	Within Groups	166.380	182	.914		
		Not at all	5.00	Total	177.762	184			

* Statistically significant

Table 17 shows the relationships between the age of the study population and the knowledge about ARI, and CDD protocols. The results exhibit a non statistical significant differences between both groups in this regards (P value=0.268). Scheffe test demonstrated that the highest level of knowledge was among study population aged 41-50 years; the lowest level was among physicians who were aged between 29-40 years with no statistically significant differences.

Concerning the relationships between knowledge level and provinces where study population distributed, table 17 shows that, physicians in Mid-zone scored the highest points in their knowledge about ARI, CDD protocols and the lowest level of knowledge were found among physicians worked in Rafah. It is worth mentioning that, ANOVA test showed a significant statistical differences (P. value= 0.005).

Regarding the last academic qualification and its relationship to the knowledge level about ARI, CDD protocols, ANOVA test showed that there were some differences among different groups in this regard. Scheffe test results indicated that the group others (general practioner specialist, family medicine specialist) elicited the highest

scores in their knowledge while the physicians with post graduate qualification were elicited the lowest scores. The differences between the different groups were statistically not significant (P. values= 0.258).

Regarding, the duration of training and its relation with the knowledge about ARI, CDD of the study population who underwent that training, the results revealed that, there were some variations among the different group. The highest level of knowledge was found among physicians who had 1-5 days training on ARI or CDD protocols, followed by those who had 6-10 days training. The lowest level was found among physicians who had 11 days and more of training on ARI and/ or CDD protocol. The ANOVA test indicated that these variations among the groups were highly statistical significant (P. value= 0.001).

In reference to the relationships between prescribing any medication according to the family request and the level of knowledge of the study population, ANOVA test showed that there were some differences among the different groups in this regard. Scheffe test results indicated that the study population who were mostly prescribing medications according the family request had the highest level of knowledge, and those not prescribing had the lowest level. The differences between the different groups were statistically not significant (P. value=0.781)

Concerning the relationship between providing counseling about ARI, CDD and knowledge, table 17 shows the variations among the different groups of the study population, regarding their knowledge. According to Scheffe test, the physicians who provided counseling regularly scored the highest level of knowledge while those sometimes provide counseling scored the lowest level of knowledge. The ANOVA test indicated that these variations among the groups were not statistically significant, (P. value= 0.341).

Finally, in regard to the belief that current health system regarding the management childhood illness needs improvement and its relation with the knowledge about ARI, CDD protocols, it is revealed that there were some variations among the different groups. The highest level of knowledge about ARI, CDD protocols was found among physicians who thought to some extent that the current health system regarding the management of childhood illness needs improvement, and the lowest level of that knowledge was among those who did think at all that health system need improvement. The ANOVA test indicated that these variations among the groups were highly statistically significant (P. value= 0.002).

Table 18: Distribution by the availability of equipment/facilities and the ownership of the center

Type of equipment/ facilities	Ownership of the Center						P. Value
	Government		UNRWA		Total		
	No	%	No	%	No	%	
Handout protocol							
Available (seen)	20	14.9	8	15.7	28	15.1	0.897
Not available	114	85.1	43	84.3	157	84.9	
Total	134	72.4	51	27.6	185	100	
Wall chart of protocol							
Available (seen)	17	12.7	43	84.3	60	32.4	0.001 *
Not available	117	87.3	8	15.7	125	67.6	
Total	134	72.4	51	27.6	185	100	
Timer for respiratory rate							
Available (seen)	9	6.7	1	2.0	10	5.4	0.201
Not available	125	93.3	50	98.0	175	94.6	
Total	134	72.4	51	27.6	185	100	
ENT set							
Available (seen)	83	61.9	38	74.5	121	65.4	0.108
Not available	51	38.1	13	25.5	64	34.6	
Total	134	72.4	51	27.6	185	100	
ORT corner facilities							
Available (seen)	3	2.2	1	2.0	4	2.2	0.908
Not available	131	97.8	50	98.0	181	97.8	
Total	134	72.4	51	27.6	185	100	
Referral forms and records							
Available (seen)	68	50.7	6	11.8	74	40.0	0.001 *
Not available	66	49.3	45	88.2	111	60.0	
Total	134	72.4	51	27.6	185	100	
Mother card							
Available (seen)	20	14.9	3	5.9	23	12.4	0.096
Not available	114	85.1	48	94.1	162	87.6	
Total	134	72.4	51	27.6	185	100	

* Statistically significant

As shown in Table 18, the availability of equipment and other facilities needed for the implementation of ARI, CDD seen protocols which illustrated in general that 15.1% of study population reported the availability of the hand out protocol. No major differences between UNRWA and MOH physicians were observed in this regard (P. Value= 0.897). Regarding the availability of wall chart of protocols, it was available

only at 12.7% at governmental facilities and at 84.3% at UNRWA facilities. The results indicate that there were statistically significant differences between the variables (P. Value= 0.001). Similarly, UNRWA physicians reported more availability of Timer for respiratory rate than MOH physicians but the results indicate that there were no statistical significances between the two groups (P. value= 0.201). The same is exactly true regarding ENT set which were more available at UNRWA than MOH. No differences were noticed between UNRWA and MOH regarding the availability of ORT corner. In contrast, regarding the availability of referral forms and records 49.3% of the MOH physicians reported the non availability, while most of those in UNRWA (88.2%) said that it was not available also. It is cleared that there were statistically significant differences between the two mentioned sectors in this regard (P. value= 0.001).

Lastly regarding, the mother card, the unavailability were more reported by UNRWA physicians than MOH physicians and the variations did not reach statistical significant level (P. Value= 0.096).

Table 19: Distribution of the availability and amount of drugs used within the protocols by ownership of the center

Variable/Drug	Ownership of the Center						P. Value
	Government		UNRWA		Total		
	No	%	No	%	No	%	
Amoxicillin							
Availability							
Always available	98	73.1	49	96.1	147	79.5	0.001 *
Sometime	36	26.9	2	3.9	38	20.5	
Total	134	72.4	51	27.6	185	100	
Amount							
Adequate	78	58.2	48	94.1	126	68.1	0.001 *
In adequate	56	41.8	3	5.9	59	31.9	
Total	134	72.4	51	27.6	185	100	
Cotrimoxazol							
Availability							
Always available	88	65.7	49	96.1	137	74.1	0.001 *
Sometime	42	31.3	2	3.9	44	23.8	
Not available	4	3.0	0	0.0	4	2.2	
Total	134	72.4	51	27.6	185	100	
Amount							
Adequate	87	64.9	49	96.1	136	73.5	0.001 *
In adequate	47	35.1	2	3.9	49	26.5	
Total	134	72.4	51	27.6	185	100	
ORS							
Availability							
Always available	106	79.1	50	98.0	156	84.3	0.001 *
Sometime	28	20.9	1	2.0	29	15.7	
Not available	0	0.0	0	0.0	0	0.0	
Total	134	72.4	51	27.6	185	100	
Amount							
Adequate	104	77.6	49	96.1	153	82.7	0.001 *
In adequate	30	22.4	2	3.9	32	17.3	
Total	134	72.4	51	27.6	185	100	
Paracetamol							
Availability							
Always available	129	96.3	50	98.0	179	96.8	0.472
Sometime	5	3.7	1	2.0	6	3.2	
Not available	0	0.0	0	0.0	0	0.0	
Total	134	72.4	51	27.6	185	100	
Amount							
Adequate	127	94.8	50	98.0	177	95.7	0.301
In adequate	7	5.2	1	2.0	8	4.3	
Total	134	72.4	51	27.6	185	100	

