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Evaluation of the Current Documentation of Death Certificates in the Gaza Strip

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Evaluation of the Current Documentation of Death Certificates in the Gaza Strip

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Evaluation of the Current Documentation of Death Certificates in the Gaza Strip

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Dedication

I dedicate this work to my father, my mother, my wife and my kids who gave me great support for holding the excitement and energy to completing this work , I thank them a lot and ask the Almighty Allah that to give me the strength to be helpful to them in their lives.

Jawad J. Badwan

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 study (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Signed

Name: Jawad J. Badwan

Date: / /

Acknowledgment

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Abstract

Death certificates represent a data source that many health researchers find useful and attractive for analysis. It is an official document that declares a person is died, how we document the death certificate affect our mortality statistics which are very important. Public health policies depend heavily on the mortality indicators derived from death certificates. Because they are the main source of information about the causes of death and illness preceding death. This study aimed to evaluate the current documentation of death certificates in the Gaza Strip.

Triangulated cross sectional quantitative, qualitative study was conducted in order to evaluate the current documentation of death certificates in the Gaza Strip. The instrument used in this study were reviewing death notification certificates through self constructed checklist and in-depth interview with 12 managers. Total of 256 death notification certificates from 1-7-2009 to 31-12-2009 were chosen through systematic sampling method and Epi info program. 0ut of them, 237 death notification certificates were detective, so the detective rate was 92.5%.

The study findings show that for reporting of original city, 28.7% was incomplete and 37% of birth dates were improperly reported. For occupation and addresses 56% and 67.9% respectively were incomplete. For data relating to death hour and if the baby live less than 24 hours, missing of these data were 19% and 97% of the certificates respectively. The findings of the study revealed that 38% of the cause of death is not documented completely nor accurately, 100% of the certificates did not mention if the deceased was pregnant or not at time of death, 10.5% of certificates were not certified by physician completely and 11.8% of PHC registration was incomplete. Finally results show that our physicians are not trained, but familial by experience on how to complete death notification certificate and the mortality and morbidity committees within hospital are not active.

The researcher concluded that there is a serious problem regarding the documentation of death notification certificates in the Gaza Strip in personal and demographic section, cause of death section, certifying physician section and PHC governorate certification section. And that due to lack of formal training, medical inexperience and perceived lack of certificate importance.

The researcher recommended that continuous training for physician on the proper way of completing death notification certificate, reactivation of mortality and morbidity committees within hospitals and initiating of professional committee in the MOH responsible for querying cause of death could help in promoting better and more accurate documentation of death certificates. Also the researcher recommended for further study to investigate the effect of good documentation of death certificates on mortality statistics and health status of the population.

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List off abbreviations

CDR	Crude Death Rate
CODs	Cause –Of-Death statement
DNC	Death notification certificate
GS	Gaza Strip
HIS	Health Information System
HIU	Health Information Unit
ICD-10	International Statistical Classification of Diseases and Related Health Problems The tenth revision
MCCD	Medical Certificate of Cause of Death
MHIS	Managing Health Information system
MOH	Ministry of Health
NCHS	National Center for Health Statistics
NGOs	Non Governmental Organizations
PCBS	Palestinian Central Bureau of Statistics
PHC	Primary Health Care
RHINO	Routine Health Information Network
SIDS	Sudden Infant Death Syndrome
SPSS	Statistical Package for Social Sciences
UNCTAD	United Nations Conference on Trade And Development
UNRWA	United Nation Relief and Works Agency
USA	United States of America
WB	West Bank
WHO	World Health Organization

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Chapter 1: Introduction

1.1 Research background

The mortality data are the most vital statistics data, and the fundamental source of demographic, geographic, and cause of death information (MOH, 2004). Identifying and documenting the cause of death of individuals is an important part of public health practices. It is important to keep such records in order to establish the main causes of death in a community, to track changes in death rates, and to determine how certain causes of death can be prevented. Death record information helps to assess future preventive, curative, and palliative actions that might be taken, such as improving car safety or emergency services, or instituting health-education programs about a certain disease. It is also important to know the age and sex of deceased9 persons in order to identify risks specific to age and gender, and to identify those deaths that can be classified as premature. Of course, identifying the cause of death is also important for legal reasons, especially in cases of violent death, and to help surviving friends and relatives deal with the death of a loved one (Thuiraux and Michel C, 2002).

In the Gaza Strip we have a good birth and death registry system, and have an available death notification certificate (DNC) divided to two parts. The first part is design for personal, demographic, the date of death, and the name, address, and relationship of the deceased of the person reporting the death. The second part of the death certificate is design for writing the cause of death according to the International Statistical Classification of Diseases and Related Health Problems, Tenth Revision (ICD-10).

In this study the researcher will evaluate the current documentation of death notification certificates in the Gaza Strip, examine for how far the documentation of death notification certificates are accurate, and what recommendations could be concluded from it to enhance the documentation of death notification certificate.

1.2 Research problem

The tenth revision of the International Statistical Classification of Diseases and related Health Problems,(known as ICD-10) provides standardized list of causes of death. It also deals with special requirements for the recording of death in cases of maternal death, infant death, or accident death(NCHS, 2000). Most of Gaza physicians know

about it, but the important question, if they are trained in using ICD-10 and are they use those skills in reported death notification certificates. The accuracy of filing the death notification certificate was not examined before in Gaza Strip. This is an important aspect because it gives us a true or false mortality data result, which in turn affects our policies and plans for public health and health care. The following study will explore the strengths and weaknesses points in the mortality documentation system in Gaza strip, and to build on the positive points in order to enhance and improve the documentation pattern of death notification certificates.

1.3 Justification

A death notification certificate is the official document that declares a person is dead, how we document the death notification certificate affect our mortality statistics which are very important. Public health policies depend heavily on the mortality data from death certificates, because they are the only source of information about the cause of death and illness preceding death (Iserson and KennethV,2003). Many problems around the world happened related to the accuracy of death notification certificate. Because of this important situation, the researcher chose to study this problem, hoping that the finding of the study would strengthening the accuracy of death notification certificate documentation both in Gaza strip and at the national level in the Palestinian authority.

1.4 Aim of the study

The overall aim of this study is to evaluate the current documentation of death documents in The Gaza Strip. Thus the study could help in promoting better and more accurate documentation of death certificates which are the main source of national mortality statistics which are important for public health and health care**.**

1.4.1 Objectives of the study

- To examine the accuracy of the reported causes of death in the death notification based on ICD-10 classification.
- To explore the completeness and accuracy of the death notification.
- To assess strengths and gaps in the processes related to death notification certificate documentation, processing, analysis, dissemination and use.

- To provide asset of recommendations that promote the documentation of death certificate, thus enhance the public health and health care.

1.5 Research questions

1. Is the cause of death reported in the death notification certificates confirmed with patient file?
2. Is their routine follow up review for cause of death certified in the death certificate?
3. Is the death certificate form used are well designed to fulfill ICD-10 criteria?
4. Are the physicians trained or familial with ICD-10 criteria?
5. Are the personal, demographic, geographic, and cause of death reported in death certificate complete?
6. Is the process of death certificate data flow are well organized?
7. Are the filing system and documentation well organized?
8. What are the main gaps in the process flow of death notification?
9. Are the causes of death data used for surveillance, research, design of public health and medical intervention, and funding decisions for research and development?
10. To which extent the mortality data are used in monitoring the health status in Gaza strip?
11. Which suggestions could be recommended in order to improve the process of death certificate documentation?

1.6 Study context

1.6.1 Demographic context

The entire area of historical Palestine is about 27,000 square km, which stretches from Ras Alnakura in the north to Rafah in the south. Palestine boarded by Lebanon in the north, the Gulf of Aqaba in the south, Syria and Jordan in the east and by Egypt and Mediterranean sea in the west (Annex 2). The importance of strategic setting of Palestine is that it is cross road three continents, Asia, Africa and Europe, which making it coveted place to many of the rapists over the centuries. Palestine was places under British mandate, finished by "Israel" establishment in 1948, in implementing the Balfour Declaration in 1917 to providing a homeland for Jews, and as a result

many of Palestinians became refugees in West bank (WB), Gaza strip (GS), Jordan, Lebanon, Syria, and others countries. (Abu-Lughod, 1971). Currently Palestinians living in Gaza Strip and West Bank in a total area of 6,020 sq. km. which represents 22% of historical Palestine area, with a total population living in is 3,762,005 individuals in 2006 with capita per sq. km. 625 (MOH,2006).

Gaza Strip is a narrow piece of land, located in the south of Palestine on the coast of Mediterranean sea (Annex 3), it has a 51 km border with occupied Palestine 1948 and an 11 km border with Egypt (Wikipedia). Gaza strip is a high crowded area, where approximately 1,5 million live in 365 sq. km, two third of them are registered as refugees, estimated density is 4,000 people per sq. km, furthermore the population is concentrated in 7 towns, 10 villages and 8 refugee camps (PCBS, 2007). The density is increase in refugee camps, for example over 80.000 refugees live in beach camp where area is less than one sq. km (UNRWA, 2005). Gaza Strip is classified into five governorates: North of Gaza, Gaza city, Mid-Zone, Khan-younis and Rafah.

The population under 15 year old percentage in Gaza Strip is 49% and 2,5% of age 65 years and more (MOH, 2006). The estimated number of death per year is 5000 deaths, and the crude death rate (CDR) is 3.33 per one thousand.

1.6.2 Socio-economic situation

"Israeli" closure policies against Gaza Strip people among different times has serious negative effect on Palestinian economic situation, after al-Aqsa Intifada in 2000, many of Palestinian workers have lost their work in "Israel" and sharp down turn in wage income from "Israel" (World Bank, 2003).

After Palestinian legislative election in 2006, all funds to the Palestinian government from "Israel", the United States, Canada, and the European Union have frozen, the severity of closure increased after political unrest in June, 2007. Prosecute deteriorating economic situation on the Gaza Strip led to the rise in unemployment rate to 65%, and 85% of households are living under the poverty line (UNCTAD, 2007).

Overall bad economy has a negative effect on the size of the government revenues from taxes, which are an important source of financing for health, and increased dependence of the Government to donors, as well as the impact on the ability of patients to obtain medicine and make them more dependent on the Ministry of Health in the health services.

1.6.3 Health care system

The Palestinian's overall health is relatively good compared with neighboring countries, major outbreaks of diseases are prevented and health indicators also improved by effective health services (WHO, 2006). Life expectancy in 2005 was 72 years for male and 73 years for female, infant mortality rates were 20 per 1000 live births (MOH, 2006). The main cause of death among adults is noncommunicable diseases, in particular cardiovascular diseases. A study carried out by Johns Hopkins University (USA) and Al- Quds University (in Jerusalem) for CARE International in late 2002 revealed a bad nutritional situation among the Palestinian population. The study found that 17.5% of children aged 6–59 months suffered from chronic malnutrition. 53% of women of reproductive age and 44% of children were found to be anemic (Al Quds University and John Kopkins University, 2002). Iron deficiency anemia represents the major nutritional problem, followed by subclinical vitamin A deficiency, rickets and iodine deficiency. Furthermore, the level of chronic malnutrition among children under five years appears to be slowly increasing (WHO, 2006). The stressful life condition and "Israel" violence against Palestinians, lead to prevalence of common mental disorders, in 2003 was reported that 40.3% among the 59% of the population whom were exposed directly to violence, compared with 12.6% among the 41% of the population whom were not exposed are suffering from mental disorders (WHO, 2006).

