Deanship of Graduated Studies
Al-Quds University

"Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank"

Abdel Salam Fayez Hamdan Owaidat

M.Sc. Thesis

Jerusalem- Palestine

1432/2011

“Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank”

Prepared By:

Abdel Salam Fayez Hamdan Owaidat

B.Sc.: Medical Imaging-AL-Quds University-Palestine

Supervisor: Dr. Asma Imam, Ph.D.

A Thesis Submitted to the Graduate School in Partial Fulfillment of the Requirements for the Degree of Master of Public Health/School of Public Health in Health Management and Policies. Al-Quds University

1432/2011

Deanship of Graduate Studies

Al-Quds University

School of Public health

Thesis approval

"Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank"

Prepared by: **Abdel Salam Fayez Hamdan Owaidat**

Registration number: **20811862**

Supervisor: **Dr. Asma Imam, Ph.D**.

Master thesis submitted and accepted, Date: 10th December, 2011

The names and signatures of the examining committee members are as follows:

1- Head of committee : **Dr. Asma Imam, Ph.D.** Signature…….

2- Internal Examiner**: Dr. Mohammed Shahin, Ph.D.** Signature…….

3- External Examiner: **Dr. Ahmed Rahhal, Ph.D.** Signature…….

Jerusalem-Palestine

1432/2011

Dedication

I dedicate this dissertation to the souls of my beloved late parents; Fayez and A'yshah, may GOD let them rest in mercy and peace.

To my darling wife; Huda,

To my cherished daughters; Raghad and Karmel,

To my precious sons; Obaida and Noor Aldin,

To my well-regarded sisters and brothers, and

To those who treasured Palestine as a home land.

Abdel Salam Fayez Hamdan Owaidat

بسم الله الرحمن الرحيم

وقل اعملوا فسيرى الله عملكم ورسوله والمؤمنون

وستردون إلى عالم الغيب والشهادة فينبئكم بما كنتم

تعملون

(التوبة، الآية: ١٠٥)

Declaration

I certify that this thesis submitted for the degree of Master is the result of my own research, except where otherwise acknowledged and that this thesis (or any part of the same) has not been submitted for a higher degree to any other university or institution.

Singed:

Abdel Salam Owaidat

Date:

Acknowledgement

Thank you **GOD** for the opportunity to learn…

First and foremost, I would like to offer all the praises and glory to our **GOD** Almighty. His inspiring words and steadfast love and mercy are lamps and lights to my path that guide me from the conception until the giving of birth to this study.

To complete a research like this, several minds are essential. But God sent people who have been very helpful and instrumental in the accomplishment of this study. I am forever grateful to these people who have supported and encouraged me along the way.

I would like to express my sincere gratitude to my adviser, Dr. Asma Imam for her faith in me, her unwavering support, wisdom, and great guidance to improve the writing. Thank her for coordinating and walking me through the process and offered a lot of opportunities and achievements in my personal and professional life and who taught me the importance of perseverance and patience to accomplish target goals in my life.

I would like to express my heartfelt appreciation to my teachers Drs., Kholood Khayyat Dajani, Yousif Behaisi, Khaldoon Badr, Lina Alkhairi, Salah O'deh, Halima Alsabbah, Mo'tasem Hamdan, Mohammed Shahin, and Nuha Alsharif …for their time, invaluable feedback and guidance. Thank them for making me better in different ways. I need to say a special thank you to the Palestinian Medical Relief Society's (PMRS's) manager in Jenin Dr. Jamil Alhamad.

Several colleagues made special contributions to this final product and the researcher gratefully acknowledges their assistance: Mr. Mohammed Hjouj, Dr. Iyad O'deh, Osama Ayesh and all my colleagues in the health profession, also my gratitude goes to people who lent a helping hand to me in data collection.

My thanks also would go to the members of the Palestinian Medical Imaging Association (PMIA) and Palestinian Medical Technology Association (PMTA) for their participation and cooperation.

My full love goes to all my sisters and brothers for their support, love and permanent caring, their encouragement was my motivation.

Finally, I must gratefully acknowledge the help and support of my gorgeous wife, Huda, whom I owe my deepest gratitude for caring, patience and inspiring; you were a pillar of strength and comfort, also my children, Obaida, Raghad, Karmel and Noor Aldin, who have encouraged me to write, study, even though it has resulted in them undertaking additional family responsibilities.

Abstract:

This study was designed to assess the perceived professional developmental needs of medical imaging and medical laboratory technologists in the West Bank and was carried out during September 2010 - December 2011.

Health personnel literature is progressively more emphasizing the necessity for paying attention to employees' development and its relationship with the procedure outcomes and performance of staff within organizations.

The researcher used quantitative qualitative method. A sample of (508) health care professionals was selected using proportional stratified random sampling method. (351) completed surveys were returned back making a response rate of 69%. A descriptive cross sectional study was conducted using a self-administered questionnaire. Data were analyzed using (SPSS version 15). Also, the researcher used the qualitative research method by conducting (60) semi-structured interviews (30 MLTs & 30 MITs) to investigate the perceptions of MITs and MLTs towards internet, scientific journals, best continuous education approaches, training hours needed monthly to keep up-to-date with new technology and training needs priorities.

