Deanship of Graduated Studies

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Evaluation of Occupational Health Hazards among Nurses in Governmental Primary Health Care Centers in Gaza Governorates

Submitted by

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Evaluation of Occupational Health Hazards among Nurses in Governmental Primary Health Care Centers in Gaza Governorates

Submitted by

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A thesis Submitted in Partial Fulfillment of the Requirement for the Degree of Master in public Health

Supervisor

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Al Quds University- Jerusalem

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Dedication

I would like to dedicate my work For my family, "husband and daughters" who offered me unconditional love and support throughout the course of this thesis.

For my parents who were my biggest supportive for me during this work.

To my directorates and colleagues in nursing who assessed and encouraged me during this thesis

Declaration

I hereby declare that this thesis is my own work and effort and that it has not been submitted anywhere for any award. Where other sources of information have been used, they have been acknowledged and that this thesis (or any part of it) has not been submitted for a higher degree to any other university or institution.

Signature: …….

Date: …….

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Abstract

Nurses are regularly confronted with a variety of biological, physical, psychological, ergonomical and chemical hazards during the performance of their work duties. This study aims to evaluate the occupational health hazards among nurses working in governmental Primary Health Care centers in Gaza governorates. The study was carried out in order to rank the main occupational hazards that nurses encounter, to identify nurses' perceptions about occupational health hazards and to describe the relationships between socio-demographic factors and the occurrence of occupational health hazards using close ended-self-administered questionnaire. The study sample consists of all nurses who were working in the selected 9 Primary Health Care centers (level four). The total number of the study sample was 120 nurses, out of them, 112 responded with a response rate of 93%.The study results showed that nurses' ranking of occupational hazard was as follows; 49.0% perceived that physical hazards ranked the first, followed by biological hazards (31.8%), ergonomic and safety hazards (30.9%), psychological hazards (29.1%) and the last one is chemical hazards (26.4%). Regarding the actual exposure to hazards, it was noticed that the most frequently type of hazards that nurses had experienced were chemical and ergonomic related hazards such as eyes redness (67%), skin redness (88%) and respiratory distress (80%). Also the results revealed that 51.8% of the study population reported complaining from head and neck pain, 63.4% complained of shoulder pain, 39.3% complained of back pain, 52.7% had lower limbs pain and 76.8% of the study population complained of pelvic pain. In addition, the result showed that 24.1% of the study population had complained of anxiety, 20.5% reporting having sleep disturbances, and 23.9% had complained of other problems such as phobia and poor communication. Furthermore, result revealed that there were no registry of cases suffering from occupational related diseases such as Human Immune Deficiency Virus and Hepatitis (C&B).

Analysis revealed that there were no statistically significant differences in knowledge and perceptions, about hazards and socio-demographic factors such as age, sex, and experience except that there was statistically significant differences in knowledge and perceptions and level of education. The study shows that there was statistically significant differences between environment and work department. Also it shows that there were statistical significant differences between the actual exposure to hazards and sex.

The study concluded that paying attention to hazards in health care settings is essential. Management needs to create safe working environment, free from different kinds of hazards according to the recommended safety standards. Also, the provision of training to managers and employees is an essential element of any health and safety promotion program.

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List of abbreviations

AFL-CIO	The American Federation of Labor and Congress of Industrial Organizations.
ALO	Arab Labor Organization
OSHA	Occupational Safety and Health Administration .
BLS	Bureau of Labor Statistics.
CDC	The Center for Disease Control and Prevention
HCWs	Health Care Workers.
HBV	Hepatitis B Virus .
HCV	Hepatitis C Virus .
HIV	Human Immunodeficiency Virus .
ILO	International Labor Organization
MSDs	Musculoskeletal disorders
NGOs	Nongovernmental Organizations.
NIEHS	National Institute of Environmental Health Sciences
NHMRC	The National Health and Medical Research Council
NSIs	Needle Stick Incidents .
NIOSH	National Institute of Occupational Safety and Health
OBPN	Occupational back pain in nurses
PCBS	The Palestinian Central Bureau of Statistics.
PHC	Primary Health Care .
PTSD	Post Traumatic Stress Disorder.
PPE	Personal Protective Equipment .

RSI	Repetitive Strain Injuries.
SPSS	Statistical Package for Social Sciences Program
TB	Tuberculosis
UNRWA	United Nations Relief and Works Agency
WHO	World Health Organization
WB	West Bank
FP	Family Planning
ANC	Antenatal Care
MCH	Mother and Child Health
GAO	General Accounting Office
RN	Register Nurse
OH	Occupational Health
NCD	Non-communicable Disease
LPN	License Practical Nurse

Definition of terms

Occupational Health

Occupational health refers to the identification and control of the risks arising from physical, chemical, and other workplace hazards in order to establish and maintain a safe and healthy working environment (NIOSH , 1999).

Occupational hazard

Occupational hazard can be defined as a risk to a person usually arising out of employment. It can also refer to a work, material, substance, process, or situation that predisposes, or itself causes accidents or disease at a work place(http://www.osha.gov).

Hazardous materials

Are materials whether they are chemical, physical or biological materials that can cause or put the worker at risk to life, health and environment. these materials can be explosive, flammable, combustible, corrosive, reactive, poisonous, biological or radioactive. They can be solid, liquid or gaseous (NIOSH 1996)..

Condition

An event, action or obligation that must be fulfilled or completed before another proposition is fulfilled (http://www.osha.gov).

Nursing

Nursing includes the promotion of health, prevention of illness, and the care of ill, disabled

and dying people. Advocacy, promotion of a safe environment, research, participation in shaping health policy and in patient and health systems management, and education (NIOSH , 1999).

Musculoskeletal disorders (MSDs)

It is a condition where a part of musculoskeletal system is injured over time. The disorder occurs when the body part is called on to work harder (NIOSH , 1999).

Repetitive Strain Injuries (RSI)

It is known as repetitive stress injury, repetitive motion injuries or occupational overuse syndrome, which is an injury of the musculoskeletal and nervous systems that may be caused by repetitive tasks , forceful exertions or awkward positions (Wright, 2003).

Noise

Environmental noise that is annoying, distracting, or physically harmful. Or it is a sound that is loud, unpleasant, unexpected, or undesired (http://www.thefreedictionary.com/noise).

Immunization

The process of inducing immunity to an infectious organism or agent in an individual or animal through vaccination (http://www.thefreedictionary).

Ergonomics

Is the study of the fit between the work environment and work activity to the physical

characteristics and capabilities of the worker (Collins,2004).

Personal Protective Equipment (PPE)

A part of standard precautions for all health care workers to prevent skin and mucous membrane exposure when in contact with blood and body fluid of any patient. Personal equipment includes protective laboratory clothing, disposable gloves, eye protection, and face mask (http://medical-dictionary).

Chapter one

Introduction

Chapter 1

Introduction

1.1. Research background

Since Florence Nightingale's time, the environment has been viewed as a major domain of nursing concern, yet few nurses and other health care providers receive many formal environmental health education or training, where the environment is considered an important element that interplays with human health and demands the attention and understanding of health care providers especially nurses (http://www.nap.edu).

Occupational health hazards are known to occur, where accidents and diseases in the workplace have generally seen as part of our daily life. Prevention of hazardous conditions in the workplace is central to the practice of occupational health as a profession and occupational health should be an integral part of the broader delivery of public health services.

In Palestine, as in most developing countries, there is difficulty in obtaining accurate estimates of the frequency of occupational health diseases. Several factors are involved where many problems do not come to the attention of health professionals and employers and are therefore not included in data collection systems. Also many occupational medical problems that come to the physicians and employers are not recognized as work-related. Beside that some medical problems recognized by health professionals or employers as work-related are not reported (http://www.emro.who.int).

The National Institute for Occupational Safety and Health (NIOSH) in 1996 conducted a study regarding the occupational health of female workers; NIOSH states that "Little is known about a number of other factors that may increase the risk for occupational disease

and injury, including the role of gender". As in other areas of health research, many occupational studies were conducted with male study subjects. However, as women increase their presence in the labor workforce, the need to protect the safety and health of female workers has been increasingly recognized by employers and occupational health professionals (NIOSH 1996).

The Center for Disease Control and Prevention (CDC), 1996 reported that each day an average of 137 persons die from work-related diseases and an additional 17 die from injuries on the job. Each year 74000 require treatment in hospital emergency departments for work-related injuries (NIOSH, 1999).

In Egypt the total number of injuries and deaths due to labor workforce were 246 cases during 1989, which represented a rate of 2.14 injuries per 100.000 workers (MMT 1991).

In Palestine, research was conducted by Jouda (2006), shows that 41.2 % of the study population of health workers suffer sleep disturbances due to occupational hazards among health workers. Also it shows that female workers affected three times more than males. Regarding medical personnel, the nurses and paramedical are affected more than doctors and administrators. Back pain was the most dominant and 26.4 % complain of eyestrain (Jouda, 2006).

The main concern of this study is to evaluate the occupational health hazards among nurses working in primary health care centers in Gaza governorates and to suggest methods of improving their work conditions.

1.2. Problem statement

Nurses confront potential exposure to infectious diseases, toxic substances, back injuries, and radiation. They also are subject to hazards such as stress, shift work, and violence in the workplace. Occupational hazards have been a long-standing concern of the health care

settings. Studies indicate that health care workers have higher rates of health hazards than other professions, and elevated rates of depression and anxiety linked to job stress. In addition to psychological distress, other outcomes of job stress include burnout, absenteeism, employee intent to leave, reduced patient satisfaction, and diagnosis and treatment errors (http://www.cdc.gov/niosh/docs/2008-136).

Occupational health is an important public health issue in Palestine for the **following reasons:**

Inadequate laws and regulations that would ensure employee safety where workplaces are not properly inspected by the authority, which lead to occupational diseases and work accidents.

Lack of insurance against occupational accidents in work places.

lack of awareness among workers of protection provided by national occupational health and safety legislation .

Lack of knowledge and skills among workers' representatives and leaders to address occupational health and safety issues.

Impossibility for workers to file lawsuits in courts due to high costs and the burden of proof (including medical examinations and tests)

Absence of monitoring of law implementation by labor inspectors and inspectors from the Ministry of Economy and Industry

Absence of monitoring of law implementation in Israeli industrial zones in the West Bank by Palestinian labor inspectors

Gaps in legislation, absence of occupational health clinics and total absence of occupational medicine from the Palestinian health system (*Shubita, A,* 2004).

Also report in Palestine shows that occupational health services is integrated in the general health services and there were no data in the annual reports

1.3. Justification of the study

Health professionals as nurses are exposed to various occupational health problems as injury, stress-related health problems, or experience emotional abuse from patients. Institutional shortages in human resources, equipment, and supplies and the timely maintenance of equipment gradually lead to the deterioration of health care services and create dissatisfaction at work (National Survey of the Work and Health of Nurses, 2005). The safety of nurses themselves, and subsequently that of their patients depends directly upon the degree to which nurses have knowledge of occupational hazards specific to their jobs and managerial mechanisms for mitigating those hazards.

It was observed that many nurses are suffering from health hazards especially musculoskeletal problems, which cause an increase rate of absenteeism and fatigue during the work. In Palestine, there is a lack of data and reports on occupational health services (MOH, 2004) where occupational health services are integrated in the primary health services with few records of occupational health accidents. There is only one study on occupational health which had focus on the ergonomic hazards among health workers in general, which mean that there are no specific studies related to nurses.

1.4. Research objectives

1.4.1. General objective

The aim of this study is to assess the occupational health hazards among nurses working in governmental primary health care centers in the Gaza Governorates.

1.4.2. Specific objectives

1. To rank the main health hazards that occur among the nurses who are working in governmental primary health care centers.

2. To identify the relationship between nurse's perception, knowledge and socio-demographic factors (age, gender, years of experience and level of education) on the occurrence of occupational health hazards.

3. To identify the relationship between actual exposure to occupational health hazards and socio-demographic factors

4. To provide the decision makers with helpful suggestions and recommendations.

1.4.3. Research questions

1. What are the main types of hazards that the nurses encounter during their works?

2. What is the occupational situation among nurses in the Gaza strip primary health care centers?

3. Are the nurses aware and have enough knowledge about occupational health hazards?

4. Is there differences between age, gender, years of experience and level of education on the occurrence of health hazard

5. What is the impact of educational degree (Diploma and Bachelor degree) on the occurrence of occupational health hazard.

6. Are the nurses satisfies with their work environment

7. Are nurses aware of their rights regarding their occupational health.

8. What are the recommended strategies that may help in decreasing the incidence of occupational health hazard.

1.5. Geographic and demographic context

1.5.1. Geographical context

The Gaza strip comprises a narrow zone of land , located South–West of Palestine . Gaza strip is stretches along the Mediterranean Sea 50 Km. long to 12Km.wide with a surface

area about 365 square Km, and altitude of 0-40 meters above the sea level (MOH, 2005). As mentioned in Palestinian MOH annual report (2006) Gaza Strip consists 6.1% of the total area of the Palestinian Territories with a population density of 3.808 inhabitants per square Km (MOH, 2006) .

1.5.2. Demographic context

According to PCBS (2007),the population of the Palestinian territory is estimated to about 3,761,646 inhabitants, about 2,345,107 inhabitants (62.3%) in West Bank (41.6%) are refugees, and 1,416,539 inhabitants (37.7%) in Gaza strip (58.4%) of them are refugees (MOH 2009). Gaza Strip comprises the following five governorates, North Governorate constituting about 17% of the total area of Gaza Strip, Gaza Governorate constitute about 20.3% of the total area of Gaza Strip, Mid-Zone Governorate constitute about 15% of the total area of Gaza Strip, Khanyounis Governorate constitute about 30.5% of the total area of Gaza Strip, Rafah Governorate constitute about 16.2% of the total area of Gaza Strip (Palestinian Central Bureau of Statistics (PCBS, 2007)) .

Governorates Gaza Governorate has the largest population size in Gaza Strip (13% of the total population of Palestinian Territory (PCBS, 2006). Studies estimates that, 45.7% of the people in Gaza Strip are under 15 years old, and 5% are above 65 years old. Gender distribution is estimated to be 50.6% males, and 49.4% females. Life expectancy is 74.1 years for females and 71.1 for males (MOH 2009) .

1.6. Political and socio-economical context

Gross National Product (GNP) in Palestine had been subjected to fluctuations since 2000. GNP was US $ 5,454 million in 1999 and dropped to US $ 4,169 million in 2005 (MOH, 2005). In 1999, the Gross Domestic Product (GDP) was US $ 4,512 million. But since 2000, terrorism and collective punishment as dividing Palestinian regions and separate and isolate

cities and villages and limiting movements and transportation between Palestinian cities. In addition to murdering and destruction of homes, land and agriculture. The social and economic turmoil has translated into poverty among PNA territories population, when Israel imposed a strict closure on Palestinian territories as a response to the second Intifada, it decreased to US $ 3,557 millions in 2002 (World Bank, 2007).

According to the World Bank, the unemployment rate increased from 11.8% in 1999 to 32% in 2005. The poverty rate in Palestine was 40%, and this is largely due to Israeli restrictions on Palestinian territories (MOH, 2005). In general, the unemployment rate in the Gaza Strip was higher than it in the West Bank (World Bank, 2003).

After the election in 2006 the political environment has deteriorated even more, because of the continuous closure on Gaza Strip resulting in a significant hardening of Israeli and wider international policy in relation to the PNA and in a general withdrawal of the limited international support (World Bank, 2007).

1.7. Environmental Status

Environmental health status in Palestine is facing serious threats due to lack of the basic knowledge and resources to maintain sustainable development, such as the absence of clean land, uncontrolled population growth, limited land resources, long term isolation as a result of the regional political circumstance and the underdeveloped environmental protection system. This had caused serious deterioration fast depletion and contamination of our environmental resources which in turn lead to health risks among citizens (Lubbad, 2006).

The major environmental health problem in Palestine including water quality, food hygiene and safety air pollution. Also handling of both hazardous waste and infectious waste mixed

up with municipal solid waste is a critical problem which causes environmental and health risks in the Palestinian territories (UNEP,2006) .

1.8. Palestinian health care system

Over the past years, the Palestinian heath care system had been developing in dynamic way to face the instability of the Palestinian situation. Palestinian MOH has been fully responsible of the management of health services in the Palestinian Territories since the transfer of responsibilities from the Israeli Civil Administration to the Palestinian Authority in 1994. MOH is the only health authority responsible for supervision, regulation, licensure, and control for all health services. United Nations Relief and Works Agency (UNRWA), Medical Services for Police and general security, and other Nongovernmental Organizations (NGOs) are considered as second hand providers of health care services in Palestine (MOH, 2003). The primary health care (PHC) system is considered as a major component of the Palestinian health care system. It provides health care to all Palestinian people especially for children and other vulnerable groups through primary and secondary health care services as well as tertiary services. PHC centers try to offer accessible health services for all Palestinians regardless of the geographical locations. According to MOH policy PHC centers classified from level 1 to level 4. At the end of 2008, there were 731 PHC centers in Palestine. Out of those 125 centers in Gaza. MOH is considered the main provider with 54.5% from the total PHC centers ,56 of these centers are in the Gaza Strip (MOH,2009) .