* Statistically significant –Fisher Exact test for cells that contain figures less than 5

Regarding the availability of the standardized needed drugs for the implementation of the protocols such as Amoxicillin, Cotrimoxazol, ORS and Paracetamol, the study indicate that, these drugs were more available and in adequate amounts at UNRWA facilities than MOH ones. The variations among UNRWA and MOH in this regards were statistically significant in most of these items both in term of availability and adequacy of the amount (see Table 19).

Regarding the reported reasons of not using the protocols (Table 20) such as, lack of training, unavailability of the needed facilities, the program is not endorsed in the health system, health worker are not interested, the program is not accepted by community, no motivation, no follow up from program management and work over load, the study indicates that these reasons were more prominent and appeared at MOH facilities than UNRWA ones. The variations among MOH and UNRWA in this regards were statistically significant in most of these reasons except two reasons, which were the lack of interest of the health workers and the non acceptance of the community for the program (see Table 20).

Table 20: Distribution of the reported reasons of not using the protocols by the ownership of the centers

Variable	Ownership of the Center						P. Value
	Government		UNRWA		Total		
	No	%	No	%	No	%	
No training has been provided							
Yes	54	40.3	5	9.8	59	31.9	0.001 *
No	80	59.7	46	90.2	126	68.1	
Total	134	72.4	51	27.6	185	100	
Facilities needed are not available							
Yes	49	36.6	2	3.9	51	27.6	0.001 *
No	85	63.4	49	96.1	134	72.4	
Total	134	72.4	51	27.6	185	100	
The program is not indorsed in the health system							
Yes	40	29.9	1	2.0	41	22.2	0.001 *
No	94	70.1	50	98.0	144	77.8	
Total	134	72.4	51	27.6	185	100	
Health workers are not interested							
Yes	19	14.2	3	5.9	22	11.9	0.119
No	115	85.8	48	94.1	163	88.1	
Total	134	72.4	51	27.6	185	100	
The program is not accepted by community							
Yes	16	11.9	3	5.9	19	10.3	0.225
No	118	88.1	48	94.1	166	89.7	
Total	134	72.4	51	27.6	185	100	
No motivation							
Yes	33	24.6	2	3.9	35	18.9	0.001 *
No	101	75.4	49	96.1	150	81.1	
Total	134	72.4	51	27.6	185	100	
No follow up from program management							
Yes	38	28.4	2	3.9	40	21.6	0.001 *
No	96	71.6	49	96.1	145	78.4	
Total	134	72.4	51	27.6	185	100	
Work over load							
Yes	35	26.1	1	2.0	36	19.5	0.001 *
No	99	73.9	50	98.0	149	80.5	
Total	134	72.4	51	27.6	185	100	

**Statistically significant*

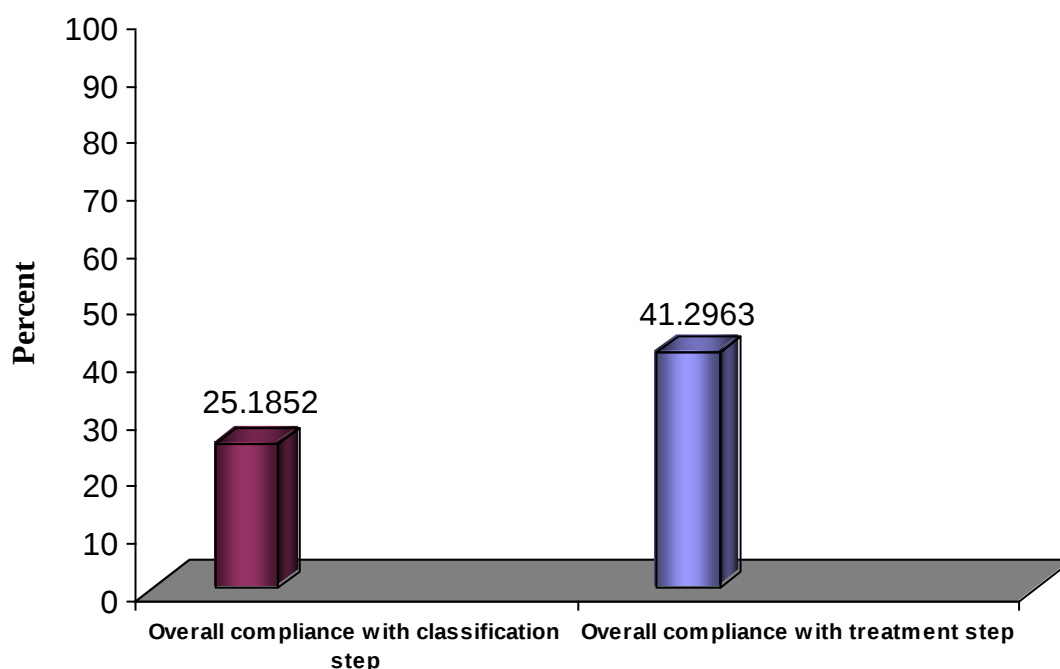
Similar findings were revealed regarding the problems facing physicians in the implementation of ARI, CDD protocols as appears in Annex (13), where UNRWA

physicians faced significantly less problems than MOH ones except work over load which was more prominent in UNRWA than in MOH (see Annex 13).

II. Protocols uses/compliance indicators (finding derived from prescriptions)

It is worth reminding the reader that, this research also included a sample of 540 prescriptions taken from the PHC centers. The idea behind doing that is to assess the use of protocols in another way different than relying entirely on the physicians' responses.

The overall physicians' compliance through evaluation of the two main steps of the protocols implementation; classification and treatment, revealed that the over all percent of compliance with the classification step which reflects the level of adherence and knowledge of the physicians about the different classification key tasks was 25.9%. The overall percent of physicians' compliance with the treatment step, which reflects the degree of the physicians' knowledge and their ability to manage correctly according to the protocols, was 41.3% (35.0 ± 35.55 , range from 0-100).