The study results showed that the training needs had specifically the utmost degree of the technologists' demands (79.75%) and were considered key area requires improvement. There was a short of clear policies and evident reliable plans (68.4%) in the determination of professional developmental needs quantitatively and qualitatively and considered a key area for improvement. Few of the technologists (59.8%) joined career development programs; this implies that technologists are not motivated to update their knowledge and skills which consequently have a negative impact on their performance. Motivation and continuous education opportunities scored relatively low levels (59.6% and 60%) respectively and need improvement. In the management support domain, it is notable, if not perhaps surprising, technologists were generally much more satisfied (70.6%) in this area as they rated their interaction with their managers being supportive as good. It means that they have positive orientations toward their managers.

Results also showed that there were significant differences related to gender in favor of females. Analysis revealed a strong relationship between the professional developmental needs and continuous education opportunities. There was a strong correlation between motivation and the professional developmental needs of technologists. Also, there was a strong correlation between career development planning and professional developmental

needs of technologists. The study results recommend that managements and the professionals should cooperate to improve the skills, knowledge and competencies of the technologists especially in first aid, management training, using updated techniques and human relations. Also, it is recommended to create a general plan to better align improved planned policies for health workers, and reform the training and development policies for health professionals. The study also recommends enabling technologists to join career development programs through involvement and yielding equitable opportunities to develop their current level. The results clearly indicate the need for developing the current motivation system and evenhanded of continuous education opportunities as well as enabling professionals to have internet access at work.

ملخص الدراسه

هدفت هده الدراسه إلى تقييم وجهات نظر فنيي واخصائيي المختبرات الطبيه والتصوير الطبي حول الاحتياجات التطويريه لهم في الضفه الغربيـــه.

اجريت هده الدراسه في الفترة ما بين ايلول 2010 وكانون اول من عام 2011، حيت تم اختيار عينه طبقيه عشوائيه من فنيي واخصائيي المختبرات الطبيه والتصوير الطبي. تم إعداد استبانه بناء على المراجعات الادبيه، وتم التاكد من صدق وتبات الاداة حيت تم استخدام معامل كرونباخ الفا والاستعانه بخبراء في هدا المجال. قسم مجتمع الدراسه إلى فئتين (مختبرات طبيه و تصوير طبي)، وتم توزيع الاستبانه على (508) اشخاص، وكان عدد الاستبانات الصالحه للتحليل(351) استـبانة بنسبة (69%) من عينه الدراســه واستخدم البــاحث الــحزمه الإحصائيه (SPSS) لتحليل البـيانات إحصائـيا.ايضا استخدم الباحث اسلوب البحث النوعي (المقابلات) حيت قام الباحث بإجراء (60) مقابله فرديه مكتفه (30 للاشعه و 30 للمختبرات) للبحث في وجهات نظر الفنيين نحو الانترنت ، المجلات العلميه ، وسائل التعليم المستمر واولويات الاحتياجات التدريبيه.

على مستوى الاحتياجات التدريبيه، فقد كان اهتمام العاملين بها كبيرا (79.75%) وبحاجه إلى تحسين وتطوير، اما السياسات (68.4%) فقد افتقرت إلى الوضوح والخطط الجليه في إقرار الاحتياجات التطويريه كما ونوعا .القليل من الفنيين (59.8%) التحقوا ببرامج تطوير وظيفي في مؤسساتهم خلال السنتين الاخيرتين مما يستوجب إعطاءهم الفرصه للالتحاق بهده البرامج . وكدلك التحفيز (59.6%) وفرص التعليم المستمر(60%) كانا عنصرين بحاجه إلى تحسين، اما الدعم الإداري (70.6%) فقد كانت إجابات المبحوتين مفاجئه إلى حد ما حيث عبر الفنيون عن مستوى علاقتهم برؤسائهم بانها جيدة. اظهرت الدراسه وجود فروق دات دلاله إحصائيه من ناحيه الجنس لصالح الإناث. كشفت الدراسه ان هناك علاقه ايجابيه بين الاحتياجات التطويريه وبين فرص التعليم المستمر وايضا السياسات الموضوعه من قبل المؤسسات الصحيه. كما ان هناك علاقة ايجابيه بين التحفيز وبين الاحتياجات التطويريه.

خلصت هده الدراسه إلى عدة توصيات منها : ضرورة ان تقوم الإدارات بتحسين المهارات والمعرفه من تدرب على الإسعاف الاولي، التدرب الإداري، استخدام التقنيات الحديثه والعلاقات الإنسانيه بما يتوافق مع احتياجات الفنيين ومع متطلبات العمل وكدلك العمل على تعميق وزيادة الوعي من خلال توفير برامج تدريبيه متخصصه . توصي هده الدراسه ايضا بتوضيح وإصلاح سياسات التطوير والتدريب المتبعه واعتماد خطه شامله متوافقه مع السياسات المرسومه مع اعداد خطه إستراتيجيه شاملة لتطوير العمليه التدريبيه مبنية على التــحديد الدقـيـق للاحتياجات الــتدريبــيه وفقا للاساليب العلمية مع مراعاة المتغيرات المستقبليه. ايضا، توصي هده الدراسه بتمكين الفنيين من الالتحاق ببرامج التطوير الوظيفي من خلال إشراكهم وإعطائهم الفرص المتساويه للالتحاق بهكدا برامج من اجل تحسين وتطوير مستواهم الحالي. كما خلصت الدراسه إلى ضرورة تطوير نظام الحوافز المعمول به في المؤسسات وكدلك ضرورة التوزيع العادل في فرص التعليم المستمر وايضا تمكين الفنيين في الحصول على خدمه الانترنت في مكان العمل.