1.9. Health indicators in Palestine:

In Palestine, the crude death rate is 2.7 per 1000 population. The Infant Mortality Rate is 24 per 1000 live births (MOH 2009) (62 in Turkey, 41 in Egypt, 40 in Tunisia, 21 in Jordan, and 7 in Israel) (Hamad, 2001). The leading causes of adult death are similar to

developed countries including cardiovascular diseases and cancers with a high prevalence of stress and psychological trauma related diseases. On the other hand, diseases of poverty are still prevalent such as respiratory infections and diarrhea diseases that remain important causes of child mortality and morbidity (MOH, 2009).

Thus, it could be said that despite the difficulties that facing Palestinians, their health status is not bad compared with other countries at a similar level of economic development.

1.10. Health human resources in Palestine

The total number of health manpower who is working in the MOH (2009) about 13000 as stated in the Palestinian MOH annual report, distributed as the following 59% in the Hospitals ,and 27%in the PHC,14% Other directorates ,and they are distributed according to the nature of work as 39% Administrators,26% Nurses,18% Physicians, and 17% Others. But in the non-MOH health organizations is not clearly documented and has no accurate statistics and many of them are working in the governmental health facilities mainly , comparison with statistics in 2005 that was 20,796, out of them 12,444 work in MOH 7,693 in Gaza Strip (MOH , 2006, 2009).

Now a day nurses who are offered services in the MOH departments in Gaza Governorates about 2180, (17.5%) of them working at PHC centers in Gaza Strip (Nursing Unit in The MOH 2009) .

1.11. Hospitals in Palestine

In Palestine, the MOH is the main provider of secondary healthcare services and some of the tertiary care. There are 78 hospitals in Palestine, with population/hospital ratio of 47,920. In Gaza Strip, there are 24 hospitals with population/hospital ratio 57,098. In West Bank and Jerusalem, there are 54 hospitals with population/hospital ratio 43,844.

MOH owns and operates 22 hospitals (10 in the Gaza Strip and 12 in West Bank, the non-MOH hospitals constitute 71.1% of the total hospitals in Palestine (about 63.6% of the total hospitals in the West Bank and 54.5% of the total hospitals in Gaza Strip) (MOH, 2005).

1.12. Primary health care centers and workers

Primary health care system (PHC) is a major component of Palestinian health care system; this system has provided health care to all Palestinian people especially for children and other venerable groups. Primary health care centers in Palestine provide primary and secondary health care services as well as tertiary services.

According to MOH policy, PHC centers classified from level I to level IV. They offer different health services according to clinic level, theses services include maternal and child health, care of chronic diseases, daily care, family planning, dental, mental services and other services according to center level. The MOH is working with other health sectors in providing the primary health services mainly with UNRWA, and NGOs sector. At the end of 2005, there are 654 PHC centers in Palestine; these centers are cared for about 3.7 million people According to the annual report of the Ministry of Health 2009, the numbers of the governmental primary health care centers Gaza strip are 56 centers . There are 330 nurses working in Gaza strip. North governorate 62 nurses, Gaza city 120 nurses , Mid-Zone 72 nurses, and South governorate 81 nurses

The PHC centers provide special health care services in different aspects, 42 centers provide immunization and antenatal care and family planning services, in addition to 107 specialized clinics and 30 dental and oral clinics. About 35 centers have laboratories and 13 centers have x- Ray units (MOH, 2009).

1.13. Legislation

In Palestine labor Law No. 7 was ratified in 2000 and replaced the 1960 Jordanian Labor Law in the West Bank and the 1964 Egyptian Labor Law in the Gaza Strip, it was drafted in line with Arab Labor Organization (ALO) and International Labor Organization (ILO) standards. The Labor Law No. states that "Work is a right for each citizen who is capable thereof. The Palestinian National Authority shall provide it on the basis of equal opportunities and without any kind of discrimination whatsoever." It is supplemented with about 30 bylaws that were ratified during 2003, 2004, 2005 and 2006. The bylaws cover a broad range of issues, concerning special protection and regulation on work for minors, women and seasonal workers, protective safety and health standards and conditions in the workplace, including periodical medical checkups, on-location first-aid equipment, and General regulations regarding working hours and extra work and specific regulation regarding dangerous and harmful-to-health work and work during religious and official holidays (BLL, 2000).

In Palestine, the health law number 20 in (2004) states that "the work environment and safety measures at work must be laid out and inspected by the MOH and other related organization " ((BLL, 2000).

1.14. Nursing in Palestine

Nursing is one of the most popular professions in the health care line. It can be said that nursing is providing health care assistance under the guidance of medical science and nursing ethics in accordance with the nursing methods, laws, and theories that are accepted and practiced today. The job of nursing or the nursing process entails solving the health problems of the patient. It is a continuous process of providing care with an aim towards recovery of the health of the patient. However, nursing does not only focus on patients'

physical needs, but also on their emotional and social requirements, as well. Therefore, the increased awareness of the Palestinian nurses, together with the feasibility to promoting and developing the nursing profession, has seen in the last years. Now there is advanced technology used to provide the advanced health care consistent with these development nurses needs to be qualified, efficient and effective. Specialty nursing education future plan for nurses/midwives need to concentrate on fields with least available such as oncology, health education, women health, management, and orthopedic (MOH, 2001).

The total number of employed nurses in Palestine 4320 at the end of 2005, out of which 3005 are working in MOH(1455 in WB, and 1550 in GS,1005 in NGOs, 258 in UNRWA and 52 in private sectors (MOH, 2006).

1.15. Description and Definitions

There was a needs to differentiate and classify the occupational diseases and problems according to type of hazards and system affected to facilitate their control. Nurses may be exposed to more than one type of hazards, and in an attempt to systematize this large number of individual hazards a classification system has been suggested.

1.15.1. Physical hazard

Physical Hazards consider as one of the major classes of hazardous materials covered by the hazard communication standard. They are substances which threaten your physical safety. These substances can be combustible, compressed, explosive, flammable, oxidizer, pyrophoric, unstable, or water (moisture) reactive (http://www.businessdictionary.com).

1.15.2. Chemical hazard

OSHA laboratory standard defines a hazardous chemical as a chemical for which there is statistically significant evidence based on at least one study conducted in accordance with established scientific principles that acute or chronic health effects may occur in exposed

employees. The term includes chemicals that are carcinogens, toxic or highly toxic agents, reproductive toxins, irritants, corrosives, sensitizers, hepatotoxins (liver toxins), nephrotoxins (kidney toxins), neurotoxins, agents that act on the hematopoietic (blood-forming) system, and agents that damage the lungs, skin, eyes, or mucous membranes. It also include chemicals that pose physical hazards. A chemical is a physical hazard if it has flammable, combustible, explosive, oxidizing (http://www.lbl.gov).

1.15.3. Biological hazard

A biological hazard or biohazards an organism, or substance derived from an organism, that poses a threat to human health. This can include medical waste, samples of a microorganism, virus or toxin that can impact human health (http://en.wikipedia.org).

1.15.4. Psychological hazard

Identification of psychological hazards (frequently referred to as 'stressors') requires particular effort as they are not as easily identified as physical hazards, they may occur suddenly as a result of a traumatic experience, such as a threat or an armed hold-up can build up gradually, such as a result of continued high work demands and conflict in working relationships(Safeguard replaces, 2008).

1.15.5. Ergonomic hazards

Ergonomics is the science about how to make work environment and work tools more comfortable to use.The main ergonomic occupational risk factors include:

− Load lifting

− Repetitive movements

− Static work load

− Working posture

− Body inclination

− Movement distance in work environment (BLS,1994).

Chapter two

Literature Review

Chapter 2

Review of the literature

Introduction

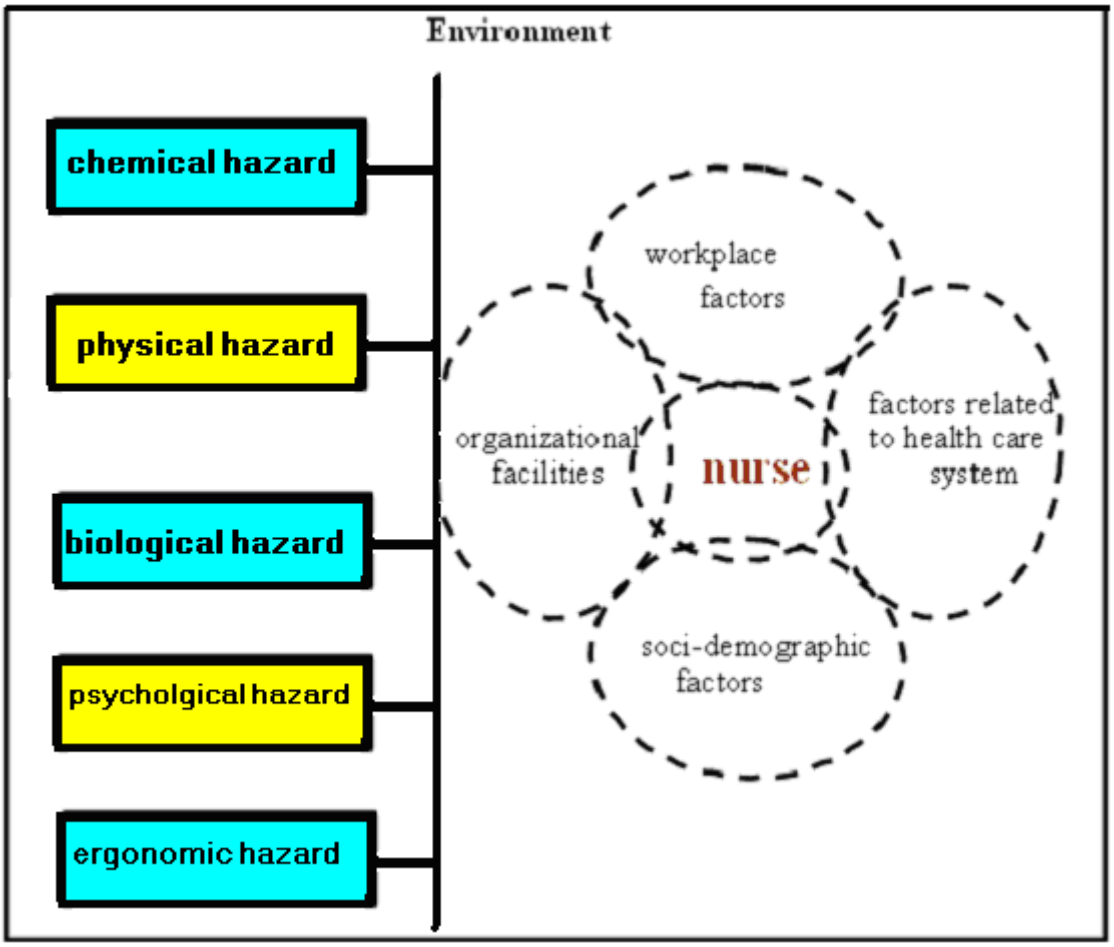
This chapter presents some previous studies concerning the occupational hazards that the nurses encounter during their work. It discusses the conceptual framework and the main concepts and variables related to the study. These concepts include socio-demographic factors, workplace factors, organizational facilities and factors related to health care system.

The history of occupational hazard awareness can be traced back to the 18th century when Bernadino Ramazzini, who is referred to as the father of occupational medicine, recognized the role of occupation in the dynamics of health and diseases (Asuzu MC 1994). Nursing has its hazards, especially in hospitals, nursing care facilities, and clinics, where nurses may care for individuals with infectious diseases. The environmental hazards of concern fall into five widely accepted classes: chemical, physical, biological, and psychosocial, and ergonomic hazards.

2.1. Conceptual framework

A healthy work environment for nurses is complex and multidimensional. It comprises numerous components and relationships among these components. A comprehensive model is needed to guide the development, implementation and evaluation of a systematic approach to enhancing the work environment of nurses. The Comprehensive Conceptual Model for Healthy Work Environments for Nurses presents the healthy workplace as a product of the interdependence among individual, organization and health care system determinants as shown below in Figure 1.

Figure1, conceptual frame work



This study is an attempt to evaluate various occupational health hazards among nurses. Different risk factors contributing to health in nursing occupation were reviewed systematically and issues were identified. A conceptual model involving potential risk factors such as socio-demographic and factors related to the workplace.

The model suggests that the nurse's functioning is mediated and influenced by interactions between the nurse and her/his environment. Thus, interventions to promote healthy work environments must be aimed at multiple components of the system, so interaction must influence not only the factors within the system but also influence the system itself.

This model defines the healthy work environment as a group of practice setting that maximizes the health and well-being of nurses depending on many factors such as:

*Socio-demographic characteristics as gender, age, years of experience knowledge and education.

*Workplace factors including the requirements of the work which necessitate physical capabilities and effort on the part of the individual. Included among these factors are (types and place of work, workload, heavy lifting, exposure to hazardous and infectious substances, and threats to personal safety).

*Health care system related factors include the policy factors that health care delivery models, funding, legislative, flexibility of the system and exposure standards.

*Organizational facilities factors such the presence of the quality of occupational health services, continuous training and education program and the possibility of direct medical intervention.

2.2. Types of occupational hazards:

2.2.1. Physical Hazards

Physical and environmental hazards commonly found in hospitals include slippery floors, electrical hazards, noise, poor lighting, and inadequate ventilation.

Ionizing and non-ionizing radiation, electricity, and heat are examples of physical hazards found in hospitals. Ionizing radiation is used in diagnostic procedures such as x-ray, fluoroscopy, and angiography, and in treatments using radioactive implantations or injections. Cumulative and long-term health effects include genetic damage and adverse reproductive outcomes (http://www.businessdictionary.com).

Radiation

The risks of long-term low-level exposure to ionizing radiation are not fully known. Exposure to ionizing radiation is associated with mutagenic and teratogenic properties leading to an increased risk of miscarriage, stillbirth, and other adverse reproductive outcomes, as well as cancers such as myelogenous leukemia, bone, and skin cancer. Nurses have potential exposure to ionizing radiation while holding patients who are undergoing radiographs, and during direct care of patients (http://www.nap.edu).

Measures to minimize exposure include maximizing distance between the radiation source and the worker, using appropriate shielding and minimizing exposure time. Special attention should be given to the maintenance of portable fluoroscopy and x-ray equipment which may scatter radiation during procedures. Non-ionizing radiation includes microwaves, magnetic fields, and lasers. The intensity of the light beam of lasers poses a risk especially to the eyes and skin. Procedures for the safe use of lasers should include training, posting warning signs, using appropriate safety eyewear, and using non-reflective tools (http://www.mflohc.mb.ca).

Noise

Noise often found in different settings, clinics, offices, hospitals, and many other workplace environments where nurses work. Occupational noise exposure is commonly associated with hearing loss (Senate Labor and Public Welfare Committee, 1970).

2.2.2. Chemical Hazards

Numerous chemicals found in hospitals and clinics may be toxic or irritating to body systems. They may be present as dusts, vapors or gases, or liquids and they may be medications and other substances used for therapeutic purposes. Chemicals can enter the body through contaminated food or cigarettes, absorption through the skin, inhalation or by

accidental needle stick. The major routes of entry are by inhalation or skin absorption (Lindbohm, M, 1990).

Types of chemical exposures

Latex allergies:

Latex products present additional hazards for nurses. Experts estimate that 8 to 12 percent of healthcare workers, especially those who frequently use latex gloves, are sensitive to latex.

Following the 1987 recommendation for universal precautions, latex reactions made their way into the spotlight with the Food and Drug Administration receiving more than 1,000 reports of adverse reactions in the ensuing four years, including 15 deaths. In 1997, NIOSH issued an alert on latex sensitivity, prompting many healthcare institutions to take steps to decrease the number and severity of these reactions, including substituting un-powdered latex and non-latex gloves and reassigning latex-sensitive personnel to areas where the use of latex gloves is limited (NIOSH,1997).

Disinfectants and sterilizing agents:

Disinfectants and sterilizing agents are another common chemical hazard for nurses. Various pharmaceutical and sterilizing agents are known to be highly toxic. Research has shown that risk of spontaneous abortion was increased more than two-fold among nurses occupationally exposed to antineoplastic drugs (cancer chemotherapy) (Selevan, S 1985). In recent years, glutaraldehyde, a sterilant, has been blamed for a variety of symptoms ranging from mild dermatitis to respiratory and neurological problems. Once kept in open basins in closed rooms, poured and regularly splashed, glutaraldehyde now is recommended for use with ventilation hoods, personal protective equipment, and closed containers (SATTAR,1989).