Figure 7: Over all protocol's compliance Indicators**Table 22: Protocols uses compliance indicators comparing the health sector regarding the ARI, CDD protocol implementation by ownership**

Dependent Var.	Independent Var.		No.	Mean	S.D	t	P. value
Classifying according to the protocol	Ownership of the center	MOH	41	20.2439	26.8782	-2.472	0.014*
		UNRWA	13	40.7692	23.2599		
Treatment according to the protocol	Ownership of the center	MOH	41	30.9756	33.60096	-4.394	0.01*
		UNRWA	13	73.8462	17.577		

* Statistically significant

As shown in Table 22, t-test comparing the implementation of the two main standardized steps in both governmental and UNRWA sectors shows that, the compliance level at UNRWA PHC centers were more prominent (40.7692 ± 23.2579), than the PHC centers in the governmental sector (20.2439 ± 26.3782) in the classification step. The differences between the two sectors in this regard were statistically significant (P. value= 0.014).

Similarly, for the treatment step according to the protocols, UNRWA PHC centers elicited higher compliance level (74%) that MOH PHC centers (31%). The differences between the two sectors in this regard were statistically significant (P. value=.001). In other words, physicians working at UNRWA PHC centers were statistical significantly more compliant with classification and treatment steps, according to the protocols more than their counterparts working at MOH.

Table 23: Comparison between the applied classification and treatment steps according to the protocols in provinces of Gaza strip

	Independent Variables		Mean	Sum of Square		df	Mean Sqr.	F	P. Value
Classification according to protocols	Province	North Gaza	4.444	Between groups	11867.593	4	2966.8	5.252	0.001*
		Gaza	20.0	Within Groups	27680.556	49	564.91		
		Mid-zone	41.333	Total	39548.148	53			
		KhanYounis	17.0						
		Rafah	52.500						
Treatment according to protocols	Province	North Gaza	11.111	Between groups	29835.37	4	7458.8	9.832	0.001*
		Gaza	63.750	Within Groups	37173.889	49	758.65		
		Mid-zone	40.0	Total	67009.259	53			
		Khan Younis	17.0						
		Rafah	85.0						

* Statistically significant

Figure 8: Distribution of the classification step according to the protocol by provinces

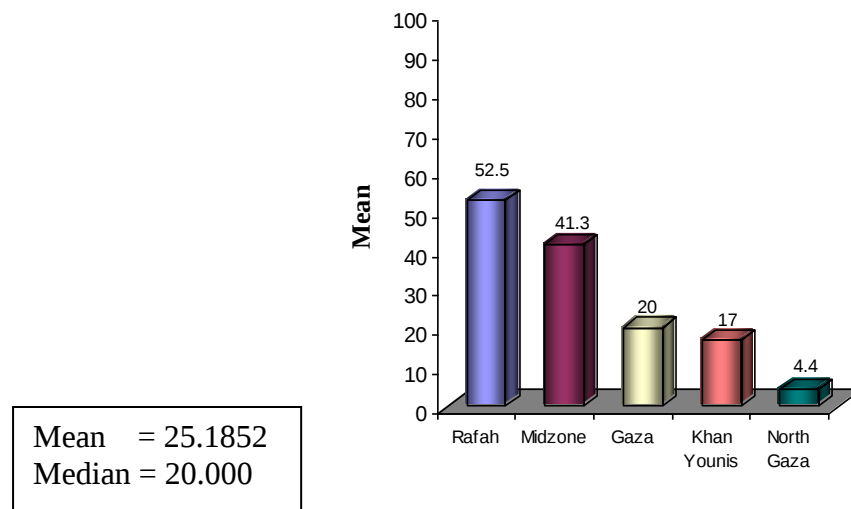


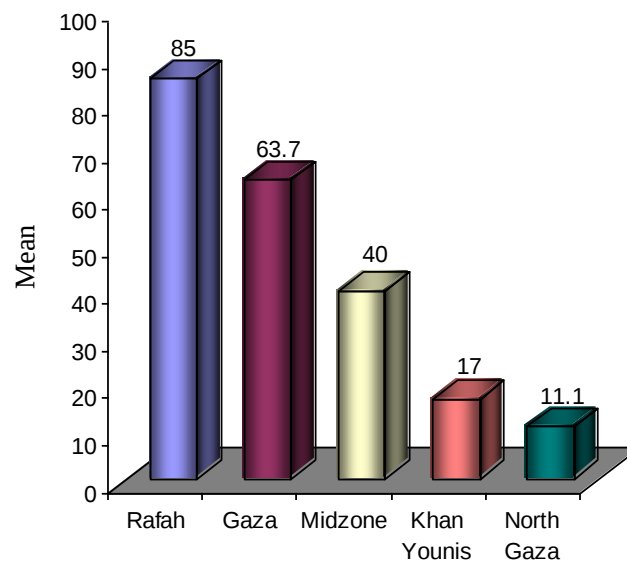
Table 23 as well as Figure 8, shows the relationships between the classification and treatment according the protocols in PHC centers in the different provinces of the Gaza Strip.

ANOVA test showed that there were some differences among the different provinces in reference to applying the classification step. Scheffe test result indicates that the PHC centers in Rafah applied the classification step according to the protocol, more than the other provinces, followed by the Mid-zone province, Gaza, Khan-Younis and the least province was North Gaza. The differences between the different provinces were highly statistical significant (P. Value= 0.001).

Similarly the same table shows the relationships between applying the treatment step according to the protocols in PHC centers and the different provinces. The results

exhibit a highly statistical significant differences among the different provinces in compliance with the treatment step (P. value = 0.001). Whilst, Scheffe test demonstrates that, the highest level of applying this step according to the protocols was in PHC centers in Rafah Province followed by Gaza Province, Mid-zone, Khan-Younis, the lowest level where found at North Gaza Province.

Figure 9: Distribution of the applied treatment step according to the protocols by provinces



Mean = 41.2963
Median = 35.000

III. Open ended questions findings

In reference to the open ended questions which stimulated physicians to suggest possible improvement strategies, the analysis outcomes indicated that, most of the study population (87.5%) reported the need for more training programs that cover all health workers. Of physicians, 51.9% reported the availability of equipment and other facilities needed for implementation. In the same way, about half of the study

population (49.2%) reported that, supervision and follow up programs are needed for the sustainability of the implementation of these protocols.

On the other hand, the need for health education programs for the community is required as expressed by 26.5% of the study population; also motivation and incentives are necessary as reported by 22.2% of the physicians. Of the respondents, 12.9% advised to increase the manpower. Congruently, 10.3% of the physicians requested reducing the overload of patients in PHC centers in order to enable them to apply the protocols and 9.7% of physicians reported that, measures should be taken to ensure the availability of drugs recommended by the protocols, and others to employ effective appointment system.