The health care system in Palestine is complex. There are four major health providers: MOH, United Nation Relief and Works Agency (UNRWA), nongovernmental organizations (NGOs), and private profit sector (Abed, 2007).

The MOH is the main health care provider in Palestine, which provides primary, secondary and tertiary services. The UNRWA provides mainly primary health care services to the refugee population. The NGOs and private for profit sector also provide the three levels of care through a wide range of practices (WHO, 2005).

1.7 Operational definitions

Health Information System (HIS): The integrated efforts to collect health data process and transform them into information and knowledge for the use in decision making and policy implementation at all levels of health services in order to improve their effectiveness and efficiency (WHO, 2000).

However the health information system is defined, it should achieve its ultimate goal, which is the production of information used for decisions and policies that finally have real impact on the health system or on the general health status. The performance of the HIS is measured against these outcomes rather than the quantity or quality of produced data (RHINO, 2003).

Health Management Information System (HMIS):

This is a health information system designed to assist the monitoring, management and planning of a specific health program (WHO 1993 as cited in WHO practical guide for developing countries, 2004). All governments need good statistics. The need is particularly acute when resources are limited and an unwise allocation of funds can mean the difference between survival and death. Reliable and timely health information is an essential foundation of public health action. The goal of HMIS is to increase the availability, value and use of timely and accurate health information in countries and globally.

Death:

Death is defined as the end of life of an organism or cell. In humans and animals, death is manifested by the permanent cessation of vital organic function, including the absence of heartbeat, spontaneous breathing and brain activity (WHO,1992).

Death certificate:

Death certificate, sometimes medical certificate of cause of death (MCCD) is a document issued by a government official such as a registrar of vital statistics that declare the date, location and cause of a persons death (Wikipedia).

Underlying cause of death

The underlying cause of death is the disease which has initiated the series of illnesses leading directly to death, or the circumstances connected with an accident or an act of violence which caused the injury or poisoning leading to death. The cause of death used in statistics (the so-called statistical underlying cause of death) is determined according to the selection and application rules of the International Classification of Diseases (ICD-10) compiled by the World Health Organization (WHO). Annual cause of death statistics are compiled according to the underlying cause of death (WHO,1992).

Immediate cause of death:

Immediate cause of death refers to the disease, failure of injury whose symptoms cause the person to die. However, the actual mechanism of death, e.g. cardiac arrest, is not regarded as immediate causes of death. The immediate cause of death is recorded in the death certificate and saved in the statistical data files, but it is not used in the compilation of annual statistics (WHO,1992).

Intermediate cause of death:

Intermediate cause of death refers to the condition which leads from the underlying cause of death to the immediate cause of death. The intermediate cause of death is recorded in the death certificate and saved in the statistical data files, but it is not used in the compilation of annual statistics (WHO,1992).

Documentation:

Documentation is the act or an instance of the supplying of documents or supporting references or records. Also it defines as the collation, synopsizing, and coding of printed material for future reference (Free dictionary).

Evaluation:

Is the systematic examination and assessment of the features of an initiative and of its effects, in order to produce information that can be used by those who have an interest in its improvement or effectiveness (WHO 1998)?

ICD-10:

The International Statistical Classification of Diseases and Related Health Problems 10^{th} Revision (ICD-10) is a coding of a disease and signs, symptoms, abnormal finding, complications, social circumstances and external causes of injury or disease, as classified by the WHO (1992). The code set allows more than 12420 different codes and permits tracking of many new diagnosis and procedures, a significant expansion on the 6969 codes available in ICD-9. Work on ICD-10 began in 1983 and was completed in 1992(WHO, 2007).

Chapter 2: Literature review

2.1 Theoretical framework

Many efforts were done all around the world to develop frameworks to strengthening the documentation pattern of death certificates, which return to the important of death certificate as a public health surveillance tool and a valuable source of information at the national and local level. The researcher will use the conceptual framework as a guide to the implementation of the study. The following conceptual framework illustrates the main component of the study according to the review of the available literature. It considers the main determinants which are completeness, accuracy of data reported in death certificates, and the process of filing and registration of issued death certificates.

(Conceptual Framework)

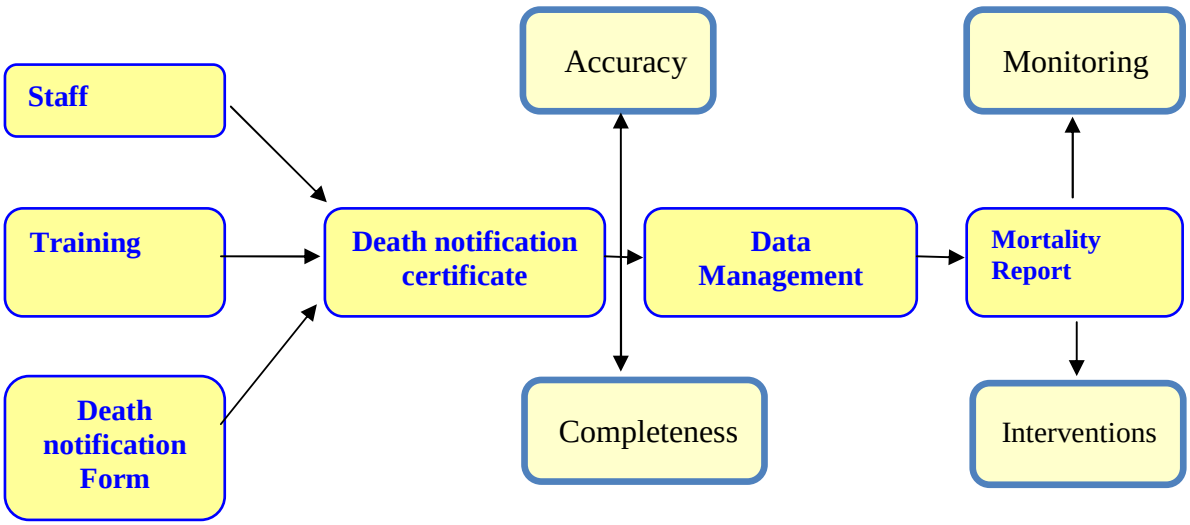

Figure (2.1) Conceptual framework of the study

This conceptual framework illustrate how the death notification certificate accuracy and completeness affected by the staff training and the form of death certificate used, and how the data in the certificate management affect the national mortality statistics which in turn can be use for monitoring the health status and for planning and intervention accordingly.

2.2 Literature review introduction

Death certificates information is a major source of statistical data to identify public health problems, to monitor progress in public health, to allocate research funds, and to conduct scientific research. For these reasons good reporting for cause of death is very important (Hoyert et al. 1999).

The accuracy of death certificate is very important point, both for personal data, demographic data, geographic data, and date of death; place of death, and for the other important section of death certificate which is the leading cause of death. The information from death certificates, specifically the cause- of- death statement (CODs), is the basis for our national mortality database. So it is important to ensure proper completion and accuracy of cause -of-death section of the death certificate. That's come through proper reporting and accuracy of CODs using the published guidelines and definitions of immediate, intermediate, and underlying cause of death. Accurate completion of death certificate is generally poor. Studies have shown that death certificate error rates are high due to lack of formal training, medical inexperience and perceived lack of certificate importance (Myers KA and Farquhar DR, 1998).

The inaccuracy of death certificate information is well documented and can occurs as a result of errors at a number of steps in the certification process. Inadequate or misinterpreted clinical information can lead to erroneous ante mortem diagnosis, which are then recorded by the physician on the death certificate. This problem has been identified and confirmed in studies comparing death certificate information with autopsy results or with the opinions of panels of expert reviewers. The rate of major discrepancies in autopsy series has been documented to be as high as 30% (Kircher et al. 1985).

The final step in the certifying process, coding by a person trained in this skill (known as nosologist), is believed to be objective and relatively accurate. However, the accuracy of the coding is limited by the information received from the certifying physician. Previous studies have shown that 16% to 33% of sampled death certificates contain major errors in the cause of death statement. In 1993 Jordan and Bass

discovered that 31.9% of sample of death certificates completed at a Canadian tertiary care teaching hospital contained such error.

Even in the United States the accuracy of death certificates is questionable, with up 29 percent of physicians erring both as to the cause of death and the deceased's age**.** Many certificates are meaningless because physicians complete them without knowing the real cause of death. Listing" cardio respiratory arrest" signifies nothing-everyone's heart and lungs eventually stop (Iserson and KennethV, 2003). A similar problem with the accuracy of death certificates has been reported in Great Britain. The Royal College of Physicians of London claims that 20 percent of British death certificates incorrectly list the cause of death (Iserson and KennethV, 2003).

As apart of Palestinian National Authority, Mediterranean region, and the global communities, Gaza governorates face the same problem with the documentation of death certificates, which need an evaluation to chick accuracy of death certificates reported, the flow of these data, the outcome of these data, and finally the use of these information for monitoring and improving the health status in Gaza governorates.

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2.3 What does death certificate include?

A death certificate includes the following items, the full name of the deceased, sex of the deceased, date of the death occurred and the address at which the death took place. Also death certificate should include the date of birth of the deceased, cause of death, name and address and relationship to the deceased of the person reporting the death. In some cases a maiden name will also be given for a married woman or widow.

2.4 General instruction for completing death certificates.

Death certificates are permanent legal records from which official copies are made. It is essential that the certificate be prepared accurately. Physicians are responsible for completing most of the information on the death certificate with the assistance of an informant who is usually a family member. Completing a death certificate involves the following guidelines: use the current form designated by the authorities, complete each item, following the specific instructions for that item, do not use abbreviations except those recommended in the specific item instruction, and file the original certificate or report with registrar. Reproductions or duplicates are not acceptable. Most authorities require that the death certificate be completed and filed within a

specified time period. Physicians are expected to use medical training, knowledge of medicine, available medical history, symptoms, diagnostic tests, and autopsy results, if available, to determine the cause of death. Generally, it is possible to file a certificate with the cause of death listed as pending or pending further study. This is especially useful when additional investigation such as autopsy results are expected, but it obligates the attending physician to update the original information after the additional information becomes available.

The literature shows the common problems in death certification and demonstrated several acceptable ways of writing cause of death statement exist. Optimally, a certifier will be able to provide a simple description of the process leading to death that is etiologically clear and be confident that this is the correct sequence of causes. However, realistically, description of the process is sometimes difficult because the certifier is not certain, or the decedent is infant or old age, and or the death due to Sudden Infant Death Syndrome (SIDS).