Isopropyl Alcohol

This is commonly used in medical applications as both an antiseptic and a disinfectant. In addition to being flammable, isopropyl alcohol can cause irritation to the eyes, nose and throat. It can cause defecting of the skin, which leads to irritation, drying and cracking. Contact dermatitis has also been noted. Exposure to high concentrations has a narcotic effect with symptoms of drowsiness, headache, staggering and unconsciousness (http://www.safety.rochester.edu).

Toxic smoke

In addition to coming into contact with sterilants such as glutaraldehyde, nurses must contend with substances unique to their environment. Unfortunately, not all nurses are aware of the danger. There are so many who don't even know there is a hazard.

Exposure does not always produce adverse health effects. Chemicals for which there is little or conflicting information about potential toxic effects should be treated as toxic. Toxic chemicals are best dealt with by preventing worker exposure. This can be done by identifying the chemicals, considering their toxic properties and potential health effects and implementing control measures (http://www.mflohc.mb.).

Toxic substances

Elemental mercury is used in various instruments found in healthcare settings. Mercury is an element that has many uses and which becomes a toxic pollutant in a variety of ways where it is toxic to human nervous systems and immune systems and creates a risk for hypertension and renal damage. Animal studies, including non-human primates, have found reproductive problems including decreased conception rates, early fetal loss, and stillbirths (http://www.wsna.org, Environmental-Hazards).

Prevention of toxicity can be accomplished by employee education, environmental controls, and proper handling of spills.(http://www.wsna.org//Workplace-Environment).

2.2.3. Biological Hazards

Workers are most concerned about possible exposure to blood-borne diseases, infectious diseases that are transmitted through contact with infected blood or certain body fluids. Healthcare personnel are at risk for occupational exposure to blood borne pathogens, including hepatitis B virus (HBV), hepatitis C virus (HCV), and human immunodeficiency virus (HIV). Exposures occur through needle sticks or cuts from other sharp instruments contaminated with an infected patient's blood or through contact of the eye, nose, mouth, or skin with a patient's blood. Important factors that influence the overall risk for occupational exposures to blood borne pathogens include the number of infected individuals in the patient population and the type and number of blood contacts. Some occupations have higher risks due to the client population and the types of procedures being performed. These include: surgeons, nurses, operating and emergency room staff, lab workers, paramedics, fire fighters, police, staff in hemo-dialysis units, dentists, dental hygienists, and occupational first aid attendants(http://www.cdc.gov/niosh/docs/2008).

In the workplace both (HBV) and (HIV) can be transmitted by infected blood and body fluids when they are in direct contact with the inside of the mouth, the eye, or with broken, scraped, chapped or inflamed skin. The risk of infections is present not only in hospitals but in other settings where nurses are employed such as primary health care nurses and home nurses. (www.nurseweek.com).

Infectious diseases

The risk of infections is present not only in hospitals but in other settings where nurses are employed such as nursing homes, institutions for the retarded, prisons, and outpatient facilities, i.e.: dialysis centers, workplace health centers, or community health clinics. In

hospitals high risk areas include pediatric areas, infectious disease wards, emergency rooms, and ambulatory care facilities(http://www.cdc.gov/niosh/docs/2008).

Hepatitis B (HBV) is the most prevalent work-related infectious disease in the United States. Although blood is the major source of the virus, it may also be present in saliva, semen, and feces. Transmission may occur from a percutaneous stick from a contaminated needle or other sharp instrument (the risk of contracting HBV after a stick with a known contaminated needle is 6–30 percent), after contaminated blood enters a break in the skin or splatters onto mucous membranes, or upon ingestion. The OSHA Blood-borne Pathogens Standard has provisions for preventing Hepatitis B in healthcare workers including Hepatitis B vaccine, education, procedures for sterilization and disinfection, and use of personal protective clothing. In addition, the CDC has recommendations for work practices during invasive procedures. (http://www.nap.edu).

Hepatitis A poses a risk for workers in settings such as institutions for the retarded where personal hygiene may be poor (Larson, 1995). The use of good hand-washing techniques is most effective preventive measure for this virus.

Nurses in many settings may be exposed to infectious diseases such as measles, mumps, rubella, and influenza. Immune status should be determined when feasible for employees with direct patient care responsibilities and appropriate immunizations should be offered (http://www.nap.edu).

Needle stick Incidents (NSIs)

Needle-stick injuries transmit infectious diseases, especially blood-borne viruses. In recent years, concern about AIDS (Acquired Immune Deficiency Syndrome), hepatitis B, and hepatitis C has prompted research to find out why these injuries occur and to develop measures to prevent them.

It is estimated a thousand health care professionals are injured each day as the result of hospital accidents involving needles or other sharp objects, according to the Center of Disease Control (CDC). This is a hazard to nurses, who are then susceptible to blood-borne diseases, as well as the patients in their care. Injury prevention in healthcare settings is a top priority and needs to be addressed as part of any effort to establish a safer working environment (http://www.nursingworld.org/safe needles safe lives).

Needle-stick injuries are a frequent occurrence among healthcare nurses. The Centers for Disease Control (CDC) estimates that about 600,000 to one million needle-stick injuries occur each year. Unfortunately, about half of these needles-tick injuries go unreported (Drexler, Schmid, and Schwager, 2007) The American Nurses Association (ANA) estimates that of the numerous needle-stick injuries only about 1,000 healthcare workers actually contract an infection. Besides exposure to blood-borne pathogens, the nurse is also at risk for about 20 other infections that can be transmitted through a needles-tick, including tuberculosis, syphilis, and malaria. When a nurse is exposed to a needle-stick, the risk of transmitting various types of blood-borne pathogens (i.e. Human Immunodeficiency Virus [HIV], Hepatitis B, or Hepatitis C) from an infected patient to a health care worker is greatly increased (Gershon,& Flanagan 2000).

Blood borne pathogenic exposures (HIV, HCV, HBV, etc) - due to needle stick injuries (NSIs), between 600,000 and 800,000 NSIs occur each year in all healthcare settings, with injections (21%), suturing (17%) and drawing blood (16%) the top three exposures (Perry et al., 2003).

"Universal Precautions" should be established in any care setting where exposure to blood and body fluids is possible. Their purpose is to eliminate or reduce the risk of transmission of blood-borne pathogens because patients infected with HBV or HIV cannot always be

reliably identified. Blood and body fluid precautions should be used with all patients. In other words, the precautions should be applied universally.

Immunization

Immunization is a measure by which some protection from infection due to occupational exposure can be given to health care workers (HCWs). It is important that you are aware of your own immune status.

Immunization against HBV is recommended for health care workers at greatest risk of exposure. In addition, depending on a person's immune status, HBV vaccine or hepatitis B immune globulin or both may be recommended after accidental exposure to blood or body fluids (http://www.mflohc.mb.).

Hepatitis B virus is largely preventable through vaccination. For HBV, HCV, and HIV, however, preventing occupational exposures to blood can prevent occupational infections with HBV, HCV, and HIV. This includes using appropriate barriers such as gown, gloves and eye protection as appropriate, safely handling needles and other sharp instruments, and using devices with safety features.

2.2.4. Ergonomic Hazards

Occupational Safety & Health Administration (OSHA) defines ergonomics as, "the science of fitting workplace conditions and job demands to the capabilities of the working population." They claim that proper ergonomics will prevent musculoskeletal problems, increase productivity, decrease time loss due to sickness and injury, as well as create a happier workforce. They point to jobs that have prolonged, repetitive use of the hands (such as keyboarding), heavy lifting (such as delivery jobs), or jobs requiring holding odd positions for long periods (such as mechanics or plumbers) as all being in need of a proper ergonomic fit (http://www.ehow.com/ meaning-ergonomically) .

The workplace is an important setting to consider when studying environmentally related illness; environmental hazards and exposures can be substantial in occupational settings. Workplace injuries and fatalities are the most well-documented indices of adverse effects of the environment on health. More than 2.25 million work-related illnesses and injuries were reported to the U.S. Department of Labor in 1993 (BLS, , 1995). Three primary occupations with at least 100,000 cases involving work absences), and nurses had larger shares of the injury and illness case total for 1993 than their share of the total workforce (BLS, May 15, 1995). Sprains and strains were by far the leading type of injury, and the parts of the body most often affected were the back, shoulder, and other areas of the upper trunk. The three most common injuries or illnesses in terms of number of lost work days were carpal tunnel syndrome (median = 30 lost days), amputation (median = 22 lost days), and fractures (median = 20 lost days). Men accounted for a larger share (two-thirds) of the survey-wide total absences due to injuries and illnesses than their share (55 percent) of total employment. Women injured on the job accounted for a larger share of repetitive motion disorders (64 percent) and injuries from violent acts (57 percent) than their share of total employment (45 percent).(BLS, May 15, 1995).

Ergonomic and safety hazards cause or worsen accidents, injuries, strain or discomfort. Ergonomics is the application of scientific knowledge to the design of environments, tools, workstations and the content of work to suit the mental and physical limitations and capabilities. Work environments and procedures that incorporate ergonomic principles can anticipate accidents and avert injury and error. Health care safety hazards include: slippery floors, cluttered hallways or blocked exits, explosive gases used in laboratories and operating rooms, various power tools and other maintenance equipment, sharp utensils and instruments, and materials handling (http://www.mflohc.mb.ca).

In the National Occupational Research Agenda, NIOSH (1996) reports that, for one year, "332,000 musculoskeletal disorders due to repeated trauma were reported in all U.S. workplaces such musculoskeletal disorders of the neck, upper extremities, and back have emerged as a major occupational risk. Prevention of any musculoskeletal disorder is aimed at the design (or redesign) of the workplace and task requirements to fit the worker based on a job analysis and assessment of the workers needs. It is not unusual for work tasks and work stations to be arbitrarily designed for men. Thus, for many female workers whose body size and proportions may differ from an average male, the work station and safety equipment may be unsuitable or even unsafe for doing their job (NIOSH, 1996).

Another problem is repetitive strain injuries (RSIs) of the upper limbs related to improper workstation and task design. RSI risk factors include: high rates of manual repetition, use of excessive manual force, and awkward postures of the wrists and shoulders. Workers in dietary and laundry departments and clerical positions, such as data entry operators and medical transcriptionists may be at increased risk (Holm and Liewellyn, 1986).

Back injuries

Nurses offer care and comfort, but they often end up with a pain in the back for their efforts. Back injury ranks second among all causes of occupational injuries for all occupations. Nurses suffer from work-related low back pain more often than workers in other jobs. It is reported that 40,000 nurses worldwide report back related injuries annually (ICN, 2007). Nursing activities such as lifting patients in bed, helping patients out of bed, transferring patients from the bed, and carrying equipment weighing 30 pounds or greater are the most frequent causes of back pain.

The activities performed by nursing personnel at extended care facilities place them at greater risk for back injuries. Frequent lifts and assists for patients who tend to be weak, debilitated, and elderly increase the risk of back injuries in those who provide their care.

Registered nurses, licensed practical nurses, and nurse's aides are among the health care workers most frequently affected by this type of injury (Kruger and others, 1997).

Occupational back pain in nurses (OBPN) constitutes a major source of morbidity in the health care environment. According to the National Institute for Occupational Safety and Health (NIOSH), occupational back injury is the second leading occupational injury in the United States. Among health care personnel, nurses have the highest rate of back pain, with an annual prevalence of 40-50% and a lifetime prevalence of 35-80%. The American Nursing Association believes that manual patient handling is unsafe and is directly responsible for musculoskeletal disorders encountered in nurses. It has been well documented that patient handling can be done safely with the use of assistive equipment and devices that eliminate these hazards to nurses that invite serious back injuries. (http://www.begellhouse.com).

Musculoskeletal disorders

Musculoskeletal disorders (MSDs) are the most common work related health problem in Europe, affecting millions of workers. Across the 27 Member States of Europe , 25% of workers complain of backache and 23% report muscular pains. MSDs can affect the body's muscles, joints, tendons, ligaments, bones and nerves (European agency for safety and health at work, 2007). Most work-related MSDs develop over time and are caused either by the work itself or by the working environment. They can also result from accidents; for example, fractures and dislocations. Typically, MSDs affect the back, neck, shoulders and upper limbs; less often they affect the lower limbs. Health problems range from discomfort and minor aches and pains, to more serious medical conditions requiring time off work and even medical treatment. In more chronic cases, treatment and recovery are often unsatisfactory - the result could be permanent disability and loss of employment (http://www.springerlink.com).

Risk factors

Many factors can contribute, either individually or in combination, to the development of MSDs:

Physical, including using force, repetition of movements, awkward and static posture, vibration and cold working environments.

Organizational, including high work demand, lack of control over work, low job satisfaction, repetitive work, high pace of work, time pressure and lack of support from colleagues and managers (European agency for safety and health at work, 2007).

Individual, including prior medical history, physical capacity and age.

In general, women are less exposed to physical risk factors, although hand or arm movements and work involving painful or tiring positions are experienced equally by both women and men. However, in certain jobs such as those involving moving people and sectors such as healthcare women are significantly more at risk.

2.2.5. Psychological Hazards

Health care organizations should maximize worker participation in decisions affecting their daily work and the organization as a whole. Employers can also effectively resolve conflicts, help staff to respond positively to change and provide social support systems (http://www.mflohc.mb.ca).

Unmanaged stress

Workplace factors that may contribute to stress include dealing with life-threatening illnesses and injuries, demanding patients, overwork, understaffing, difficult schedules (i.e., rotating shifts or working multiple shifts), specialized equipment, the hierarchy of authority, lack of control and participation in planning and decision making, and patient deaths. In many hospitals, the nurse may feel isolated, fatigued, angry, and powerless due

to a sense of depersonalization created by a large bureaucratic system (http://www.nap.edu).

Also Stress may be associated with many types of reactions: such as

Psychological (irritability, job dissatisfaction, depression)

Behavioral (sleep problems, absenteeism)

Physical (headache, upset stomach, changes in blood pressure)

An acute traumatic event could cause post traumatic stress disorder (PTSD). Not every traumatized person develops full-blown or even minor PTSD (Tattersall & Bennett and pugh, 1999).

Stress has been regarded as an occupational hazard since the mid-1950s. In fact, occupational stress has been cited as a significant health problem. Work stress in nursing was first assessed in 1960 when Menzies identified four sources of anxiety among nurses: patient care, decision-making, taking responsibility, and change. The nurse's role has long been regarded as stress-filled based upon the physical labor, human suffering, work hours, staffing, and interpersonal relationships that are central to the work nurses do. Since the mid-1980s, however, nurses' work stress may be escalating due to the increasing use of technology, continuing rises in health care costs, and turbulence within the work environment (NIOSH,1999).

Nevertheless, work stress and burnout remain significant concerns in nursing, affecting both individuals and organizations. For the individual nurse, regardless of whether stress is perceived positively or negatively.

Risk factors that may expose a worker to the risk of stress include:

1-High job demand combined with low job control, delegation without authority ,lack of feedback on job performance.

2- Poor match between the demands of a job and a worker's skills, abilities and aptitudes

3-Regular contact with clients who are themselves under strain, for example child protection, health care or emergency workers

4-Change at a rate that does not allow time for adjustment

a-Unclear or conflicting roles and responsibilities

b-Inadequate training or skills for the immediate job

c- Poor physical environment, such as excessive noise, poor lighting or ventilation

d-Managers/supervisors who do not possess necessary people management skills, may lead to workers not feeling valued.

e-Shift work (http://www.questia.com)

Violence

Against health care workers is an emerging occupational hazard. Preventing injury from aggressive acts starts when the employer acknowledges that the potential for violence exists. Violence at work is common among workers who are in contact with people in distress, frustration and anger due to pain, psychological problem or substance abuse that can affect their behavior .

There must be strong management commitment to violence prevention programs. Strategies should encompass workplace design; patient care approaches to reduce anger, frustration, and agitation; staff training on recognition and interventions for potentially violent situations; and support systems for workers who do experience a violent event (http://www.mflohc.mb.ca).

Female nurse and hazard at work

Lifting of heavy burdens increases the intra-abdominal pressure, and may induce an increased risk of prolapsed of the female internal genitals. While taking care of patients,

the nursing staff in hospitals and nursing homes are exposed to heavy lifting. Scientifically uncontrolled casual observations among assistant nurses gave rise to the assumption of an increased risk (The Work Environment Authority's Statute Book, 2000).

Female reproductive health hazards include:

- Radiation
- Certain chemicals
- Some drugs both legal and illegal
- Cigarettes
- Certain viruses
- Alcohol

How a reproductive health hazard affects a woman or her unborn child, and whether it has more than one effect, depends on exactly when she is exposed. During the first trimester of pregnancy, exposure to a harmful substance may cause a miscarriage or birth defect; exposure to a harmful substance during the last two trimesters of pregnancy could potentially affect the growth of the fetus, the development of the brain, or increase the risk of premature labor. Not every woman exposed to these harmful substances will experience the possible harmful affect to her reproductive health or her pregnancy. (http://www.statcan.gc.ca/pub).

