An-Najah National University

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A Point-in-Time Observational Study of Hand Washing Practices of Healthcare Workers in the North of West Bank

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This thesis was defended successfully on20/7/2010 and approved by

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الإهداء

إلى مَن علّمني كَيف الصعود و حَمل لي شُعلةً

تلذذ بحروقاتِها في يَديهِ لينيرَ لي دَربي

"إليكَ والدي"

و إلى الحضن المعبَق بأريج الوَطن

مَن علّمتني كَيف أقِف أمامَكم في لحظةٍ تَتسابق فيها الدموع لمقلتيّ

"إليكِ أمّي"

إلى مَن اجتمعوا مَعي على دِفء مَوقِد الشِتاء و تَقاسموا مَعي ظلمَة ليلِة واحِدة

"إليكم إخوتي"

لِمن أمسَك بِيدي و كانَ عَوني و سَندي

لِمن أبى إلا أنْ أكونَ هُنا رَغماً عَن أنفِ الحَياة

"إليكَ زوجي"

لِمَن جَعلوني أصِل إلى هُنا كَي أستطيع عَطائَهم

و وَهبوني الحَياة ألف مرّة بِكلمة " أمي"

لِمن مَضيتُ أشقّ الطريق لأجلِهم كَي يَتبعوني

"لكم أبناء قلبي"

و لا أنسى مَن علّمني حَرفاً أن أكونَ لهُ عَبداً
و كلّ مَن سَبقني الطّريق و سيلحَقني إليها مِن طلاّب عِلم
لِجامعتي التي تركتُ مذكّراتي عَلى مقاعِدها
لكم جَميعا أُهدي سَهري و تَعبي و جَهدي

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الإقرار

أنا الموقع أدناه مقدم الرسالة التي تحمل العنوان:

A Point-in-Time Observational Study of Hand Washing Practices of Healthcare Workers in the North of West Bank

دراسة وقتية لملاحظة ممارسات غسل اليد للعاملين في القطاع الصحي في شمال الضفة الغربية

اقر بان ما اشتملت عليه هذه الرسالة إنما هي نتاج جهدي الخاص ، باستثناء ما تمت الإشارة إليه حيثما ورد، وان هذه الرسالة ككل، أو أي جزء منه لم يقدم من قبل لنيل أية درجة علمية أو بحث علمي أو بحثي لدى أية مؤسسة تعليمية أو بحثية أخرى.

Declaration

The work provided in this thesis, unless otherwise referenced, is the researcher's own work, and has not been submitted elsewhere for any other degree or qualification.

Student's name: : **اسم الطالب:**

Signature: **التوقيع :**

Date: **التاريخ :**

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List of Abbreviations

CDC	Centers for Disease Control and Prevention
HCWs	Health care workers
HCAI	Health care associated infection
CFUs	Colony forming units
ICU	Intensive care unit
USA	United State of America
CM^2	Centimeter square
€	Euro
MRSA	methicillin-resistant Staphylococcus aureus
US$	United State Dollar
UNARWA	United Nations Relief and Works Agency
Shift A	From 7 am to 2pm
Shift B	From 2 pm to 9 pm
Shift C	From 9pm to7am
LR	Labor room
IR	Incubator room
WHO	World Health Organization
SPSS	Statistical Package for Social Science
ANOVA	analysis of variance

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Abstract

Background: Transmission of microorganisms from the hands of health care workers is the main source of cross-infection in hospitals and can be prevented by hand washing.

Objectives:

This study aimed to determine the hand washing compliance of health care workers in three hospitals; Jenin governmental hospital , Al-Ittihad private hospital and Qalqilia (UNRWA) hospital. It also aimed to evaluate the associations of several factors with hand washing /hand hygiene compliance of health care workers, who work in the labor room(LR), incubator room(IR), and intensive care unit(ICU) in these hospitals.

Method:

A Cross sectional, point in time observational study was carried out, the study conducted during the period, September-December2009; researcher is the observer who randomly observed the health care workers during routine patient care. The target population were doctors and nurses who

work in the labor room (LR), incubator room (IR), and intensive care unit (ICU), 1050 observation opportunities were collected from three hospitals; Jenin governmental hospital, Al-Ittihad private hospital and Qalqilia (UNRWA) hospital. (SPSS) were used for data analysis.

Result:

30.6% of the observation opportunities before patient contact use rub, 22.1% use wash, 30.8% use gloves, 16.6% use nothing after patient contact 39.7% use rub, 40.9% use wash, and 19.4% use nothing.

The study found that the highest compliance for hand washing before patient contact was among the practical nurses (39.7%), and hand washing compliance was worst among physician specialists (15.5%). The age of health workers who showed highest compliance was 30-40 years old. Years of experience had a negative impact on compliance rate for hand washing, shift B had the best results for hand washing compliance before patient contact, and 67.71% of the health care provider took off jewelry and kept short nails through the work.

Conclusion:

Noncompliance with hand washing is a substantial problem in a hospital setting. From the responses indicated by the health care workers, it becomes evident that a behavioral change is warranted. It involves a combination of education, motivation and system change.

Chapter One

Introduction

1.1 Introduction

During the mid-nineteenth century, Dr. Ignaz Semmelweis discovered that routine and proper hand washing could prevent the spread of infectious diseases. Dr. Semmelweis made this discovery when he recognized a commonality among his maternity patients. Dr. Semmelweis realized that his medical students worked with cadavers during their morning anatomy class, and then proceeded to make rounds with him in the afternoon examining maternity patients. During the transition between working with cadavers and seeing patients, Dr. Semmelweis hypothesized that his students were spreading infections to his healthy patients because his students were not washing their hands between handling the cadavers and examining the patients. Once the connection was made, and proper and routine hand washing was implemented, the 25-30% mortality rate of Dr. Semmelweis' patients decreased to 1.27%.[1]

Individuals of all ages carry a great amount of bacteria and viruses on their hands. Disease-causing microorganisms can frequently be isolated from the hands. Hand carriage of bacteria is an important route of transmission of infection between patients .Appropriate hand washing reduced the incidence of both nosocomial and community, infections[2]. Guidelines from national and international infection prevention and control organizations have repeatedly acknowledged that hand washing is the single most important procedure for preventing infections[3].

In 2000, The Center for Disease Control and Prevention (CDC) in Atlanta, developed standard guidelines for when individuals should wash their hands. Hands should be washed after using the restroom, handling uncooked foods, changing a diaper, coughing or sneezing, playing with

pets, handling garbage, and caring for someone who is ill. The CDC has also established guidelines for proper hand washing techniques:[4]

1. Use soap and warm, running water.
2. Wash all surfaces thoroughly, including wrists, palms, back of hands, fingers, and under fingernails.
3. Rub hands together for at least 10 to 15 seconds.
4. When drying hands, use a clean or disposable towel. Pat skin dry rather than rubbing to avoid chapping and cracking.
5. Apply hand lotion after washing to help prevent and soothe dry skin.

Proper hand washing has been credited for reducing illnesses in child care centers, school settings, and the workplace [5].This reduction in illness then leads to a reduction of absenteeism and missed days of work by the staff. Not only is proper hand washing important in the school, home, and community setting, it is also important in the hospital setting. Despite the fact that rate of acquiring an infection from the hospital is extremely high, hand washing provides a significant means for preventing the spread of germs that may lead to illness [6].

At a time when costs for patient care are increasing and hospitals are threatened by bacterial resistance, prevention of nosocomial infections is an important issue. However, health care workers show poor compliance with hand washing[7]. Microorganisms are not only present on the surface of the skin, but also under watches and cuffs. Several studies have indicated that the hands of health care workers may be colonized or contaminated with pathogens such as *Staphylococcal aureus*[8], *Klebsiella pneumoniae*, *Acinetobacter* species, *Enterobacter* or *Candida* species[9]; *Klebsiella* can live on the hands up to 150 minutes and hand washing can reduce patient infections in significant amount[10].

Hand washing with tap water and detergents suspends millions of microorganisms and allows them to be rinsed off; this process is referred to as mechanical removal of transient microorganisms[11] . Hand washing with decontaminating agents kills or inhibits the growth of microorganisms; this is referred to as chemical removal for both transient and some resident microorganisms [12]. Smith Temple (1994) recommended washing the hands for 1-2 minutes to be effective; however, good hand washing technique is not the only the vital step, but also we need a hygienic way of drying hands. It is pointless taking time to wash properly if we use the same towel that every one else has been using. It has been suggested that paper towels operate effectively by two mechanisms. First they rub away transient organisms and old dead skin loosely attached to the surface of the hands. Second, they remove bacteria from deeper layer of skin brought to the surface by friction plus the warmth and moisture generated through washing [13].

1.2 Normal Bacterial Skin Flora

To understand the objectives of different approaches to hand cleansing, knowledge of normal bacterial skin flora is essential. Normal human skin is colonized with bacteria; different areas of the body have varied total aerobic bacterial counts (e.g., 1 x 10^6 colony forming units (CFUs)/cm^2 on the scalp, 5 x 10^5 CFUs/cm^2 in the axilla, 4 x 10^4 CFUs/cm^2 on the abdomen, and 1 x 10^4 CFUs/cm^2 on the forearm) [14]. Total bacterial counts on the hands of medical personnel have ranged from 3.9 x 10^4 to 4.6 x 10^6 [14].In 1938, bacteria recovered from the hands were divided into two categories ;transient and resident [14].Transient flora, which colonize the superficial layers of the skin, are more amenable to removal by routine hand washing. They are often acquired by health care workers during direct

contact with patients or contact with contaminated environmental surfaces within close proximity of the patient. Transient flora are the organisms most frequently associated with health care associated infections. Resident flora, which are attached to deeper layers of the skin, are more resistant to removal. In addition, resident flora (e.g., coagulase-negative staphylococci and diphtheroids) are less likely to be associated with infections. The hands of HCWs may become persistently colonized with pathogenic flora (e.g., *S. aureus*), gram-negative bacilli, or yeast. Investigators have documented that, although the number of transient and resident flora varies considerably from person to person, it is often relatively constant for any specific person [15,16].

1.3 Evidence of Transmission of Pathogens on Hands

Transmission of health care associated pathogens from one patient to another via the hands of HCWs requires the following sequence of events:

• Organisms present on the patient's skin, or that have been shed onto inanimate objects in close proximity to the patient, must be transferred to the hands of HCWs.

• These organisms must then be capable of surviving for at least several minutes on the hands of personnel.

• Next, hand washing or hand antisepsis by the worker must be inadequate or omitted entirely, or the agent used for hand hygiene must be inappropriate.

• Finally, the contaminated hands of the caregiver must come in direct contact with another patient, or with an inanimate object that will come into direct contact with the patient.

Health care associated pathogens can be recovered not only from infected or draining wounds, but also from frequently colonized areas of normal, intact patient skin[17,18].