The reliability and accuracy of CODs remain a significant problem. Despite its limitations, the autopsy remains the best standard against which to judge pre-mortem diagnosis. The CODs of the death certificate may be improved if death certificates are completed in conjunction with the postmortem examination and amended when the autopsy findings show a discrepancy.

2.5 Sequence leading to death, underling cause and contributory causes.

The MCCD is set out in two parts, in accordance with World Health Organization (WHO) recommendations in the International Statistical Classification of Diseases and Related Health Problems(ICD). The physician are asked to start with the immediate, direct cause of death on line Ia, then to go back through the sequence of events or conditions that led to death on subsequent lines, until he reach the one that started the fatal sequence. If the certificate has been completed properly, the condition on the lowest completed line of part I will have caused all off the conditions on the lines above it. This initiating condition, on the lowest line of part I will usually be selected as the underling cause of death, following the ICD coding rules in which routine mortality statistics depend on. Then the physician should also enter any other diseases, injuries, conditions, or events that contributed to the death, but were not part

of the direct sequence in part two of the certificate (Office for National Statistics, 2005).

2.6 Roles of educational intervention in improving the accuracy of death certification.

The inaccuracy of death certification can lead to misallocation of resources in health care programs and research. Major errors in the completion of the correct cause of death on death certificates are very common among medical residents. Studies has showed that educational intervention can improve dramatically the accuracy in the completion of death certificates by physicians and this intervention should be mandatory not only during the residence programs but as part of the continuing medical education package for physicians (Weeramanthri T et al.1993).

The accuracy of data contained on the death certificate has been the subject of a number of studies. The major death certificate error that has been cited in the literature is inaccurate cause of death as assigned by certifying physicians. Since death certificate data is used to calculate vital statistics, these inaccuracies lead to problems in reporting vital statistics and in population based studies that rely on vital statistics. This limitation has been recognized in the United States, Great Britain, Canada, and many other countries. Several solutions for correcting these inaccuracies have been proposed, including physician education, quality assurance programs with feedback, and encouraging more autopsies. All of these measures are designed to improve the accuracy of assigning the cause of death (Maudsley G and Williams EMI, 1996).

Also EL- Nour et al,2004 study in the pediatric hospital in Khartoum state found that there was serious lack of training of doctors on death certification and the death certificate format was not modified or updated for long, and their recommendation was to conduct training for doctors at all level and the death certificate format has to be modified and updated to be appropriate and easy to fill by. They found that the filling out of the death certificate was inappropriate and incomplete. Part II of the cause of death item was not filled out in (97%) of the certificates. The completion of most items of the death certificate was partial (98.2%).

Also another study were conducted in Beirut in 2002 revealed that the information on death certificates was complete in respect off all demographic characteristics of the deceased persons except for occupation and month of birth. Data relating to these variables were missing on approximately 95% and 78% of the certificate respectively. And around half of the certificates did not carry a certifiers signature and an even larger proportion lacked documentation of the underlying cause of death(Sibai et al. 2002).

2.7 Cause-of-death Querying

Cause-of-death querying is a process by which the State health department contacts the medical certifier who completed the cause-of-death statement and asks for clarification or further information so that resulting mortality statistics may be as complete and accurate as possible. The purpose of querying is to obtain information needed to properly code and classify the cause of death to educate the certifier about the proper method of completing medical certifications of death(Rosenberg HM,1989). Querying is one of the most important ways to improve the quality of cause-of-death data. It must therefore, be viewed as an integral part of any State's vital statistics activity. Querying is an essential part of the vital registration process, so both local registrars and registration personnel in the State health department should be thoroughly knowledgeable of the laws, procedures, and other requirements for death registration, querying, and death certificate amendment(Rosenberg HM,1991).

While querying has an immediate goal of clarifying the cause of death for individual records, it has a broader goal of educating physicians on how to complete a medical certification. It is very important that all physicians, medical examiners, or coroners who may be certifying deaths be properly oriented to the principles of medical certification, the manner in which the statements are to be entered, and the importance of completeness, accuracy, and specificity in listing the causes of death. Even the most conscientious physician sometimes has a difficult time in distinguishing between those conditions that should be included in the causal chain versus those conditions not in the chain but medically important and relevant.

States must decide who can best carry out querying. Historically, nosologists have done the querying, but with the advent of automated processing, fewer States have nosologists. These States must develop different mechanisms for querying, perhaps

by training other staff to query. The person who queries records needs to be someone who understands the content and purpose of the querying manual, which in turn implies an understanding of coding rules and medical causality. That person could be an experienced nosologist or a trained statistician or a medical officer with an understanding of how death certificates should be completed. Consideration might be given to identifying a physician on staff in the State health department or under contract who could provide assistance with the querying process(Hanzlick R,1994). It is critical that the person doing the querying have good communication skills as well as an understanding of why the certificate is being queried (e.g., to obtain more information or to correct obvious inadequacies).

If employed correctly, the query procedure can be a very effective method of acquainting physicians with the proper methods for certifying a cause of death. Unfortunately, most physicians do not receive training on completing death certificates during their formal education; therefore, querying can help provide them with information to enable them to certify a death correctly. Many common errors or omissions can be avoided by consistent querying, if sufficient explanation is furnished to the certifier to help them modify their approach with future medical certifications(Hopkins et al.1989).

2.8 ICD revisions

Since the beginning of the century the International Classification of Diseases and Related Health Problems (ICD) for mortality has been modified about once every ten years, except for the twenty year interval between the last two revisions, ICD-9 and ICD-10, as shown below:

Revision	**Years in Effect**
First (ICD-1)	1900-1909
Second ICD-2)	1910-20
Third (ICD-3)	1921-29
Fourth (ICD-4	1930-38
Fifth (ICD-5)	1939-48
Sixth (ICD-6)	1949-57
Seventh (ICD-7)	1958-67
Eighth, Adapted (ICDA-8)	1968-78

Ninth (ICD-9) 1979-1989

Tenth (ICD-10) 1989-

The rationale for the periodic revisions has been to reflect advances in medical science and changes in diagnostic terminology. Historically, the U.S. accepted the WHO versions of the ICD, except for the Eighth Revision, when the U.S. produced its own “adapted" version, which is symbolized by the “A” in ICDA-8. TheU.S.’s rejection of the WHO version reflected principally disagreements on the content of the circulatory chapter. Those changes in the ICD for mortality have been made only every ten to twenty years rather than annually promote comparability over time in mortality trend data (NCHS, 2000).

2.9 Differences between ICD-10 and ICD-9

ICD-10 differs from ICD-9 in a number of respects: 1) ICD-10 is far more detailed thanICD-9; about 8,000 categories compared with 4,000 categories. The expansion was mainly to provide more clinical detail for morbidity applications; 2) ICD-10 uses 4-digit alphanumeric codes compared with 4-digit numeric codes in ICD-9; 3) three additional chapters have been added and some chapters rearranged; 4) cause-of-death titles have been changed, and conditions have been regrouped; 5) some coding rules have been changed. 6) Finally, ICD-10 is published in three volumes compared with two volumes in ICD-9

2.10 Most common errors in death certificates

The accuracy of data contained in death certificate has been the subject of a number of studies. The major death certificate error that has been cited in the literature is inaccurate cause of death as assigned by certifying physicians. Since death certificate data is used to calculate vital statistics, these inaccuracies lead to problems in reporting vital statistics and in a population based studies that rely on vital statistics (Maudsley G and Williams EMI, 1996). Data other than cause of death are also recorded in death certificates. These include demographic data (age, sex, place of death and residence of deceased), date and time of death, if the deceased was pregnant at time of death, data related to occupation and certifying physician data. In most reports the demographic data are assumed to be and not subject to significant error. Previous study found some errors in recording place of residence on death certificate, but these errors have tended to be uncommon (McCarthy MA,1960).

2.11 Documentation and Reporting

Documentation and reporting are methods of communicating information related to health care management. In any setting the success of a care plan depends on accurate and complete reporting and precise record documentation. Good documentation and reporting create a high level of communication that helps health team members have a common view of the clients problems.

Edelstein (1990) defines documentation as any thing written or printed that relied on as a record of proof for authorized persons. A medical record should be a comprehensive description of the client's health status and needs, as well as the services provided for the client's care. Good documentation reflects not only quality of care but also evidence of each health care member's accountability in giving care.

2.12 Purpose of Records

A record is a valuable source of data used by all members of the health care team. It's purposes include communication, financial billing, education, assessment, research, auditing and legal documentation (Hines,1988). Statistical data relating to the frequency of clinical disorders, complications, use of specific medical and nursing therapies, deaths and recovery from illness can be gathered from client records. Death certificates are a good example from which statistical data could be managed to bring mortality data through which we can monitor the health status of the population and also the policy maker could plan for intervention according to these data.

2.13 Guidelines for Good Documentation and Reporting

Quality documentation and reporting are necessary to enhance efficient, individualized client care. Six important guidelines must be followed for quality documentation and reporting. Documentation and reports must be factual, accurate, complete, current, organized and confidential (Bergerson,1988).

2.14 Computerized Documentation

Computers have been widely used in hospitals and other health care facilities for over a decade. Automated technology improves the integration of informational resources and the accessibility of the information to all health care personal. Health care team must know the benefits and risks of computerized documentation. All members of the health care team can access and enter data and thus generate a comprehensive data base. Mc Neil (1979) describes the computer as a source of information superior to face- to – face reporting because the input of all individuals caring for a client is available integrated and more complete manner than what previous shift members choose to report and also computers can reduce many tasks that burden health care team.

Also there are legal risks associated with computerized documentation. Computers open the way for access to information by almost everyone. The password used to enter and sign off computer files should not be shared with another care giver, and a good system requires frequent changes in personal passwords to prevent unauthorized persons from tampering with records (Collins,1990).

2.15 Evidence – Based Practice

It is the conscientious, explicit and judicious use of current best evidence in making decisions about the care of individual patients (Sackett et al1996). It is well known that accurate and complete information is a very important component in any management system. All health system need good statistics reflecting their past and current status. This need become more important especially when the resources are limited to assure efficient distribution and utilization of the scarce resources. The statistics reflecting health actions are supposed to be reliable, timely and accessible to estimate the required health indicators. Health information system enable decision makers to identify problems and needs, track progress, evaluate the impact of intervention and finally leads to evidence based decisions on health policy, programs design and resource allocation (WHO,2000).

Chapter 3: Methodology

3.1 Study Design

The design of this study is descriptive, cross sectional design with quantitative and qualitative approaches. The methodological triangulation will enrich the study and strengthens the scientific rigor of the findings. The aim of the study is to evaluate the accuracy and completeness of cause of death reported in death notification certificates in the Gaza Strip from 1/7/2009 until 31/12/2009, accuracy of cause of death according to ICD-10, and to assess the use of death notification certificates in monitoring the mortality statistics. This design is chosen because it is the best design to describe the documentation situation of death notification certificates in the Gaza Strip. It is less expensive and enables the researcher to meet the study objectives in short term time. It also explores the association between study variables.