Workplace Reproductive Health Hazards

Chemical or physical hazards in the workplace include:

Cancer treatment drugs such as methotrexate, which can affect health care workers and pharmacists. Known observed effects of this type of exposure include infertility, miscarriage, birth defects, and low birth weight.

Over 100 years ago lead was known to cause miscarriages, stillbirths, and infertility in female pottery workers. Today lead is still a workplace reproductive health hazard for health workers. In addition to the health effects above, lead exposure can cause low birth weight and developmental disorders.

Health care workers, dental professionals, and atomic workers may be exposed to ionizing radiation such as X-rays and gamma rays. This type of exposure can cause infertility, miscarriage, birth defects, low birth weight, developmental disorders, and childhood cancers. (http://aje.oxfordjournals.org).

All pregnant workers, as well as women who don't work outside the home, should be aware that strenuous physical labor such as prolonged standing, or heavy lifting, can cause miscarriage late in pregnancy, or premature delivery.

Cross-sectional data from the 2003 Canadian Community Health Survey were analyzed. Multiple logistic regression analyses were conducted to adjust for potential confounding by demographic and socio-economic characteristics. When confounding by demographic and socio-economic characteristics was taken into account, nurses were more likely than other employed postsecondary-educated women to report back problems, that most work days were “quite a bit” or “extremely” stressful, and having had flu immunizations and cervical cancer screening. They were less likely to report insufficient consumption of vegetables and fruit or heavy alcohol use (http://www.statcan.gc.ca/pub).

Research on the health of Canadian nurses has revealed a number of areas of concern. Nurses face occupational health hazards that include exposure to infectious diseases, biological hazards and carcinogens; psychological demands; and shift work. A study commissioned by Health Canada’s Office of Nursing Policy found that registered nurses who were employed full-time had an illness- and injury-related absenteeism rate 83% higher than that of other occupational groups. This level of absenteeism raises questions

about nurses' health, the environments in which they work, the work they do and how it is organized, and the cost to the system in lost time—an estimated 19.6 million hours (about 11,000 full-time equivalents) in 2002. (http://www.statcan.gc.ca/pub).

By contrast, in a 2007 study of mortality and cancer risks among British Columbia nurses, Dimich-Ward et al . found that, compared with the general population of women in the province, female registered nurses were at lower risk of all-cause, cardiovascular-related, and cancer mortality. And with the exception of malignant melanoma, the nurses had a lower incidence of cancer. (http://womenshealth.about.com).

2.3. Personal Protective Equipment

Healthcare workers are confronted each day with the difficult task of working safely within a hazardous environment. Today, the most common occupational risk faced by healthcare personnel is contact with blood and body fluids during routine patient care. This exposure to pathogens increases their risk for serious infection and possible death. It is also important to use work practices that can minimize the exposure to the hazardous substances. Because of this increasing risk, better infection prevention guidelines and practices are needed to protect staff working in these areas. Moreover , staff members who know how to protect themselves from blood and body fluid exposures and consistently use these measures will also help protect their patients Protective barriers, now commonly referred to as personal protective equipment (PPE), have been used for many years to protect patients from microorganisms present on staff working in the healthcare setting. More recently, with the emergence of AIDS and HCV and the resurgence of tuberculosis in many countries, use of PPE now has become important for protecting staff as well. While some PPE, such as clean examination gloves, are extremely important in reducing

the risk of transmission, others (e.g., cloth caps and shoe covers) continue to be used without convincing evidence of their effectiveness (Larson et al 1995).

Personal protective equipment includes: gloves, masks/respirators, eyewear (face shields, goggles or glasses), caps, gowns, aprons and other items. In many countries caps, masks, gowns and drapes are made of cloth or paper.

Types of Personal Protective Equipment

Gloves

Protect hands from infectious materials and protect patients from microorganisms on staff members' hands. They are the most important physical barrier for preventing the spread of infection, but they must be changed between each patient contact to avoid cross-contamination. For example, examination gloves should be worn when handling blood, body fluids, secretions and excretions (except sweat), contaminated surfaces or equipment, and when touching no intact skin or mucous membranes. But we shouldn't forget that (Wearing gloves does not replace hand washing or use of antiseptic hand rubs).

Masks

Should be large enough to cover the nose, lower face, jaw and facial hair. They are worn in an attempt to contain moisture droplets expelled as health workers or surgical staff speak, cough or sneeze, as well as to prevent accidental splashes of blood or other contaminated body fluids from entering the health workers' nose or mouth. Unless the masks are made of fluid-resistant materials, however, they are not effective in preventing either very well.

Eyewear

Eyewear protects staff in the event of an accidental splash of blood or other body fluid by covering the eyes. Eyewear includes clear plastic goggles, safety glasses, face shields and visors.

Cover gowns

It is a worn over, or instead of, street clothes. The main use of cover gowns is to protect the healthcare workers' clothing. Scrub suits usually consist of drawstring pants and a shirt.

Employee Training and Education

Training is an essential element of any health and safety program. Training and education informs nurses at all levels, including management, of their roles, rights and responsibilities related to health and safety in the workplace (ICN,2007).

For program effectiveness nurses must know the hazards to which they are exposed; the signs and symptoms of exposure; how to use hazard controls, such as personal protective equipment; how to recognize signs of a problem; and where to go for help. Nurses also need to be trained on how to report a new unidentified workplace hazard and how to report a workplace injury or illness.

Summary of the literature review

Health care workers especially nurses are exposed to a wide variety of occupational health hazards. Hazards that are encountered in the work environment can be divided into five different categories: biological hazards, chemical hazards, physical hazards, psychological agents, and ergonomic hazards. Some of the most exposure types of hazard that nurses encounter are :

Back Injuries: Low back injuries are the leading occupational health problem affecting healthcare workers and are increasing among nurses and nurses' assistants.

Latex Allergy: Latex gloves have been used to prevent transmission of many infectious diseases to healthcare workers. However, latex is hazardous to some healthcare workers, resulting in a range of health effects from minor dermatitis to asthma, life-threatening anaphylaxis and respiratory arrest, similar to a bee sting allergic reaction.

Needle-sticks: An estimated 600,000 - 800,000 needle-stick injuries (NSI) occur annually in the United States. About half of these injuries go unreported.

Workload Issues: Changes in work organization resulting from restructuring, downsizing, and layoffs within the healthcare industry are resulting in decreased staffing levels, increased workloads and time pressures, and longer hours of work.

Workplace Violence: Of the medical professionals, nurses suffer the largest number and the highest rate of non-fatal workplace violence.

Toxic Chemicals: Despite the existence of OSHA chemical hazard communications, most healthcare workers are unaware of the risks of these agents and the appropriate control measures.

Physical hazards: Physical agents include radiation, electricity, noise, and extreme temperatures. Poor equipment, poor ventilation, and slippery floors.

It is concluded that the nurse's work environment posses many health hazards for the worker that should be recognized, and attempts should be made to provide protection and to minimize exposure. For that all nurses should understand the scientific principles and underpinnings of the relationship between individuals and the environment (including the work environment). This understanding includes the basic mechanisms and pathways of exposure to environmental health hazards, basic prevention and control strategies.

Chapter three

Methodology

Chapter 3

Methodology

This chapter presents the study design, study population, study setting, period of the study, sample size, sampling method and method of the study beside construction of the questionnaire and the ethical procedures that were considered in the study. Tools and instruments that were used in the study, their validity and reliability, , data collection and analysis processes are also presented in this chapter. This chapter also presents the selection criteria and the limitations of the study.

3.1. Study design:

This is analytical cross sectional study, as this study is considered suitable in describing the variables, their distribution patterns, and examining associations between them. It is suitable in term of time, people, money, and resources and it is relatively practical and easily managed. On the other hand it can help in examining some associations between the study variables and enables the researcher to meet the study objectives over a short period of time. It's also, provides detailed information and stimulates further research or studies Coggon, 1993).

3.2. Study Population:

The target population consists of all nurses who are working in Gaza governorates primary health care centers level four. The total number of nurses working in primary care centers is 330 nurses distributed over 52 primary health care centers in Gaza governorates including 120 nurses working in the 9 centers level four .

3.3. Setting of the Study:

This study was carried out at the primary health care centers (level four) in Gaza governorates. These centers are located as follow: one in the North, five in Gaza

governorate, one in the Middle zone, one in Khanyousin governorate and one in Rafah governorate. These centers are the biggest centers and level four provide all the services in PHC such as immunization, antenatal care (ANC), family planning (FP), daily care (dressing, injection, nebulizer), non-communicable disease (NCD) (Diabetes mellitus(DM) ,hypertension(HT)), and dental units.

3.4. Inclusion and Exclusion Criteria:

3.4.1. Inclusion criteria*:*

All nurses who are working in the primary health care centers level 4 in Gaza governorates were included in the study.

3.4.2. Exclusion criteria:

Nurses were excluded from the study in the following conditions:

- Nurses working in non-governmental hospitals, and UNRWA
- Nurses working in level 1,2,3 centers.
- Newly graduated nurses and under training program.

3.5. Response Rate

The number of respondents was 112 subjects from the total number of sample size (120) with response rate of 93%, 8 subjects of the sample were not agree to participate in the study

3.6. Period of the Study:

The study was conducted in the year 2009. The proposal was approved by the School of Public Health-Al Quds University in May 2009.

An administrative approval from the General Directorate of PHC were obtained in October 2009 and an ethical approval from Helsinki Committee were obtained in June 2009. Pilot study was conducted in October 2009, while actual data collection took place in november

2009. Data analysis was completed by November 2009 and the final results were available by December 2009. The total duration of the study was 10 months. The study was conducted in the period between September 2009 and February 2010.

3.7. Construction of Questionnaire

A structured close ended-self-administered questionnaire was developed. a self administered structured questionnaire (Annex 9) which was distributed and collected by hand. Most of the questions were structured in a Yes/No coded format and a few questions structured in a coded scale format. The questionnaire was designed to be clear with no complex terms, leading; duplication and double parallel questions were avoided. The questionnaire was in Arabic Language where it was distributed to the study subjects.

The questionnaire has been modified from a questionnaire that have been done by Dr Jouda for his study in 2006.

The questionnaire has been divided into six sections as follow:

The first section consists of the personal data including socio-demographic data, the second section consists of the data related to work environment that evaluated the worker's comments on their work conditions, the third section includes employee's awareness towards their knowledge related to occupational hazards, the part four includes questions to measure exposure information of the employees, part five consists of information about health care system and finally performance information including information about the organizational facilities.

3.8. Validity:

Validity is defined as "the extent to which a measuring instrument measures what is supposed to measure" (Mark 1996),

Face and content validity

Face validity is the extent to which the items of a test or procedure appear superficially to acceptable and appealing to the subject It's conducted before data collection by the help of experts to ensure relevancy, clarity and completeness. Content validity is a subjective estimate of measurement based on judgment rather than statistical analysis. In order to validate the instrument used, the designed questionnaire with covering letter, title and objectives of the study were sent to 10 experts from different backgrounds including specialists in environmental health, managers, and experts in public health science (Annex 11), in order to ensure its face and content validity.

The previously mentioned ten experts reviewed the instrument and consensus about the questions was reached. Additional validity measures were implemented and included training of the researcher assistant, standardization of implementation, standardization of tools, reviewing the filled questionnaires and data cleaning.

3.9. Pilot Study:

After revision and modification of the study questionnaire by field-related specialists, a pilot study was conducted was conducted before starting data collection as a pretest to point out weaknesses in working, to determine its suitability and appropriateness and to determine if there is a need for modifications. Also to determine the real time needed to fill the questionnaire. Participants of the pilot study were asked about any ambiguities and their opinion about the questionnaire. All of them was received clear explanation about the study purpose.

3.10. Data Collection

The researcher distributed the questionnaires and explain to each subject the purpose and objectives of the study and answer his/her questions if any in relation to the study. We gave each person a questionnaire and asked him/her to complete the questionnaire and bring it back to the researcher. Questionnaire was collected by the researcher and other two

assistants who was trained about how to collect the data after full explanation about the study and the purpose of it. The researcher reviewed over the completed questionnaires to ensure completion of all information needed.

3.11. Ethical Considerations

The study respected the research ethical principles by obtaining an official letter of approval to conduct the study from Helsinki Committee (Annex 4). An official letter of request was sent to the Ministry of Health to get the approval from the governmental primary health care director (Annex 5,5). The researcher attached an explanatory letter in Arabic (Annex 7), which clarifies the purpose and confidentiality of the study.

Every participant was provided with an explanatory form about the study including the consent form..

3.12. data management and statistical analysis

3.12.1. Data entry

All filled questionnaires were checked and completed by interview. Data was entered and analyzed using the statistical package for social science (SPSS). After finishing the data entry process, data cleaning was done to guarantee that all data were entered accurately and in appropriate way. The coded questionnaire was entered by the biostatician using the computer software.

3.12.2. Data analysis

After collecting and revising the filled questionnaire the next step was coding the questionnaires and the checklist using the computer software statistical package for social science (SPSS) version 11.0. Then, the coded questionnaires and checklist were entered into the computer by the researcher with biostatician . Data cleaning was done through checking out a random number of the questionnaire and through exploring descriptive

statistic frequencies for all variables. Means and standard deviations were computed for the continuous numeric variables and then coded. In addition, to examine the potential relationships between the different variables, and independent t-test and one way ANOVA test were used. t-test were used to examine the differences in the mean scores for variables and to investigate the relationship between the independent and dependent variables.

3.13. Limitations of the study

- Limited scientific resources and few literatures on occupational health in Palestine Lack of resources and literature related to the study in Palestine.
- Political situation that faced the health information centers which make it difficult to obtain final documentation such as number of nurses.
- Time factor including the time where all the nurses can be available for example some nurses were in vacation which means that there was a need to make another appointment for the same clinic.
- Limited cooperation from some nurses during filling the questionnaire.

Chapter four

Results and discussion

Chapter 4

Results and discussion

This chapter presents the results of the study have been addressed including, the results of relevant inferential statistical tests to explore and identify the relationship between different study variables with figures and tables.

4.1. Socio-demographic factors

4.1.1.Age distribution

As shown in table 1, about 45.9% of study population were lies in the age group from (31-45) years, where the youngest age group 30 years and less represents only 25.7%, while 28.4 % of the study population are more than 45 years. This is an indication that most nurses, were below 45 years in age.

4.1.2. Distribution of study population by governorates

As shown in Table 1, half of subjects (50%) are working in Gaza city, (13.3%) were in Mid-Zone governorate, 13.3% were from North governorate, 11.6% were from Rafah governorate, and 11.6% were from Khanyounis. But As we see that there are five centers which were chosen from Gaza city that are level 4 in Gaza strip and 50% of the nurses are working in Gaza centers to accommodate with the large number of residents in Gaza that depend mainly on governmental PHC services for the most of Gaza province population .

4.1.3.Distribution of subjects by qualification

Also table 1, shows that the distribution of participants according to the first nursing certificate. There were 21.4 % practical nurse (below two years), 35.7 % were 3 years diploma (RN) and the highest percent (39.3%) were holding bachelor degree.

4.1.4. Distribution of subjects by experience

In addition table 1, shows that 23.6 % of respondents have had experience less than 5

years, where 45.5.5% have experience from 6-15 years and, 30.9% have experience more than 15 years with mean of 13.3 years. This shows that more than 76% have more than 5 years of experience. This accommodate with middle age group as mention before.