Few of the study population expressed their wishes in increasing the coordination between the PHC level and secondary level, and between all health providers.

Improving the health system to increase the compliance of implementation was also suggested. Physicians expressed the need for improving and updating the context of the protocols to cope with new international strategies. Using the mass media as a tool to increase the awareness of the community and increasing their participation was also suggested.

Chapter 5

Discussion and Implications

This study is conducted primarily to assess the PHC physicians' compliance with ARI and CDD protocols in governmental and UNRWA health sectors in the Gaza Strip. In addition, the study considered the factors that affect physicians' compliance with the

protocols and its implementation. Additionally, the study points to the main challenges encountered in the implementation of the concerned protocols.

The value of using protocols is significant in decreasing variations in practice pattern, reducing length of stay and lowering costs. Physicians' compliance with ARI, CDD protocols is an important factor that affects the utilization of the medical services and could improve patients' outcomes (Welke et al, 2003). Ironically, non-compliance with ARI and CDD protocols is one of the problems that cause harmful effect on the clients, especially children, and on preventive and/or curative health achievements and the efficient use of the available resources mainly drugs. The value of that is more important in the Palestinian context which is characterized by scarce resources. This study has been conducted, as a health services research, because physicians' compliance regarding the guidelines and protocols became an integral part in improving the quality of health services. Studying the current situation regarding the protocols implementation is of great value to develop corrective strategies if needed. This is of special value in helping for the wider implementation of the IMCI entire strategy. The coming pages in this chapter shed the light on the most important findings that revealed by the study, and the implications of these findings in reference to the objectives of the study.

As aforementioned, the conceptual framework of this study has considered certain dimensions that affect compliance with ARI, CDD protocols. These compliance dimensions were: personal characteristics, training including gaining knowledge and skills, availability of material and equipment, health system and the related variables, monitoring and supervision, barriers to implementation as (work over load,

motivation and manpower). The dimensions of the compliance adopted in this study are illustrated in the coming paragraphs.

PHC physicians' characteristics:

Given that the study topic has never been investigated in the Gaza Strip, the study contributes to providing some useful information on the organizational and demographic variables of PHC Gaza physicians in both government and UNRWA health sectors and their impact on protocols' compliance.

Like most Arab countries males (74.6%) were found to be the professional gender dominant group. Although, only 7% of Palestinian women in general are working (PCBS, 1997), females physicians constituted a much higher percent (25%).

However, female physicians constituted around 35% of the American Health care system manpower (Bouvier, 1998). The researcher claims that although the gender gap is currently narrower than before, still socio-cultural factors affect this phenomenon. For instance, Palestinian families prefer to send their sons rather than their daughters to study medicine particularly abroad. The study indicated that female physicians are generally more knowledgeable, received more training and more compliant than their male counterparts (But not statistically significantly differences were noticed). This could be related to the nature of women who usually more obedient, committed and motivated to work (Hamad, 2001).

Regarding age of the PHC physician, the study illustrates that the study population is relatively younger (30% less than 40 years) than in other countries (Bouvier, 1988). This reflects high recruitment rates in the Palestinian health organizations especially after the establishment of the Palestinian Authority. The study indicated that the physicians who were above the age of 40 had more knowledge about ARI and CDD protocols than young ones. Regarding currently using protocols there were no

noticeable variations among the different age categories. The finding about age is twofold, first it gives policy makers and planners valuable information that help them to understand the different characteristic variables and its effect on compliance and secondly, the relatively young physicians population is encouraging to set more training programs as they could deliver long term impact particularly when given to a young population (long term investment). Similarly, in reference to the years of experience, the study indicated that there was high recruitment rate in health care organizations of relatively young, inexperienced physicians (more than one third of them had an experience between 1-10years). Again, this may reflect the current trend of supporting health care organizations with extra staff after the end of the occupation period. It is worth noting that, since the establishment of Palestinian Authority many services have been established, restructured and or extended. This stimulated the recruitment of extra physicians to cope with the induced changes.

Regarding the last academic qualification or the level of education of the study population, as with other professions in Palestine, it seems that the Palestinian PHC physicians are fairly well educated, 74.6% of them having BSc and 23.8% having post graduate studies as diploma or master degree and the remaining of them 1.6% had other specialties. Findings indicated that the level of knowledge and the level of compliance were generally slightly higher among those who had higher qualifications (attended post graduate courses). Physicians holding BSc qualifications who represented the largest percentage could be the main potential target in terms of provision of more training and more follow up in this regard. Training and Education has been identified as a powerful factor in gaining knowledge as well as compliance regarding the implementation of the protocols (Mullins, 1999).

Regarding the last academic qualification, unlike other health professionals in Gaza Strip, the great majority of physicians (90%) were graduated from abroad being equally distributed between Arab countries and foreign countries. Interestingly, foreign countries study curriculum, as well as the Palestinian colleges' curriculum, contained components related to the IMCI including ARI and CDD protocols. In contrast, graduates from Arab countries didn't study a curriculum that contains components related to the IMCI including ARI and CDD protocols and the variations in this regard were statistically significant. Similarly, those who studied a curriculum that contained components related to the IMCI including ARI and CDD protocols were statistically significantly using the IMCI including ARI and CDD protocols more than the others. Assuming that theory guides practice (Mullins, 1999), conscious efforts need to be exerted at colleges and academic institutions to include the IMCI component in the relevant training programs.

The majority of the studied population had worked in other fields not related to PHC (63%) but no noticeable differences in terms of compliance were concluded between those who worked entirely in PHC facilities and those who worked in other places before working in PHC facilities. This really raises a point about organizational learning and developing employees through work. The literature indicates that organizational success can't be achieved without developing employees at work and they should be empowered at work places both technically and professionally.

The study included the two main health services providers in Gaza which are the MOH and UNRWA. Two thirds were working for the MOH and the rest for UNRWA. Physicians level of knowledge, compliance level, availability of infrastructure and drugs for the implementation of the concerned protocols were all statistically significantly better at UNRWA than MOH. The study confirms that the

nature of work system and the organizational policies and procedures affect the physician's compliance. One possible explanation is that, the generic protocols (IMCI including ARI and CDD) were produced, distributed and funded by WHO and UNRWA belongs to the WHO (WHO, 1999). Therefore, the commitment and follow up of the implementation of these protocols were stronger within the UNRWA sector more than MOH. Additionally, most of UNRWA's physicians were trained while only less than half of those from MOH were trained, and as a result, knowledge, skills and practices were statistically significantly better among those who received training than those who did not.

This finding calls for setting more effective strategies at the organization level to ensure the availability of adequate knowledge, proper training, functioning management systems and appropriate infrastructure for the effective and sustainable implementation of IMCI including ARI and CDD protocols.