1.4 Magnitude of HCAI burden:

HCAI is a major problem for patient safety and its prevention must be a first priority for settings and institutions committed to making health care safer. The impact of HCAI implies prolonged hospital stay, long term disability, increased resistance of microorganisms to antimicrobials, massive additional financial burdens, an excess of deaths, high costs for the health systems and emotional stress for patients and their families. Risk of acquiring HCAI depends on factors related to the infectious agent (e.g. virulence, capacity to survive in the environment, antimicrobial resistance), the host (e.g. advanced age, low birth weight, underlying diseases, state of debilitation, immunosuppression, malnutrition) and the environment (e.g. ICU admission, prolonged hospitalization, invasive antimicrobial therapy)[19].

1.4.1 HCAI in developed countries:

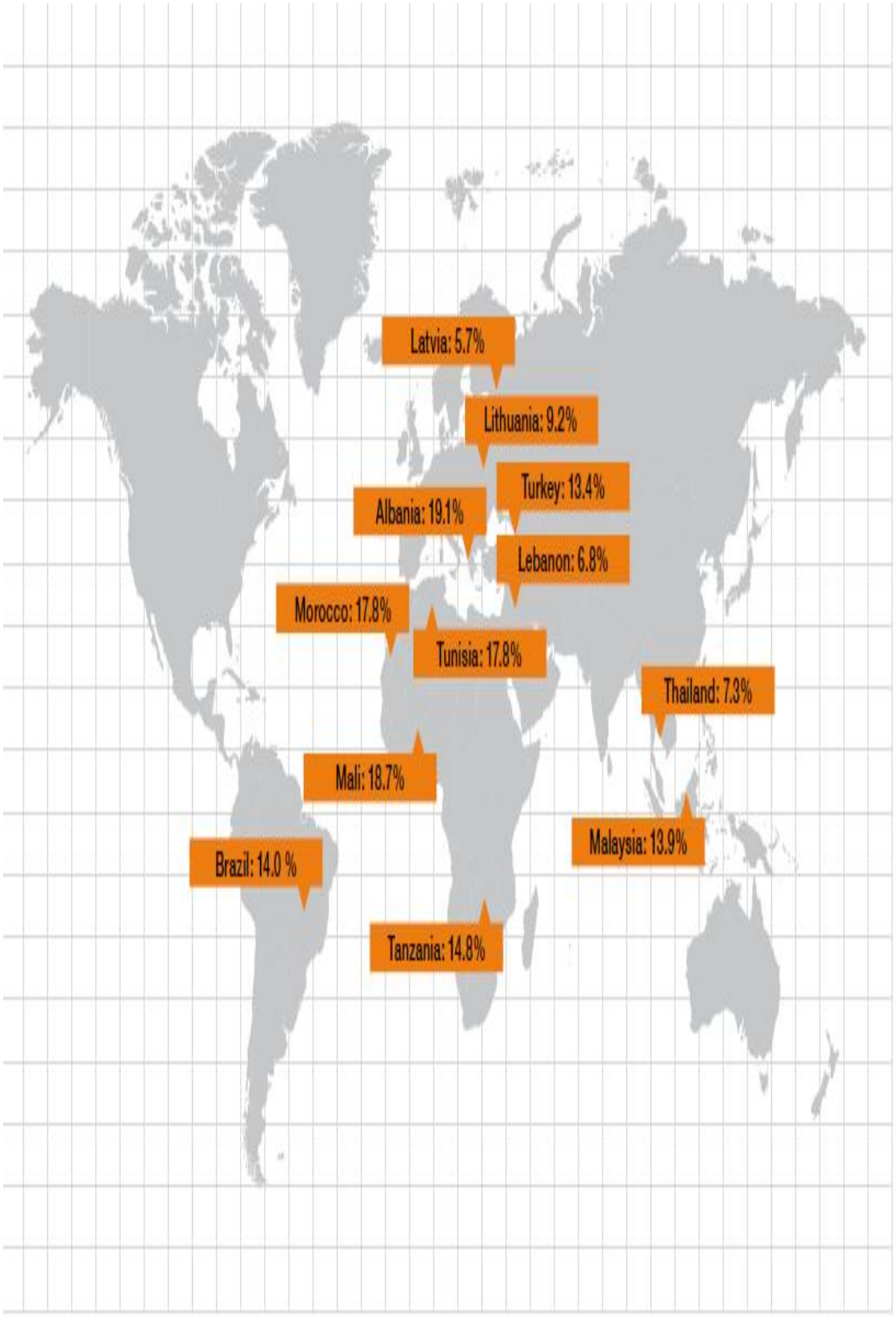
In developed countries, HCAI concerns 5–15% of hospitalized patients and can affect 9–37% of those admitted to intensive care units (ICUs)[19,20] Recent studies conducted in Europe reported hospital wide prevalence rates of patients affected by HCAI that ranged from 4.6% to 9.3% (Figure1.1)[21,22]. An estimated five million HCAI at least occur in acute care hospitals in Europe annually, contributing to 135 000 deaths per year and representing around 25 million extra days of hospital stay and a corresponding economic burden of €13–24 billion[23] The estimated HCAI incidence rate in the United States of America (USA) was 4.5% in 2002, corresponding to 9.3 infections per 1000 patient days and 1.7 million

affected patients and an annual economic impact of US$ 6.5 billion in 2004.Approximately 99 000 deaths were attributed to HCAI. Prevalence rates of infection acquired in ICUs vary from 9 to37% when assessed in Europe and the USA, with crude mortality rates ranging from 12% to 80% In ICU settings particularly, the use of various invasive devices (e.g. central venous catheter, mechanical ventilation or urinary catheter) is one of the most important risk factors for acquiring HCAI. Device associated infections have a great economic impact; for example catheter-related bloodstream infection caused by methicillin-resistant Staphylococcus aureus (MRSA) may cost as much as US$ 38 000 per episode[24].

(Figure1.1) Prevalence of HCAI in developed countries[21,22]

1.4.2 HCAI in developing countries

The usual difficulties of diagnosing HCAI, in developing countries the paucity and unreliability of laboratory data, limited access to diagnostic facilities like radiology, and poor medical record keeping must be added as obstacles to reliable HCAI burden estimates. Therefore, limited data on HCAI from these settings are available from the literature. In addition, basic infection control measures are virtually non-existent in most settings as a result of a combination of numerous unfavorable factors such as understaffing, poor hygiene and sanitation, lack or shortage of basic equipment, attributed to limited financial resources. Furthermore, inadequate structures and overcrowding, almost all of which can be populations largely affected by malnutrition and a variety of diseases increase the risk of HCAI in developing countries. Under these circumstances, numerous viral and bacterial HCAI are transmitted and the burden due to such infections seems likely to be several times higher than what is observed in developed countries. (Figure1.2)[25,26]



(Figure1.2) Prevalence of HCAI in developing countries [25,26]

1.5 Significance and objectives:

The hands are the most important vehicle of transmission of nosocomial infection, Hand hygiene is the single most important measure for control of nosocomial infections.

1.5.1 Main objective:

To determine the hand washing/ hand hygiene prevalence of health care workers in three hospitals; Jenin governmental hospital , Al-Ittihad private hospital and Qalqilia (UNRWA) hospital, in three departments labor room(LR),incubator room(IR) and intensive care unit(ICU).

1.5.2 Secondary objective:

To determine the associated factors with hand washing /hand hygiene compliance of health care workers.

1.5.3 Significance of the study:

1- Importance of the subject of the study and the lack of previous studies to assess the situation in Palestine.
2- Infection control is neglected in Palestinian hospitals there is no data about health care associated infections.

1.6 Research questions:

This study attempts to address the followings:

Is there any relationship between health care workers compliance for hand washing/hand hygiene before and after patient contact and the followings variables:

1- Site of working (private, UNRWA, governmental).
2- The sex of health care worker.
3- The health care workers category.
4- The shift (A, B, C).
5- The department (ICU, LP, and IR).

6- The heavy work load.

7- The age of the health care worker.

8- The years of experience of the health care worker.

1.7 Study hypothesis:

The study tested the following hypothesis and all hypothesis were tested at α=0.05

1-There is a significant relationship, at a significant level (0.05) between health care workers compliance for hand washing/ hand hygiene and the followings variables:

1- Site of working (private, UNRWA, governmental).

2- The sex of health care worker.

3- The health care workers category.

4- The shift (A, B, C).

5- The department (ICU, LP, and IR).

6- The heavy work load.

7- The age of the health care worker.

8- The years of experience of the health care worker.

1.8 Limitation of the Study

The current study faced a number of limitations which can be summarized as the following:

The circumstances surrounding data collection resulted in study limitations having a single observer demand more time and effort .the design of the study which was conducted to monitor the hand washing compliance of health care worker did not monitor the quality and time duration of hand washing.

1.9 Ethical Consideration

The study was approved by the Research Ethics Committee of the Faculty of Graduated Students at An-Najah National University, Palestine.

A formal letter from the Vice President Office for Academic Affairs at An-Najah National University was sent to the Ministry of Health requesting the Director of General Research For Planning and Development to allow the researcher to conduct the study, every eligible manager of the hospital was given a full explanation about the research including purpose, nature of study importance of participation in addition to an assurance of confidentiality of information and voluntary participation; they were totally free to accept or reject participation in the research.

Chapter two

Literature review

2.1 Literature review

2.1.1Washing Habits of Adults

A review of the literature suggests that, in general, individuals of all ages have not implemented the hand washing practices that Dr. Semmelweis advocated over one hundred and fifty years ago. Despite the proven health benefits of hand washing, many people don't practice this habit as often as they should even after using the toilet.

In 2000, Wirthlin Worldwide conducted two different types of surveys on the hand washing habits of adults. One type was observational, the other type was completed via telephone. In the observational survey, researchers observed the hand washing practices of 7,836 individuals (3,589 males and 4,247 females age 18 years and older) in five major metropolitan areas: Grand Central/Penn Station, New York City; Navy Pier, Chicago; Golden Gate Park, San Francisco; Braves' Baseball Game, Atlanta; and a casino, New Orleans. The observations took place in public restrooms where soap, water, and paper towels were readily available. The observers recorded whether or not the individuals washed their hands after using the restroom. After the data were collected, they were compared to a similar observational study that was completed by Wirthlin Worldwide in 1996. Table 1, which follows, shows the results of that study[27] ,observers found that men in Atlanta were the least likely to wash their hands after using the restroom. Women in San Francisco were the most likely to wash their hands after using the restroom. Though the average rate of hand washing shifted between the cities when comparing the 1996 observations to the 2000 observations, overall an average of 68% of adults observed in public restrooms washed their hands before leaving in 1996 and in 2000[27] .