3.2 Study setting

The study was conducted at MOH facilities dealing with death notifications, and these were the health information unit (HIU), the primary health care department (PHC), Al-Shifa Hospital, Gaza European Hospital and Pediatric Hospital. The PHC are responsible for registration of deaths through its five governorate offices and birth and death registration office, while the HIU are responsible for coding of cause of death according to ICD-10, data management and doing mortality statistics to monitor the health status in the Gaza Strip.

3.3 Study population

The study population is formed of two components. The first one are the death notifications registered in MOH from 1/7/2009 until 31/12/2009. The second one is the health staffs who are dealing with the death notifications. Nine physicians from Al Shifa Hospital, Gaza European Hospital and Pediatric Hospital, in addition to three employees from the primary health care department and health information system department in the ministry of health were chosen to do key informative interview with them. The tables in annex (9) illustrate the number, name, position, and place of work for the key informant people that will be interviewed.

3.4 Sampling process

The number of death notification certificates in Gaza Strip from 1/7/2009 until 31/12/2009 were 2332 death certificates. The researcher used the systematic sampling method and Epi info program to choose the study sample according to date of death. On assumption that 25% to 30% of reporting is incomplete and at confidence level 95% with power 80%, the sample size was 256.

3.5 Selection criteria

3.5.1 Inclusion criteria

All registered death notifications in MOH facilities in Gaza Strip from 1/7/2009 until 31/12/ 2009.

Key informants should be head of health care departments currently working in MOH.

3.5.2 Exclusion criteria

All death notifications which are not registered in MOH facilities in Gaza strip from 1/7/2009 until 31/12/ 2009.

3.6 Research instruments

The researcher used two types of instruments, the first was checklist which was established (Annex 10) which include personal, demographic, geographic, and the cause of death variables as stated in the death notification certificates to evaluate the completeness and accuracy of data reporting on death notification certificates and the use of these data for monitoring and improving the health status in Gaza Strip. The second instrument was key informant interview with the key people in Al Shifa Hospital, Gaza European Hospital and Pediatric Hospital, primary health care department (PHC), and health information unit in the ministry of health (HIU).

The main theme of key informant interview(Annex11) used to assess firstly the completeness and accuracy of personal, demographic, geographic data and cause of death section of death notification certificate. Secondly the researcher assessed who is the responsible for writing these data and is he familial and or trained in doing that in a proper way according to ICD-10 criteria or not?. The third theme was if they know the important of following these instructions and the usefulness of data completeness and accuracy? Finally if the physicians and related employees need further

interventions in addition to formal training to improve the efficiency and quality of death certification.

3.7 Validity of the research

3.7.1 Face and content validity

The study instrument was constructed after reviewing the literature related to the study then sent with the objectives of the study in enclosed covering letter to 7 experts working in the same field in order to give their views on the dimension of statements of the questionnaire(Annex13). According to their suggestions and advice, the researcher added, modified, excluded and changed some of the questions to be more suitable for achieving the objectives of the study.

3.8 Data management and statistical analysis

For the quantitative part of the study the researcher used the SPSS program- version 13- to evaluate the results. This include; checklist checking, data entry, data cleaning, frequencies, and cross tabulation. For key informative interview, data managed by formulation of sufficient questions related to specific concerns of the study, preparing an interview guide, and the interviews conducted in MOH facilities with each key informant for about half an hour. Then interview data analyzed through interview summary sheet, a systematic writing of data, organizing of data thematically. Then thematic presentation of qualitative results presented with the quantitative results and this integration enriched the study findings.

3.9 Pilot study

Pilot study only for quantitative part was conducted in health managing information unit in order to test and standardized the research instrument to increase the response rate and scientific rigor. A random sample of ten death notifications was selected and tested according to the checklist. The results of the pilot test were excluded from the final study results. The pilot result used to finalize the tools for general study phase. For the qualitative part there was no need to conduct piloting because the interview schedule was comprehensively reviewed by the study supervisor and the questions revealed to be clear and simple.

3.10 Ethical and administrative considerations

The researcher was keenly committed to all ethical considerations required to conduct a research. First, ethical approval obtained from both the school of public health Al-Quds University and Helsinki Committee to carry out the study. Second, an approval letter was sent to the general director of Human Resources Development in the MOH which arranged with the director general of PHC in Gaza strip, the director general of MOH in Gaza strip, and with the director of health managing information system department in MOH. Confidentiality of all data collected was completely ensured. Names were checked for completeness and not used for further procedures.

3.11 Period of the study

The study started immediately after having the University and Helsinki committee approval in June 2010, then the approval from the general director of human resources and development in MOH taken in July 2010. Data collection for both death notifications and interviews took two months. After that data entry, cleaning, analysis and interpretation were conducted which took three months. Final research report was written in January- February 2011.

3.12 Detective and response rate

The number of death notifications found after searching are 237 out of 256, so the detective rate was 92.5%. And the number of key informants met were twelve with 100% response rate.

3.13 Limitations of the study

- The cross sectional design of the study has some weaknesses as it is liable to contextual changes and does not allow giving answers of possible causalities.
- Limited time available to conduct the study.
- Limited scientific resources like books and journals.
- Recurrent shortage of electricity.
- Lack of relevant financial resources.

Chapter 4: Results and discussion

In the following chapter the researcher attempts to illustrate the main findings of the study and compares them with the results of previous similar studies. Following the used methodology the findings of the personal and demographic variables, cause of death variables, certification of treating or reporting physician and PHC registration data availability will be first presented followed by the result of the key informed interview related to the main theme.

4.1Results from the checklist

4.1.1Findings from identification data

Table (1) Availability of identification data in Death Certificate

Sn.	Items	No.	%
1.	**PHC Governorate office**		
	Complete documentation	209	88.2
	Incomplete documentation	28	11.8
	Total	**237**	100
2.	**Deceased's ID Number**		
	Complete documentation	237	100
	Incomplete documentation	0	0
	Total	**237**	**100**
3.	**Deceased's full name**		
	Complete	235	99.2
	Partial	2	0.8
	Total	**237**	**100**
4.	**Deceased's mother name**		
	Documented	224	94.5
	Not documented	13	5.5
	Total	**237**	**100**
5.	**Deceased's birth date**		
	Complete Documentation	150	63.3
	Incomplete documentation	87	36.7
	Total	**237**	**100**
6.	**Deceased's place of birth**		
	Complete Documentation	223	94.1
	Incomplete documentation	14	5.9
	Total	**237**	**100**

Table 1 shows that 88% of PHC governorate office was documented, while 12% were not documented and it shows also that 100% of the deceased ID number were documented. The documentation of the deceased's full name was 99% complete, while it was 1% partial documentation. It also shows that 94.5% of deceased's mother

name were documented, while 5.5% were not documented. Finally table 1 illustrates that 63% of deceased's birth date were documented, while 37% were not documented and it shows that 94% of deceased's place of birth were documented, while 6% were not documented. These findings are approximately complete except for deceased's birth date which were not documented for 37% of the sample and it is consistent with what the key informants said that in relation to the identification data they are not confirmed with the patient file, because they consider that these data has to be written by medical secretary. This result is consistent with the findings from other study in Beirut- Lebanon(Sibai et al. 2002) who found that 78% of deceased's month of birth were missing in death certificates.

4.1.2 Findings from demographic data

Table (2) Availability of demographic data in Death Certificate

Sn.	Items	No.	%
1.	**Deceased's sex**		
	Male	135	57
	Female	102	43
	Total	**237**	**100**
	Age group		
2.	0-14 Years	68	28.7
	15-60 Years	53	22.4
	More than 60 Years	116	48.9
	Total	**237**	**100**
3.	**Marital Status**		
	Documented	228	96.2
	Not documented	9	3.8
	Total	**237**	**100**
4.	**Religion and Nationality**		
	Documented	232	97.9
	Not documented	5	2.1
	Total	**237**	**100**
5.	**Residence address**		
	Complete Documentation	76	32.1
	Incomplete documentation	161	67.9
	Total	**237**	**100**
6.	**Original town**		
	Documented	169	71.3
	Not documented	68	28.7
	Total	**237**	**100**
7.	**Occupation of deceased**		
	Documented	104	43.9
	Not documented	133	56.1
	Total	**237**	**100**

Table 2 illustrates that 57% of the deceased were male and 43% were female. And it revealed that 29% of the deceased were at age group 0-14 years, 22% were at age group 15-60 and 49% were at age group more than 60 years. And also it shows that 96% of deceased marital status were documented, while 4% of deceased were not documented.

Table 2 also illustrates that 98% of deceased religion and nationality were documented, while 2% were not documented. It also illustrates that 68% of deceased residence address is not documented completely, while 32% is documented completely. Also it illustrates that 71% of deceased original town were documented, while 29% were not documented and 56% of deceased's occupation were not documented, while 44% were documented.

We found the high percentage of incomplete documentation both for deceased's residence address, occupation and original town and that due to the same cause key informants said, which is the responsibility of medical secretary to document these data. These findings also came in accordance to the study conducted in Beirut-Lebanon(Sibai et al. 2002) who found that 95% of deceased's occupation were missing in death certificates. The high percentage of incomplete documentation in both identification and demographic data considered as loss of valuable source of information which affect our ability to monitor and evaluate the health of our population correctly, because mortality data are the most vital statistics data, and the fundamental source of demographic, geographic, and cause of death information (MOH, 2004). Data other than cause of death are also recorded in death certificates. These include demographic data(age, sex, place of death and residence of deceased), date and time of death, if the deceased was pregnant at time of death, data related to occupation and certifying physician data. In most reports the demographic data are assumed to be and not subject to significant error. Previous study found some errors in recording place of residence on death certificate, but these errors have tended to be uncommon(McCarthy MA,1960).

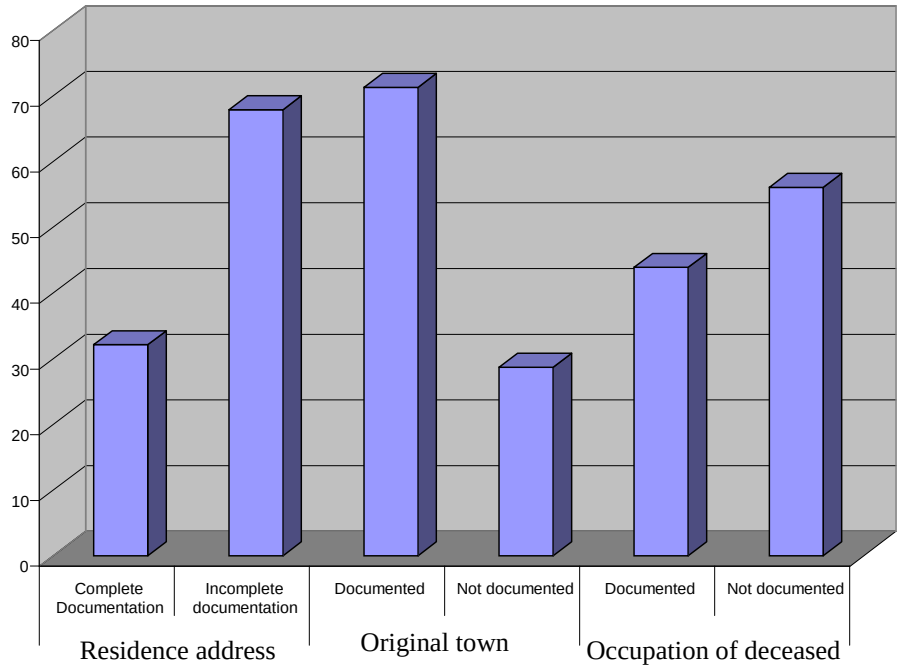

Figure (4.1) Percentages of demographic data in death certificate

4.1.3 Findings from death data

Table 3 illustrates that 100% of deceased's death date is documented, while death hour was 81% documented and 19% was not documented. It also illustrates that 97.5% of the sample dose not mention if the deceased live less than 24 hours and 2.5% mentioned that. Also 98% of deceased nationality at time of death is documented, while 2% is not documented It also shows that 94% of reporting person data were documented, while 6% were not documented. This table also illustrates that 98% of deceased place of death were documented, while 2% were not documented and it shows us the kind of hospital or place of death which were 77.6% governmental, 19% at home, 2.1% west bank and occupied Palestine and finally 1.3% NGO.