List of Tables:

List of Figures:

List of Annexes:

Acronyms and Abbreviations:

CE:	**Continuous Education**
CME:	**Continuous Medical Education**
CPD:	**Continuous Professional Development**
CT:	**Computerized Tomography**
DF:	**Degrees of Freedom**
DHP:	**Department of Health Planning**
EMR:	**East Mediterranean Region**
GS:	**Gaza Strip**
HENRE:	**Higher Education Network for Radiography in Europe**
HHR:	**Health Human Resources**
HHRP:	**Health Human Resources Planning**
HR:	**Human Resources**
HRD:	**Human Resources Development**
HRDM:	**Human Resources Development Management**
HRM:	**Human Resources Management**
IT:	**Information Technology**
LMICs:	**Low and Middle Income Countries**
LSD:	**Least Significance Difference**
MT:	**Medical Technology**
MI:	**Medical Imaging**

MIT:	**Medical Imaging Technologist**
MLS:	**Medical Laboratory Sciences**
MLT:	**Medical Laboratory Technologist**
MoH:	**Ministry of Health**
MRI:	**Magnetic Resonance Imaging**
MRS:	**Medical Radiation Science**
MT:	**Medical Technology**
No:	**Number**
NSHP:	**National Strategic Health Plan**
PhD:	**Doctor of Philosophy**
PHIC:	**Palestinian Health Information System**
PMIA:	**Palestinian Medical Imaging Association**
PMoH:	**Palestinian Ministry of Health**
PMTA:	**Palestinian Medical Technological Association**
Q.C:	**Quality Control**
Sig:	**Significance**
T.Q.M:	**Total Quality Management**
TLD:	**Thermo Luminescent Dosimeter**
TNA:	**Training Needs Assessment**
UNRWA:	**United Nations for Relief and Work Agency**
WB:	**West Bank**
WHO:	**World Health Organization**

Chapter One: Background and Significance

1.1 Introduction

The aim of this study was to assess the perception professional developmental needs of the medical imaging and laboratory technologists in the West Bank and to examine the effect of selected factors such as continuous education, career planning, motivation, management support, policies and personal characteristics on the development of medical imaging technologists (MITs) and medical laboratory technologists (MLTs). This chapter includes a brief discussion about (MITs) and (MLTs), current human resources, futuristic needs in Palestine and background information about national universities and colleges. Significance of the study, problem statement, justification, overall aim and objectives, feasibility, limitations and hypotheses of the study were included.

1.1.1 Medical Imaging Technologists (MITs):

MITs' role has changed significantly in the last twenty years, and the requirement for their services has increased noticeably, while their work has become more complex with the technical and information technology (IT) skill demands increasing and the keystone knowledge base also going up. The range of tasks radiographers have to perform has increased too (White & McKay, 2002) with the development of increasing sub-specialties (Nightingale & Hogg, 2003).

MITs utilize an assortment of equipment to create high quality images to diagnose injury or illness or work as part of a team. Accurate skills needed count to a certain extent on the equipment used and the services provided but technical and professional knowledge, team working and interpersonal skills are also required. MITs critically shape the connection between patient and clinician, and need well-developed inter-personal skills (Brown, Green, Pitcher & Simm, 2000). The skills of patient management have increasingly come forward, as radiographers have to act with patients with dissimilar levels of open-mindedness and concern under unreliable medical conditions (Eraut, Alderton, Cole & Senker, 1998).

The Palestinian medical imaging association (PMIA) represents all MITs, coordinates their professional roles and annually organizes its conference, sustains their rights and holds the responsibility to provide them with new updates (Hjouj, 2010).

In the national plan for human resource development and education in health, Palestinian National Authority (PNA) issued strategies related to planning for supply and distribution of medical imaging in Palestine to integrate planning for human resources (HR) in medical imaging in the national health plan and strategic health plans, promote planning for HR nationally through shared responsibilities, ensuring coordination between planning, education and management of HR in the field of medical imaging and implementing an accreditation system for education/training programs for HR (formal education) in medical imaging. Ministry of higher education (MoHE), radiologists association, medical imaging technologists association, universities and colleges and ministry of health were involved in managing such strategies (PNA, 2001).

1.1.2 Medical Laboratory Technologists (MLTs):

Given that the future role of laboratory medicine is powerfully and evenly challenged by new technologies, it is necessary to take a wide outlook of the control and present to the administrators and other decision-makers the complete range of activities and benefits laboratory medicine can provide. Above all, the importance of medicinal laboratory can only be achieved by adding value to laboratory tests, represented by their effectiveness in influencing the management of patients and related clinical outcomes (Panteghini, 2004).

The recent advances in the medical laboratory testing at the level of routine tests as well as the molecular diagnostic methods have expanded the role of the medical laboratory teams from just a supporting role to an essential one in guiding and monitoring the whole diagnostic and patient-management process. Such a significant revolution demands highly qualified and well-trained professionals with sufficient relevant skills in addition to being exposed to constant training and educational programs to allow them to meet the new challenges and cope with mounting advancement of the field. *(http://www.ifcc.org).*

A medical laboratory technologist (MLT), also called a clinical laboratory technician, uses instruments such as microscopes, chemicals, computers, and high-tech laboratory equipment with increased computer technology and automation. Technologists perform less hands-on work and concentrate more on analytical tasks to perform routine laboratory procedures on blood, tissue and other bodily fluids. A medical laboratory technologist usually works under the supervision of a medical laboratory scientist or pathologist who

specializes in biological sciences. MLTs' responsibilities are determined by level of education and years of experience (U.S. Bureau of Labor Statistics, 2009).