Table 1, Socio-demographic distribution

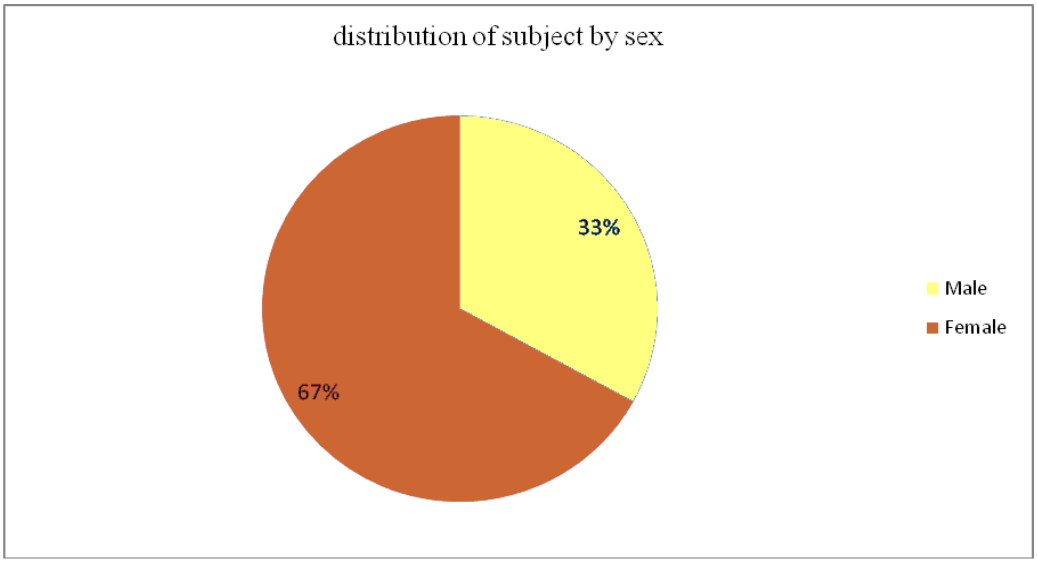
Age	**No.**	**%**
30Yrs and less	28	25.7
From 31 to 45 Yrs	50	45.9
More than 45 Yrs	31	28.4
Total	**109**	**100.0**
(Mean = 38.4 , MD = 36.0, Std = 9.3)		
governorates	**No.**	**%**
North	15	13.33
Gaza	56	50
Mid Zone	15	13.33
Khanyounis	13	11.6
Rafah	13	11.6
Total	**112**	**100**
Qualification	**No.**	**%**
Practical Nurse	24	21.4
Diploma Nurse	40	35.7
Bachelor	44	39.3
Other	4	3.6
Total	**112**	**100.0**
Years of experience	**No.**	**%**
5 years and less	26	23.6
From 6 to 15 years	50	45.5
More than 15 years	34	30.9
Total	**110**	**100.0**

4.1.5. Gender distribution

Figure 2, shows that male subjects represents 33.0% of the study population, while female subjects represents 67.0% of the total respondents. This result indicates that females are more involved in the nursing work than males in PHC and that's agree with the nature of services which mainly depends on the female nurses.

In general males are more involved in the working force than females in hospital settings especially at managerial levels, as with other sectors in the Palestinian health care system where males usually constitutes the greater portion of the workforce (88.5) and this is somewhat consistent with the level of women involvement in workforce (11.5%) in Gaza Strip (PCBS, 2007).

Figure 2, Distribution of subjects by gender



4.2. Distribution of subjects by place of work

The result shows that the higher percent of nurses are working in child health section 32.1%, then emergency department 17.9%, antenatal department 17 %, dental unite, 13.4% non communicable diseases 8.9%, family planning 7.1% and the lowest percentage of the nurses are working in the epidemiology department by 3.6% as seen in table 2.

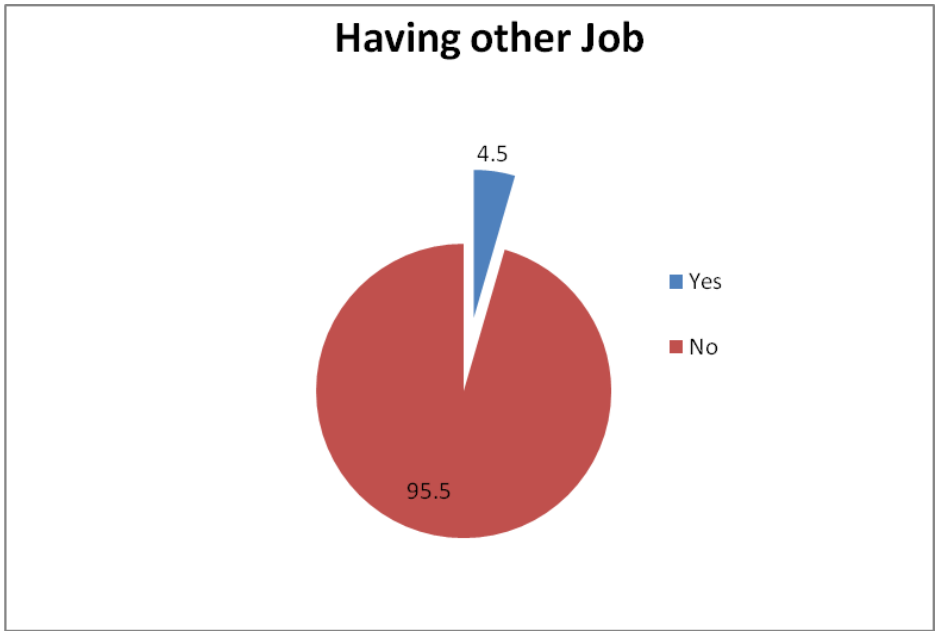
Table 2, Distribution of subjects by place of work

Work Department	No.	%
Child health department	36	32.1
Antenatal care department	19	17.0
family planning department	8	7.1
Epidemiology department	4	3.6
Dental Unit	10	8.9
Emergency Department	20	17.9
Other	15	13.4
Total	**112**	**100.0**

4.3. Distribution of subjects according to other jobs

Figure 3 shows that 95% of the study population are not having other jobs

Figure 3, Distribution of subjects according to other jobs or not



4.4. Work Environment

4.4.1.Using safety measures at work

Table 3, shows that 84.8% of the study population are in need to use equipment as their work required, 78.9% of them consider these equipments are convenient.

One of the most important aspects of patient care is to ensure safety for each patient and the nurse throughout the day. It is impossible to prevent accidents completely. However, there are ways to limit the potential for accidents that may cause injury to both of them .

The results shows that 91.1% have safety measures at work, 77.7% of them use gloves as a safety measures and 57.3% handle patient safely. Also results shows that 80.6% wear special uniform and 20.4% use eye cover. On the other hand the majority of the study population 97.1% use safety box. All the centers in primary health care are supported with most of safety measures by coordination between the ministry of health and other donation departments. Nurses may need to be familiar not only with standard personal protective equipment used as part of an agency's infection control program (e.g., gloves, gowns, and respiratory masks).

4.4.2. Workplace compatibility with safety measures

Also table 3, shows that 65.2% has compatible work place with safety measures. 34.8% of the study population don't have compatible work place, of them 87.2% have crowded work place, 74.4% complain of inconvenient furniture, 59% have noisy environment, 53.8% have light and glare troublesome, and 43.6% have no temperature adjustment at their work place and. Taking into consideration that 23.1% don't have problem with heavy lifting as rarely considered in PHC like slipping floor which represent 17.7% of them, also doesn't represent major problem as limitation of movement in PHC related to the nature of work.

OSHA's Act of 1970 strives to "assure safe and healthful working conditions for work and mandates that "each employer shall furnish to each of his/her employers employment and a place of employment which are free from recognized hazards that are causing or are likely to cause death or serious physical harm" (http://www.osha.gov).

It has been assured that healthy and productive work environment can fostered by improved working conditions and professional development& Blythe. 2003), where The

impact of environmental factors can affect on the ability of personnel to carry nursing work in any facilities. But these factors are not under the workers control, but every organization can help in improving their work conditions. Also we cant ignore the worker's role in maintain good condition of the work by helping in minimizing the crowded by using the appointment system to reduce the short peak overloaded work.

Table 3, safety measures at work environment

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
safety measures at work						
Equipment at work	95	84.8	17	15.2	**112**	**100.0**
Convenient of equipment	75	78.9	20	21.1	**95**	**100.0**
safety measures at work	102	91.1	10	8.9	**112**	**100.0**
Using these measures	**102**	**91.1**	**10**	**8.9**	**112**	**100.0**
Wearing gloves	80	78.4	22	21.6	**102**	**100.0**
Safe handling of patient	59	57.8	43	42.2	**102**	**100.0**
Uniforms	82	80.4	20	19.6	**102**	**100.0**
Eye cover	21	20.6	81	79.4	**102**	**100.0**
Safety box	100	98	2	2	**102**	**100.0**
compatibility with safety measures						
Workplace compatible with safety measures	**73**	**65.2**	**39**	**34.8**	**112**	**100.0**
Crowded workplace	34	87.2	5	12.8	**39**	**100.0**
Furniture not convenient	29	74.4	10	25.6	**39**	**100.0**
Noise not tolerable	23	59.0	16	41.0	**39**	**100.0**
Light and glare are troublesome	21	53.8	18	46.2	**39**	**100.0**
Heat not convenient	17	43.6	22	56.4	**39**	**100.0**
Heavy lifting	9	23.1	30	76.9	**39**	**100.0**
Slipping floors	7	17.9	32	82.1	**39**	**100.0**

4.5. Training courses about occupational health

Table 4, shows that 59.2% of the study population receive training program in their job and work devices, where 40.8% doesn't have training program, 65% take instruction about safety measures but 62.1% said that they have no safety measures protocols at work, which indicate the problem of un sufficient consideration toward safety measures for employees at the time that the main goal of public health is prevention of disease. "Bent 2008" emphasizes on that, training should result in individual learning and enhanced organizational performance.. (Amer, 2006) showed that one of the main reasons usually make the management of medical equipment not as desired that the medical team either of physicians or nurses does not have enough knowledge, experience and sense to handle or deal with such equipment. In-service training is important for the equipment users such as nurses to handle them safely to protect both these equipments and their users (Soller, 2004). Commitment of the organization's leadership to provide adequate support for staff by creating protocol to protect them should be on the top of the organizational agenda.

Table 4, Training courses about occupational health

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
Training programs	61	59.2	42	40.8	**103**	**100.0**
Instruction	67	65.0	36	35.0	**103**	**100.0**
Protocol	39	37.9	64	62.1	**103**	**100.0**

4.6. Occupational perception and knowledge

4.6.1.Ranking the types of occupational hazards types

As shown in table 5, according to nurse's perception toward types of occupational hazard. The results shows that nurses rank these types as the following, 49.0% agree on Physical hazard is

the first, the second is Biological hazard by 31.8%, the third is Ergonomic hazard by 30.9%, the fourth is Psychological hazard 29.1% and the last one is Chemical hazard with 26.4%.

Table 5, perception of nurses toward the types of hazards

ranking	Type of hazard	%
1-	Physical hazard	49.0%
2-	Biological hazard	31.8%,
3-	Ergonomic and safety	30.9%
4-	Psychological hazard	29.1%
5-	Chemical hazard	26.4%.

4.6.2.Knowledge for occupational health

Table 6, shows that 92% of the study population have knowledge about the occupational health, 98.2% are aware about their occupational hazards at work**,** 96.4% know how to avoid such hazards, 65.2% know their legal rights while 34.8% are not and this need more concern from both the employees and their organizations to let them know what rights and duties they have whether for themselves or for their organizations. This result consistent with the vision of (Mc Namra, 2008) who emphasize that supervisors often provide career counseling to help employees develop and advance in their careers role in training and development, the supervisors ensure that new employees are oriented to the organization, its policies facilities etc. They develop training plans with employees to ensure that employees have the necessary expertise out their jobs, they provide ongoing guidance to employees, often in the forms of ongoing coaching and counseling .

Table 6, Knowledge for occupational health

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
information about occupational health	103	92.0	9	8.0	112	100.0
awareness of occupational hazards at work	110	98.2	2	1.8	112	100.0
Knowledge how to avoid hazards	106	96.4	4	3.6	110	100.0
awareness of legal rights toward health hazard	73	65.2	39	34.8	112	100.0

4.7. Actual exposure to occupational hazard

Table 7, shows that 83.9% of the study population suffer from tiredness and exhaustion at the end of their work day, 79.8% of them consider these symptoms due to their routine work, which clearly appears the size of the problem that nurses suffer as occupational hazard, in-spite of these high rates but it may go on with the fact that the majority of nurses employees in PHC were female who has another role at home after job.

The result shows that 42% of the study population having sleep disturbances , and 80.9 % of them due to their routine work. Also 58% suffer from muscular or joint pain ,75.8% of them due to the routine work.

That agree with Health and Safety committee in the United states of America in 2005 which reported that work overload can occur when a person is allocated a great deal of work, but insufficient resources (in terms of ability, Staff, time or equipment) to cope with it When employees faced with work overload, they may try to cope by working excessive hours, which may lead to health problems and problems outside of work. Working excessive hours can lead to fatigue, which in turn can impact upon performance (Health and safety committee, 2005).

Table 7, Actual exposure to occupational hazard

Items	Yes		No		Other	
	No.	%	No.	%	No.	%
tiredness and exhaustion at the end of day	94	83.9	18	16.1	0	0.0
the cause is routine work	75	79.8	15	16.0	4	4.3
sleep disturbances at the end of the day	47	42.0	65	58.0	0	0.0
the cause is in routine work	38	80.9	6	12.8	3	6.4
suffering from muscular or joint pain	66	58.0	46	42.0	0	0.0
the cause is in routine work	50	75.8	14	21.2	2	3.0

4.7.1.Exposure to ergonomic hazards

Head and neck complain

The result shows in table 8 where 51.8% of the study population have head and neck pain, 5.4% complain of numbness and less than 3% have stiffness and swelling in head and neck. These problem.

Shoulder complain

The result shows that 63.4% complain of shoulder pain.

Back pain

complain of back pain 39.3%.

Upper and lower limbs

Result shows that 68.8 % complain of upper limbs pain and 52.7% have lower limbs pain.

Pelvis pain

Results shows that 76.8% of the study population complain of pelvis pain.

From these results we can see that these complains coming due the nature of work in PHC which depend on writing work and long time sitting.

Table 8, Exposure to ergonomic hazards

Body part	Pain	stiffness	swelling	numbness	Not Suffering
Head and neck	51.8	0.9	1.8	5.4	40.2
Shoulder	63.4	1.8	0.0	13.4	21.4
Back	39.3	0.0	0.9	2.7	57.1
Upper limbs	68.8	8.9	0.9	5.4	16.1
Lower limbs	52.7	11.6	1.8	2.7	31.3
Pelvis	76.8	3.6	0.0	1.8	17.9

4.7.2. Exposure to physical hazards

The result shows that 30.4% of the study population complain of visual problems, 8.9% have breathing problem, 6.3% complain of hearing problems and only 1.8% have skin problems as shown in table 9.

Physical hazards are the most common and will be present in most workplaces at one time or another. They include unsafe conditions that can cause injury, illness and death. There are many types of physical hazards such as electrical hazards, moving parts that a worker can accidentally touch, constant loud noise, high exposure to sunlight/ultraviolet rays, heat or cold, working from heights, including ladders, or any raised work area, spills on floors or tripping hazards, such as blocked aisle or cords running across the floor.

Table9, Exposure to physical hazards

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
Hearing problem	7	6.3	105	93.8	**112**	**100.0**
Visual problem	34	30.4	78	69.6	**112**	**100.0**
Skin problem	2	1.8	110	98.2	**112**	**100.0**
Breathing	10	8.9	102	91.1	**112**	**100.0**

4.7.3. Exposure to chemical hazards

Eye affection

As shown in table 10, 67% of the study population complain of eyes redness, 4.5% have visual disturbances, 1.8% have eye swelling, where only 7.1% are not suffering.

Skin affection

Also 88.4% complain of skin redness, 6.3 have eczema and 3.6% complain of burn in the skin .

Respiratory affection

As shown in physical hazard tables 9, 8.9% have breathing problems, of them 80.4% complain of respiratory distress, 3.6% complain of suffocation ,4.6% have cough, 1.8% have wheezing and 2.7% don't suffering.

These complained are explained in Relation to patient treatment and maintenance of a proper environment, e.g., disinfectants and sterilants, hazardous drugs, and latex exposure among others ((CDC, OSHA, 2004). Also due to short term exposures to chemical compounds can cause pulmonary and central nervous system damage. Workers can bring mercury home on their shoes and clothing and as a result expose family members for

variety of symptoms ranging from mild dermatitis to respiratory and neurological problems (Hudson et al., 1987).

Table 10, Exposure to chemical hazards

Body Part	**Symptoms**				
Eyes	Redness	Visual disturbances	swelling	burning	Not Suffering
%	**67.0**	**4.5**	**1.8**	**19.6**	**7.1**
skin	Redness	Edema	Eczema	Burn	Not Suffering
%	**88.4**	**0.0**	**6.3**	**3.6**	**1.8**
Respiratory	Distress	Suffocation	Cough	Wheezing	Not Suffering
%	**80.4**	**3.6**	**11.6**	**1.8**	**2.7**

4.7.4. Exposure to psychological hazards

Table 11 shows that 24.1% of the study population complain of anxiety, 20.5% have sleep disturbances, 16% complained of worried and 6.3% complain of burnout while 23.9% complain of other problems such as phobia and poor communication, which accommodate with the recent survey of American Nursing Association (ANA) that nurses cite stress and overwork as their top safety concern. And workplace stress may increase a person's risk for cardiovascular disease, psychological disorders, workplace injury, and other health problems. Early warning signs may include headaches, sleep disturbances, job dissatisfaction, difficulty in concentrating, and low morale." – "factors such as shift work, long hours, fatigue, and intense emotional situations (American Nurses Association, 2004).