However, understanding PHC physicians' demographic characters and backgrounds help policy makers to set appropriate plans and interventions that could increase their knowledge about these protocols and subsequently its implementation.

Knowledge and Training:

Generally, the study reveals that about half of the study population had received training courses on ARI and CDD protocols or any of them, being higher at UNRWA sector than MOH sector. The researcher claims that, although some training programs have been carried out, still there is a room for more improvement. More intensive training programs should be designed and implemented particularly at MOH to ensure sustainability and generalization of the protocols implementation. This approach is on line with the WHO philosophy that training affects the compliance of physicians, (WHO, 1998), which has given a priority to train all health workers on the standard

case management, due to different values. The literature indicates that training builds better knowledge and communication skills, develops hidden talent, ensures consistent quality, provides greater focus, produces more effective/ productive efforts and clarifies the concepts of the target subject (William and Flannery, 1990). Additionally, encouragement of conceptual thinking, needed for successful activities after successful training, make the person exhibits new skills, sees new opportunities, has greater confidence and a sense of direction, contributes to the work and are motivated to action. Training allows every person to play more significant role in the activity process. Trained persons become more organized, focused and strategic force to be reckoned with (William and Flannery, 1990).

The training course for ARI, CDD protocol is designed to teach the case management process to health workers who see sick children and infants (WHO, 1994). The health worker will learn to manage sick children according to the case management charts, including: assessing signs and symptoms of illness, classify the illness, identifying treatment for the child's classifications and deciding if a child needs to be referred, giving important pre-referral treatment, providing treatment in the health facility such as ORS, vitamin, teaching the mother to give specific treatment at home, such as an oral antibiotic, counseling the mother about feeding (WHO, 1994).

The study indicated that most of the training programs were done between the year 1995 to 2000 after the establishment of the Palestinian Authority and the establishment of early initiatives to improve and develop the health care system. There were noticeable variations among the various governorates in reference to the percentage of trainees. Results revealed that training courses covered more physicians in Mid-zone, Rafah followed by Gaza. Decisions on training should consider the provision of training to the different governorates based on equity

principles. Any job rotation and or redistribution needs to consider maintaining a balance among governorates and the availability of the technically skilled people at each health facility.

The study showed that females were more trained than males. More importantly, training affected the use of protocols in the clinical setting. There were statistically significant variations among those who received and those who did not receive training in reference to their use of protocols to the advantage of trained physicians. Therefore, training programs should be developed and implemented to adequately cover the needy population. The improper or in adequate training given to physicians about the use of ARI, CDD protocols is a primary cause of non compliance regarding these protocols (WHO, 1998).

Knowledge about the protocols was higher among UNRWA physicians, than government ones due to the greater coverage of the training programs at UNRWA section. The study findings conclude that the PHC physicians were relatively well educated and had adequate knowledge about most of the protocols components. On the other hand, the knowledge deficit appeared to be more in the field of case management and knowledge about the child danger signs and knowledge about the drugs of choice. These areas require further attention by policy makers and middle level managers.

The positive thing is that the need for more training program was requested and reported by the majority of the study population. Their responses pointed to their appreciation and enthusiasm for training on the ARI and CDD protocols. The researcher suggests the adoption of the IMCI new strategy where training covers most of the acute illnesses including ARI, CDD in a comprehensive way instead of multiple separate training courses.

Regarding the other sources of knowing about ARI and CDD protocols, the study results reveal that, only few physicians gained knowledge about the protocols through studying the IMCI which recently integrated into the curriculum of the Medical Schools (MOH Egypt, 2002). This approach is adopted in different countries. Some (59.3%) physicians learned about the ARI and CDD protocols through continuous education programs and only few through self learning. Learning about the ARI and CDD through these channels was limited due to several reasons such as being too busy, unstable political situation and lack of motivation in the work. The researcher suggests utilizing different approaches to encourage physicians to gain knowledge via self learning through providing the health centers with updated medical references and supporting health libraries. Providing physicians with internet facilities, electronic library facilities, published articles and references are helpful strategy.

Availability of protocols:

Copies of ARI and CDD protocols were only available and seen (by the data collectors) by 15.1 % of the study population. The rationale behind that could be related to the fact that copies of ARI and CDD protocols were distributed only for the trained physicians. The researcher assumes that many physicians who received training and therefore received copies of the protocols keep those protocols at home and regard it as a personal asset. The literature indicates that copies of the protocols should be available all the time at the facilities to be used by physicians during their practice on daily basis (WHO, 1998).

ARI or CDD protocol as it is a standard case management tool used as such (the generic one) without adaptation to be suitable for our situation and culture, may affect the community acceptance of these protocols, due to social, cultural and the available resources which all reflect in physicians' compliance (MOH and UNICEF, 1995).

Therefore, the adaptation of protocols to fit the cultural, social and health context is important. This was not met with the experiences of different global countries as KSA where a national protocol using the WHO guidelines and recent relevant scientific references was developed (Khoja et al, 1999). The later study indicated that most of the study population did not receive any formal instruction about the implementation, so their compliance was low due to absence of policies and lack of follow up. The study also pointed to the reasons of not using the protocols which included inadequate training programs and non availability of material and facilities needed, work over load, lack of follow up programs, the programs were not endorsed by in the health system and lack of motivation. Therefore, distribution and dissemination of an adequate number of copies of the adapted protocols combined with providing training and follow up and monitoring are most likely to yield more positive results.

Health system:

It would be difficult to apply the gained knowledge and skills and to follow the concerned protocols if you lacked the necessary drugs or equipment in your health facilities, or if your supervisor expected you to do things differently. This is why it is important to improve and strengthen the health system in a way that supports and promotes the implementation of the ARI and CDD protocols (IMCI, 1999). Various aspects of the health care system are considered as important pillars which affect the physicians' compliance regarding ARI, CDD protocols as outlined below.

The availability of materials and equipment that is essential to be used by the health worker to assist him/her to reach to the proper assessment, classification and treatment of the cases. According to the standard protocols, these materials include handout protocols, wall chart, timers, ENT set, ORT corner facilities, and mother card

(/WHO, 1999). The study reveals that there were obvious shortage of the needed equipment and materials in all health facilities in both government and UNRWA centers. Wall chart of protocols were statistically significantly more available in UNRWA than government (P value= 0.001), while referral forms and records were statistically significantly more available in government than UNRWA (p. value= 0.001). Unlike the situation in this study, in Egypt the majority of facilities were visited through surveys and (92%) were provided with basic supplies and equipment (MOH Egypt, 2002). The provision of the standardized needed equipment and materials in the health facilities is an important priority that should be addressed and management should keep regular supervisory visits and should monitor the availability and the functional status of this equipment.