Palestinian Medical Technology Association (PMTA**)** is the formal national body representing all medical laboratory scientists and technicians in Palestine. The PMTA strives for organizing the medical laboratory profession, supporting its members' rights and providing them with continuous scientific and professional education. Since its establishment in 1996, the PMTA has a policy to organize a biannual national conference in laboratory medicine. The precedent 5 conferences have been incessantly met with a spacious partaking from association members and health professionals. PMTA provides a chance for professionals and researchers to present their research works and their practical experience in the field of laboratory medicine and to communicate with the clinical laboratory professionals and technicians (Al-Quds University, 2010).

Through the continuous professional development programmes (CPD), medical technologists have an opportunity to become members in the association. PMTA approached means and proposed points for its members to participate and become activating members in the association and to take actions to provide motivation for the members to keep ongoing with the updated technologies. Points are accumulated over a two-year period leading to certification points. 40 points must be accumulated in a two-year period. Points are obtained by attending scientific meetings, workshops, courses and journal clubs. They can also be obtained through essay writing and involvement in the academic development of the profession, lecturing, undergraduate work, postgraduate work and supervision. After validation of the work, points are added to the individual file of the member (PMTA, 2010) (Annex 5).

1.2 Current HR of MITs & MLTs and Futuristic Needs in Palestine

Human resources are the major element in the improvement of health services quantitatively and qualitatively .In this regard, the development and improvement of human resources have been a strategic objective of the health care system. However, human resources development is facing many challenges, mainly the inadequate implementation of human resources development plan (HRDP) prepared in 2001. Respectively unplanned growth continued among human resources, yet the shortage sustained in many specialties and surplus in others (NSHP, 2008, Page 40).

Despite the shortage, Human Resources Development Management (HRDM) in Palestinian Ministry of Health (PMoH) had achieved a lot of accomplishments in the development process and adopted a short-term plan followed by a long term one. However, there were some barriers hindering carrying out predetermined plans such as: HR shortage in competent leaders and this impediment was evaded by the assistance of available MoH experiences. The shortcoming of financial capabilities specified for HRD in MoH, and using its annual special budget in other activities, furthermore, lack of steadiness and disparity of satisfaction level in the development process negatively affected HR development (Issa, 2005).

Much of the data collected on allied health workforce is of poor quality. It is inconsistent across the professions and jurisdictions, making health workforce planning very difficult.

The global health workforce is conservatively estimated to be just over 59,220,000 million health workers (WHO Report, 2006, Page 5).WHO estimates a shortage of more than 4.3 million health workers and 2.4 million health professionals will be needed to meet the shortfall worldwide (WHO Report , 2006 Pages 11,12) .

In Palestine, there are 673 MITs (322 in West Bank and 351 in Gaza Strip) (PMIA, 2010) as shown in table (1.2) in addition to 40 new graduates annually from Arab American University and Al-Quds University (NSHP, 2008). However a shortage is detected of about 240 MITs (NSHP, 2008).

Also, in Palestine, there are about 2461 MLTs registered in the West Bank and 1953 in Gaza Strip, as shown in table (1.2). (PMTA, 2010).There is a surplus in the numbers of MLTs of about 1392, looking for a job and this number really is enough for Palestine for 3 years (PMoH, PHIC, Midyear Report, 2009).

Table (1.2): Allied health care professionals (MITs and MLTs) in Palestine distributed according to geographic area:

Specialty Area	West Bank (W.B.)	Gaza Strip (G.S.)	Total
Medical Laboratory Technologists(MLTs)	**2461**	**1953**	**4414**
Medical Imaging Technologists(MITs)	**322**	**351**	**673**

Since there are no clear plans on how many MITs and MLTs noted in Palestine, decisions on how many students to enroll at universities are not based on need but on commercial concerns e.g. universities accept students to enroll regardless of the marks obtained at schools or if there is a surplus in an area and a shortage in others; this will create imbalance in the workforce.

1.3 MLTs and MITs National Programs

Health services in Palestine need lots of recruits –in addition to how many are being graduated annually e.g. Medical imaging -to break off a large number of other areas. Bridging the gaps of HHR of the health organizational needs must be accompanied with good planning and full collaboration between organizations rendering health services and universities and colleges graduating health skilled workforce through a national committee to study the educational needs through statistics and programmes being carried out and designation of programmes or participation in supporting and setting health strategic plans (Issa, 2005).

Nationally, there are four education programs in medical imaging (MI); (3 in the W.B. and 1 in G.S.) that graduate MITs with baccalaureate degrees with a capacity to graduate 40 MITs annually. However, there are ten education programs in medical technology (MT) granting 3 diploma programs, 5 baccalaureate programs, one high diploma and also one master program in MT (Annex 6).

Continuous education (CE) is necessary to maintain and enhance the graduates' knowledge, skills and attitudes for better practice. Pursuing post-baccalaureate studies is a serious step to be carried out by the technologists to develop human resources. All health professionals need ongoing education in order to ensure quality of care to clients and consumers. Consumers also need more education on the role of allied health professionals in primary health care (Harber, 2005).

1.4 Justification and Significance of the Study

The main goal of this study was to assess the development needs of the MITs and MLTs in Palestine.