Table 11, Exposure to psychological hazards

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
Depression	8	7.1	104	92.9	**112**	**100.0**
Anxiety	27	24.1	85	75.9	**112**	**100.0**
Sleep disturbance	23	20.5	89	79.5	**112**	**100.0**
Burnout	7	6.3	105	93.8	**112**	**100.0**
Worried	18	16.1	94	83.9	**112**	**100.0**
Phobia	2	1.8	110	98.2	**112**	**100.0**
Hostile	1	0.9	111	99.1	**112**	**100.0**
Poor communication	5	4.5	107	95.5	**112**	**100.0**

4.7.5. Exposure to biological hazards

Table 12, shows that there was no one have whether HIV, HCV, or HBV but there was only one case who have TB, which indicates the good situation of safety measures and precaution among nurses in PHC which accommodate with the studies that shows blood borne pathogenic exposures (HIV, HCV, HBV, etc) are due to percutaneous needle-sick injuries (NSIs) (Perry et al., 2003). And with the study which has been established in Gaza strip among health care workers by Dr Amr El Husaini register less than 3% of all the health workers that have HCV, and HBV.

Table 12, Exposure to biological hazards

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
HB	0	0.0	112	100.0	**112**	**100.0**
HBC	0	0.0	112	100.0	**112**	**100.0**
HIV	0	0.0	112	100.0	**112**	**100.0**
TB	1	0.9	111	99.1	**112**	**100.0**

Differences between actual exposure to occupational hazard and nurses perception

From the previous results we see that there are differences between the ranking of the hazard's types according to the nurse's perception and the exposure to the hazard, where the physical hazard was the first type with 49.0%, the second is Biological hazard 31.8%, the third is Ergonomic hazard 30.9%, the fourth is Psychological hazard 29.1% and the last one is Chemical hazard with 26.4%. But the chemical hazard was the first one that account the most percent in exposure following with the ergonomic hazard and that is measured among nurses according to their perception toward hazards.

4.8.Health Care System

4.8.1. Sick leave and its causes

Figure 4, 5, and table 13, shows that 75 % of the study population have sick leaves during the year 2009, of them 26.5% have only 2 days or less, 45.8% have 3-7 days and 27.7% have more than 7 days , while 25% didn't have any sick leaves during the last year. The result shows that the main cause for these sick leaves is ordinary disease while only 7.3% of them due to occupational hazards. While 17.4% for other causes which may be related to socio-economical status

Nurses take nearly 50% more days off sick than other public sector workers. It found nurses and healthcare assistants take on average, 16.8 days a year of sick leave. This compared with 11.3 days across other sectors of the public workforce, including teachers, police officers, social workers and civil servants. (http://www.guardian.co.uk)

Figure 4, percentage of sick leaves 2009

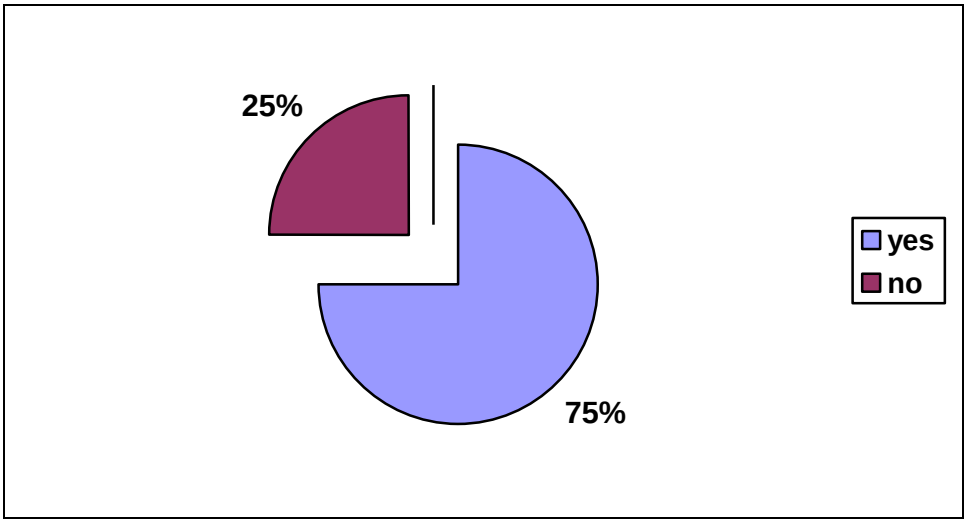


Figure 5, Number of sick leaves days

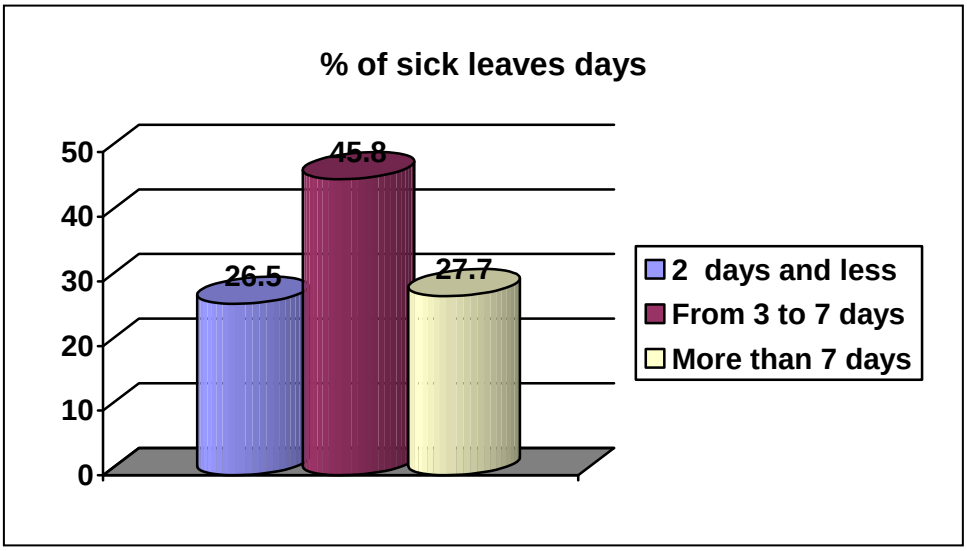


Table 13 Causes of sick leaves

cause for sick leaves	No	%
Occupational	6	7.3
Ordinary disease	62	75.6
Other	14	17.1
Total	**82**	**100.0**

4.8.2.Medical intervention post injury

Table 14, the medical intervention post injury done to employees exposed to work hazards shows that 79.1% of the study population have first aid at work place, and 7.0% were transferring to the hospital, while 14.0% have no measures at all.

Table 14, post exposure action

post exposure action	No.	%
First aid at place	68	79.1
Transfer to hospital	6	7.0
Nothing done	12	14.0

4.8.3. Need to improve the work system

When asking the study population whether the work system need improvement or not , 86 % of them said yes . most of them with 64 % said that the improvement should take place in promotion, 60.8 % in safety measures, 56.7 % in finance and 50.5 % in management as shown in table 15. These percent emphasize that there are a need for improvement in these domains especially in promotion by encouraging and enforcing the need for nursing supervisors to pay closer attention to safe work practices since supervisors are often judged by the degree to which employees under them perform their jobs.

Despite that the safety measures that are existed in PHC centers which considered as convenient and good enough but this doesn't prevent the need for more improvement especially that most of these devices and equipments are supplied by donated areas.

thereby increasing management accountability for safety, with the accountability for the need to improve the working condition would be better achieved with the knowledge of what causes injuries and diseases, it is easier to design and implement suitable measures

towards prevention, where employee training, with modifying their job description help both the employee and supervisor become more responsible for safety, and both have a clearer understanding of complete safety performance.

Table 15, Perception toward work system improvement

need to improve current system	No.	%
Yes	97	86.6
No	15	13.4
Total	**112**	**100.0**
Areas of improvement		
Management	49	50.5
Financial	55	56.7
Promotion	63	64.9
Safety measures	59	60.8

4.9. Performance evaluation

4.9.1.compatibility of work tasks with capabilities of workers

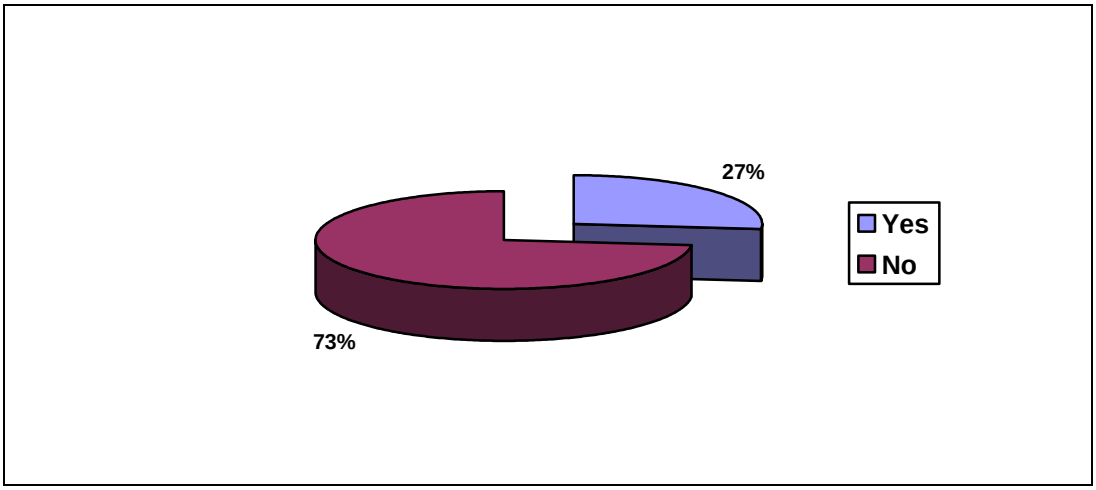
Table 16 shows that 42 % of the study population are assigned to work tasks that exceed their abilities ,an they justified that due the lack in manpower with percent of 53.2 % while 42.6 % due to lack in facilities and logistics where increasing intensity of work which may come from accumulation of referrals in beginning of the working day, Increasing paperwork due lack of management information system, Improper promotion system with lack of motivations and rewards and Absence of clear job description. Figure 6, shows that 83 % of the study population are satisfied with their work while only 17% are not. Also most of them with 73.2 % don't want to change their work while only 26.8% who want to change their work place. Because unstable political situation and fearing of losing their jobs

According to a study completed in the United States, 75.8% of the nurses surveyed said unsafe working conditions interfere with their ability to deliver quality care. Eighty-eight percent indicated that health and safety concerns influence their decisions about the type of nursing work they do as well as whether or not they will continue to practice nursing (Houle 2001).

Table 16, Compatibility of work tasks with capabilities of workers

	Yes		No		Total	
	No.	**%**	**No.**	**%**	**No.**	**%**
work tasks and capabilities	**47**	**42.0**	**65**	**58.0**	**112**	**100.0**
Lack of manpower	25	53.2	22	46.8	**47**	**100.0**
Lack of training and experience	13	27.7	34	72.3	**47**	**100.0**
Lack of facilities and logistics	20	42.6	27	57.4	**47**	**100.0**
Unknown cause	14	29.8	33	70.2	**47**	**100.0**
Job satisfaction	93	83.0	19	17.0	**112**	**100.0**

Figure 6, desire to change work place



4.9.2. Reduce work performance

Table 17 shows that 10.7 % of the study population reduce their work intentionally. 50% due to lack of quality, 33.3% of them are not welling to work, 33.3% feel lack of harmony and 33.4% lack whether to experience or they fear of the work results.

Table 17, Reduce work performance

Items	Yes		No		Total	
	No.	%	No.	%	No.	%
reduce performance at work	12	10.7	100	89.3	112	100.0
No welling to work	4	33.3	8	66.7	12	100.0
Lack of experience	2	16.7	10	83.3	12	100.0
Lack of harmony	4	33.3	8	66.7	12	100.0
Lack of incentives	0	0.0	12	100.0	12	100.0
Lack of quality	6	50.0	6	50.0	12	100.0
Fear of work results	2	16.7	10	83.3	12	100.0

4.9.3. Delayed work performance

Table 18 shows that 13.4% of nurses arrive late to work. Of them 64.3 % out of their control while the rest due to lack of penalties and other reasons as shown in table 22.

Table 18, Delayed work performance

Delayed work performance	No	%
Yes	15	13.4
No	97	86.6
Total	**112**	**100.0**
Causes of delayed to work?		
Out of control	9	64.3
Absence of penalties	2	14.3
Lack of harmony	1	7.1
Other	2	14.3
Total	**14**	**100.0**

4.10. relation between occupational perception and knowledge with Demographic variables

The study examined the relationship between occupational perception and knowledge and demographic variables as shown in table 19.

To age :

Analysis revealed no differences of statistical significance relationship between perception and knowledge and age (F =0.075 and p-value = 0.928).

To governorate:

There are no statistical differences between occupational perception and knowledge and governorates where (F = 1.309, p –value = 0.928) and this can be due to the choice of the most crowded clinics in Gaza that have the majority of the work and all of them have the same work conditions such as large number of clients, and the different services.

To experience:

There are no statistical differences between occupational perception and knowledge and experience where (F = 0.193, p –value = 0.825)**.**

To education

There are statistical differences between occupational perception and knowledge and education where (F= 2.217, p –value = 0.090)**.**

To work department

There are no statistical differences between occupational perception and knowledge and work departments where (F = 0.764, p –value = 0.600)**.**

Table 19, Relation between perception and knowledge with demographic variables

Variables	Items	No.	Mean	Std	F	Sig.
Age	30 Yrs and less	28	0.88	0.15	**0.075**	**0.928**
	From 31 to 45 Yrs	50	0.86	0.16		
	More than 45 Yrs	31	0.87	0.17		
	Total	**109**	**0.87**	**0.16**		
Governorates	North	15	0.87	0.22	**1.309**	**0.271**
	Gaza	34	0.82	0.17		
	Mid zone	35	0.91	0.11		
	Khanyounis	9	0.87	0.14		
	Rafah	19	0.88	0.15		
	Total	**112**	**0.87**	**0.16**		
Experience	5 Yrs and less	26	0.88	0.14	**0.193**	**0.825**
	From 6 to 15 Yrs	50	0.87	0.16		
	More than 15 Yrs	34	0.86	0.17		
	Total	**110**	**0.87**	**0.16**		
Education	Practical Nurse	24	0.92	0.13	**2.217**	**0.090**
	Diploma Nurse	40	0.86	0.18		
	Bachelor	44	0.84	0.15		
	Other	4	1.00	0.00		
	Total	**112**	**0.87**	**0.16**		
Work Department	MCH	36	0.90	0.14	**0.764**	**0.600**
	ANC	19	0.85	0.16		
	FP	8	0.90	0.11		
	Epidemiology	4	0.75	0.38		
	Dental Unit	10	0.84	0.13		
	Emergency Department	20	0.87	0.16		
	Other	15	0.85	0.16		
	Total	**112**	**0.87**	**0.16**		

4.11. Relation between occupational perception and knowledge with sex

Table 20 shows that there are no statistical differences between occupational perception and knowledge and sex where (F = 0.282, p –value = 0.778)**.**

Table 20, Relation between Occupational perception and knowledge and sex

Variables	Items	No.	Mean	Std	t	Sig.
Sex	Male	37	0.88	0.14	0.282	0.778
	Female	75	0.87	0.17		

4.12. Compatibility between work environment and Work Department

Table 21 shows that there are statistical difference between environment and knowledge and work department where (F = 1.920, p –value = 0.084)

Table 21, Compatibility between work environment and work department

Variables	Items	No.	Mean	Std	F	Sig.
Work Department	MCH	36	0.87	0.21	**1.920**	**0.084**
	ANC	19	0.79	0.23		
	FP	8	0.83	0.15		
	Epidemiology	4	0.54	0.37		
	Dental Unit	10	0.80	0.07		
	Emergency department	20	0.81	0.16		
	Other	15	0.76	0.23		
	Total	112	0.81	0.21		

4.13. Relation between actual exposure, and socio-demographic data.

4.13.1. Actual exposure to occupational hazard and station

Table 22, the results shows that there was no statistical differences between actual exposure and work department where (f = 1.155, p –value = 0.336).

4.13.2. Actual exposure information and age

Also it shows no statistical differences between actual exposure information and age (F= 0.149, p –value = 0.862).

A study in Ghana have been done that examined the relationship between age and safety perception indicated a positive association between age and safety perception, As older workers had the best perceptions on safety, by highest level of job satisfaction, were the most compliant with safety procedures, the lowest accident involvement rate. (http://baywood.metapress.com).

4.13.3. Actual exposure information and experience

There was no statistical differences between actual exposure information experience where (F = 0.187, p –value = 0.830).

4.13. 4. Actual exposure information and qualification

There was no statistical differences between actual exposure information qualification where (F = 1.149, p –value = 0.333). Studies have revealed that newly qualified nurses or trainees are at greater risk for back injury than more experienced personnel. Additional risk factors for back injury are gender, and weight of the nurse (http://www.nap.edu/openbook).