As suggested by the WHO, to assure the availability of the materials and equipment needed to sustain and increase the compliance of the physicians and health facilities regarding the protocols, monitoring and surveys must be done to ascertain the availability of these materials at health facilities (WHO, 1999).

The non availability of the materials and equipment needed for the implementation of ARI, CDD protocols is considered one of reasons appeared of not complying with these protocols, so maintaining an adequate supply of these materials and equipment will be effective to improve the compliance level.

Another important issue needed to support the compliance of ARI and CDD protocols is the availability of supportive policies. The use of ARI and CDD protocols was decided to be implemented at primary health care centers by MOH through collaboration with UNICEF as a project aiming to reduce the mortality and morbidity among children below 5 years (MOH and UNICEF, 1995). Also, implementation in UNRWA was through a separate collaboration (UNARWA, 1996). ARI and CDD

were implemented as a program without setting a policy to assure the sustainability of implementation. The study results clarified that the majority of the study population reported that they did not receive any formal instructions to implement these protocols, and some of them considered the non endorsement of the programs in the health system as a cause of their non compliance and also as a problem that is facing the implementation. The result of this study is inconsistent with other research studies conducted in other countries which developed and supported a policy for the use of ARI and CDD protocols. For instance, Uganda supported the CDD/ARI program and planned to phase out it gradually with the introduction of the new strategy IMCI (WHO, 1997).

One area that requires developing a clear policy is related to that fact that, only children below 3 years were covered by free of charge health insurance and seen by the pediatrician. After the age of 3 years, children are seen by the physician who treats adults. Meaning that, the protocols are not applied widely to cover its intentional target age group (children below 5 years). So a policy is needed to ensure the coverage of all the children below 5 years in order to give them the privileges and the benefits of the protocols implementation.

Another related aspect is the management and organization of the work which also affects the level of physician's compliance. Having management systems in place is a key factor in productivity, commitment, satisfaction and compliance (Mullins, 1999). Additionally, having clear management system also ensures the availability of needed items for compliance such as drugs, equipment and follows up.

Another important component that is needed to ensure the compliance and the implementation of the ARI and CDD is the availability of essential drugs recommended for ARI, CDD protocol such as Amoxicillin, Cotrimoxazole ORS, and

Paracetamol (WHO, 1999). Findings indicated that these essential drugs were reasonably available to cover the needs of the served population. However, the availability of these drugs were more noticed at UNRWA health centers than MOH health centers with statistical significant differences. The findings of this study are congruent with other findings in most countries regarding the availability of the essential drugs, through improving their health system, or ever through the support of WHO and UNICEF (WHO, 1998), (UNICEF, 1995). Conscious efforts are needed to ensure the availability of essential drugs at health facilities as recommended by the protocols throughout all the days of the month.

Another factor that affects compliance is the availability of work design. This study points that work over load was one of the reported causes that reduced the compliance of the PHC physicians regarding the protocols, and one of the problems facing the implementation. Fair and reasonable distribution of work is a key factor in employees' commitment and compliance with the work regulation (MOH Egypt, 2002). Whilst, most of the study population reported the availability of the backup facilities needed for referring any emergency (very severe disease) cases to the hospital, the majority of them do not sent any reports about their activities regarding ARI, CDD protocols implementation to the supervisor at district level. Most of the study population reported the lack of supervision that allows feedback and reinforces their performance. So to improve compliance with protocols, the health care services should be managed in a way that facilitates the practical application of these protocols. The presence of effective referral system jointly with an effective supervisory system is crucial factor in physicians' compliance.

Monitoring and supervision:

Monitoring and supervision programs to the health facilities is seen as an important need to reinforce the skills and knowledge of the physicians, in addition to that, the collected data will help the upper management to monitor the progress and to discover the problems facing the implementation. As mentioned in the results chapter, almost all of the study population reported not being regularly visited by the supervisor or program manager. Without supervision the implementation could go in an arbitrary not standardized way (Hutchinson and Barker, 1999). The literature indicates that the implementation of the ARI and CDD programs in the deferent countries have been monitored and evaluated through field visits, surveys, as a result, these countries where ARI, CDD are considered as public health problems for children established a national polices and supporting program objectives and strategies by using specific indicators (WHO, 1998). The study findings imply that serious measures need to be taken at health facilities to empower supervisory and monitoring activities.

There is a consensus in the literature that supervision is needed and must be strengthened (WHO, 1998). The WHO report indicates that 250 supervisory skills training courses were held in 98 countries, with more than 10,000 participants (within 4 years) for supervision and follow up the programs (WHO, 1998). The research assumes that supporting monitoring and supervision and follow up, not only for ARI, CDD protocols but also for all health care guidelines and protocols, will improve the compliance of the physicians and will reflect on other aspects of the organization work.

Barriers of implementation:

Governments pay great efforts with the assistance of WHO and UNICEF to improve child health all over that world, through controlling and managing the ARI and CDD, the two main killer, through implementing a standard protocols designed by WHO

and UNICEF. However, traditionally, health care systems performance does not always reach the expected targets due to numerous barriers including the work over load, inadequate training programs and lack of resources required, poor acceptance of the community, lack of motivation and lack of follow up programs, and non endorsement of the programs in the health system. The study findings show that the mentioned barriers were also reported by the study population, necessitating appropriate interventions from the various managerial levels. There were statistical significant differences among the two main health providers MOH and UNRWA, where the barriers have been more frequently reported in MOH facilities than in UNRWA facilities in most of the barriers, except the work over load which were more frequently reported in UNRWA facilities. Lack of community acceptance was more frequently reported by physicians from MOH. Clients' satisfaction and acceptance is always an important issue that requires attention. Clients' satisfaction was defined by Anderson as or the degree of congruence between patient expectations of and their perception of care actually received (Anderson, Maloney and Bread, 1998). So perception represent the way that client interpret and express their sense and experiences (Faweet, 1989) and because the health is socially underpinned, so different factors influence the community perception. That understanding appeared in the answers of physicians regarding the problems or barriers faced their implementation of ARI, CDD protocols as discussed before, most of that discussion matched with what published in the 50th WHO report 1999 where health worker performance does not always reach expected target, despite considerable training efforts, and also mentioned over work and how to cope with shortage of essential drugs, also the complain that the overlapping signs and symptoms made the case management complex. So the researcher suggests implementing awareness programs,

improving counseling and effective communication and interactions between clients and health providers. Given that the reported barriers for the implementation of the ARI and CDD were many, and could even vary within the same sector, management should take serious steps to study in more in-depth those perceived barriers and act on them. A general strategy could be the provision of training about the possible scenarios and ways of dealing with them and developing a management system that supports the implementation of the concerned protocols.