Table 2.1: Percent of Adults Observed Washing Their Hands[27]

	Males		Females		Total	
	1996	2000	1996	2000	1996	2000
Chicago	60%	78%	93%	86%	78%	83%
Atlanta	46%	36%	89%	84%	64%	64%
New York City	62%	43%	58%	54%	60%	49%
New Orleans	73%	55%	70%	74%	71%	64%
San Francisco	62%	71%	78%	89%	69%	80%

The second survey completed by Wirthlin World Wide was done via telephone. The survey consisted of asking 1,021 adults about their hand washing habits in several different situations. Women who were surveyed were significantly more likely to say that they washed their hands more often after several different activities as compared to men. For example, 40% of women said they wash their hands after coughing or sneezing, compared to 22% of men. Fifty-four percent of women said that they wash their hands after petting a dog or cat, while only 36% of men said that they wash their hands after petting a dog or a cat. When asked about changing a diaper, 86% of women said they wash their hands after handling a diaper, whereas 70% of men said they wash their hands after handling a diaper[27].

In 2003 Wirthlin world wide conducted 1,000 telephone interviews to better understand hand washing among Americans, they found that Americans characteristically ignored the act of washing their hands. Most of adults (95%) surveyed said they always washed their hands after using public restroom. When Wirthlin world wide conducted an observational study of people in washrooms or airports in five major cities (New York,

Chicago, San Francisco, Dallas/front worth and Miami) it was found that only 78% users actually washed their hands[28].

2.1.2 Hand washing Habits of School-Age Children

The hand washing habits of high school students have been examined through several research studies. Guinan, McGuckin-Guinan, & Sevareid, (1997) conducted a descriptive observational study to determine the hand washing habits of high school students after using the restroom. The study observed, measured, and compared the duration and techniques of male and female high school students. The researchers recorded the following observational data: sex of the student, location, use of soap, and whether or not the length of hand washing was greater than five seconds. The data showed that 58% of female students washed their hands after using the restroom, compared with only 48% of male students. Twenty-eight percent of female students used soap versus only 8% of males. Female students also washed their hands for a longer duration than did the male students, with 50% of female students washing their hands longer than five seconds, and only 23% of male students washing their hands longer than five seconds[29].

Pete (1997) also conducted an observational study that examined the hand washing practices of high school students. The observers recorded the number of students who washed their hands after using the restroom. The data showed that a total of 40% of high school students were observed washing their hands after using the restroom (32% female and 8% male). The study was limited, however, in that it did not examine the duration of the hand washing, or if proper hand washing techniques were being used by the students. The study was also limited due to a relatively small sample size[30].

Hand washing habits of elementary school students have also been studied. Using the same observational tool as in the high school study, the data showed that both female and male students had a 100% hand washing rate after using the restroom[29] . This study, however, observed students in the elementary school where hand washing was mandatory after using the restroom. The children were accompanied to the restroom by their teachers, and were instructed to wash their hands when they were finished. This study was also limited because it did not examine the duration of the children's hand washing or the children's hand washing techniques.

Hand washing behaviors was assessed and intentions among school children in Bogotá, Colombia, to help identify and overcome barriers to proper hygiene practices. Data on hand-washing behavior and intentions and individual and contextual factors were collected from 2042 sixth- through eighth-grade students in 25schools in Bogotá via anonymous questionnaires. A member of the school administration or teaching staff completed a questionnaire about the school environment. Site inspections of bathroom facilities were conducted.

They found only 33.6% of the sample reported always or very often washing hands with soap and clean water before eating and after using the toilet. About 7% of students reported regular access to soap and clean water at school. A high level of perceived control was the strongest predictor of positive hand-washing intentions Students with proper hand-washing behavior were less likely to report previous-month gastrointestinal symptoms or previous-year school absenteeism they concluded that Scarcity of adequate facilities in most schools in Bogotá prevents children from adopting proper hygienic behavior and thwarts health promotion efforts. The current renovation program of public schools in Bogotá

provides a unique opportunity to meet the challenges of providing a supportive environment for adoption of healthy behaviors[31].

2.1.3 Hand washing Interventions for Children

Several studies have been completed that examine the effectiveness of various hand washing interventions on the hand washing habits of preschool and elementary school children, and incidences of communicable illnesses in the school or child care settings[32].

Early et al., (1998) examined the hand washing habits of elementary school-age children. The purpose of this study was to determine whether or not hand washing education interventions had the potential to positively change the hand washing practices of elementary school-age children. This study covered several factors regarding hand washing in six different elementary schools before and after hand washing interventions were implemented. The trained observers recorded the following information: When the hand washing was occurring (before lunch or after restroom use), if soap was used, and if hands were dried with a paper towel before the student left the restroom. The baseline data showed that 58% of all of the students washed their hands after using the restroom[32].

The Early et al. study also tested four hand washing interventions that were tested in five schools. The first intervention was a peer education program. The peer education program consisted of fourth grade students teaching first grade students about different aspects of hand washing based on materials developed by Procter and Gamble[32]. This educational program aimed to teach first grade students about germs, where germs live, how they are transmitted, and when, why, and how to properly wash hands. The fourth graders taught the first-graders this information by using storyboards, video presentations, and teaching them interactive songs that

emphasized the steps of proper hand washing. The fourth graders also gave out stickers to the first grade students who participated in the educational program[32].

The second intervention consisted of having alcohol-based hand wipes installed in the restrooms of the school. The students were instructed on how to use the hand wipes, and large posters were hung in the restrooms as a reminder of how to use the hand wipes properly. Two schools received the peer education hand washing program intervention, one school received the hand wipe intervention, one school received the peer education hand washing program and the hand wipes interventions, and one school acted as the control group and did not receive any hand washing interventions. After the completion of the interventions, the hand washing rate increased from 42% to 45% for the control group; 64% to 72% for the two schools that received the education intervention; 50% to 66% for the school that received the hand wipe intervention; and 45% to 67% for the school that received both the hand washing education and the hand wipe intervention[32].This study did not, however, record the duration of the hand washing and did not differentiate between female and male students' hand washing occurrences.

Master et al., (1997) designed a quasi-experimental study to examine the effect of a scheduled hand washing program on school absenteeism due to acute communicable illnesses. The ages of the children who participated in this study ranged from 5 to12 years. The children were divided into two groups: control group and hand washing group. The children in the control group washed their hands as usual with no required times for hand washing and no prompting from adults. The children in the hand washing group were instructed to wash their hands at scheduled times including after

arriving at school, before eating lunch, after lunch recess, and before going home, in addition to other appropriate times (such as after using the restroom). Three weeks prior to the intervention, both groups were taught proper hand washing techniques and appropriate times for hand washing. The researchers monitored the rate of absenteeism of both groups for 37 school days.

The results of the data showed that there were 116.5 days of absence in the hand washing group compared to 175 days of absenteeism by the control group. This data indicated that scheduled hand washing times contributed to a 25% lower rate of absenteeism from school. This study was limited, however, in that it did not collect any baseline data on the hand washing habits of the children before the intervention. This study also did not monitor the technique or duration of hand washing of both of the groups during the intervention period. The study also did not indicate the overall health of the students before they were assigned to either the control or hand washing group[5].

Niffenegger (1997) designed an experimental study to determine the effectiveness of an instructional program on bacteria, viruses, and hand washing on reducing the incidence of communicable illnesses in child care settings. This study was 21 weeks in duration and took place in the field setting. The ages of the children ranged from three to five years. Two child care centers participated in this study. One center was the control group, the other center was the test group. The parents and teachers of the children at both centers completed a "Child Health Assessment Checklist" which monitored each child's health on a weekly basis. The children in the control group did not receive any education on hand washing or bacteria and viruses, and were instructed to continue their hand washing practices as usual. The test group received a developmentally appropriate 3-day unit

plan on hand washing at 3-week intervals. The hand washing education was based on the "Hooray for Hand washing" curriculum developed by the Soap and Detergent Association (1990). This included reading stories to the children about the importance of hand washing, displaying posters that reminded children and staff to wash their hands, and using tapes that contained jingles set to music that encouraged children to sing while washing their hands. The teachers at the child care centers devoted 15 to 20 minutes per day to hand washing education. The data showed that, at the end of the study, the incidence of colds in the test groups was significantly lower than the incidence of colds in the control group. From weeks 1 to11, the control group had an incidence of colds at the rate of 12.7%. That rate increased to 27.8% in weeks 12 to 21. The incidence of colds in the test group had a rate of 19.4 % during weeks 1 to11, and remained almost constant at a rate of 18.9% during weeks 12 to 21. This data influenced the researcher's hypothesis that hand washing education can have a significant impact on the incidence of colds in the child care setting[33].

Rosen describes the effect of a preschool hygiene intervention program on psychosocial measures of educators regarding hand washing and communicable pediatric disease. A cluster-randomized trial, with randomization at the level of the preschool, was run in 40 Jerusalem preschool classrooms. Eighty preschool educators participated. The program used a multi pronged approach which included elements aimed at staff, children, parents, school nurses and the classroom environment. Frontal lectures by medical, epidemiological and educational experts, along with printed materials and experiential learning, were provided to staff. Responses from a validated survey instrument were used to build four scales for each respondent regarding beliefs, attitudes, self-efficacy and knowledge. The scales were built on a Likert-type 1-7 scale (1 = minimum,

7 = maximum). The effect of the intervention was tested using mixed model analysis of variance. Response was received from 92.5% of educators. Educators believed that hand washing could affect health (mean = 5.5, SD = 1.1), had high levels of self-efficacy (mean = 6.1, SD = 0.9) and had positive attitudes toward hand washing (mean = 5.7, SD = 1.2). Knowledge was affected by the intervention (intervention: mean = 6.2, SD = 0.7; control: mean = 5.8, SD = 0.8). The combination of positive attitudes toward hand washing among educators and the program's effectiveness in imparting knowledge helped to create a sustained social norm of hand washing among many children in disparate locations[14].

2.1.4 **Hand washing Interventions for Child Care Staff**

Krilov, Barone, Mandel, Cusak, Gaber, & Rubino, (1996) also researched factors that may have a positive impact on decreasing the rate of respiratory illnesses in the child care setting. Basing their research on the premise that the number of preschool children enrolled in school-based educational programs and child care centers has dramatically increased, Krilov et al., designed a two-year experimental study. This study involved developing and implementing a comprehensive infection control program at a specialized preschool program, and then measuring the effects of that program on the incidence of respiratory and other illnesses. The researchers gathered preliminary data on the health status of the children attending the preschool, and then continued to monitor the children's health through health assessment surveys completed at 3-month intervals by the children's parents. The infection control program that was initiated consisted of several in-service educational topics. Proper hand washing was emphasized among the several in-services that were offered. The data from this study showed that compared to the baseline data, the incidence of respiratory infections decreased significantly (0.67 to 0.42 with a p Value <0.05) when

the infection control program was implemented[34]. This indicates that an infection control program that emphasizes the importance of Black, et al., (1981) developed an experimental study to evaluate the effectiveness of a hand washing program in decreasing the incidence of enteric illnesses in the child care setting. Four child care centers participated in this study; two child care centers were in the test group (hand washing group) and two child care centers were in the control group. During a two-month baseline period, data were gathered on the incidence of enteric illnesses in the child care centers. During the intervention phase of the study the staff members at the test group centers were given instructions on when to wash their hands: before handling food, after arriving at the child care center, after helping a child use the restroom, after using the restroom themselves, and after changing a diaper. Data on the incidence of enteric illnesses were collected over a 35-week period of time. The data showed that the incidence of enteric illness in the hand washing group was only 52% of that in the control groups. This strongly suggests that a hand washing program implemented in the child care setting may significantly reduce the incidence of enteric illnesses. This study was limited, however, in that the hand washing education was not formally presented to the children in the centers. The information was focused on educating the staff of the child care centers about the importance of proper hand washing. Perhaps the incidence of enteric illnesses may have been significantly lower if the children in the child care centers had received some hand washing education also. Another limitation of this study was in the structure of the hand washing education that was implemented. The researchers did not provide a description of the information on hand washing that was presented to the staff at the child care centers. A description of the hand washing education would have provided evidence that proper hand washing

techniques had been explained by the researchers and implemented by the staff [35].