Table 22, Relation between actual exposure, and socio-demographic factors.

Variables	Items	No.	Mean	Std	F	Sig.
station	MCH	36	0.64	0.28	**1.155**	**0.336**
	ANC	19	0.68	0.30		
	FP	8	0.58	0.35		
	Epidemiology	4	0.67	0.47		
	Dental Unit	10	0.43	0.27		
	Emergency department	20	0.53	0.38		
	Other	15	0.71	0.35		
	Total	**112**	**0.62**	**0.33**		
Age Group	30 Yrs and less	28	0.64	0.33	**0.149**	**0.862**
	From 31 to 45 Yrs	50	0.60	0.34		
	More than 45 Yrs	31	0.61	0.32		
	Total	**109**	**0.61**	**0.33**		
Experience	5 Yrs and less	26	0.62	0.32	**0.187**	**0.830**
	From 6 to 15 Yrs	50	0.63	0.33		
	More than 15 Yrs	34	0.59	0.34		
	Total	**110**	**0.62**	**0.33**		
Qualification	Practical Nurse	24	0.60	0.34	**1.149**	**0.333**
	Diploma Nurse	40	0.63	0.35		
	Bachelor	44	0.64	0.31		
	Other	4	0.33	0.00		
	Total	**112**	**0.62**	**0.33**		

4.14.The relation between actual exposure information and sex

Table 23 shows that there was statistical differences between Exposure information and knowledge and sex using T-test that (f = 1.736, p –value = 0.085).

Table 23, Relation between actual exposure information and sex

Variables	Items	No.	Mean	Std	t	Sig.
Sex	Male	37	0.54	0.36	1.736	0.085
	Female	75	0.65	0.30		

Chapter 5

Conclusion and recommendation

5.1. Conclusion

It is widely acknowledged that nurses are crucial components in healthcare system. In their roles, The safety of nurses themselves, and subsequently that of their patients, depends directly upon the degree to which nurses have knowledge of occupational hazards specific to their jobs and managerial mechanisms for mitigating those hazards. The level of occupational safety and health training resources available to nurses, as well as management support, are critical factors in preventing adverse outcomes from routine job-related hazards.

Ultimately, prevention of job-related injuries for nurses, and subsequently their patients, will depend directly on the degree to which nurses can identify and control the varied occupational hazards specific to jobs. Neither accreditation standards nor position descriptions adequately integrate common occupational hazard recognition and control strategies, nor do they adequately prepare nurses to identify and control hazards specific to nursing.

The total number of nurses working in PHC centers consist of 330 nurses distributed over 52 primary health care centers in Gaza governorates including 120 nurses working in nine health centers level. Of the study population 33.0% are males while 67.0% of the total respondents are females, 21.4 % were practical nurse(less than two years), 35.7 % were 3

years diploma (RN). The highest percent (39.3%) were bachelor degree.

Also 45.9% of study population were lies in the age group from (31-45) years, where 25.7 % are the youngest age group 30 years and less , while 28.4 % of the study population are more than 45 years ,23.6 % of respondents have had experience less than 5 years , where 45.5.5% have experience from 6-15 years and, 30.9 % have experience more than 15 years with mean of 13.3 years. This shows that more than 76 % have more than 5 years experience. Which indicate that most nurses are well qualified with young age to tolerate the burden of the work.

When ranking the types of occupational hazards according to the respondent perception, the result shows that the physical hazard occupied the first stage with 49.0% , the second is Biological hazard by 31.8%, the third is Ergonomic and safety hazard by 30.9% , the fourth is Psychological hazard 29.1% and the last one is Chemical hazard with 26.4%.

The result shows that there is no differences of statistical significance between perception and knowledge and socio-demographic factors such as age and sex but it shows that there are statistical differences between occupational perception and knowledge and education where (F= 2.217, p –value = 0.090)**.** Also it shows that there was statistical differences between actual exposure information and sex where (f = 1.736, p –value = 0.085). There are statistical difference between environment and knowledge and work department where (F = 1.920, p –value = 0.084)

The impact of environment factors on the ability of personnel to carry nursing work where that a healthy and productive work environment is fostered by: improved working conditions that's why we need to enhanced understanding of problems related to work hazards which can be can be useful in accessing the environmental issues that may be faced by their patients.

5.2.Recommendation

- Improving the working condition for nurses, especially for aged nurses.
- Increased allowances, salaries, full overtime payment, active association and professional body to put the legislation and control of nursing profession.
- Establishing nursing information database for nursing personnel in Palestine.
- Managers must issue clear work policies and take the necessary actions to implement or support these policies.
- Management commitment to health and safety programs is evident when all levels of staff are involved in the assessment of hazards.
- selection of hazard controls and programs evaluation activities.
- Involvement in the process empowers and motivates employees to actively participate in achieving programs objectives and goals and increases their compliance with health and safety recommendations.
- Identification and assessment of the risks from health hazards in the workplace. This involves surveillance of the factors in the working environment and working practices which may affect workers' health.
- Regular and periodic examination for the workers as law mention.
- Protocol development in relation to work safety.
- Advising on planning and organization of work and working practices, including the design of work-places, and on the evaluation, choice and maintenance of equipment and on substances used at work.

- Encourage worker seek to know their legal rights in case they expose to any kind of hazard by overview of major environmental and occupational health legislation and regulation.
- Define the rights and responsibilities of various levels of nursing in relationship to occupational health and safety

5.3 .**Recommendations for Further Studies**

- Discuss the impact of unhealthy and unsafely working environments on nurses and their patients where recognizing and control occupational hazards can improve job satisfaction and reduce turnover.
- Present a systematic hazard management approach to protect nurses in the workplace .
- Explore issues of compensating nurses who are injured or become ill from exposure to workplace
- Explore Role of nursing practice in promoting environment health.

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Annex (1)

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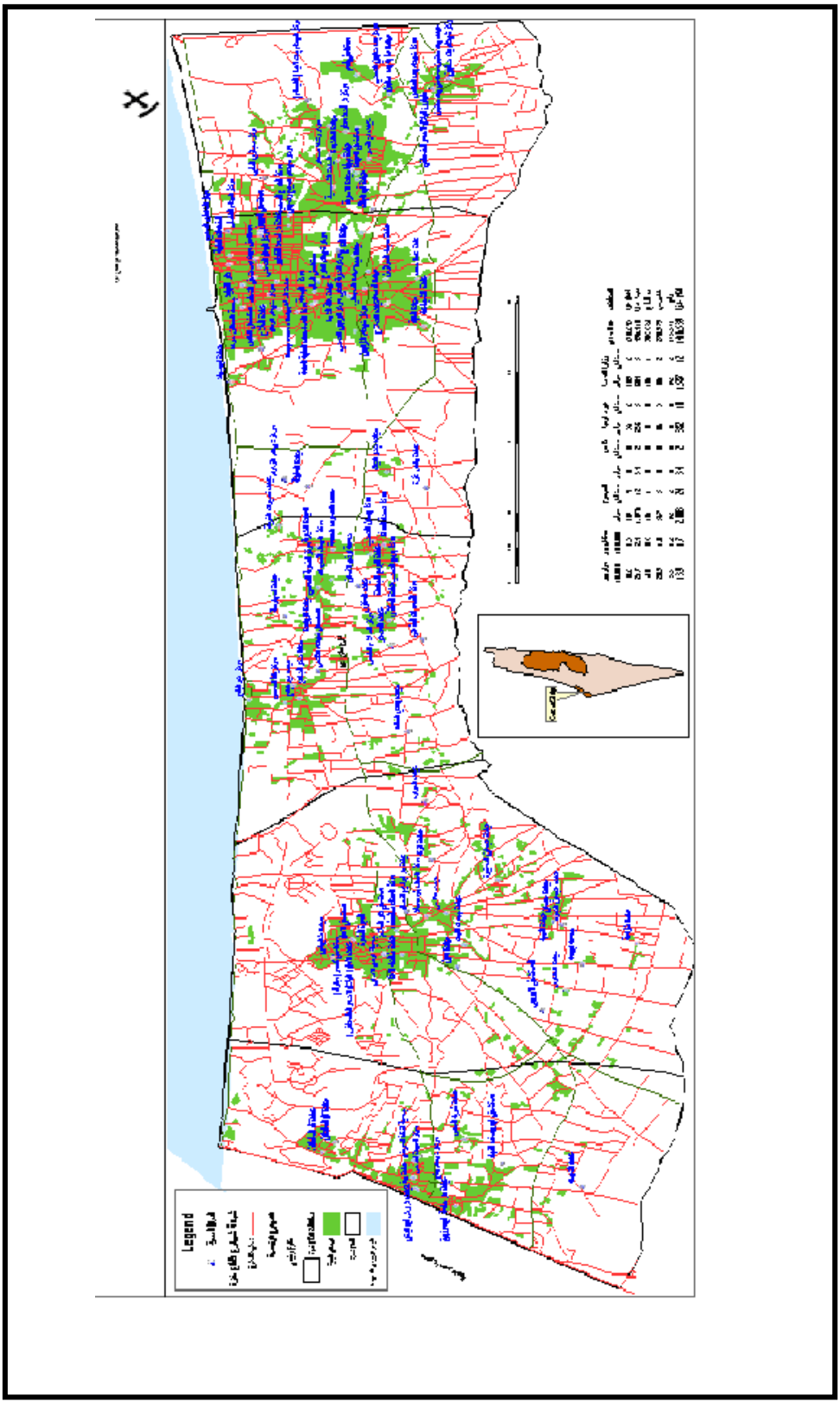
Annex (2)

MOH-HMIS, Introduction, Health Status in Palestine 2000, July 2001

Annex (3)



source : Palestinian Health Information Center

Annex (4)

Palestinian National Authority
Ministry of Health
Helsinki Committee

السلطة الوطنية الفلسطينية
وزارة الصحة
لجنة هلسنكي

التاريخ2009/6/3

Name:

الاسم: إيمان عبد المطلب محمد نطط

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

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:-

Evaluation of Occupational Health Hazards among Nurses in Governmental Primary Health Care Centers in Gaza Governorate

In its meeting on June 2009 and decided the Following:-

و ذلك في جلستها المنعقدة لشهر 6 2009

To approve the above mention research study.

و قد قررت ما يلي:-

الموافقة على البحث المذكور عاليه.

Signature
توقيع

Member
عضو

Member

Chairperson

Ministry of Health Helsinki Committee

Conditions:-

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

Annex (5)

Palestinian National Authority
Ministry Of Health
PHC General Directorate

السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة للرعاية الصحية الأولية

التاريخ2009/10/21

الأخ/ مدير عام الرعاية الأولية حفظه الله،،،،،

د. فؤاد عبد الحليم العيسوي

السلام عليكم ورحمة الله وبركاته،،

الموضوع/ السماح للباحثة / إيمان عبد المطلب نطط بإجراء بحث الماجستير

تهديكم دائرة التمريض بالرعاية الأولية أطيب التمنيات وترفع لحضرتكم طلب الأخت/ إيمان نطط والتي تعمل حكيمة في عيادة الزيتون حيث أن المذكورة أعلاه بحاجة إلى موافقتكم للقيام بعمل بحث ميداني في عيادات محافظات غزة.

عنوان البحث/ تقييم المخاطر الصحية لدى التمريض في مراكز الرعاية الأولية.

وشكرا لكم لحسن التعاون،،،،

جهاد محمد مطر
مدير دائرة تمريض الرعاية الأولية

للرفع حسب النظام

Annex (6)

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

السلطة الوطنية الفلسطينية
وزارة الصحة
الإدارة العامة لتنمية القوى البشرية

الرقم: ٥٩/١٠٧٥ التاريخ: 2009/11/05

وزارة الصحة
الإدارة العامة للرعاية الأولية
الرقم: ٤٧٩٨
التاريخ: ٩/١١/٢٠٠٩

الأخ/ د. فؤاد العيسوي المحترم،،،
مدير عام الرعاية الأولية
تحية طيبة وبعد ،،،

الموضوع / تسهيل مهمة باحث

بخصوص الموضوع أعلاه، لا مانع من تطبيق بحث التخرج للطالبة إيمان عبد المطلب نطط الملتحقة ببرنامج ماجستير صحة عامة تخصص صحة بيئة والتي تعمل موظفة في إدارتكم، والبحث بعنوان:

" **تقييم المخاطر الصحية لدى فئة التمريض في مراكز الرعاية الأولية** "

حيث يهدف البحث الي تقييم المخاطر التي تواجه التمريض، وسيتم جمع المعلومات عن طريق استبانه من الممرضين والممرضات الذين يعملون في مراكز الرعاية الأولية وسيقوم الباحث بجمع البيانات بنفسه دون تحمل الوزارة أي تكاليف وسيتم تزويد الوزارة بنتائج البحث للاستفادة منها في تحسين الخدمة المقدمة بحيث لا يتعارض مع مصلحة العمل وضمن أخلاقيات البحث العلمي.

وتفضلوا بقبول التحية والتقدير ،،،،،،

د. ناصر رأفت أبو شعبان
مدير عام تنمية القوى البشرية

وزارة الصحة
تنمية القوى البشرية
صادر: ٥٩/١٠٧٥
التاريخ: ٩/١١/٨ م

صورة لـ:
- الملف

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

Annex(7)

بسم الله الرحمن الرحيم

الأخ/ت الأفاضل .....

السلام عليكم ورحمة الله وبركاته,

تحية طيبة وبعد....

إن هذا الاستبيان يهدف إلى تقييم المخاطر الصحية المهنية لدى العاملين في مجال التمريض في مراكز الرعاية الأولية بوزارة الصحة .

إن مشروع هذه الدراسة هو عمل بحثي علمي لتقييم المخاطر الصحية التي قد تنجم عن تعرضهم لعدة مسببات أو لعدم ملائمة بيئة وأدوات العمل مع العاملين في مراكز الرعاية الأولية وذلك تحت إشراف جامعة القدس ضمن برنامج ماجستير الصحة العامة.

وإنني اقدر جهودكم بمشاركتكم وتخصيص جزء من وقتكم الخاص لتعبئة هذه الاستبيان .حيث أنها تهدف إلى تقييم المخاطر الصحية المهنية لدى فئة التمريض ومحاولة الخروج بتوصيات للتقليل من هذه المخاطر فقط .علما بان إجاباتك ستكون غاية بالسرية و سوف تستخدم فقط للبحث العلمي .

شكراً لتعاونكم

الباحثة/إيمان نطط

Annex (8)

Dear colleague

This research is aiming to evaluate the occupational hazards in nursing working in primary health care centers.

Please fill this questionnaire according to the previous agreement .

You have the right to refuse filling this questionnaire but I will appreciate your cooperation if you choose to share in this study, and be sure that the information that you give will be used only for the scientific research .

Thanks for your cooperation

Student: Iman Nattat

Annex (9)

Part one:

Personal data:

1- Age: ---------- years.

2- Gender

Male ☐ Female ☐

3- Address:

North Gaza Governorate ☐ Gaza Governorate ☐

Middle-Zone Governorate ☐ Khanyounis Governorate ☐

Rafah Governorate ☐

4- Marital status:

Single ☐ Married ☐ Divorced ☐

Widow ☐ Others ----------

5- Number of family members: ----------

6- Years of experience ----------

7- Certificate:

Practical nurse ☐ Diploma in nursing ☐

Bachelor degree ☐ master degree ☐

PhD ☐ Other ----------

8-Work department

MCH ☐ Antenatal ☐ Family planning ☐

Epidemiology ☐ NCD ☐ Dental unit ☐

☐

Emergency department others----------

9- Do you have other job than the current one?

Yes ☐ No ☐

10- If yes, how many extra hours do you work daily? ----------

Part two:

Work Environment:

11- Does your work require the use of any equipment?(oxygen cylinders, autoclaves, sharp objects, etc)

Yes ☐ No ☐

12- If yes, is it convenient?(standard criteria).

Yes ☐ No ☐

13- Do you have any safety measures at work?

Yes ☐ No ☐

14-Do you use these measures?

Yes ☐ No ☐

15-If yes, please specify:

Wearing gloves ☐ safe handling of patient ☐

Uniforms ☐ eye cover ☐

Safety box ☐ training programs ☐

Instruction ☐ protocol ☐

Others----------

16- Is the workplace compatible with safety measures?(Furniture ,sitting, ventilation etc..)

Yes ☐ No ☐

17- If no, please choose the reason.

Furniture not convenient ☐ heavy lifting ☐

Light and glare are troublesome ☐ slipping floors ☐

Noise not tolerable ☐

Heat not convenient ☐

Crowded workplace ☐

18- Is there a special uniform for work?

Yes ☐ No ☐

Third part:

Occupational perception and knowledge:

19- Do have any information about occupational health and its services?

Yes ☐ No ☐

20- Are you aware of your occupational hazards at work?

Yes ☐ No ☐

21- If yes, what type of hazards you may be exposed to? Please rank them.