The Palestinian health care system is a mixture of governmental, non-governmental, United Nation Relief and Work Agency (UNRWA) and private (profit and non-profit) services delivery. These health providers are over lapping in services, and none of these sectors can provide comprehensive health services (Mataria, 2004). Despite the shortage of the health workforce, insignificant information denotes and discusses the MITs' and MLTs' developmental needs in the different sectors. Given that such data could put forward managers' insight to better direct strategies for improving development and job performance. Therefore, this study was conducted to provide the planners with information regarding the development of MITs and MLTs and their professional developmental needs as perceived by them. Such study has never been conducted before and the outcomes expected to be used by policy makers and planners. It is commonly acknowledged that all professionals should sustain, bring up to date and improve their knowledge and skills through the process of continuous education. Many medical imaging and laboratory technologists have difficulties in accessing opportunities, although these difficulties vary according to a range of factors, not least of which the perceptions of the individual practitioners are concerning viable learning opportunities *http://www.bhert.com.*

Health service delivery within Palestine is sought after to be safe efficient, effective, acceptable and accessible. Therefore, MITs and MLTs need to keep updated with the current developments in their fields. The developmental needs and requirements of medical imaging technologists and laboratory technologists have to be examined in light of personal characteristics, motivation, continuous education opportunities, management styles, policies and career planning development.

Furthermore, the findings of this study will allow the policy-makers to realize the importance of development needs for the MITs and MLTs and social development of the country. Cooperation and participation are the key factors in developing and preserving this kind of development.

1.5 Problem Statement

Health experts, community representatives and planners had put in place well-established national strategic health plans (NSHPs) started in the early nineties of the previous century such as NSHP 1994, NSHP 1999-2003, Human Resources Development Plan 2001, Health Sector Review 2004, Ministry of Health Reform and Organization Plan 2005, MTDP 2006-2008, NSHP preparatory workshop which was held in Jericho in 2006, NSHP 2008-2010 and eventually the NSHP 2011-2013. Despite all of these plans, effective and efficient application to these plans does not rise to the level to show that they are affecting health planning and development of the health care system in depth.

The continuous raise in the numbers of the public workforce in cadre in the health care setting was mostly to compromise social problem presented by unemployment and not based on study of actual needs to the health organizations. Human resources were not taken up and allocated according to actual needs and based upon specific criteria agreed upon. Recruiting relatively large numbers in MoH facilities did not meet the actual health organizational needs. Moreover, the professional development programmes were not capable to meet the development needs of the new cadres and eventually did not contribute quality to the health care (Issa, 2005).

The absence of appropriate human resources policies and efficient application is responsible, in many countries, for a chronic imbalance with multifaceted effects on the health workforce: quantitative mismatch, qualitative disparity, unequal distribution and a lack of coordination between HRM actions and health policy needs (Dussault & Dubois, 2003).

Orienting of HR of technicians to the field of management and orienting towards raising their academic levels to improve their financial and social situation lead to less concentration on the mid-level and clinical studies, and focused on the high academic studies; baccalaureate, master or doctorate degrees. This –negatively- affected the level of technical and direct clinical services delivery where the number of higher education certification holders has increased at the expense of the clinical personnel who pears the most burden in direct service delivery to patients compared to the available numbers in needs (Issa, 2005).

For better career paths, many allied health care professionals choose to move out from clinical areas into management and education fields leading to shortages in clinical

practitioners (Harber, 2005). The absence of motivation system especially for clinical staff has lead to dissatisfaction and movement to non clinical work (Issa, 2005).

1.6 Overall Aim and General Objectives of the Study

The aim of this study was to assess the perceived professional developmental needs of the medical imaging and laboratory technologists in the different sectors in the West Bank. The objectives of the study were:

1. To determine the factors affecting professional developmental needs of the medical imaging and medical laboratories technologists across the West Bank.
2. To determine the association between the demographic characteristics of the respondents and professional developmental needs of the medical imaging and medical laboratories technologists in the West Bank.
3. To determine the relationship between professional developmental needs and management support, continuous education opportunities, career planning, personal characteristics, policies and motivation of the medical imaging and medical laboratories technologists in the West Bank.
4. To determine the current main training needs of MITs and MLTs in the West Bank.

1.7 Feasibility of the Study

The particular interest of the researcher was to oversight the conditions of the MLTs and MITs in the Palestinian health system as a member of this team, accompanied with the membership in the PMIA motivated the researcher to take up this study. Moreover, PMLA and PMIA were very cooperative in providing lists of the names of technologists.

1.8 Limitations of the Study

There were some limitations during conducting this study; these limitations are summarized as follows:

1. The exclusion of other factors that may affect development of MITs and MLTs due to time limitation.

2. Unavailability of relevant literatures and lack of resources in assessing professional developmental needs.
3. The financial limitation since the study was self funded.
4. Researcher's bias may influence responses of subjects as working in the same field and known by some participants in the study during carrying out semi-structured interviews.

1.9 Hypotheses of the Study

1. There are no statistically significant differences at $\alpha \leq 0.05$ in the professional developmental needs of technologists according to age.
2. There are no statistically significant differences at $\alpha \leq 0.05$ in the professional developmental needs of technologists according to (position) title.
3. There are no statistically significant differences at $\alpha \leq 0.05$ in the professional developmental needs of technologists according to gender.
4. There are no statistically significant differences at $\alpha \leq 0.05$ in the professional developmental needs of technologists according to qualification.
5. There are no statistically significant differences at $\alpha \leq 0.05$ in the professional developmental needs of technologists according to years of experience.
6. There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and management support.
7. There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and continuous education opportunities.
8. There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and career planning.
9. There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and institution policies.
10. There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and their motivation.