2.1.5 Hand washing Habits and Interventions for Hospital Staff

Because hand washing is the most effective means of preventing and controlling cross-infections in the community and in the hospital settings, the hand washing habits of hospital staff have also been studied. Earl (2001) observed the hand washing habits of hospital staff in two hospital intensive care units. Hand washing observations were made over a course of 30 days for a total of 134 hours. During that time, the observers indicated that there were 1,090 patient care episodes where hospital staff should have washed their hands. The hospital staff were observed washing their hands for 432 of those episodes (39.6%). The data collected also indicated that there were significant differences in the frequency of hand washing between the employment status of the hospital staff and times of day that the observations were made. During the observational period, nursing personnel (registered nurses, licensed practical nurses and nursing assistants) should have washed their hands 760 times. Of those 760 times, the nursing personnel washed their hands 313 times (41.2%). Ancillary personnel (such as radiation technicians, physical therapists, and occupational therapists) should have washed their hands 86 times during the observations. The data showed that they washed their hands 44 times (51.2%). Physicians should have washed their hands 222 times. The data showed that they washed their hands 65 times (29.3%). The frequency of hand washing during different times of day was also examined. During the morning hours, there were 647 times when hand washing should have taken place. Hand washing took place 251 times (38.8%). During the evening hours, 428 opportunities for hand washing were available. Hand washing took place 174 times (40.7%). Overnight, hand washing should

have taken place 15 times; 7 episodes of hand washing were observed (46.7%)[36].

Gallagher (1999) also examined the hand washing habits of hospital staff. Based on an observation tool developed by Gould and Chamberlain (1997), the researcher described the overall hand washing compliance of various hospital staff. The data showed the following compliance rates: nurses, 36%; health care assistants, 43%; domestic workers, 33%; physicians, 33%; physiotherapists, 50%; phlebotomists, 33%[37].

Pittet et al., (2000) studied the hand washing habits of hospital staff to obtain baseline data for a study developed to examine the effects of a hand washing campaign on the incidence rates of nosocomial infections and meticillin-resistant *staphylococcus aureus* (MRSA). The researchers collected baseline hand washing data on various hospital staff prior to the implementation of the hand washing campaign and then every six months for three years during the hand washing campaign. The hand washing campaign consisted of displaying large colorful posters that emphasized several topics related to hand washing. These topics included: nosocomial infections, cross transmission of bacteria and viruses, hand carriage of bacteria and viruses, hand hygiene, hand disinfection, and hand protection using creams. The posters were displayed in 250 areas within the hospital and were rotated weekly to different areas. Overall compliance of hand washing improved from 47.6% in 1994 to 66.2% in 1997. During that time, the prevalence of nosocomial infections decreased from 16.9% in 1994 to 9.9% in 1997. The rate of newly detected MRSA positive patients decreased from 2.16% in 1994 to .93% in1997. This study indicated that the implementation of a hand washing campaign has the potential to increase staff compliance of hand washing and also has the potential to

decrease the incidence rates of nosocomial infections and MRSA in the hospital setting[6].

Barbara C.C. Lam,(2004) conduced a study about The nature and frequency of patient contacts, the hand hygiene compliance, and hand-washing techniques of HCWs were observed unobtrusively to reflect the baseline compliance and to investigate factors for noncompliance. The intervention consisted of problem-based and task-orientated hand hygiene education, enhancement of minimal handling protocol and clustering of nursing care, liberal provision of alcohol-based hand antiseptic, improvement in hand hygiene facilities, ongoing regular hand hygiene audit, and implementation of health care–associated infection surveillance. The observational study was repeated 6 months after the completion of the intervention program, which extended over 1-year period. Overall hand hygiene compliance increased from 40% to 53% before patient contact and 39% to 59% after patient contact. More marked improvement was observed for high-risk procedures (35%–60%). The average number of patient contacts also decreased from 2.8 to 1.8 per patient per hour. There was improvement in most aspects of hand-washing technique in the post intervention stage. The health care–associated infection rate decreased from 11.3 to 6.2 per 1000 patient-days[38].

In 2009, an observational study was conducted in Canada at an oncology hospital to examine hand hygiene practices observed during 612 procedures that were performed by 67 HCPs. Hand hygiene compliance was 41.7% (n = 255) before procedure and 72.1% (n = 441) after the procedure. The overall compliance was only 34.3% (n = 210). Compliance with the standards of hand hygiene was higher in high-risk procedures (odds ratio [OR] = 1.77; 95% confidence interval [CI], 1.18–2.65) and

when HCPs were exposed to blood (OR = 1.40; 95% CI, 1.07–1.73). The findings highlight the need to continue to push compliance with hand hygiene using innovative approaches that go beyond teaching and in-service training[39].

Cross-sectional study conducted to determine the relationship between demographic characteristics of Jordanian registered nurses and theory of planned behavior concepts and to determine the relationships among theory of planned behavior concepts. One hundred fifty registered nurses of 250 were participated. Hand washing Assessment Instrument that assesses hand hygiene behavior, attitudes, and beliefs was used in this study. Independent *t* tests and correlations were used to test hypotheses. Significant and positive correlations were found between intention to perform hand hygiene and the following variables: beliefs about outcomes, subjective norm, normative beliefs, and perceived behavioral control (r = 0.566, 0.444, 0.400, and 0.500), respectively. They concluded that Health education programs must be conducted to encourage hand hygiene behavior among Jordanian registered nurses who perceived their internal factors (eg, information, skills, and abilities) and external factors (eg, time, opportunity, and resources) to perform hand hygiene[40].

This review of literature indicated that both children and adults do not engage in effective or appropriate hand washing practices[27,29,30,32].

This review of literature also offered an examination of the connection between hand washing and the incidence of illness[5,33,34,35].

Chapter Three

Methodology

(Materials and Methods)

3. Materials and Methods

This chapter of the thesis describes the design of the study ,study area, the population of the study, data collection, the measuring instrument, tool, and the analysis method.

3.1 Design of the study:

A cross sectional point in time observational study was carried out to investigate hand washing/hand hygiene practices of health care workers in the North West Bank.

3.2 Study area:

The study was conducted during the period of September-December 2009, in three hospitals; Dr Khalili Suleiman Martyr hospital (Jenin governmental hospital), Qalqilia UNRWA hospital, and Al-Ittihad private hospital.

Dr Khalili Suleiman Martyr hospital (Jenin governmental hospital), is the only governmental hospital in Jenin, with a capacity of 123 beds. The hospital serves a large part of the northern West Bank, particularly Tubas and Jenin areas. The Units in this hospital include Pediatric 25 beds, Neonatal 12 beds, Maternity 23 beds, ICU 4 beds, Internal medical 25 beds, Surgery 20 beds, Kidney Dialyses 8 beds, Emergency 10 beds, Thalasemia 10 beds and Chemotherapy 6 beds. Built in 1961,and located in Jenin city, the hospital services covers about 300000 Jenin district population, with total admissions in 2008 19121 patients.

The second hospital covered by our study is Qalqilia UNRWA hospital which comprises 63 beds and offers emergency, internal medicine, gynecology - obstetrics, and pediatric care. The hospital provides care to a large number of refugees in the northern West Bank, and the bed occupancy rate was 67.5 percent. In 2003 as a result of restrictions on movement and the construction of the Barrier (wall), this rate has fallen, to

an average of 39 percent a year. In 2003, the number of patients from outside the city has declined from 38.6 percent to 16.7 percent and the number of surgical procedures performed has fallen from 1,154 to 305 because of the wall construction[41].

Al-Ittihad is a private, general medical hospital, which established in 1971.The number of beds 101,and the number of employees are 160, the hospital consists of many departments ; obstetric-gynecology , neonatal, I.C.U, emergency ,internal medicine ,surgical ,laboratory ,blood bank ,and x-ray departments.

3. 3 Study population:

The target population the health care workers doctors and nurses females and males who work in the three departments LR, IR, and ICU and work in the three hospitals included in our study.

3. 3.1 Sample size:

We applied the following formula to calculate the sample size.

$n = 1/e^2$

Where n=sample size

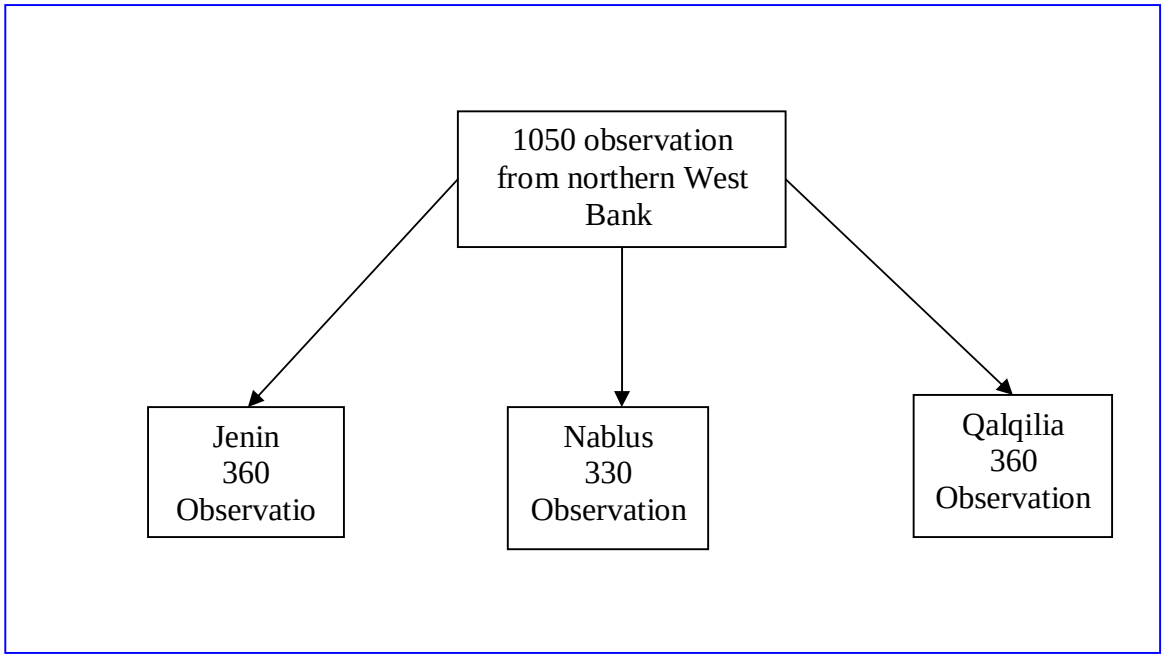
e=error term which we can expect in this study (error due to error in the sample, error in the field, error from the researcher)

Assumption: accepted error term 3.1%

$n = 1/ (0.031)^2$

n = 1040

The sample size in the current study was 1050 observation divided according the following:



(Figure 3.1) sample size

our sample was simple random sampling ,the researcher is the only observer who randomly observed the subjects during routine patient care. The observation periods distributed randomly during the day as well as the night for three weeks in each hospital circulated randomly between the three departments (LP, IR, ICU).The researcher collected ten observations for each health care provider category in each shift an equal number of observation for each shift was chosen to simplify statistical analysis.