Compliance indicators:

The researcher studied the overall physicians' compliance through evaluation of the two main steps of the protocols implementation; classification and treatment by examining ten prescriptions from each health facility; data analyzed revealed that the over all percent of compliance with the classification step which reflects the level of adherence and knowledge of the physicians about the different classification key tasks was 25.9%. This indicates a serious finding that 75% of children with ARI and CDD were not classified properly according to the protocols, or the misclassified cases had actually been under-classified, i.e. considered as milder cases than what they actually were, as this would have important clinical implications.

The findings of this study revealed that statistical significant differences between the two main health sectors, government and UNRWA regarding the classification step to the advantage of the UNRWA physicians (P. value= 0.006). Meaning that, the compliance of PCH physicians working in UNRWA clinics, was higher than their counterparts working in government. Again, this could be explained by the fact that UNRWA sector covered nearly most of the physicians through training, and therefore they became more knowledgeable regarding the protocols and this affected their compliance subsequently.

The overall percent of the compliance with the treatment step, which reflects the degree of the physicians' knowledge and their ability to manage correctly according to the protocols, and knowing the severe conditions warranting urgent referral or admission to hospital, was 41.3%. Regarding the treatment step, the results showed that UNRWA facilities were more compliant and committed to this step in the protocols than the MOH ones. The variations between the two sectors were statistically significant. The variations between the two sectors reflect the utilized management system and the effectiveness of the approach used to tackle the issue of protocols implementation there.

In spite that the government sector in Palestine tried to improve the implementation through including the ARI, CDD protocols within the schedule of the training topics for the general practitioner program, still a lot of efforts are needed. The literature indicates that studies and surveys that were implemented in China, Malaysia, Papua New Guinea, Philippines and Viet Name, showed that a very high percentage of children (not defined were correctly classified as having pneumonia but only 50%-60% were treated correctly (WHO, 1998). ARI health facility survey was done in Pakistan in 1994 reveals that 38% of facilities with recommended oral antibiotics, 29% of health workers trained in standard case management, 25 % of facilities capable of providing standard case management, 4% of pneumonia cases managed correctly. These results showed a need for urgent action to improve several components of the programs activities where the federal ARI cell responded rapidly (WHO, 1998).

Incidence of diarrhoeal disease was decline from 0.7 per child per year in 1998 due to CDD program implementation in Sultanate Oman, (MOH Sultanate of Oman, 2002).

In Bangladesh, the drug cost of treating diarrhoeal disease declined by 12% per client,

and for the ARI cases the drug cost was reduced by 53% per client; this helped reduce the total drug cost by about 32% for the clinics in the six month period (Quayyum et al, 2002).

These findings of this study are challenging as the compliance of protocols is not as required and further efforts are needed from the various levels as mentioned earlier. The study showed highly statistical significant differences among Gaza provinces regarding to the compliance with classification and treatment. PHC Physicians from Rafah facilities were highly compliant with the protocols due to receiving more training, and having more knowledge than their counterparts from the other provinces. On the other hand, North Gaza showed the lowest compliance rate regarding the ARI, CDD protocols; this may be due to that, training and knowledge regarding the ARI, CDD protocols were low among the physicians there. The researcher suggests primarily, that the difference not credible to make decisions about the whole compliance with protocols, either the result reflect only the two main steps of the implementation, so the whole compliance and quality of the implementation needs more studies.

Respondents' comments regarding the open ended questions to decide what they would like to do in the field of ARI, CDD programs, results revealed that, most of them suggested the need for more training programs to cover all the health workers as recommended by the WHO, where priority had given to the training of the health worker on standard case management. The second suggestion was, to make the equipment, essential drugs and other facilities needed for implementation available all the time. They also advised to activate the supervision and follow up programs to reinforce the knowledge and skills and to dissolve the problems facing the implementation as much as possible. Increasing the awareness of the community also

was one of the important suggestions. Motivations, supporting manpower, and setting an appointment system were some of the suggestions of the study population.

Integrated management of childhood illness is newly updated an international strategy, designed as a result of intensive research studies to replace the two separate protocols ARI, CDD to reduce the morbidity and mortality among children less than 5 years, and improving the growth and development, as it deal with the child as a one unit. Several steps were taken in GS and WB by MOH and collaboration with all health providers supported by UNICEF, as most of developing countries at global level, were doing where IMCI implemented as a solution to improve the child health (MOH, 2004).

Chapter 6

Conclusion and Recommendations

In an attempt to assess the physicians' knowledge and practices/compliance with ARI, CDD protocols in PHC services in GS, the current study was conducted at the two main health sectors where the protocols implemented is supposed to take place (Government and UNRWA). Both of them (UNRWA and MOH) have a net work of PHC facilities covering all Gaza Governorates.

The study findings might help in improving the physicians' compliance with the protocols as a part of providing better management of childhood illnesses services.

The study sample included all the PHC physicians practicing medical services and

samples of prescriptions (10 prescriptions from each health facility). The response rate was 100%.

Over all the study reveals that, the mean age of the study population was $44.55 \pm SD$ 8.14, most of them were males (74.6%) and 25.4% were females. The majority of physicians (72.4%) were working in government sector while 27.4% were working in UNRWA sector. About half of the study population were general practioners, and 41.1% pediatric specialist. Half of participants graduated from Arab countries, 40.5% were graduated from foreign countries. In reference to the years of experience, the study indicated that there was high recruitment rate in health care organizations of relatively young, inexperienced physicians. This may reflect the current trend of supporting health care organizations with extra staff after the end of the occupation period. It is worth noting that, since the establishment of Palestinian Authority many services have been established, restructured and or extended. This stimulated the recruitment of extra physicians to cope with the induced changes. The results showed that, only 23.2% were studied curriculum that included IMCI mainly ARI, CDD, while 43.3% learned the concepts of IMCI, from different sources. The study indicates that, about half of the study population had received training courses on ARI and CDD protocols or any of them, being higher at UNRWA sector than MOH sector. The researcher claims that, although some training programs have been carried out, still there is a room for more improvement. The study showed that females were more trained than males and knowledge about the protocols was higher among UNRWA physicians, than government ones due to the greater coverage of the training programs at UNRWA section. More intensive training programs should be designed and implemented particularly at MOH to ensure sustainability and generalization of the protocols implementation.