1.10 Study assumptions

The followings are the assumptions of the study

1. Sufficient number of professionals will participate, respond and cooperate in filling the study instrument.
2. All items and concepts, in the study instruments will be understood and clear for participants.
3. All the participants will fill in the questionnaires honestly and sincerely that will reflect the real situation of their perceptions.
4. Valid and reliable data are provided by participants.

1.11 Summary

This introductory chapter provided an overview about the importance of the professional developmental needs of technologists, also an overview of the study aim and objectives that is; to assess the perceived professional developmental needs of the allied healthcare professionals (mainly MITs and MLTs) and the factors that affect development. This chapter included background information about the technologists' education and national programs.

Chapter Two: Literature Review

2.1 Introduction

This chapter reviews national and international studies conducted in the area of assessment of perception of professional developmental needs of allied health care professionals. A comprehensive search was employed to uncover theoretical and research work related to the study concepts. Internet search, previous master thesis, books and journals were reviewed in regard to technologists' development needs and the factors that affect their development. Search failed to find out core rich local or international published studies similar to this proposed study concepts.

2.2 Historical Background about Health Sector in Palestine

The continuance of human resources for health services, allocation and development of its knowledge and career capabilities are considered the most priorities of health organizations in the world. Human resources of the Palestinian MoH have risen from 3984 in 1993 to 6454 in 1994 with 65% increase. In 2003 and 2005, the numbers were 9096 and increased to 13000 employees respectively with an increase of 228% relative to 1994 (Issa, 2005).

The number of Palestinian health workforce in a permanent career inside and outside MoH is (18134) employees. The number of MoH in the year 2000 was (7458) has risen to (14526) in 2009, and thus the number of population per employee in MoH has lowered from (375) to (270) population (MoH, Palestinian Health Information Center (PHIC), 2010).

MoH has granted licenses to a large number of allied health professionals after the introduction of chain of lectures, workshops and clinical training to raise their scientific level, and large numbers of employees were recruited to develop health services. PMoH was concerned to increase the efficiency and effectiveness of human resource development implying training for health workers at all levels and sectors. MoH provides employees abroad educational apprenticeships for raising health levels of the society although it is a great challenge facing HR as the lack and inefficiency of continuous education programs (Issa, 2005) .This requires mechanisms to integrate the graduates in the health system and to guarantee the minimum similarity of health care approaches. Also, this requires

developing and implementing the national clinical management protocols and standard operational procedures (Issa, 2005).

Since the changeover of authority at the closing stages of 1994, Human Resources for Health Development (HHRD) have been a priority and focus of attention in the Palestinian healthcare system (Hamdan & Dfever, 2003).As a result, a "management unit" of HHR was founded which took into consideration education, training, planning and development of HR in MoH through involving these programmes: -

i. Continuous education: the proposed programme combines applied knowledge, workshops and scientific days for health personnel.
ii. Symposia, missions and conferences: the objective was to develop capabilities of health professionals to have more scientific, professional and higher studies in different areas. HRMD and MoH could not impose its rules regarding this issue. Eventually, their role was worthless unless through participation in the scholarship committee and making interviews to select candidates. Despite the intensive survey that was preceded for the needs of MoH, mission committee could not apply the results of this survey and most of the time; MoH was offered requisites by donor countries which do not agree with its priorities. Too much loss of opportunities was noticed even after the selection of candidates because of several interferences.
iii. Coordination with universities and health colleges: approaches cooperation, collaboration and unification with academic institutions in the health education field for better determination of actual developmental needs of HR.
iv. Specialty studies: proposing generalization and execution of specialized programmes to doctors, administrators and professionals (Issa, 2005).

Moreover, MoH had gone through serious steps towards the establishment and development of the libraries in hospitals. MoH founded a lot of libraries in many hospitals, health posts and continuously providing these libraries with the updated references and journals (Issa, 2005).

The services provided by PMoH in the past were in low levels. Recently, a lot of changes had been fulfilled in all fields despite constraints and obstacles. MoH had gone through serious development steps towards achieving high quality services that were not even known, e.g. kidney implantation, open heart surgery and the extension and development of the Palestinian hospitals. The Palestinian health sector achieved great progress and a lot of

accomplishments that are considered an advanced model to reform and develop the health system. There is a serious work toward a true reform to this sector and a promising developmental process that guarantees the accessibility to sustainable and high quality services. Lately, MoH published its reports, news, missions and courses on its website for transparency and equivalent opportunities. Palestinian Minister of Health issued a decision for the diploma employees who are head of wards and head of departments that they can study health management in Al-Quds Opened University with the tuitions paid by MoH until 2013 (MoH, 2010).

The World Bank denoted to the superlative development level of the PMoH and considered it as the best in the Middle East area and North Africa. "The PNA has continued to strengthen its institutions delivering public services and promoting reforms that many existing states struggle with," the World Bank report said. The World Bank, which offers advice and resources to developing nations, listed some Palestinian successes, notably in health and education. *http://www.reuters.com*.