3. 3.2 Inclusion criteria:

1- The health care workers who made contact with any patient and who work in labor room, incubation room, ICU over a 24-hour period in one of the three hospitals included in our study.

2-The health care workers included in our study are; physician specialist, physician resident, staff nurse and practical nurse.

3. 3.3 Exclusion criteria:

1-Transient health care worker who does not work as permanently in one of the three departments LR, IR, and ICU.

2-Other health care workers who do not belong to the four healthcare provider categories (physician specialist, physician resident, stuff nurse, practical nurse).

3-Health care providers who made contact with bed linen, bed frames medical records or monitoring equipment.

3.4 Definition:

Patient contact was defined as any contact by the hands of a health care worker with a patient's skin or an indwelling invasive device during a procedure in which the hands could be contaminated with the patient's blood, secretions or excretions. Contact with bed linen, bed frames medical records or monitoring equipment was not regarded as contact.

Typical patient contact involved procedures such as examining wounds, inserting intravenous or arterial catheters, aspirating endotracheal tubes, performing echocardiographic examinations, auscultation of the chest, palpating the chest or abdomen, manipulating chest drains or urinary catheters, inserting tracheal or gastric tubes, and withdrawing blood from intravascular catheters.

3.5 Procedure:

Hand washing was assessed before and after contact with the patient. Departure from the Procedure area after patient contact without hand washing was regarded as non-compliance. Hand washing was required whether gloves were used or changed. There were no judgments made about the duration or efficacy of the hand washing technique. Any health care worker used alcohol rub or gloves was recorded.

Opportunities for hand washing were all situations in which hand washing is indicated according to published guidelines[42]. These guidelines suggest that hand be washed with soap and water or be disinfected : 1) before and after patient contact, 2) after contact with a source of

microorganisms (body fluids and substances, mucous membranes, broken skin, or inanimate objects that are likely to be contaminated), and 3) after removing gloves. Compliance with hand washing was defined as any action to cleanse the hands with water and one of the available hand washing agents, or with rubbing the hands with a hand washing agent alone. Observations were recorded without the names of workers. However, anonymity was preserved for data analysis. Subjects were not aware that they were being observed only the eligible manager of each hospital was given a full explanation about the research including purpose, nature of study, importance of participation in addition to an assurance of confidentiality of information.

3.6 Tools:

The study was the first to be conducted in Palestine, there was no chance to adopt a ready made observation tool form, so the researcher developed a new one which was evaluated and reviewed carefully by the research committee at An-Najah National University.

Each observation recorded with the time of the event, unit or ward, availability of water, soap, drying devices, and compliance or failure to comply with hand hygiene. The age, gender, years of experience in the hospital, category of employment this information was obtained from to the health workers themselves ,the observational tool form had been pre tested and adjusted in a pilot study .Anonymity was preserved for data analysis and no judgment was passed about the duration or efficacy of the hand washing technique.

3.7 Pilot study:

Pilot testing was conducted on Jenin governmental hospital, the observational tool form was tested, 80 observations were collected, after some changes recommended by my advisor who has a strong research back

ground, the observation tool was approved by the Research Committee of the Faculty of Graduated Students at An-Najah National University, Palestine. The results of the pilot study not included in the main study because we made some changes in the observational tool.

3.8 Data collection:

The researcher is the only observer who randomly observed the subjects during routine patient care our sample was simple random sampling. The observation periods distributed randomly during the day as well as the night for three weeks in each hospital circulated randomly between the three departments (LP, IR, ICU).The researcher collected ten observations for each health care provider category in each shift an equal number of observation for each shift was chosen to simplify statistical analysis. The health care workers were unaware that they were observed; only the head manager of each hospital knows the topic and the purpose of the study; the health care workers were informed that we are working on different topic.

3.9 Data analysis:

Statistical Package for Social Science (SPSS) was used for data analysis. Calculated Values included frequencies, cross tabulation and one way ANOVA and Chi-Square Tests.

Chapter Four

Results

4. Results:

The profile of the study population includes three parts: 1) Profile of HCW participating in the study in three hospitals, which included hospital name, shift, department, health care provider category, sex, age and years of experience. 2) Frequency of wearing jewelry during work. 3) Frequency of available appropriate condition of hand washing, which included availability of water, availability of soap, availability drying device, and availability of time.

4.1 Profile of the study sample:

Table 4.1.1 Profile of HCW participating in the study in three hospitals

Hospital name	**Frequency**	**Percent**
Jenin hospital	360	34.3
Al-Ittihad hospital	330	31.4
Qalqilia hospital	360	34.3
Shift	**Frequency**	**Percent**
Sift A	350	33.3
Shift B	350	33.3
Shift C	350	33.3
Department	**Frequency**	**Percent**
LR	360	34.3
IR	330	31.4
ICU	360	34.3
Health care provider category	**Frequency**	**Percent**
Physician specialist	270	25.7
Physician resident	270	25.7
Staff nurse	240	22.9
Practical nurse	270	25.7

Sex	**Frequency**	**Percent**
male	574	54.7
female	476	45.3
Age	**Frequency**	**Percent**
20-30	225	21.4
30-40	519	49.4
More than 40	306	29.1
Years of experience	**Frequency**	**Percent**
1-5 years	419	39.9
5-10 years	370	35.2
More than 10 years	261	24.9

Table 4.1.1 shows that the study sample contains the close percent frequencies of Jenin and Qalqilia hospitals (34.4%) , and 31.4% from Al-Ittihad hospital. All shift frequencies (A, B, and C) equal observations was collected 33.3% for each shift, there is no staff nurses working in IR in Al-Ittihad hospital and this explains why the sample frequencies from Al-Ittihad hospital was less than other hospitals. 54.7% of the study sample was females, and 45% was males. 21.4% of the study sample was aged 20-30 years, 49.4% was aged 30-40 years, while 29.1% of the study population was aged above 40 years. Also the table shows that 39.9% of the study sample have 1-5 years experience, 35.2% have 5-10 years experience as well as 24.9% have experienced more than ten years.

Table 4.1.2 Frequency of Wearing jewelry during work

	Frequency	**Percent**
bracelets	81	7.7
ring	168	16.0
Long nails	44	4.2
More than one	46	4.4
nothing	711	67.7

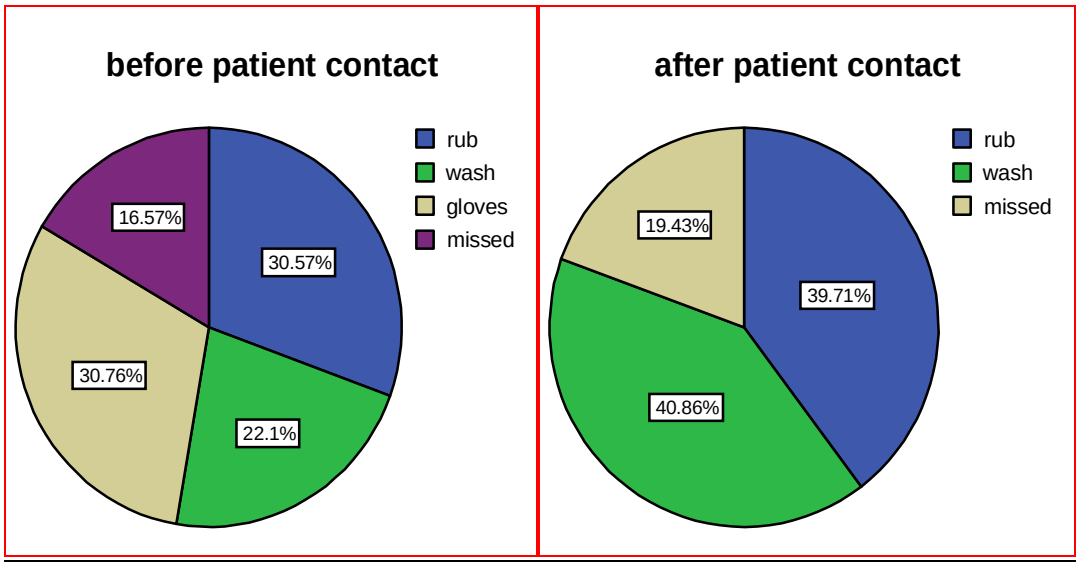
Table 4.1.2 shows the frequency of wearing jewelry at work. Only 67.71% of the health care providers in the study sample take off jewelry through the work.

Table 4.1.3 Frequency of available appropriate condition of hand washing.

	Frequency	**Percent**
Availability of water	1050	100
Availability of soap	983	93.6
Availability drying device	893	85.0
Availability of time	906	86.3

Table 4.1.3 shows the frequency of availability of appropriate condition suitable. Time for hand washing was available 86.3%, availability of water was100%, soap 93.6%and 85% drying device was available.

4.2 Percentage of hand washing/ hand hygiene before and after patient contact



(Figure 4.1) percentage of hand washing/hand hygiene

We found that 30.6% from sample use rubbing with alcohol before patient contact, 22.1% conduct hand washing, 30.8% using gloves, 16.6% do nothing, after patient contact 39.7% from sample use rub, 40.9% use wash, and 19.4% use nothing, results in figure 4.1 show that only 22.1% of the sample wash their hands before patient contact, however this percent increased to double after patient contact.

4.3 Factors affecting hand washing before and after patient contact:

Results of the study that explored factors affecting hand washing before after patient contact were categorized to individual level factors, group level factors and individual level factors.

4.3.1 Individual level factors:

Individual level factors included :(health care provider job, sex, age and the years of experience).