These findings revealed that the majority of deaths occurred in the governmental hospital(77.6%) and we have a problem in documentation of death hour and if the baby live less than 24 hours or not which are respectively 19% and 97.5%. Documentation of these data is very important aspect for monitoring and legal purposes.

Table (3) availability of death data in death certificate

Sn.	Items	No.	%
1.	**Death date**		
	Complete Documentation	237	100
	Incomplete documentation	0	0
	Total	**237**	**100**
2.	**Death Hour**		
	Documented	193	81.4
	Not documented	44	18.6
	Total	**237**	**100**
3.	**Less than 24 hours**		
	Mentioned	6	2.5
	Not mentioned	231	97.5
	Total	**237**	**100**
4.	**Nationality at time of death**		
	Documented	232	97.9
	Not documented	5	2.1
	Total	**237**	**100**
5.	**Reporting person data**		
	Complete Documentation	223	94.1
	Incomplete documentation	14	5.9
	Total	**237**	**100**
6.	**Place of death**		
	Documented	233	98.3
	Not documented	4	1.7
	Total	**237**	**100**
7.	**Kind of hospital**		
	Governmental	184	77.6
	NGOs	3	1.3
	At Home	45	19
	West Bank and Occupied Palestine	5	2.1
	Total	**237**	**100.0**

Some of the key informants said that it is not their job to document these data and the others said that they are not familial with the importance of these data. These results came in accordance with the findings from studies in Beirut and Al Khartoum(Sibai et al.2002 and El Nour et al.2004) who found that the filling out of the death certificates were inappropriate and incomplete.

The following table illustrate the distribution of place of death by name of hospital

Table (4) Distribution of place of death by name of hospital

Place of death	No.	%
Al Shifa	75	31.6
Home	45	19
European Gaza	31	13.1
Nasser	18	7.6
Forensic Medicine	16	6.8
Kamal Odwan	14	5.9
Al Naser Pediatric	10	4.2
Al Aqsa Martyrs	9	3.8
Al Rantisi	4	1.7
AL Durra	3	1.3
Occupied Palestine	3	1.3
Bait Hanoun	2	0.8
Al Najar	2	0.8
West Bank	2	0.8
Al Owda	1	0.4
Arab Ahli	1	0.4
AL Wafa'a	1	0.4
Total	**237**	**100**

This table revealed that the majority of deaths occurred in Al Shifa hospital(31.6%) then (13.1%) in European Gaza Hospital. And this distribution are normal because these two hospitals are the main hospitals in Gaza governorates. The third high percentage of deaths occurred at home (19%) which off course certified by treating or reporting physician. The percentage of deaths seen by forensic medicine was 6.8%, which considered low when compared with other country in which the percentage reach between 30% to 70%.

4.1.4 Findings from cause of death and pregnancy history data

Table (5) Availability of cause of death and pregnancy history data

Sn.	Items	No.	%
1.	**Cause of death**		
	Complete documentation	**147**	**62**
	Incomplete documentation	**90**	**38**
	Total	**237**	**100**
2.	**Deceased pregnant or not**		
	Documented	0	0
	Not documented	**237**	**100**
	Total	**237**	**100**

Table 5 illustrates that 62% of deceased cause of death were complete documented, while 38% were incomplete documented and it illustrates that 100% of the sample dose not mention if the deceased was pregnant or not at time of death. These two items considered the most important items in the death notification certificate, because we can monitor and evaluate the maternal mortality rate and the leading cause of death by these items. From the results we notice the high percentage of error in both items which in turn affect our mortality data.

Most of key informant physicians said that they are not trained, but they are familial by experience in the proper way of documented cause of death section of DNC and the others said that they are not trained or familial with the proper way of completing DNC. These result came in consistent with the findings from studies in Beirut, Canada, Khartoum and the USA (Sibai et al. 2002, El Nour et al. 2004, Jordan and Bass,1993 and Iserson and KennethV, 2003). Sibai study found that more than half of the certificates lack documentation of the underlying cause of death, El Nour study indicated shortage of training of physicians in El Khartoum Hospitals, Iserson and KennethV study found that 20% of British death certificates incorrectly list the cause of death and Jordan and Bass found that 31.9% of sample of death certificates at a Canadian tertiary contained such error. Major errors in the completion of the correct cause of death on death certificates are very common among medical residents. Studies has showed that educational intervention can improve dramatically the accuracy in the completion of death certificates by physicians and this intervention should be mandatory not only during the residence programs but as part of the continuing medical education package for physicians (Weeramanthri T et al.1993).

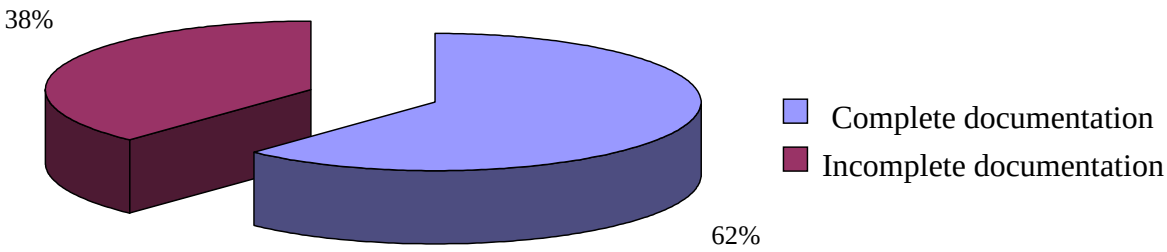

Figure (4.2) Percentages of cause of death documentation in death certificate

4.1.5 Findings from physician certification section

Table (6) certification of treating or reporting physician data availability

Sn.	Items	No.	%
1.	**Certification of treating or reporting physician**		
	Complete documentation	212	89.5
	Incomplete documentation	25	10.5
	Total	237	100

Table (6) illustrates that 89.5% of death notification certificates were complete certified by treating or reporting physician, while 10.5% were not completely certified by treating or reporting physician. This mean that some certificate certification has no clear address for certifying physician, or no clear date of certifying physician and or no clear stamp of certifying physician.

The key informant especially from PHC and HIU assured that they face the problem of incomplete certification by reporting physician which make a big problem for them if they want to query the cause of death. In Beirut around half of the certificates did not carry a certifier's signature (Sibai et al. 2002).

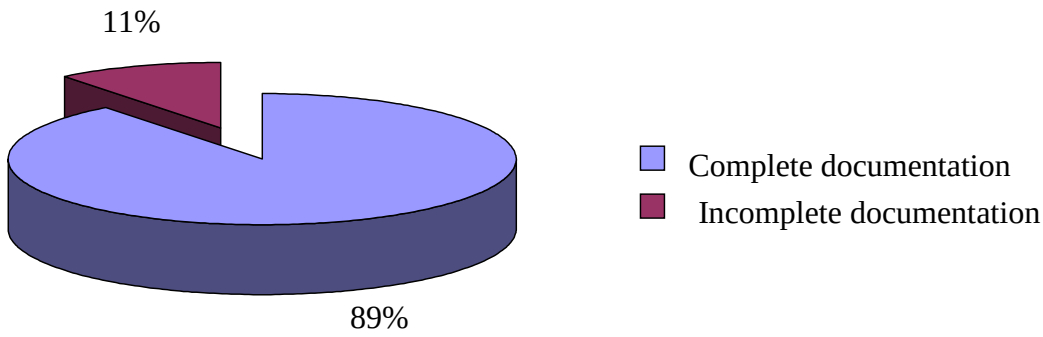

Figure (4.3) Percentages of physicians certification in death certificate

4.1.6 Findings from PHC registration section

Table (7) PHC registration data availability

Sn.	Items	No.	%
1.	**PHC governorates Office**		
	Documented	209	88.2
	Not documented	28	11.8
	Total	**237**	**100**
2.	**Documentation of death**		
	Complete Documentation	209	88.2
	Incomplete documentation	28	11.8
	Total	**237**	**100**
3.	**ID Card Available**		
	Yes	211	89
	No	26	11
	Total	**237**	**100**

Table 7 illustrates that 88% of death certificates were documented completely by PHC governorate office, while 12% were not documented completely and 89% of ID card were available, while 11%were not available.

When the researcher asked the key informant from PHC about the cause of this incomplete documentation he related that to the delay in sending DNC by families and

hospitals and the deficiency in the number of employees in the PHC governorate office.

Accurate completion of death certificate is generally poor. Studies have shown that death certificate error rates are high due to lack of formal training, medical inexperience and perceived lack of certificate importance (Myers KA and Farquhar DR, 1998).

4.2 Other findings from key informants interview

Key informant interview was held with twelve key informants (four from Shifa Hospital, three from Gaza European Hospital, two from Pediatric Hospital, two from Health Information Unit and one from the Primary Healthcare Department.

Cause of death, personal, demographic and geographic data reported confirmation with patient file

All the key informants interviewed said that the cause of death reported is confirmed with the patient file, but in relation to the personal and demographic data they are not . They said that these data should be written by medical secretary or administrative affaires.

Routine follow up review for the cause of death certified in the death notification certificate

Regarding to the question related to the routine follow up review for the cause of death most of the interviewed said that it is done routinely in the morning meeting in which they discuss what has been written and documented, except one key informant he said yes but not routinely just only in special cases.

Death notification certificate form used

Most of the doctors said that the death notification certificate form used need modification for example it should mention to autopsy and should be increase the space for writing COD.

If the physicians are trained or familial with the proper way of completing death notification certificates?

In relation to this question there were different opinions, some of them said that physicians are trained and familial with the proper way of completing DNC and the others said that they are not trained or familial.

The filing system and documentation of death notification certificates organization

Most of the physicians said that the filing system and documentation of DNC are well organized except one said that it is organized but not adequate. And the PHC and HIU employees said that there is delay in sending DNC from hospitals which affect their work.

The extent mortality data used for monitoring the health status in Gaza.