Physical ☐ Chemical ☐

Psychosocial ☐ Biological ☐

Ergonomic and safety ☐

22- Do you know how to avoid such hazards?

Yes ☐ No ☐

23- Did you have any training course on safety use of equipment at work?

Yes ☐ No ☐

24- If yes, do you apply what you have learned?

Yes ☐ No ☐

25- Are you aware of your legal rights if you have a health hazard?

Yes ☐ No ☐

Fourth Part:

Exposure Information:

26- Do you feel tired and exhausted at the end of your work day?

Yes ☐ No ☐

27- If yes, do you think that the cause is in your routine work?

Yes ☐ No ☐ other causes----------

28- Do you have sleep disturbances at the end of the work day?

Yes ☐ No ☐

29- If yes, do you think the cause is in your routine work?

Yes ☐ No ☐ other causes----------

30- Do you suffer from muscular or joint pain?

Yes ☐ No ☐

31- If yes, do you think the cause is in your routine work?

Yes ☐ No ☐ other causes----------

32- Do you have history of these symptoms, if yes please specify by yes or no.(ergonomic)

Body part	Pain	stiffness	swelling	numbness
Head and neck				
Shoulder				

Back				
Upper limbs				
Lower limbs				
Pelvis				

33- - Do you have history of these symptoms, if yes please specify by yes or no.(chemical)

Body part	symptoms			
eyes	Redness	Visual disturbances	swelling	burning
skin	redness	edema	eczema	burn
respiratory	distress	suffocation	cough	wheezing

34- - Do you have history of these symptoms, if yes please specify by yes or no.(psychological)

burnout	Sleep disturbance	Anxiety	depression
Poor communication	hostile	Phobia	worried

35- - Do you have history of these symptoms, if yes please specify by yes or no.(physical)

	yes	no

Hearing problem		
Visual problem		
Skin problem		
Breathing		

36- - Do you have history of these diseases, if yes please specify by yes or no.(biological)

	yes	no
HB		
HBC		
HIV		
TB		

Part five:

Health Care System (Intervention)

37- Last year, did you have any sick leave?

Yes ☐ No ☐

38-If yes, how many days? ----------

39-what was the cause for the leave?

Occupational ☐ Ordinary disease ☐ Others, specify----------

-

40- If you have been exposed to any work hazard, what was the immediate action?

First aid at place ☐ transfer to hospital ☐

Nothing done ☐

41- Did you have a history of previous disease or injury during your work ?

Yes ☐ No ☐

42- If yes did you receive any post injury or disease rehabilitation?

Yes ☐ No ☐

43- Do you think the current work system needs development and improvement?

Yes ☐ No ☐

44- If yes, do you think it is in

Management ☐ financial ☐

Promotion ☐ safety measures ☐

Part six:

Performance Information (organizational facilities)

45- Do you think that your assigned work tasks exceed your capabilities?

Yes ☐ No ☐

46- If yes, what is the cause?

Lack of manpower ☐

Lack of training and experience ☐

Lack of facilities and logistics ☐

☐

Unknown cause

47- Are you satisfied with your work?

Yes ☐ No ☐

48- Do you want to change your work place?

Yes ☐ No ☐

49- If yes, where do you want to work?

Other section inside the department ☐

Other department inside the directorate ☐

Other directorate outside the ministry of health ☐

50- Do you usually arrive late to your work?

Yes ☐ No ☐

51- If yes what is the cause?

Out of control ☐ Absence of penalties ☐

Lack of harmony ☐ others, specify ----------

52- Do you intentionally reduce your performance at work?

Yes ☐ No ☐

53- If yes, what is the possible cause?

No welling to work	☐	Lack of experience	☐
Lack of harmony	☐	Lack of incentives	☐
Lack of quality	☐	Fear of work results	☐

Annex (10)

استبانه (عربي)

الجزء الأول:

معلومات شخصية :

1. **العمر/السنوات: ــــــــــــــ**
2. **الجنس** ذكر ☐ أنثى ☐
3. **العنوان**

محافظة شمال غزة☐ محافظة غزة ☐ محافظات الوسطى ☐ محافظة خانيونس☐ محافظة رفح ☐

4. **الحالة الاجتماعية :**

متزوج ☐ اعزب ☐ مطلق/ة ☐ أرمل/ة ☐

5. **عدد أفراد العائلة : ــــــــــــــ**
6. **سنوات الخبرة في مجال التمريض : ــــــــــــــــــــــــ**
7. **المؤهل العلمي :**

دبلوم سنتان ☐ دبلوم ثلاث سنوات ☐ بكالوريوس ☐

دبلوم عالي ☐ ماجستير ☐ غير ذلك ☐

7. **مكان العمل :**

رعاية الامومة والطفولة ☐ رعاية الحوامل ☐ تنظيم الاسرة ☐

قسم الاوبئة ☐ الأمراض الغير معدية ☐ وحدة الأسنان ☐

قسم الطوارئ ☐ غير ذلك ☐

8. هل تعمل/ ين في مجال آخر غير العمل الحالي؟

نعم ☐ لا ☐

9. إذا كانت الإجابة نعم كم ساعة تعمل/ ين يوميا؟.....

الجزء الثاني:

معلومات عن طبيعة العمل :

10. هل عملك يحتاج استخدام أي أدوات أو أجهزة ؟ (اسطوانات أكسجين _ أجهزة تعقيم _ أدوات حادة _ الخ)

نعم ☐ لا ☐

11. إذا كانت الإجابة بنعم ، هل هي مناسبة ؟

نعم ☐ لا ☐

12.هل يوجد لديكم أي إجراءات وقائية في الحماية ؟

نعم ☐ لا ☐

13.هل تستخدم/ ي هذه الأدوات ؟

نعم ☐ لا ☐

14.إذا الإجابة بنعم ، حدد/ي

التعامل مع المرضى بأمان ☐ استخدام القفازات ☐ زى خاص للعمل ☐

بروتوكولات ☐ إرشادات ☐ برامج تدريبية ☐

15. هل مكان العمل مناسب مع الإجراءات الوقائية؟

نعم ☐ لا ☐

16. إذا كانت الإجابة لا ، الرجاء اختيار السبب

الأثاث غير مناسب ☐ مشاكل في الإضاءة وانعكاسها أحمال ثقيلة ☐

أرضيات منزلقة ☐ ضوضاء غير محتملة حرارة غير مناسبة ☐

أماكن مزدحمة ☐

17.هل يوجد لديكم ملابس خاصة للعمل؟

نعم ☐ لا ☐

الجزء الثالث

الوعي المهني :

18. هل يوجد لديك معلومات عن الصحة المهنية وخدماتها ؟

نعم ☐ لا ☐

19. هل تعلم/ي بمخاطر المهنة التي تعمل/ين بها ؟

نعم ☐ لا ☐

20. إذا كانت الإجابة بنعم ، أي نوع من المخاطر تتعرض/ين لها؟الرجاء ترتيبها.

مخاطر جسدية ☐ مخاطر كيميائية ☐ مخاطر نفسية ☐

مخاطر بيولوجية ☐ مخاطر عدم الملائمة ☐

21.هل تعرف/ي طرق الوقاية منها ؟

نعم ☐ لا ☐

22.هل حصلت/ي على دورات تدريبية في مجال العمل واستخدام الأجهزة بطريقة آمنة ؟

نعم ☐ لا ☐

23. إذا كانت الإجابة بنعم ، هل تطبق/ي ما تعلمته ؟

نعم ☐ لا ☐

24.هل لديك/ي معرفة عن حقوقك إذا تعرضت لمخاطر صحية ؟

نعم ☐ لا ☐

الجزء الرابع :

معلومات التعرض للمخاطر الصحية :

25. هل تشعر/ي بإجهاد وإعياء بعد العمل؟

نعم ☐ لا ☐

26. إذا كان الجواب بنعم , هل تعتقد/ي أن السبب هو روتين العمل؟

نعم ☐ لا ☐

27. هل تعاني من مشاكل في النوم بعد انتهاء العمل؟

نعم ☐ لا ☐

28. إذا كان الجواب بنعم , هل تعتقد/ي أن السبب هو روتين العمل؟

نعم ☐ لا ☐

29. هل تعاني من آلام في عضلات مفاصل الجسم؟

نعم ☐ لا ☐

30. .. إذا كان الجواب بنعم , هل تعتقد/ي أن السبب هو روتين العمل؟

نعم ☐ لا ☐

31.هل يوجد لديك أي من الأعراض الآتية :(مخاطر الملائمة)

عضو الجسم	ألم	تيبس	ورم	تنميل
الرأس والرقبة				
الأكتاف				
الظهر				
الأطراف العلوية				
الأطراف السفلية				
الحوض				

32 . هل يوجد لديك أي من الأعراض الآتية :(مخاطر كيميائية)

عضو الجسم	الأعـــــــــــــــــــــــــراض			
العين	احمرار	زغللة	ورم	حرقان
الجلد	احمرار	ورم	اكزيما	حرق
التنفس	ضيق	اختناق	كحة	صفير

33 . **هل يوجد لديك أي من الأعراض الآتية :(مخاطر نفسية)**

احتراق وظيفي	مشاكل بالنوم	اضطراب	اكتئاب
مشاكل بالتواصل	عدوانية	خوف	قلق

34. **هل يوجد لديك أي من الأعراض الآتية :(مخاطر كيميائية)**

	نعم	لا
مشاكل في السمع		
مشاكل في الرؤية		
مشاكل جلدية		
مشاكل بالتنفس		

35. **هل يوجد لديك أي من الأعراض الآتية :(مخاطر بيولوجية)**

	نعم	لا
HB		
HBC		
HIV		
TB		

الجزء الخامس

النظام الصحي

36.في العام الماضي هل حصلت/ي على إجازات مرضية

نعم ☐ لا ☐

37.إذا كانت الإجابة نعم, كم كان عدد الأيام؟.....

38.ماذا كان سبب الإجازة

مرض مهني ☐ مرض عادى ☐ أسباب أخرى ☐, حددها.....

39.إذا كنت تعرضت إلى إصابة بسبب العمل , ماذا كان الإجراء المتخذ بعد الإصابة مباشرة

إسعاف في مكان العمل ☐ تلقى علاج خاص بالمستشفى ☐ لم تتلقى اى إجراء طبي ☐

40.هل تعرضت/ي لأي مرض مهني أو إصابة مهنية

نعم ☐ لا ☐

41. إذا كانت الإجابة نعم ,هل تلقيت أي تأهيل للعودة للعمل بعد الإصابة؟

نعم ☐ لا ☐

42.هل تعتقد/ي بان النظام الحالي لعملك يحتاج إلى تطوير وتحسين؟

نعم ☐ لا ☐

43..إذا كانت الإجابة نعم ,هل تعتقد/ي بان التطوير يجب أن يكون في

الإدارة ☐ التمويل ☐ التعزيز الصحي ☐ الإجراءات الوقائية ☐

الجزء السادس

معلومات الأداء

44.هل تعتقد/ي بان مهمات عملك اكبر من طاقتك على العمل؟

نعم ☐ لا ☐

45.إذا كانت الإجابة نعم,ما السبب؟

نقص الموارد البشرية ☐ نقص في الخبرة والتدريب ☐ نقص في الإمكانيات ☐ غير معروف ☐

46. هل أنت راض/ية عن عملك؟

نعم ☐ لا ☐

47.هل ترغب/ي في تغيير مكان عملك؟

نعم ☐ لا ☐

48.إذا كانت الإجابة نعم, أين ترغب/ي بالعمل

قسم آخر داخل الدائرة ☐ دائرة أخرى داخل الإدارة ☐ دائرة أخرى داخل الوزارة ☐

49. هل تصل/ي عادة متأخر/ة عن الدوام الرسمي للعمل

نعم ☐ لا ☐

50. .إذا كانت الإجابة نعم ,ما هو السبب؟

خارج عن إرادتي ☐ غياب سياسة العقاب والحساب☐ عدم الانسجام بالعمل ☐ أخرى.....

51.هل تتعمد/ي خفض مستوى أداءك في العمل؟

نعم ☐ لا ☐

52. .إذا كانت الإجابة نعم ,ما هو السبب المحتمل؟

عدم الرغبة في العمل ☐ نقص في الخبرة والتدريب ☐ عدم الانسجام بالعمل ☐

قلة الحوافز داخل العمل ☐ نقص الجودة ☐ التخوف من نتائج العمل ☐

Annex(11)

Names of Experts

1- Dr yousef Abu Safieh	**Al-Quds University**
2- Dr.. Yehia Abed	**Al-Quds University**
3 Dr Ashraf El Jedi	**Islamic University**
4- Dr. khaled kahaman	**Al-Quds University**
5- Dr. Fuad El Aisawi	**MOH General Director of PHC**
6-Mr. Jehad Mater	**MOH Director of nursing in PHC**
7-Dr. Younis Awadallah	**MOH Director of IMCI in PHC**
8- Dr. Abdelaziz Thabet	**Al-Quds University**
9- Dr. Itaf Abed	**Islamic University**
10-Khalil Shoaib	**Director Of palestinian college of nursing**

ملخص الدراسة

تقييم المخاطر الصحية لدى التمريض في مراكز الرعاية الأولية

هناك العديد من المخاطر الصحية, والتي يمكن أن تؤثر في حياة الإنسان من خلال بيئته الطبيعية, حيث يتعرض العاملين الصحيين -خاصة التمريض- إلى عدة أنواع من المخاطر الصحية, وتقسم هذه المخاطر المهنية إلى:

- مخاطر كيميائية بسبب التعرض إلى مواد كيميائية.
- مخاطر بيولوجية بسبب التعرض لعدوى البكتيريا والفيروسات.
- مخاطر جسدية مثل التعرض للضوضاء والحرارة.
- مخاطر نفسية مثل القلق والخوف ومشاكل النوم.
- مخاطر الملائمة مع بيئة العمل, والتي تشكل دورا هاما في التسبب بمعظم شكوى العاملين في مجال الصحة والتي بالتالي تؤدى إلى نفور العامل من بيئة عمله وقلة إنتاجيته .

إن مشروع هذه الدراسة هو عمل بحثي علمي, يهدف لتقييم المخاطر الصحية المهنية لدى العاملين في مجال التمريض في مراكز الرعاية الأولية بوزارة الصحة بمحافظات غزة. عينة الدراسة تتكون من جميع الممرضين والممرضات الذين يعملون بمراكز الرعاية الصحية الأولية بتسعة مراكز ذات مستوى رابع في محافظات غزة, حيث أن العدد الإجمالي للممرضين والممرضات العاملين في مراكز الرعاية الصحية الأولية هو 330 ممرض و ممرضة, وهذا العدد موزع على 52 مركزاً

للرعاية الصحية الأولية في محافظات غزة, من بينهم 120 يعملون في تسعة مراكز صحية ذات مستوى رابع, وقد أجريت الدراسة في الفترة من شهر أكتوبر 2009 وحتى فبراير 2010. وقد تم جمع البيانات من الممرضين والممرضات خلال عملهم بعد اخذ الموافقة الرسمية من الجهات المعنية والرسمية, بالإضافة لموافقة المشاركين في إكمال هذه الدراسة باستخدام استبيان تم تحكيمه بواسطة خبراء محليين, حيث أظهرت النتائج ترتيب المخاطر الصحية كالتالي:المخاطر الفيزيائية بنسبة 49.0 ٪ , المخاطر البيولوجية 31.8 ٪, مخاطر الملائمة 30.9 ٪ ، المخاطر النفسية 29.1٪, و وأخيرا المخاطر الكيميائية بنسبة 26.4 ٪. وقد أظهرت النتائج بأنه لا توجد فروق ذات دلالة إحصائية بين الإدراك والمعرفة بمعلومات التمريض, وبين العوامل الاجتماعية, باستثناء المؤهل العلمي والذي أظهرت الدراسة بأنه يوجد فروق ذات دلالة إحصائية بينه وبين الإدراك والمعرفة بمعلومات التمريض. كما أظهرت الدراسة عدم وجود أي فروق ذات دلالة إحصائية بين الإصابة بأي نوع من الخاطر الصحية وبين العوامل الاجتماعية مثل العمر أو المؤهل العلمي, مع وجود فروق ذات دلالة إحصائية بين الإصابة بهذه المخاطر, وبين الجنس ومكان العمل.

كما يعتبر التدريب احد أهم عناصر الصحة والسلامة المهنية, حيث انه يساعد العاملين الصحيين من كافة المستويات بمعرفة حقوقهم ومسئولياتهم بما يتعلق بالسلامة المهنية داخل إطار عملهم. لذا تمت التوصية بتحسين النظام الإداري بما يتعلق بالسلامة المهنية للعاملين الصحيين, ذلك من خلال عمل برامج تدريبية, وتوعية العاملين بما قد يتعرضون له من مخاطر وكيفية السيطرة عليها.