Table 4.3.1 Individual level factors affecting hand washing.

Health care provider category	Washing hands before patient contact		p-value	Washing hands after patient contact		p-value
	Yes%	NO%		Yes%	NO%	
Physician specialist	15.5	28.6		19.6	30.0	
Physician resident	20.7	27.1		23.8	27.1	
Staff nurse	24.1	22.5		24.0	22.1	
Practical nurse	39.7	21.8	0.000*	32.6	20.9	0.000*
sex						
male	44.0	57.7		52.7	56.0	
female	56.0	42.3	0.000*	47.3	44.0	0.283
Age	Washing hands before patient contact		p-value	Washing hands after patient contact		p-value
	Yes%	NO%		Yes%	NO%	
20-30 years	32.8	18.2		32.9	13.5	
30-40 years	46.6	50.2		45.7	52.0	
More than 40	20.7	31.5	0.000*	21.4	34.5	0.000*
Years of experience						
1-5 years	50.0	37.0		52.0	31.6	
5-10 years	30.2	36.7		28.7	39.8	
More than10 years	19.8	26.3	0.002*	19.3	28.7	0.000*

***p-value significant at ≤ 0.05.**

Table 4.3.1 shows the relation between individual level factors (health care provider job, sex, age and the years of experience) and washing hands before /after patient contact using one way ANOVA test with a significant difference ($p \leq 0.05$).

Regarding health provider category; practical nurses were the highest to comply with washing before /after patient contact, the difference between providers was significant both before and after patient contact ($p< 0.05$).

The results showed that there was a significant difference ($p=0.001$) between hand washing compliance before patient contact and the sex of health care providers, also the age of health care providers was significant both before and after patient contact ($p< 0.05$). Health care providers 30-40 years old were the highest to comply with washing before /after patient contact. Experience in 39.9% of sample is (1-5 years), 35.2% with experience (5 -10 years), and 24.9% with experience more than 10 years .We found in this study that there is a relationship between health care workers to comply with hand washing before and after patient contact with years of experience ($p< 0.05$) but had a negative impact on compliance rate for hand washing ,when experience years increased a compliance to hand washing decreased.

4.3.2 Group level factors:

Group level factors included : (site of work, shift, department).

Table 4.3.2 Group level factors affecting hand washing.

site of work	Washing hands before patient contact		p-value	Washing hands after patient contact		p-value
	Yes%	NO%		Yes%	NO%	
Jenin hospital	**36.2**	**33.7**		**33.1**	**35.1**	
Al-Ittihad hospital	**35.5**	**30.3**		**33.3**	**30.1**	
Qalgilia hospital	**28.4**	**35.9**	**0.094**	**33.6**	**34.8**	**0.538**
shift						
Shift A	**30.2**	**34.2**		**31.2**	**34.8**	
Shift B	**43.1**	**30.6**		**37.8**	**30.3**	
Shift C	**26.7**	**35.2**	**0.001***	**31.0**	**34.9**	**0.041***
department						
LR	**33.6**	**34.5**		**33.1**	**35.1**	
IR	**38.8**	**29.3**		**33.1**	**30.3**	
ICU	**27.6**	**36.2**	**0.011***	**33.8**	**34.6**	**0.610**

***p-value significant at ≤ 0.05.**

Table 4.3.2 shows the relation between Group level factors (site of work, shift, and department),and washing hands before /after patient contact using one way ANOVA test with a significant difference ($p \leq 0.05$).

Regarding group level factors affecting hand washing, although Qalqilia hospital has the lowest rate of hand washing before patient contact, and Al-Ittihad hospital had the lowest rate after patient contact, the difference between three hospitals was not statistically significance ($p > 0.05$).

From the results in the table 4.3.2 we can conclude that shift B (2-9pm) had the best results for hand washing compliance before and after patient contact, also it was significant both before and after patient contact ($p < 0.05$).

We found that there is association between hand washing before patient contact and the department with ($p=0.011$), Neonate units had the highest hand washing compliance rate (38.8%); the lowest compliance rate (27.6%) was found in ICU department.

4.3.3 Institutional level factors: (Availability of adequate time for hand washing, Availability of water, soap and drying device).

Availability of water was 100%, soap 93.6% and 85% available drying device, and time for hand washing was available 86.3%; table 4.3.3 represents the relation between the institutional level factors and washing hands before /after patient contact using Chi-Square Tests with a significant difference ($p \leq 0.05$). No statistical test done for water factor because water was 100% available and useless to do any statistical test.

Table 4.3.3 Institutional level factors affecting hand washing.

Availability of Time	**Washing hands before patient contact**		**p-value**	**Washing hands after patient contact**		**p-value**
	Yes%	**NO%**		**Yes%**	**NO%**	
Yes	**21.7**	**87.3**	**0.047***	**41.4**	**58.6**	**0.832**
No	**28.5**	**71.5**		**41.0**	**59.0**	
Availability of soap	**Washing hands before patient contact**		**p-value**	**Washing hands after patient contact**		**p-value**
	Yes%	**NO%**		**Yes%**	**NO%**	
Yes	**22.6**	**77.4**		**41.2**	**58.8**	
No	**23.9**	**76.1**	**0.80**	**43.3**	**56.7**	**0.73**
Availability of drying device	**Washing hands before patient contact**		**p-value**	**Washing hands after patient contact**		**p-value**
	Yes%	**NO%**		**Yes%**	**NO%**	
Yes	**23.0**	**77.0**		**41.2**	**58.8**	
No	**21.0**	**79.0**	**0.59**	**42.0**	**58.0**	**0.84**

***p-value significant at ≤ 0.05.**

We found in this study that there is a relationship between health care workers to comply with hand washing before patient contact with availability of adequate time for hand washing (p= 0.047). The results showed no significant difference between hand washing compliance before and after patient contact with availability of soap and drying device **(** p> 0.05).

4.4 Factors affecting hand hygiene before and after patient contact:

Results of study that explored factors affecting hand hygiene before after patient contact were categorized to individual factors, group level factors and individual level factors.

4.4.1 Individual level factors:

Individual level factors included :(health care provider job, sex, age and the years of experience).

Table 4.4.1 Individual level factors affecting hand hygiene**.**

Health care provider category	Hand hygiene before patient contact				p-value	Hand hygiene after patient contact			p-value
	Rub %	wash %	gloves %	missed %		rub %	wash %	missed %	
Physician specialist	24.0	15.5	25.7	43		26.9	19.6	36.0	
Physician resident	29.3	20.7	24.5	28		26.6	23.8	28.0	
Staff nurse	24.9	24.1	24.5	14		23.5	23.8	20.0	
Practical nurse	21.8	39.7	25.4	15	0.00*	23.0	32.9	16.0	0.391
sex									
male	60.1	44.0	51.1	65.5	0.619	53.7	52.7	60.8	0.170
female	39.9	56.0	48.9	34.5		46.3	47.3	39.2	
Age	Hand hygiene before patient contact				p-value	Hand hygiene after patient contact			p-value
	rub	wash	gloves	missed		rub	wash	missed	
20-30 years	23.1	32.8	19.2	7.5		15.1	32.9	10.3	
30-40 years	52.6	46.6	48.9	48.3		54.7	45.5	47.1	

More than 40	**24.3**	**20.7**	**31.9**	**44.3**	**0.00***	**30.2**	**21.7**	**42.6**	**0.056**
Years of experience									
1-5 years	**38.6**	**50.0**	**39.6**	**29.3**		**31.4**	**52.0**	**31.9**	
5-10 years	**40.5**	**30.2**	**34.4**	**33.9**	**0.001***	**44.6**	**28.4**	**30.4**	**0.000***
More than10 years	**20.9**	**19.8**	**26.0**	**36.8**		**24.0**	**19.6**	**37.7**	

***p-value significant at ≤ .05.**

Table 4.4.1 shows the relation between Individual level factors (health care provider job, sex, age and the years of experience) and hand hygiene before /after patient contact using one way ANOVA test with a significant difference ($p \leq 0.05$).

Regarding health provider category (physician specialist); about 43% do not use any thing before patient contact however this percent dropped to 15% for practical nurses, the difference between providers was significant before patient contact ($p= 0.000$).

The results showed no significant difference between hand hygiene compliance before and after patient contact regarding sex of health care providers. The age of health care provider was significant before patient contact ($p= 0.000$); health care providers (20-30) years old were the lowest percent group of not complying with hand hygiene before /after patient contact.

We found in this study that there is a relationship between health care workers who comply with hand hygiene before and after patient contact regarding years of experience ($p < 0.05$); however this relationship was against years of experience i.e. the more the years of experience the less

compliance rate for hand hygiene, when experience years increased a compliance to hand hygiene decreased.

4.4.2 Group level factors:

Group level factors included :(site of work, shift, and department).

Table 4.4.2 Group level factors affecting hand hygiene**.**

Site of work	Hand hygiene before patient contact				p-value	Hand hygiene after patient contact			p-value
	Rub %	wash %	gloves %	missed %		rub %	wash %	missed %	
Jenin hospital	25.5	36.2	41.5	34.5		31.7	33.1	42.2	
Al-Ittihad hospital	33.3	35.3	26.6	31.6		31.4	33.1	27.9	
Qalgilia hospital	41.1	28.4	31.9	33.9	0.007*	36.9	33.8	29.9	0.05*
shift									
Shift A	34.0	30.2	35.0	33.3		32.1	31.0	40.7	
Shift B	31.8	43.1	32.2	25.3		34.5	37.8	21.6	
Shift C	34.3	26.7	32.8	41.4	0.212	33.3	31.2	37.7	0.032*
department	Hand hygiene before patient contact				p-value	Hand hygiene after patient contact			p-value
	rub %	wash %	gloves %	missed %		rub %	wash %	missed %	
LR	30.2	33.6	35.6	40.0		33.6	32.9	38.7	
IR	33.6	38.8	29.4	21.0	0.007*	31.7	33.1	27.5	0.542
ICU	36.1	27.6	35.0	39.0		34.8	34.0	33.8	

***p-value significant at ≤ 0.05.**

Table 4.4.2 shows the relation between group level factors (site of work, shift, and department), and hand hygiene before /after patient contact using one way ANOVA test with a significant difference ($p \leq 0.05$).

Regarding group level factors affecting hand hygiene, Al-Ittihad hospital had the lowest rate of non compliance for hand hygiene before /after patient contact, and Jenin hospital had the highest rate of non compliance for hand hygiene before /after patient contact; the difference between three hospitals was statistically significance ($p \leq 0.05$).

From the results in the table 4.4.2 , we can concluded that shift B (2-9pm) had the lowest rate of non compliance for hand hygiene before /after patient contact, and the result it was statistically significant ($p = 0.032$).

We found that there is association between hand hygiene before patient contact and the department with ($p=0.007$), Neonate units had the lowest rate of non compliance for hand hygiene before /after patient contact.