According to the answers of this question, most of physicians said that they used mortality data for monitoring the health status at the level of their departments and the others said that they used it when the death rate increase, but the HIU employee said that they used it routinely to monitor the health status in Gaza.

Use of knowledge about mortality and health status to set priorities, formulate and evaluate health strategies and programs.

Yes, most physicians said that they used mortality statistics to set their needs and priorities for their departments and then these data send to the hospital managerial level which in turn send it to the MOH to set priorities, formulate and evaluate health strategies. The PHC and HIU employees met said that they used these data regularly through presenting monthly and annual reports except for 2007 the annual report did not presented due to technical problems. They said also that policy maker use it for monitoring and not for planning or intervention.

Their recommendations and how these recommendations could be implemented

- Modification for the DNC especially in the cause of death section.
- Making workshops and especial courses about ICD10 and the proper way of completing DNC.
- Don’t use the abbreviation in the cause of death section.
- Initiating professional committee in the MOH responsible to review and follow up DNC.

Chapter 5:Conclusion and recommendations

This chapter provides the main conclusions of this study as well as some recommendations for decision makers that may help in adopting better documentation of death certificates in the Gaza Strip.

5.1 Conclusion

Evaluating the documentation of death notification certificate is the first step of evaluating the quality of death documents. The main objective of this study is to evaluate the current documentation of death notification certificates in the Gaza Strip which could help in promoting better and more accurate documentation of death notification certificates. In this research the researcher used triangulated approach: first, checklist was used to investigate 256 death notification certificates, second, in-depth interview were held with twelve department managers.

The study results show that there is a serious problem regarding the documentation of death notification certificates in the Gaza Strip in personal and demographic section, cause of death section, certifying physician section and PHC governorate certification section.

The study revealed that most of the personal and demographic data are highly documented except for deceased's original town, birth date, occupation and residence address which were not documented completely. Data relating to these variables were missing on approximately 28.7%, 37%, 56% and 67.9% of the certificates respectively. The cause of this huge missing of these very important data are due to the lack perception of physicians of the importance of death notification certificate and their believe that these data has to be documented by medical secretary.

Regarding to the death data documentation the results shows that most of these data are documented except for death hour and if the baby live less than 24 hours. Data relating to these variables were missing in approximately 19% and 97% of the certificate respectively. The death hour is very important subject for legal, monitoring and evaluating aspects and has to be written by physician himself/ herself because he is the responsible one for the documentation. Also results revealed that 77.6% of deaths occurred in governmental hospitals, 19% at home, 2.1% in the West Bank and occupied Palestine hospitals and 1.3% in NGO hospitals. This distribution of place of

death is normal distribution because the majority of deaths occurred in the governmental hospital as the main health care provider in the Gaza Strip especially Al Shifa and Gaza European hospitals which are the largest hospitals in Gaza Strip.

The study finding revealed that 38% of the cause of death is not documented completely nor accurately and did not follow the right consequence of cause of death. This subject is the main important one in the DNC for mortality statistics, which need further intervention and concern from MOH. Also 100% of the certificates did not mention if the deceased was pregnant or not, and this topic is very serious one because by which we can monitor the maternal mortality and health status of the population.

Regarding to the certification of treating or reporting physician section the results illustrate that 89.5% of certificates certified completely, while 10.5% were not certified completely. Off course the loss of physician signature, stamp, or address affect our ability to contact him in need for follow up or querying the cause of death. Moreover results show that 11.8% of PHC registration was incomplete.

And finally the participants proposed some suggestions in order to improve the documentation of DNC as: necessity of presence of continuous training about the proper way of completing of DNC for physician at all level, activation of mortality and morbidity committee within hospital, modification and updating for the death notification certificate form used especially in the cause of death section and initiating of professional committee responsible for querying the cause of death documented in the DNC.

5.2 Recommendations

5.2.1 Recommendation to the Ministry of Health

- Conduct continuous training for physicians on the proper way of completing death notification certificate.
- Reactivation of mortality and morbidity committees within hospital.
- Modification for the death notification certificate form used especially the cause of death section.
- Initiating professional committee in MOH responsible for querying the cause of death documented in the DNC.
- Improving the communication and coordination between the HIU, birth and death registry office in PHC and other departments in the hospitals.
- Putting a specific time to send DNC from hospitals to birth and death registry office.
- Specification of who should document all the death notification certificate data.

5.2.2 Recommendations for further research

- Other studies are needed to investigate the effect of good documentation of death notification certificates on mortality statistics and health status of the population.
- Further studies are needed to assess the leading cause of death in the Gaza Strip.
- Further studies are needed to evaluate the maternal mortalities in the Gaza Strip.
- Other studies are needed to assess the consistency of information between death notification certificates and the clinical records of deceased patients in the Gaza Strip.

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Annexes

Annex (1)

السلطة الوطنية الفلسطينية
وزارة الداخلية

تبليغ عن وفـاه
يعبأ هذا النموذج بأربع نسخ

النسخة الأصلية

حضرة وزارة الصحة في محافظة .....

أمر رقم 426 بشأن بطاقة هوية وتسجيل السكان 1972-5732 أبلغكم التفاصيل عن المرحوم المذكور أدناه وأنى أشهد أن جميع هذه التفاصيل مضبوطة ومصححة:

1. رقم هوية المرحوم | | | | | | | | | | | 2. الإسم الأول ..... 3. اسم الأب .....

4. اسم الجد ..... 5. اسم العائلة أو الحاملة ..... 6. الجنس ..... 7. اسم أم المتوفي .....

8. الحالة المدنية	9. الدين والقومية	10. محل الإقامة الدائم/ المدينة	الشارع/ الحارة	رقم الدار
.....	.....	.....	.....	.....

تاريخ الوفاة اليوم ..... لشهر ..... سنة ..... الساعة .....

مكان الوفاة المدينة / القرية ..... إذا حصلت الوفاة في المستشفى أذكر اسمه .....

تاريخ الولادة اليوم ..... الشهر ..... السنة ..... وإذا كان المتوفي طفلا عاش أقل من 24 ساعة أذكر عدد ساعات الحياة .....

مكان الولادة المدينة / القرية ..... البلدة الأصلية .....

الجنسية في يوم الوفاة ..... المهنة .....

اسم مقدم التبليغ ..... عنوانه ..... صلة القرابة .....

	فترة المرض	
أ- السبب المباشر للوفاة	.....	☐ Pneumonia ☐ Pulmonary Emobolism
ب- نتيجة من	.....	☐ Cereberal Haemorrhage ☐ Thrombophlebitis ☐ Complete Hemiplegia ☐ St. P. Gastrectomy ☐ Atherosclerosis Dudenum Ulcer
ج- نتيجة من (المرض الأصلي)2)	.....	☐ Dudenal Ulcer ☐ Hypertension ☐ Cardiac Arrest ☐ Heart Failure
أمراض أخرى	.....	☐ Myocardial Infarction ☐ Diabetec

إذا كان المتوفي إمرأة الرجاء البيان إذا كانت حاملا أو طرحت أو وضعت قبل وفاتها .....
تم فحص الجثة قبل الوفاة نعم ☐ لا ☐

تصديق: أشهد بهذا أنني قد عالجت المتوفي المذكور أعلاه منذ .....

اني قد رأيت المتوفي على قيد الحياة لآخر مرة بتاريخ ..... أن الوفاة وقعت بتاريخ ..... أنني رأيت الجثة بتاريخ .....

أشهد حسب معرفتي الشخصية بأن كافة التفاصيل المبينة أعلاه مضبوطة وصحيحة

التاريخ ..... التوقيع .....

اسم صاحب التوقيع (ختم أو باسم واضحة) ..... صفته .....

عنوانه .....

لإستعمال الدائرة

استلم يوم ..... أعطي تصريح دفن ..... مكان الدفن .....

حول لمكتب التسجيل ..... بتاريخ .....

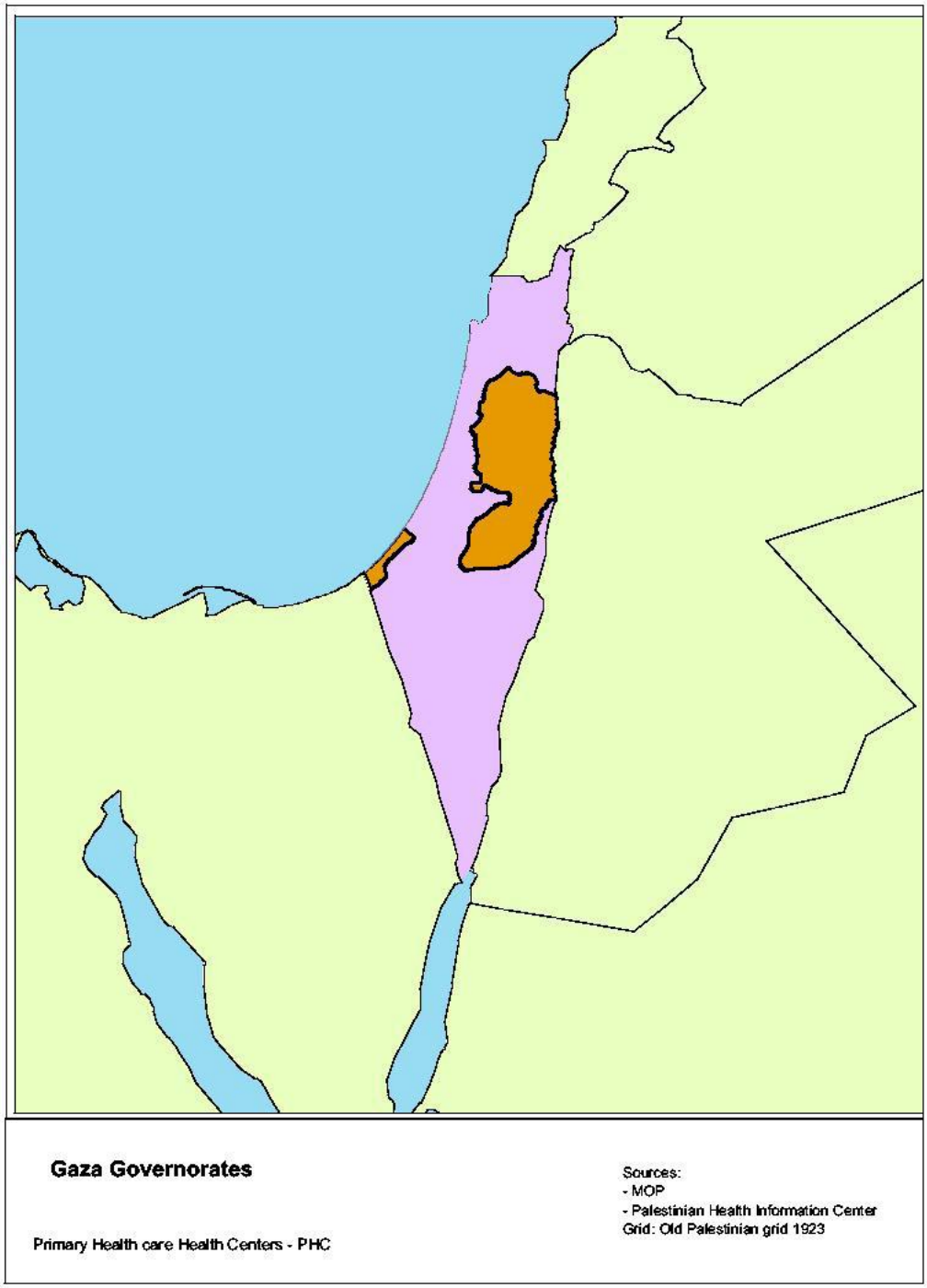
ختم وتوقيع مكتب الصحة .....