2.3 Previous Studies

The previous studies that were related to the study topic were:

2.3.1 Assessment of HR Management Practices in Lebanese Hospitals:

Human resources management practices are a key strategy for retaining effective health professionals in health care organizations. A cross-sectional survey design of HR managers (and those who combine their role as HR managers with other duties) in Lebanese hospitals was utilized .The objective of this study was to assess the perceptions of HR managers about the challenges they face and the current strategies being adopted. Also study aimed at assessing enabling factors including role, education, experience and HR training. The survey included a combination of open- and close-ended questions. A total of (72) hospitals expressed their willingness to participate and (61) hospitals responded to the survey with a total of 96 respondents.

The results showed that from (61) hospitals, (96) respondents who reported the most challenge facing HR were poor retention of employee (56.7%), lack of qualified personnel (35.1%), lack of a system for performance evaluation (28.9%) and continuing education and training for employees (19.6%).

The study concluded that there is a need for a cadre of competent HR managers who can fully take for granted these responsibilities and who can continuously improve the status of employees at their organizations. The results of this study indicated that HRM in Lebanese hospitals should be strengthened in order to build capacity to better manage and retain health workers. The findings showed that not all hospitals clearly delineate the departmental responsibilities for its HRM function. Mismatch between reported challenges and strategies were observed. Authors aggregated that these findings may extend to other countries in the Eastern Mediterranean region **(**El-Jardali**,** Tchaghchagian & Jamal, 2009).

2.3.2 Assessment of Professional Development Needs of Nurses and Midwives:

With the absence of any previous evaluative relevant studies and reviews, a study was conducted to determine the training and development needs of nurses and midwives in Indonesia in 2006.

A valid and reliable training needs instrument was modified for use within the Indonesian environment. It consists of 40 items (all health-related tasks) which have to be rated along two seven-point scales. The first of these scales asks respondents to assess how important the task is to their job and the second scale is a self-assessment of respondents' current performance level of the task. By comparing the importance rating with the performance rating, an index of training need was obtained (high importance and low performance indicating a significant training need). A self-completion survey was administered to 524 nurses and 332 midwives selected from five provinces in Indonesia and representing hospital and community locations and positions, covering both hospital and community staff and an array of midwifery and nursing training and development of a consistent programme of continuing professional development and occupational roles and education and training needs of the respondents.

The results showed that the professional roles of nurses and midwives varied significantly by province with distinctions, but very little discrepancies in the roles of hospital and community midwives. The most educated midwives attributed more significance to 35 out of the 40 tasks, signifying an embedded role feature of activity level .All midwives

reported momentous training needs for all 40 tasks. The most-educated midwives recorded training needs for 24 tasks, while the less-educated had training necessities for all tasks, which suggest that new training programmes are valuable. Few differences in training needs were exposed between hospital and community midwives and nurses .The study concluded the need for further development and training of midwives and nurses in an extensive assortment of tasks. These results provide an efficient and steadfast impression of existing midwifery and nursing roles and development needs and could supply to inform future training.

2.3.3 The Continuous Professional Development; Requirements of Radiographers:

The Higher Education Network for Radiography in Europe (HENRE) carried out a study aiming to investigate through a questionnaire factors relevant to continuous professional development (CPD) in relation to the use of different imaging modalities and role expansion, alongside maintaining a quality service with fewer radiography personnel using co-funding from the European Commission in 12 countries in Europe in 2006 (Cyprus, Estonia, Finland, France, Germany, Greece, Lithuania, Malta, the Netherlands, Norway, Sweden and the United Kingdom).The network facilitates coordination and cooperation of about 50 universities across the European Union simultaneously with the International Society of Radiographers and Radiological Technologists (ISRRT) and European radiographic professional organizations and demonstrated many issues of mutual interests and concerns in the education and training of radiographers.

This study was conducted by Marshall et al., (2006) in which surveys were used to investigate the perceptions of radiographers towards using e-learning and internet. Seven hundred and thirty-four individual questionnaires were distributed with a response rate of 75%. English was the most common language used for the native and non-native of the radiographers for the delivery of CPD. Cross sectional imaging (CT and MRI) was mainly the well-liked part for CPD training while training in digital imaging was also much desired. Longer qualified radiographers specified less importance to CPD while it was important to a large amount of MITs.

The results showed that 5% of radiographers believe that CPD is not important and of the 95% who believed CPD to be either important or very important, the majority (54%)

believed it to be very important. This may be an indication of the developing tendency worldwide requiring MITs to exhibit fitness to perform, with CPD being one way of achieving this. 39% of the respondents were willing to spend between 6 and 10 hours per month on CPD, with the mean commitment of the sample being 7 hours a month.

Respondents preferred CT (49%), MRI (38%) and (37%) preferred digital imaging, while these choices reveal fast development in technology particularly CPD for MITs. The data display that the foremost spot of work practice is plain film radiography with CT, digital imaging and MRI subsequent as the other widespread work areas.

The key finding was that the majority of the sample worked in university teaching hospitals (55%), regional hospitals (27%) while outpatient clinic was the least (1%).

Also this study revealed that many constraints to CPD exist, e.g. costs, work constraints, geographical location, timing, disengagement with the principle of CPD, quality issues with some CPD, lack of confidence, family constraints, perceived lack of benefits, lack of relevance, support and availability of education and training[*].