4.4.3 Institutional level factors: (Availability of adequate time for hand washing, Availability of water, soap and drying device) .

Availability of water was 100%, soap 93.6% and 85% available drying device. Time was available 86.3%. Table 4.4.3 represents the relation between the institutional level factors and hand hygiene before /after patient contact using Chi-Square tests with a significant difference ($p \leq 0.05$). No statistical test was done for water factor because the water was 100% available, and useless to do any statistical test.

Table 4.4.3 Institutional level factors affecting hand hygiene**.**

Availability of Time	**Hand hygiene before patient contact**				**p-value**	**Hand hygiene after patient contact**			**p-value**
	rub %	**wash** %	**gloves** %	**missed** %		**rub** %	**wash** %	**missed** %	
Yes	**30.7**	**21.1**	**30.9**	**17.3**	**0.245**	**39.3**	**40.7**	**20.0**	**0.288**
No	**29.9**	**28.5**	**29.9**	**11.8**		**42.4**	**41.7**	**16.0**	
Availability of soap	**Hand hygiene before patient contact**				**p-value**	**Hand hygiene after patient contact**			**p-value**

	rub %	wash %	gloves %	missed %		rub %	wash %	missed %	
Yes	**30.6**	**22.1**	**30.4**	**16.9**	**0.785**	**40.2**	**40.8**	**19.0**	**0.144**
No	**29.9**	**22.4**	**35.8**	**11.9**		**32.8**	**41.8**	**25.4**	
Availability of drying device	**Hand hygiene before patient contact**				**p-value**	**Hand hygiene after patient contact**			**p-value**
	rub %	**wash %**	**gloves %**	**missed %**		**rub %**	**wash %**	**missed %**	
Yes	**30.0**	22.4	**30.3**	**17.2**	**0.285**	**39.9**	**40.6**	**19.5**	**0.948**
No	**33.8**	**20.4**	**33.1**	**12.7**		**38.9**	**42.0**	**19.1**	

*** p-value significant at ≤ 0.05.**

The results showed no significant difference between hand hygiene compliance before and after patient contact with availability of adequate time for hand washing, availability of water, soap and drying device (p> 0.05).

4.5 Summary of the results:

1050 observation opportunities were collected from three hospitals; Jenin governmental hospital, Al-Ittihad private hospital and Qalqilia (UNRWA) hospital. (SPSS) were used for data analysis; calculated Values included frequencies, cross tabulation, one way ANOVA and Chi-Square Tests.

Our findings showed that 30.6% of the observation opportunities before patient contact use rub, 22.1% use wash, 30.8% use gloves, 16.6% use nothing .After patient contact 39.7% use rub, 40.9% use wash, and 19.4% use nothing.

We found that the highest compliance for hand washing before patient contact was among the practical nurses (39.7%), and hand washing compliance was worst among physician specialists (15.5%), and the highest compliance among health care workers aged 30-40 years old. Years of

experience had a negative impact on compliance rate for hand washing, shift B had the best results for hand washing compliance before and after patient contact, 67.71% of the health care provider took off jewelry and kept trimmed nails through the work.

Chapter Five

Discussion

And

Recommendation

5. Discussion of the results:

The aim of this study was to determine the hand washing compliance of health care workers in three hospitals; Jenin governmental hospital, Al-Ittihad private hospital, and Qalqilia (UNRWA) hospital. To assess the situation and find the factors affecting hand washing compliance, I have divided the factors into three main parts:

1-Individual level factors :(health care provider category job, sex, age, and the years of experience).

2-Group level factors :(site of work, shift and department).

3- Institutional level factors :(availability of adequate time for hand washing, availability of water, soap, drying device).

Our result point that percent of hand washing is higher after patient contact. It seems that health care workers are most likely to wash hands after patient care ,it seems that proper steps were not emphasized in hospitals and practice of hand washing is left to personal motivation. Lack regular ongoing hand washing education programs that give specific consideration to the sequence of steps in patient care ,it could be the reason for this problem. There has been some concern that using gloves may be considered an alternative to hand washing[43,44], but failure to change contaminated gloves is at least as common as failure to wash hands[44,45].Glove use was observed 30.8% of hand washing opportunities in our study and thus was not a major determinant of noncompliance. Because microbial contamination of hands and possible transmission of microorganisms have been reported even when gloves were worn, hand washing with soap and water or hand antisepsis is required after glove

removal[44].Guidelines of the Association for Professionals in Infection Control and Epidemiology state that gloves should be used as an adjunct to (not a substitute for) hand washing[44].The Occupational Safety and Health Administration Blood borne Pathogens Standard prohibits washing or decontaminating gloves for reuse [46].Glove use is required when contact with mucous membranes, broken skin, or any moist body substance is anticipated[44]. Also gloves (latex gloves) which are dispensed from traditional glove boxes can carry infection on vital areas, as can the box itself. This infection is picked up from health care workers hands when taking gloves from the box, and inadvertently touching areas of the gloves being taken (and other gloves in the box), which will subsequently contact the patient, such as palms and fingers. So we must know gloves are not alternative for hand washing.

5.1 Variable affecting hand washing/hand hygiene compliance:

5.1.1 Individual level factors: (health care provider category job, sex, age, and the years of experience).

Health care provider category job:

We found that the highest compliance for hand washing before patient contact was among the practical nurses (39.7%) and was worst among physician specialists (15.5%) who may be the most difficult for anyone in charge to interrupt and ask to go wash their hands (at least in Arab countries, where the physician still has a strong image of control and professional authority), improvement in physician compliance might improve overall adherence among all health care staff. Our study goes along with Pitte 1999 who found that hand washing compliance was worst among physicians, Pitte proposed a possible solution to the problem; use of

an antiseptic solution instead of soap-and-water hand washing, soap-and-water hand washing of sufficient duration is too time-consuming to be feasible[47].

Age:

From the results that we obtained in this study, we can say that there is a relationship between health-care workers to comply with hand washing / hand hygiene before and after contact with the patient and the age of these workers. The highest compliance among those working in the field of health care was between 30-40 years old. This may help decision makers to use this group to increase compliance among other health care workers

Years of experience:

Experience in 39.9% of sample is (1-5 years), 35.2% with experience (5 -10 years), and 24.9% with experience more than 10 years .We found in this study that there is a relationship between health care workers to comply with hand washing / hand hygiene before and after contact with the patient and years of experience but had a negative impact on compliance rate for hand washing .When experience years increased a compliance to hand washing decreased, this may be due to health care worker with less experience still adhere to what they have learned This underscores the need to intensify regular educational programs in hospitals and on an ongoing basis.

Sex

We found that females washing their hands before patient contact more than males, (female 54.6%, male 45.4% (p-value .000), this can be explained by females being more careful about hand washing which goes along with a recent research study that found female staff members in one hospital wash their hands more often than male staff members, (December

2001 article in the American Journal of Infection Control). Overall, female hand washing rates were 33% higher than those of males[48].

However our finding regarding hand hygiene before and after patient contact showed no significant difference regarding sex.

5.1.2 Group level factors: (site of work, shift, department).

Site of work

We found that hand hygiene before and after patient contact are significant to site of work.

We found that before patient contact, UNRWA hospital employees use rub more than wash but private hospital employees use wash more than rub and in government hospital use gloves more than wash, After patient contact we found that in UNRWA hospital, they use rub more than wash, but private hospital they use wash more than rub, and in government hospital use wash more than rub.

This may be relevant to the work environment for each hospital; in private hospitals the employees may prefer wash due to easy access to sinks, as might affect their performance. In UNRWA hospital they preferred rub because sinks are not accessible in each room, and in governmental hospitals the gloves are more available, and access to sinks is easy according to researcher observation, therefore they used gloves and wash.

A study conducted in Argentinean hospitals found that in the private hospitals where administrative support for the healthcare workers program was significantly greater, healthcare workers compliance for hand washing was significantly higher[49].

Shift

From the results, we can conclude that shift B (2-9 pm) had the best compliance for hand washing before patient contact, this may be related to decreased work load during evening shift ,and this did not agree with results conducted by Earl (2001), which found that the night shift had the best hand washing compliance[36], So we need regular reporting and supervision in all shifts to improve hand washing compliance.

Department

We found that there is association between hand washing /hand hygiene before patient contact with department. Neonate units had the highest hand washing compliance rate (38.8%), the lowest compliance rate (27.6%) was found in ICU department. Our result goes along with Pittet 1999 who found that the lowest compliance rate (36%) was in ICU's[50].

This maybe because health care providers dealing with life saving are giving more attention to other choices and not considering hand washing as important.

5.1.3 Institutional level factors:

(Availability of adequate time for hand washing, availability of water, soap, and drying device).

In our results, there was association between availability of an adequate time for hand washing before patient contact, this means we need to increase the staff number to decrease the heavy work load, so that the staff is given more chance for hand washing; however this is not the only factor affecting the poor compliance for hand washing, since time for hand washing was available 86.3%. In our study, availability of water was100%, soap 93.6% and 85% drying device was available, therefore water, soap, drying device, and time were not limiting factors for hand washing.

5.2 Wearing jewelry during work: 67.71% of the health care providers take off jewels and keep nail trimmed during work, Jewelry is a source for harboring organisms and has been found to be a reservoir for the fast colonization of microorganisms[51]. Additionally jewelry presents challenges in wearing non sterile or sterile gloves. All members of the health care should be involved in the process of developing and implementing health care facility policies and procedures for wearing jewelry that "Wearing rings, watches, bracelets and similar hand and forearm jewelry reduces the efficacy of washing, scrubbing and disinfecting the hands and forearms"[51].Studies have demonstrated that the skin underneath rings has an increased colonization of microorganisms as compared to other areas of the skin on fingers where rings are not worn[52,53]. Additionally, studies have shown there is an increase exponentially in colonization when multiple rings are worn[54]. Rings and forearm jewelry present difficulties in the proper wearing of gloves and cause gloves to tear. Therefore, jewelry should not be worn in order to avoid interference with the ability to wear the correct size and possibly affect the integrity of the gloves.

5.3 Conclusion:

Noncompliance with hand washing is a substantial problem in a hospital setting. From the responses indicated by the health care workers, it becomes evident that a behavioral change is warranted. It involves a combination of education, motivation and system change. The factors necessary for change include dissatisfaction with the current situation, the perception of alternatives and the recognition, both at the individual and institutional level, of individual's ability and potential to change. While the institutional level of involvement includes education and motivation, the individual level and group level necessitate primarily a system change. This

suggests that interventions aimed at improving hand washing practices may be more effective if they are focused on selective wards, categories of health care workers, or patient care situations.

The consequent lack of precision of this indicator probably weakened the association between workload and compliance with hand washing. Noncompliance with hand washing is a substantial problem in our hospital and is associated with identifiable factors. This suggests that interventions aiming at improving hand washing practices may be more effective if they focus on selected wards, groups of health care workers, or patient care situations. In addition, our finding of a relation between the intensity of patient care and noncompliance argues that hand washing should not be seen only as problematic individual behavior but that effective solutions must take into account organizational factors. Even though our data do not establish a causal relation between poor compliance and factors, but it gives impression that there is a problem, and the decision maker must start to study it and work on developing policy to solve it.