مرفق بطاقة هوية ١

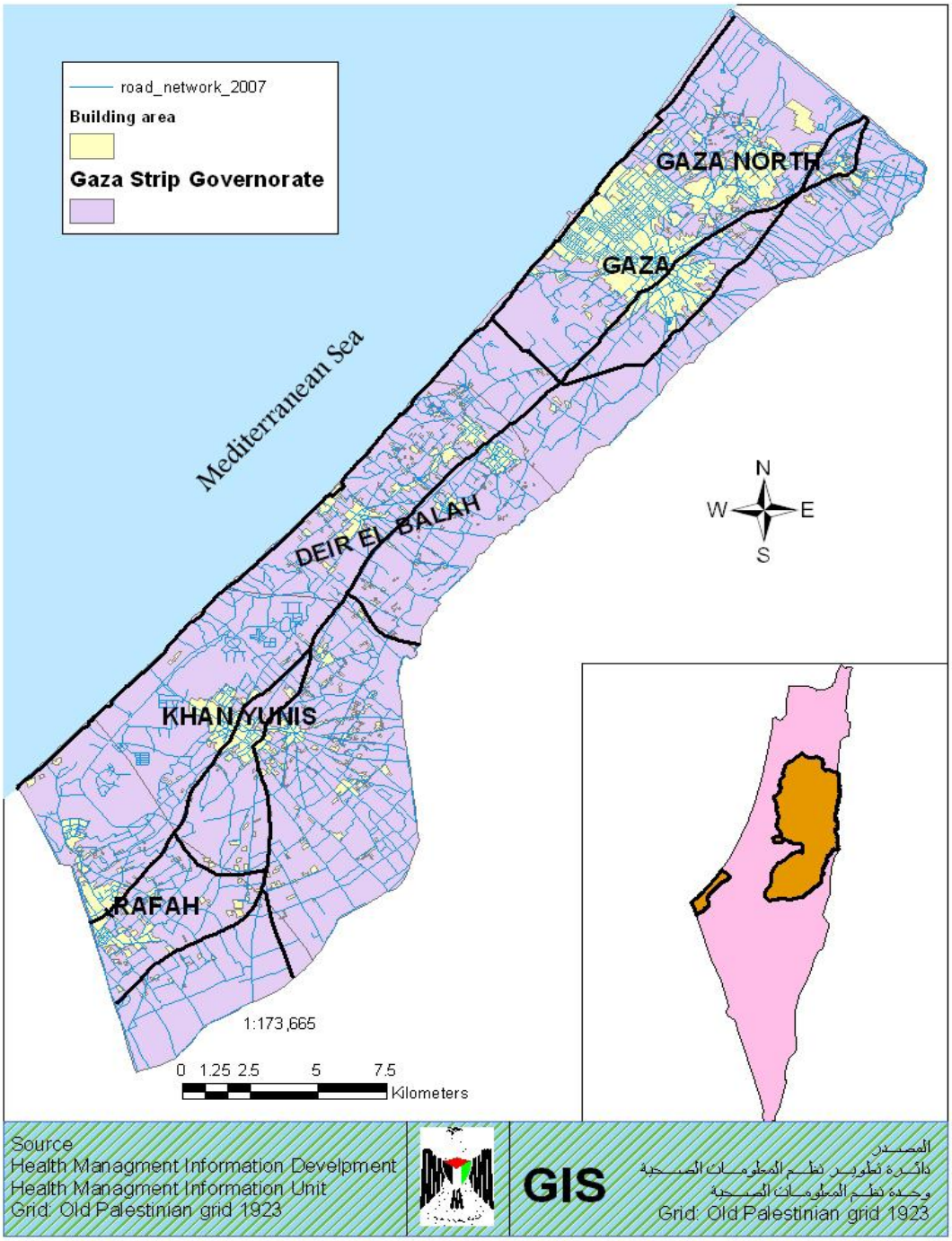
ملاحظة: البنود من 1 - 10 يجب تسجيلها بموجب بطاقة الهوية للمتوفي أو شهادة الميلاد أو تصريح زيارة
- يتم التبليغ عن أي حالة وفاة خلال مدة أقصاها 7 أيام وأي تأخير عن ذلك يستوجب دفع غرامة تأخير حسب قانون وزارة الد

Annex(2)

Map of Palestine



Annex (3)


road_network_2007
Building area
Gaza Strip Governorate
GAZA NORTH
GAZA
DEIR EL BALAH
KHAN YUNIS
RAFAH
Mediterranean Sea
N
W
E
S
1:173,665
0 1.25 2.5 5 7.5
Kilometers
Source
Health Managment Information Develpment
Health Managment Information Unit
Grid: Old Palestinian grid 1923
GIS
المصدر
دائرة تطوير نظم المعلومات الصحية
وحدة نظم المعلومات الصحية
Grid: Old Palestinian grid 1923

Annex(4)

29

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

التاريخ 7/6/2010

Name:
I would like to inform you that the committee has discussed your application about:
Evaluation of the current documentation of death certificates in the Gaza Governorates.

الاسم: جواد جابر سلامة بدوان
نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

In its meeting on June 2010
and decided the Following:-
To approve the above mention research study.

و ذلك في جلستها المنعقدة لشهر 6 2010
و قد قررت ما يلي:-
الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member	Member	Chairperson
عضو	عضو	

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

Annex(5)

Jerusalem
School of Public Health

القدس
كلية الصحة العامة

2010/7/11

الأخ/د. ناصر أبو شعبان المحترم

مدير عام تنمية القوى البشرية–وزارة الصحة

تحية طيبة وبعد،،،

الموضوع: مساعدة الطالب جواد جابر بدوان

يقوم الطالب المذكور أعلاه بإجراء بحث بعنوان:

"Evaluation of the Current Documentation of Death Certificates in the Gaza Strip"

كمتطلب للحصول على درجة الماجستير في الصحة العامة–مسار إدارة صحية و عليه نرجو التكرم للإيعاز لمن ترونه مناسب لتسهيل مهمة الطالب في جمع البيانات اللازمة من دائرة نظم المعلومات و مكتب تسجيل المواليد و الوفيات في دائرة الرعاية الأولية و المستشفيات التابعة لوزارة الصحة (مستشفى الشفاء الطبي و مستشفى النصر للأطفال و مستشفى غزة الأوروبي).
علماً بأن المعلومات ستكون متوفرة لدى الباحث و الجامعة فقط.

و اقبلوا فائق التحية و الاحترام،،،

د. بسام أبو حمد

منسق عام برامج الصحة العامة

College of Public Health – AL-QUDS UNIVERSITY

وزارة الصحة – تنمية القوى البشرية
وارد: 1290
التاريخ: 15/7/2010م

نسخة:
- الملف

Jerusalem Branch/Telefax 02-24799234
Gaza Branch/telefax 08-2884422-2884411
Sphealth@admin.alquds.edu
فرع القدس/تلفاكس 02-2799234
فرع غزة/تلفاكس 08-2884422-2884411
ص.ب/51000–القدس

Annex(6)

The Palestinian National Authority
Ministry of Health
Directorate General of Human Resources Development

وزارة الصحة
الإدارة العامة لتنمية القوى البشرية

الرقم: 15/1163

التاريخ: 2010/07/18

الأخ الدكتور / زياد الخزندار المحترم،،،
مدير وحدة نظم المعلومات

تحية طيبة وبعد،،،

<u>الموضوع/ إجراء بحث</u>

بخصوص الموضوع أعلاه، يرجي تسهيل مهمة الطالب/ جواد جابر بدوان والذي يعمل في قسم الطب الشرعي بوزارة العدل والملتحق ببرنامج ماجستير الصحة العامة مسار إدارة صحية – جامعة القدس لإجراء بحث بعنوان:-

"Evaluation of the Current Documentation of Death Certificates in the Gaza Strip "

حيث سيقوم الباحث بالاطلاع علي شهادات الوفيات وتعبئة نموذج لتقييم الشهادات من مكتب تسجيل المواليد والوفيات في الوحدة، وذلك بما لا يتعارض مع مصلحة العمل وضمن ضوابط وأخلاقيات البحث العلمي،دون تحمل الوزارة أي أعباء.

وتفضلوا بقبول خالص الاحترام والتقدير،،،،،،

د. ناصر رأفت أبو شعبان
مدير عام تنمية القوى البشرية

صورة لـ/
- الملف

Gaza Tel / 08-2827298 Fax / 08-2868109 Email / gdhrd@moh.gov.ps

Annex(7)

Ministry of Health
Directorate General of Human Resources Development

وزارة الصحـــة
الإدارة العامـــة لتنميـــة القـــوى البشـــريـــة

الرقم: ١٥/١١٥٤/...

التاريخ: 2010/07/18

الأخ الدكتور / فؤاد العيسوي المحتـــرم،،،
مدير عام الرعاية الأولية
تحية طيبة وبعد،،،

الموضوع/ إجراء بحث

بخصوص الموضوع أعلاه، يرجي تسهيل مهمة الطالب/ جواد جابر يدوان والذي يعمل في قسم الطب الشرعي بـوزارة العدل والملتحق ببرنامج ماجستير الصحة العامة مسار إدارة صحية – جامعة القدس لإجراء بحث بعنوان:-

"Evaluation of the Current Documentation of Death Certificates in the Gaza Strip "

حيث سيقوم الباحث بالاطلاع علي شهادات الوفيات وتعبئة نموذج لتقييم الشهادات من مكتب تسجيل المواليد والوفيات فـي الرعاية الأولية، وذلك بما لا يتعارض مع مصلحة العمل وضمن ضوابط وأخلاقيات البحث العلمي،دون تحمل الوزارة اي أعباء.