The study results showed that, copies of ARI and CDD protocols were only available and seen (by the data collectors) by 15.1 % of the study population. The rationale behind that could be related to the fact that copies of ARI and CDD protocols were distributed only for the trained physicians. The researcher assumes that many physicians who received training and therefore received copies of the protocols keep those protocols at home and regard it as a personal asset. The literature indicates that copies of the protocols should be available all the time at the facilities to be used by physicians during their practice on daily basis. Moreover, the study indicated that most of the study population (86.6%) did not receive any formal instructions about the implementation, so their compliance was low due to absence of polices and lack of follow up. The study also pointed to the reasons of not using the protocols which included inadequate training programs and non availability of materials and facilities needed, work over load, lack of follow up programs, the programs were not endorsed by in the health system and lack of motivation. Of the study population 49% informed that they were still using the protocols. The study revealed that there were obvious shortage of the needed equipment and materials in all health facilities in both government and UNRWA centers. Wall chart of protocols were more available in UNRWA than government, while referral forms and records were more available in government than UNRWA. Findings indicated that the essential drugs were reasonably available to cover the needs of the served population. However, the availability of theses drugs were more noticed at UNRWA health centers than MOH health centers. This study points that work over load was one of the reported causes that reduced the compliance of the PHC physicians regarding the protocols, and one of the problems facing the implementation. The majority (94.1%) of the study population do not sent any reports about their activities regarding ARI, CDD

protocols implementation to the supervisor at district level. Most of the study population (98.9%), reported the lack of supervision that allows feedback and reinforces their performance as mentioned in the results chapter, almost all of the study population reported not being regularly visited by the supervisor or program manager. The study findings imply that serious measures need to be taken at health facilities to empower supervisory and monitoring activities. The study findings show that the numerous barriers including the work over load, inadequate training programs and lack of resources required, poor acceptance of the community, lack of motivation and lack of follow up programs, and non endorsement of the programs in the health system were encountered in the protocols implementation. More barriers have been more frequently reported in MOH facilities than in UNRWA facilities in most of the barriers, except the work over load which were more frequently reported in UNRWA facilities. Lack of community acceptance was more frequently reported by physicians from MOH. Data analyzed indicated that the over all percent of compliance with the classification step which reflects the level of adherence and knowledge of the physicians about the different classification key tasks was 25.9% and the compliance of PHC physicians working in UNRWA clinics, was higher than their counterparts working in government. The overall percent of the compliance with the treatment step, which reflects the degree of the physicians' knowledge and their ability to manage correctly according to the protocols, and knowing the severe conditions warranting urgent referral or admission to hospital, was 41.3%. Regarding the treatment step, the results showed that UNRWA facilities were more compliant and committed to this step in the protocols than the MOH ones. The study showed highly statistical significant differences among Gaza provinces regarding to the compliance with classification and treatment. PHC Physicians from Rafah facilities were highly

compliant with the protocols. On the other hand, North Gaza showed the lowest compliance rate regarding the ARI, CDD protocols. Most of the study population suggested the need for more training programs to cover all the health workers as recommended by the WHO, The second suggestion was, to make the equipment, essential drugs and other facilities needed for implementation available all the time. They also advised to activate the supervision and follow up programs. Increasing the awareness of the community also was one of the important suggestions. Motivations, supporting manpower, and setting an appointment system were some of the suggestions that were suggested by the study population.

Recommendations:

The study enabled the researcher to put some useful recommendations that could be helpful in improving physicians' compliance if considered by health professionals and policy makers as follows:

1. The study indicated that the compliance/use level is relatively low as 49.2% of the studied physicians reported currently using ARI and CDD protocols. More efforts are needed to increase physicians' compliance with the concerned protocols.
2. The review of prescriptions indicated that the compliance with the classification according to the protocols was 25.2% and with treatment it was 41.3% pointing to the low adherence to ARI and CDD protocols. Efforts should be designed and implemented to support the adherence to the protocols based on the results of this study.
3. The finding that, training improves physicians' compliance calls for designing and implementing more in-service training at PHC facilities. Improvement of physicians' knowledge and skills level regarding the standard case

management and IMCI concepts would increase their compliance and commitment to the protocols. The findings of this research imply that basic medicine programs could contribute in compliance and improving physicians' practice if adequate attention is paid to this issue.

4. To increase physicians' compliance, health care system should provide the health facilities with the equipment and supplies needed as recommended by the WHO and UNICEF.
5. The management capacity of the health care system should be empowered in a way that strengths follow up, supervision and referral services. Conscious efforts are needed to have functional management systems in place in order to support the implementation and follow up of protocols.
6. More efforts should be directed to increase community awareness regarding child health and benefits gained by using protocols. Counseling services should be supported in a way that increases clients' awareness, commitment, and satisfaction with service they receive.
7. The study pointed to the compliance level among physicians in relation to their demographic characters related variables. Policy makers and managers could improve the compliance level by paying attention to the findings of this study in this regard. For example, male physicians needed more attentions in this regard.
8. The study pointed to the compliance level among physicians in relation to certain organizational variables which worthwhile to be considered by managers and policy makers. Based on the findings of this study, more efforts are needed to support compliance at MOH, and other sectors implementing the protocols.

Research recommendations:

- What is the level of compliance among health providers from other sectors such as NGOs and private sector?
- What is the level of compliance among other health professionals such as Nurses?
- Could the result of physicians' compliance with ARI and CDD be generalized to the entire IMCI strategy?
- Would compliance level be increased if the recommendations brought by the study were implemented?
- What is the impact of adoption and implementation of IMCI / ARI, CDD on the child management and children health status?

Chapter 7

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Annex (13)

Table 21: Distribution of the problems facing the implementation of ARI, CDD protocols by the ownership of the center

Variable	Ownership of the Center						P. Value
	Government		UNRWA		Total		
	No	%	No	%	No	%	
Work over load							
Yes	73	54.5	44	86.3	117	63.2	.001 *
No	61	45.5	7	13.7	68	36.8	

Total	134	72.4	51	27.6	185	100	
No adequate training							
Yes	47	35.1	6	11.8	53	28.6	.002 *
No	87	64.9	45	88.2	132	71.4	
Total	134	72.4	51	27.6	185	100	
Facilities needed are not available							
Yes	60	44.8	12	23.5	72	38.9	.008 *
No	74	55.2	39	76.5	113	61.1	
Total	134	72.4	51	27.6	185	100	
No acceptance from community							
Yes	34	25.4	20	39.2	54	29.2	.064
No	100	74.6	31	60.8	131	70.8	
Total	134	72.4	51	27.6	185	100	
Health workers are not interested							
Yes	26	19.4	8	15.7	34	18.4	.560
No	108	80.6	43	84.3	151	81.6	
Total	134	72.4	51	27.6	185	100	
No motivation							
Yes	36	26.9	21	41.2	57	30.8	.060
No	98	73.1	30	58.8	128	69.2	
Total	134	72.4	51	27.6	185	100	
No follow up from program management							
Yes	58	43.3	27	31.8	85	45.9	.239
No	76	56.7	24	47.1	100	54.1	
Total	134	72.4	51	27.6	185	100	
Not endorsed in the health system							
Yes	38	28.4	9	17.6	47	25.4	.001 *
No	96	71.6	42	82.4	138	74.6	
Total	134	72.4	51	27.6	185	100	

* Statistically significant