5.4 Recommendations:

There is a common misconception that the programs to combat infectious diseases are expensive and beyond the abilities of most hospitals, but the opposite is true, Infection control programs can be applied at low cost, when infection control programs, are designed in a balanced manner to be cost effective. For example, infection can be controlled among the patients in intensive care units by proper hand washing and through a commitment to aseptic methods, instead of costly antibiotics which may cause other problems. Planning for implementation is a critical part of a successful strategy. As a first step, policy maker must agree on the scope and extent of program implementation.

We highly recommend policy makers to design a plan to combat nosocomial infection in our hospitals based on the resources available, the hospital size and its complexity. We can summarize the parts of planning for improving the compliance for hand hygiene as follows:

1-**System Change**: ensuring that the necessary infrastructure is in place to allow health care workers to practice hand hygiene. This includes two essential elements: access to a safe, continuous water supply as well as to soap and towels, readily-accessible alcohol-based hand rub at the point of care.

2. **Training / Education**: providing regular compulsory training on the importance of hand hygiene, based on the correct procedures for hand rubbing and hand washing to all health care workers. Technical and information tools should be available to assist with formulating key messages for health care providers.

3. **Evaluation and feedback**: monitoring hand hygiene practices among health care workers and the set up needed to do so, along with related perceptions and knowledge, while providing performance and results feedback to the staff.

4. **Reminders in the workplace**: prompting and reminding health care workers about the importance of hand hygiene and about the appropriate indications and procedures for performing it.

5. **Institutional safety climate**: creating an environment and the perceptions that facilitate awareness-raising about patient safety issues. At the same time guaranteeing consideration of hand hygiene improvement as a high priority at all levels, including: active participation at both the institutional and individual levels; awareness of individual and institutional capacity to change and improve (self-efficacy); and partnership with

patients and patient organizations depending on cultural issues and the resources[55].

6. We highly recommend policy makers to Appoint new full time infection control team in each hospital who will be responsible for infection control program implementation.

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Appendix A

Definition of Terms

Alcohol-based hand rub: An alcohol-containing preparation designed for application to the hands to reduce the number of microorganisms on the hands. In the United States, such preparations usually contain 60 percent to 95 percent ethanol or isopropanol.

Antimicrobial soap: Soap (detergent) containing an antiseptic agent.

Antiseptic agent: Antiseptics are antimicrobial substances that are applied to the skin to reduce the number of microbial flora. Examples include alcohols, chlorhexidine, chlorine, hexachlorophene, iodophors, chloroxylenol (PCMX), quaternary ammonium compounds, and triclosan.

Antiseptic hand wash: Washing hands with water and soap or other detergents containing an antiseptic agent.

Antiseptic hand rub: Applying an antiseptic hand rub product to all surfaces of the hands to reduce the number of microorganisms present.

Bloodstream infection: A serious infection that occurs when bacteria from an infected site on the body invade the bloodstream. If bacteria continue to multiply without being stopped by antibiotics or the patient's immune system, there is a high risk of septic shock, a potentially life-threatening condition.

Cumulative effect: A progressive decrease in the numbers of microorganisms recovered following repeated applications of a test material.

Decontaminate hands: Reducing bacterial counts on hands by performing antiseptic hand rub or antiseptic hand wash.

Detergents: Compounds that possess a cleaning action. They are composed of a hydrophilic part and a lipophilic part and can be divided into four groups: anionic, cationic, amphoteric, and non-ionic detergents.

Hand antisepsis: Refers to either antiseptic hand wash or antiseptic hand rub.

Hand hygiene: A general term that applies to hand washing, antiseptic hand wash, antiseptic hand rub, or surgical hand antisepsis.

Hand washing: Washing hands with plain (non-antimicrobial) soap and water.

Methicillin-resistant S. aureus (MRSA): A type of staphylococci bacteria that is resistant to the commonly prescribed antibiotic, methicillin. This can cause serious infections.

Microorganisms: Microscopic organisms such as bacteria and viruses, commonly known as germs, can cause infections in humans.

Multi-drug resistant pathogens: Bacteria that cause serious infections that are very difficult to treat due to the pathogens' resistance to many commonly-prescribed antibiotics.

Nosocomial infection: An infection acquired in a hospital or other healthcare setting.

Persistent activity: Prolonged or extended antimicrobial activity that prevents or inhibits the proliferation or survival of microorganisms after product application. This may be demonstrated by sampling a site several minutes or hours after application and demonstrating bacterial antimicrobial effectiveness when compared to a baseline level. In the past, this property has also been called "residual activity". Both substantive and non-substantive active ingredients can show a persistent effect if they lower the number of bacteria significantly during the wash period.

Plain soap: Detergents that do not contain antimicrobial agents, or contain very low concentrations of antimicrobial agents that are effective solely as preservatives.

Pneumonia: Infection of the lung. Pneumonia once was a common cause of death and killed one out of four victims. It is still a serious disease, especially in infants and the elderly, who are most vulnerable.

Resistant gram-negative rods: A type of bacteria that causes serious infections that are very difficult to treat due to the pathogen's resistance to many commonly prescribed antibiotics. They are a cause of illnesses such as pneumonia.

Staphylococci: A type of bacteria that causes what is commonly called a Staph infection. Potentially, the bacteria can cause a life-threatening illness should it infect a major organ. Many Staph infections respond to antibiotics' however, there are resistant strains emerging.

Substantivity: An attribute of some active ingredients that adhere to the stratum corneum, remaining on the skin after rinsing or drying, to provide an inhibitory effect on the growth of bacteria remaining on the skin.

Surgical hand antisepsis: Antiseptic hand wash or antiseptic hand rub performed preoperatively by surgical personnel to eliminate transient bacteria and reduce resident hand flora. Antiseptic detergent preparations often have persistent antimicrobial activity.

Surgical site infections: Defined by the location of the original contamination, surgical site infections can be caused by MRSA, VRE and other dangerous multi-drug resistant pathogens.

Urinary tract infections: A bacterial infection of the urinary tract, which can include the bladder and kidneys.

Vancomycin-resistant enterococci (VRE): Enterococci are a type of bacteria that cause, among other things, serious surgical site and urinary tract infections which are very difficult to treat due to the bacteria's resistance to many commonly-prescribed antibiotics.

Visibly soiled hands: Hands showing visible dirt or visibly contaminated with proteinaceous body substances (e.g., blood, fecal material, urine).

Appendix B

Study observation tool:
Date:
Day of week

Hospital:
1-Jenin hospital
2-Al-ittihad hospital
3-Qalqilia hospital

Shift:
1-A
2-B
3-C

Patient care unit:
1-LR
2-IR
3-ICU

Health care provider category:
1-physician specialist
2-physician resident
3-stuff nurse
4-practical nurse

Sex:
1-male
2-female

Age:
1-(20-30) years
2-(30-40) years
3-more than40years

Years of experience:
1-(1-5) years
2-(5-10) years
3- more than 10years

Jewels:
1-nails
2-bracelets
3-rings
4-nothing

Availability of water:
1-yes
2-no

Availability of soap:
1-yes
2-no

Availability of drying device:
1-yes
2-no

Availability of an adequate time for hand washing:
1-yes
2-no

Hand hygiene before patient contact:
1-rub
2-wash
3-gloves
4-missed

Hand hygiene after patient contact:
1-rub
2-wash
3-missed

جامعة النجاح الوطنية
كلية الدراسات العليا

دراسة وقتية لملاحظة ممارسات غسل اليد للعاملين في القطاع الصحي في شمال الضفة الغربية

إعداد
فاطمة محمد أسعد حسين

إشراف
د.أنور دودين

قدمت هذه الأطروحة استكمالا لمتطلبات درجة الماجستير في الصحة العامة بكلية الدراسات العليا في جامعة النجاح الوطنية في نابلس،فلسطين

2010

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الملخص

خلفية الدراسة: نقل الميكروبات من أيدي العاملين في مجال الرعاية الصحية هي المصدر الرئيسي لنقل العدوى عبر المستشفيات ، ويمكن الوقاية منها عن طريق غسل اليدين.

الأهداف :تحديد امتثال العاملين في مجال الرعاية الصحية لغسل اليدين في المستشفيات الثلاثة مستشفى جنين الحكومي ، مستشفى الاتحاد النسائي العربي الخاص ومستشفى الوكالة قلقيلية. وتقييم عدة عوامل التي يمكن أن يكون لها علاقة بامتثال العاملين لغسل اليدين / نظافة اليدين والذين يعملون في ثلاثة أقسام وهي الولادة ، العناية المكثفة ، الأطفال الخدج.

الأسلوب : أجريت دراسة وقتية مقطعية عن طريق الملاحظة،في الفترة بين أيلول – كانون أول 2009 ،الباحث هو الذي قام بملاحظة العاملين الصحيين خلال عملهم الروتيني في رعاية المريض .عينة الدراسة المستهدفة الأطباء والممرضين الذين يعملون في أقسام الولادة ، العناية المكثفة ، الأطفال الخدج. جمعت 1050 ملاحظة من المستشفيات الثلاث المستهدفة في الدراسة، وتم تحليلها إحصائيا باستخدام برنامج (spss).

النتيجة : بينت النتائج أن،22.1 % قاموا بغسل اليدين قبل الاتصال مع المريض،30.6 % قاموا باستخدام الكحول،30.8 % استخدموا القفازات و16.6 %لم يستخدموا شيء. بعد الاتصال مع المريض 39.7 % استخدموا الكحول ،40.9 % قاموا بغسل أيديهم و19.4 % لم يستخدموا شيء.

وجدنا أن أعلى نسبة امتثال لغسل اليدين قبل الاتصال مع المريض بين الممرضات المؤهلات 39.7 ٪ ، والأسوأ بين الأطباء المتخصصين 15.5 ٪ ، ووجد إن الفئة العمرية بين 30- 40 سنة هي الأكثر امتثالا أما سنوات الخبرة فقد كان لها تأثير سلبي على معدل الامتثال لغسل الأيدي. وقت دورية العمل الثانية من الثانية مساءا إلى التاسعة مساءا كان أفضل نتيجة لغسل اليدين قبل الاتصال بالمريض ، 67.71 ٪ من مقدمي الرعاية الصحية يعملون دون ارتداء مجوهرات ولهم أظافر قصيرة .

الاستنتاج : عدم الامتثال لغسل اليدين مشكلة كبيرة في المستشفيات . من النتائج التي حصلنا عليها أصبح من الواضح أن هناك ما يبرر تغيير السلوك وان ذلك لن يتحقق إلا بمزيج من التعليم ، والتحفيز وتغيير النظام الحالي .

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