وتفضلوا بقبول خالص الاحترام والتقدير،،،،،،

د. ناصر رأفت أبو شعبان
مدير عام تنمية القوى البشرية

صورة لـــ/
- الملف

وزارة الـ
تنمية الشـ
صادر: ١٥/١١٥٤...
التاريخ: ١٨/٧/٢٠١٠

Gaza Tel / 08-2827298 Fax / 08-2868109 Email / gdhrd@moh.gov.ps

Annex(8)

Ministry of Health
Directorate General of Human Resources Development

وزارة الصحـــه
الإدارة العامـــة لتنميـــة القـــوى البشـــريـــة

الرقم: ١٥/١٥٩٩

التاريخ: 2010/07/18

الأخ الدكتور / محمد الكاشف المحتـــرم،،،
مدير عام المستشفيات
تحية طيبة وبعد،،،

الموضوع/ إجراء بحث

بخصوص الموضوع أعلاه، يرجي تسهيل مهمة الطالب/ جواد جابر بدوان والذي يعمل في قسم الطب الشرعي بـوزارة العدل والملتحق ببرنامج ماجستير الصحة العامة مسار إدارة صحية – جامعة القدس لإجراء بحث بعنوان:-

"Evaluation of the Current Documentation of Death Certificates in the Gaza Strip "

حيث سيقوم الباحث بالاطلاع علي شهادات الوفيات وتعبئة نموذج لتقييم الشهادات من مكتب تسجيل المواليد والوفيات فـــي المستشفيات التالية (م. الشفاء، م. النصر، م. الأوروبي)، وذلك بما لا يتعارض مع مـــصلحة العمـــل وضـــمن ضـــوابط وأخلاقيات البحث العلمي،دون تحمل الوزارة أي أعباء.

وتفضلوا بقبول خالص الاحترام والتقدير،،،،،،

د. ناصر رأفت أبو شعبان
مدير عام تنمية القوى البشريه

صورة لـــ/
- الملف

وزارة الصحة
تنمية بشرية
١٥/١٥٩٩
التاريخ 18/7/10

Gaza Tel / 08-2827298 Fax / 08-2868109 Email / gdhrd@moh.gov.ps

Annex (9) the following tables illustrate the number, name, position, and place of work for the key informant people that will be interviewed.

Al Shifa Hospital

NO	NAME	POSITION
1	Dr. Sobhi skaik	Senior manager of surgical department
2	Dr. Fawzi AL Nablsia	Senior manager of ICU department
3	Dr. Marwan El Hidi	Senior manager of medical department
4	Dr. Hasan El Louh	Senior manager of obstetric department

Gaza European Hospital

NO	NAME	POSITION
1	Dr. Yaser El Khaldi	Senior manager of ICU department
2	Dr.Salah Al Shhami	Senior manager of medical department
3	Dr. Sameer Abo Drass	Senior manager of pediatric department

Pediatric Hospital

NO	NAME	POSITION
1	Dr. Saed Barakat	Senior manager of neonatal ICU department
2	Dr. Hisham Mortaja	Senior manager of pediatric ICU department

Health information system department

NO	NAME	POSITION
1	Mr. Jehad Okasha	Manager of HIS development in MOH
2	SN. M El Yazori	Officer of death certificates department in HIS

Primary Health Care Department

NO	NAME	POSITION
1	Mr. Jamal Radwan	Officer of birth& death registry in PHC department

Annex (10)

Checklist for Death notification Certificate

Death Certificate Items

Item number	Item Descriptor	√
1	PHC governorate office	
2	Deceased ID number	
3	Name of Deceased:	
4	Father name of the deceased	
5	Grandfather name of the deceased	
6	Family name of the deceased	
7	Sex of the deceased	
8	Mother name of the deceased	
9	Marital status of the deceased	
10	Religion and nationality	
11	Residence address (city or town)	
	Street	
	House number	
12	Date of Death (day)	
	Month	
	Year	
	Hour	
13	Place of death(city or town)	
14	Name of Hospital or Institution	
15	Date of birth(day)	
	Month	
	Year	
16	Number of hours of the deceased live less than 24 hours	
17	Place of death(city or town)	
18	Original town	
19	Nationality at time of death	
20	Decedent's Usual Occupation	
21	Name of the person reporting the death	
	His address	
	His ID number	
	His relationship to the deceased	
22	Underlying cause of death	
	Intermediate cause of death	
	Immediate cause of death	
23	If the decedent is women, notify if she was pregnant or aborted or delivered before death	
24	Deceased were seen before death(yes or no)	
25	Certifier:	
	I certified that I treat the deceased before death	
	I saw the deceased before death last time in(date)	
	Date of death	
	I saw the deceased in(date)	

	I certified that all the above information is right(date and signature)	
	Name of the signature	
	His affiliation	
	His address	
26	Death notification received day	
	Buried permission	
	Buried location	
	Referred to the local register office	
	Date	
	Signature of the PHC office	
27	ID card available	

Note: items from 1 to 11 have to be register according to ID card or birth certificate of the deceased, and notification to the local registry office within 7 days.

Annex (11)

Key informant questions

My name is _____ from the_____ _____. I am conducting a study on the current documentation of death certificates in Gaza strip, and I would like to ask you a few Questions about the current documentation of death certificate in your organization.
First, I would like to ask you a few questions about the importance of proper accuracy and completion of death notification reported

- Is the cause of death reported in the death notification confirmed with the patients file?
- Is their routine follow up review for the cause of death certified in the death notification?
- Is the death notification certificate form used are well designed to fulfill ICD-10 criteria?
- Are our physicians trained or familial with the proper way of completing death notification certificate?
- Are the filing system and documentation of death notification certificates are well organized?
- To which extent the mortality data are used in monitoring the health status in Gaza strip?
- Do you regularly use knowledge about mortality and health status to set priorities and to formulate and evaluate public health strategies and programs? Could you provide 2 or 3 examples of such utilization?
- Which suggestions could be recommended in order to improve the process of death notification certificate documentation?
- How recommendations could be implemented and which changes are necessary?
- Is there anything else we should have talked about, but did not?

Annex(12)

بسم الله الرحمن الرحيم

السيد :

الموضوع : تحكيم إستبانة بموضوع

Evaluation Of The Current Documentation Of Death Certificates In The Gaza Strip.

أرجو من سيادتكم التكرم بتحكيم الإستبانة المرفقة من حيث علاقة مضمون الأسئلة و ارتباطها بأهداف الدراسة، حيث أنني طالب في جامعة القدس- أبو ديس كلية الصحة العامة ، أقوم بعمل هذه الدراسة كمشروع للحصول على درجة الماجستير .
نثمن مشاركتكم في تحكيم هذه الإستبانة لما فيه من فائدة تعود على البحث الصحي و الخدمات الصحية .
مرفق أهداف البحث

و دمتم ذخرا و سندا

أسم الطالب : جواد جابر سلامة بدوان
الكلية و التخصص : كلية الصحة العامة مسار الإدارة الصحية
جوال :0599605225
بريد إلكتروني : badwanj@gmail.com

Annex(13)

Name of experts

1- Dr. Bassam Abo Hamad

2- Dr. Sobhi Skaik

3- Dr. Riyad Awad

4- Dr. Mohamed AL Maqadma

5- Mr. Mahmoud Daher

6- Mr. Abed El Naser Soboh

7- Mr. Sadi Abo Awad

من خلال الخبرة العملية في كيفية تعبئة و توثيق شهادات الوفاة كما أن لجان المراضة و الوفيات بالمستشفيات غيرمفعلة .

أستنتج الباحث من خلال الدراسة بأنه يوجد مشكلة حقيقية بموضوع توثيق شهادات الوفاة بقطاع غزة فيما يخص البيانات الشخصية و الديموغرافية للمتوفى ، سبب الوفاة، تصديق الأطباء على شهادات الوفاة و متابعة ذلك في مكاتب الرعاية الصحية الأولية ، هذا و أن الأطباء يفتقرون إلى التدريب الجيد و الخبرة الطبية في كيفية توثيق شهادات الوفاة و مدى أهميتها.

يوصى الباحث أن التدريب الجيد المستمر للأطباء على الطريقة الصحيحة لتوثيق شهادات الوفاة و تنشيط لجان المراضة و الوفيات داخل المستشفيات و الشروع في تأسيس لجنة مهنية في وزارة الصحة مسئولة عن الاستعلام عن أسباب الوفاة الموثقة يمكن أن يساعد في تعزيز توثيق أفضل و أكثر دقة لشهادات الوفاة . كما يوصى الباحث لعمل المزيد من الدراسات من الدراسات لتقصى أثر التوثيق الجيد لشهادات الوفاة على إحصائيات الوفيات و الحالة الصحية للسكان .

تقييم واقع توثيق شهادات الوفاة الحالي بقطاع غزة

إعداد: جواد جابر سلامة بدوان .

إشراف: د. يحيى عابد .

ملخص الدراسة:

تعتبر شهادات الوفاة مصدر ثرياً للمعلومات المستخدمة في عمل إحصائيات الوفاة في جميع أنحاء العلم حيث يعتمد عليها الكثير من الباحثين في مجال الصحة لتقييم العوامل الصحية المؤثرة في السكان من خلال تحليل المعلومات الموثقة بشهادة الوفاة، حيث تعتبر شهادة الوفاة المصدر الرئيسي للمعلومات عن سبب الوفاة و الأمراض التي سبقت الوفاة، هذا و قد هدفت هذه الدراسة إلى تقييم واقع توثيق شهادات الوفاة بقطاع غزة .

تم الاعتماد على المنهج الو صفى الكمي و الكيفي المقطعي من أجل تقييم واقع توثيق شهادات الوفاة بقطاع غزة. تم جمع المعلومات باستخدام إستبانة عبارة عن استمارة استخلاص، هذا بالإضافة لعمل مقابلات معمقة مع أثنى عشر طبيبا و موظفاً في وزارة الصحة لهم علاقة و لديهم الخبرة فى هذا المجال. عينة الدراسة تم اختيارها من شهادات الوفاة المسجلة بوزارة الصحة من تاريخ 2009/7/1 و حتى 2009/12/31 حيث كان عدد شهادات الوفاة 256 شهادة وفاة تم اختيارها بطريقة العينة المنتظمة، وجد منها 237 شهادة وفاة فكان معدل وجود هذه الوثائق 92.5% . جمع البيانات و عمل المقابلات كان من قبل الباحث.

تبين النتائج أن التبليغ عن البلدة الأصلية للمتوفى بشهادة الوفاة لم توثق بنسبة28.7% و تاريخ الوفاة للمتوفى لم يوثق بشكل صحيح بنسبة 37% ،أيضا بينت الدراسة أن مهنة المتوفى كانت غير موثقة بنسبة 56% و عنوان المتوفى لم يكن موثقا بشكل كامل بنسبة 67.9% ،كما أظهرت النتائج أن ساعة الوفاة لم توثق بشكل سليم بنسبة 19% وبالنسبة للبند الخاص بالأطفال حديثي الولادة فيما إذا كان قد عاش أقل من 24 ساعة لم يوثق بنسبة 97%.

هذا و قد أظهرت النتائج أيضا أن 38% من أسباب الوفاة لم توثق بشكل كامل و صحيح و أن 100% من شهادات الوفاة لم تشير فيما إذا كان المتوفى أنثى حامل أو وضعت أو أجهضت في وقت الوفاة ،كما أظهرت النتائج أن نسبة 10.5% من شهادات الوفاة لم تكن مصدقة بشكل كامل و أن نسبة 11.8% من شهادات الوفاة لم تكن مصدقة و مسجلة بمكاتب الرعاية الصحية الأولية بشكل كامل ، و أخيرا بينت النتائج أن معظم الأطباء غير مدربين و لكن عندهم المعرفة و ذلك