2.3.4 Impact of Motivation on Productivity of Radiographers:

A study about the motivation of medical imaging technologists was conducted in Nigeria by Okaro et al., (2010). The objective of that study was to determine the impact of motivation on the productivity of healthcare workers with particular reference to the radiographers using descriptive designed questionnaires. 17 respondents of medical imaging technologists in 2 organizations were approached to fill in the questionnaires. The response rate was 100 %. The results showed that technologists were not adequately motivated and this has impacted negatively on their productivity. All medical imaging technologists felt their salaries were not fit and not commensurate with the work they are doing. They believed their salaries were not fair compared to those of the other hospital staff. Working conditions and environment in both organizations were poor. However, the study showed that the radiographers were properly recognized by the management and the radiographer management relationship was not cordial.

Recommendations were as follow:

• The technologists' salaries should be reviewed to be equitable matchable to other staff.

• Installing updated equipment in the radiography departments.

[*] The term "CPD" is commonly used to describe a concept also denoted as "Lifelong Learning", "Continuing Professional Education", "Continuing Vocational Training", "Continuing Education" and "Post Qualification Development" (Houle, 1980; Tann, et al., 2001).

• Protection for both operator and client should be provided in the radiography departments.

• Technologists have to be provided with specific benefits such as subsidies, medical treatment and training.

2.3.5 Palestinian Health Professionals Need for E-learning Facilities to Improve Their Continuing Postgraduate Education:

While advanced Internet technology in health care learning is well established in developed countries, it is only recently becoming adopted in developing countries. This survey which was conducted by the International Medical Education Trust-Palestine (IMET2000-Pal) in 2009 aimed to providing a medium of continuous health education (CHE) and encourage a culture of all-time learning to offer health professionals in Palestine with e-learning services to enable them to follow their postgraduate continuing education, provide learning, educational and continuous training resources. 618 respondents (medical doctors, dentists, pharmacists, nurses and other allied health workers in West Bank and Jerusalem) were interviewed face to face by field workers who were trained prior to the study. The results showed that e-learning was much needed as affirmed by the majority of respondents (95.5%). The majority of respondents (62.6%) favored all types of e-learning methods. However, power point presentation and questions were the most preferred methods of e-learning as indicated by (81.0%) of respondents, followed by on-line articles (79.2%) then videoconferences (76.1%). Time limitation, internet access and computer use were the main three obstacles indicated by the respondents to continue e-learning activities. Also this study showed that for health professionals in Palestine, e-learning has been indicated as an important modality to complement lecture-based learning.

2.3.6 The Internet and the Medical Radiation Science Practitioner:

A study was conducted in Australia by Shanahan et al., in 2007 with the objective to identify the factors limiting practitioner access to the Internet and this research sought to establish the professional use of Internet-based tools by Australian Medical Radiation Science (MRS) Practitioners and issues affecting access to the Internet within MRS workplaces. Quantitative and qualitative methods were used in this study

These approaches included interviews with 28 (MRS) practitioners from four areas of specialization; namely nuclear medicine, radiation therapy, radiography and zonography. A 4-page postal survey was sent to a random sample of 1142 MRS practitioners with a response rate of 32.8% and the results showed that MRS practitioners search the Internet (87%), access specific web pages (86%), use email (82%) and listservs (39.4%) to update their professional knowledge. It was evident that access to the Internet within the workplace varied within the MRS profession. Whilst the majority (96.4%) of MRS practitioners had some level of access to the Internet in their workplace, factors shown to affect practitioner access were workplace setting ($p = 0.000$), work environment ($p = 0.000$), and geographic location ($p = 0.025$). The majority of clinical workplaces (81%) did not provide practitioners with remote access to electronic resources available in the workplace such as e-journals and databases. This research concluded that issues of limiting the accessibility of information available through the Internet to MRS practitioners must be addressed by organizations such as professional societies, registration bodies and workplaces that currently recognize or mandate that MRS practitioners must stay up-to-date with the changing knowledge base of their profession.

2.4 Summary

This chapter has reviewed the historical development of health sector in Palestine and literatures available about the professional developmental needs of allied health care professionals. However, scarce literatures which denote and discuss the radiographers' and the laboratory technologists' development needs in the different sectors.

Chapter Three: Conceptual Framework

3.1 Introduction

This chapter entails the conceptual framework of the study, which is considered as a guide/blueprint for the research process. The framework which was developed after a thorough literature review includes different factors that affect the development needs as management support, continuous education opportunities, career planning, motivation, policies and personal characteristics of the technologists.

3.2 Operational Definitions

Motivation: Has been defined as a predisposition to behave in a purposive manner to achieve specific, unmet needs (Buford, Bedeian & Lindner, 1995); an internal drive to satisfy an unsatisfied need (Higgins, 1994); and the will to achieve (Bedeian, 1993). (Statements 25-28) see annex (4).

Continuous Education Opportunities: Continuous education is an instructional program that brings participants up to date in a particular area of knowledge or skills (Dictionary of the English Language, 2000). (Statements 37-46) see annex (4).

Human Resources Development Policies: Policy is defined as an arrangement of actions and manners that hand out some conclusions such as being convenient or advantageous. Furthermore, as an associate field of political discipline facing the building and decision implementation by administrators and nominated legislators to improve the health and well-being of the public (Miller-Keane Encyclopedia and Dictionary of Medicine, 2003). (Statements 29-36) see annex (4).

Professional Development: Skills and knowledge that are attained for both personal development and career progression. It includes the entire types of facilitated education opportunities, ranging from school degrees to official assignments, conferences and informal opportunities located in practice. It has been described as thorough and collaborative, ideally incorporating an evaluative stage (Speck & Knipe, 2005).

Career Planning: Career development is defined as the total constellation of economic, sociological, psychological, educational, physical and chance factors that combine to shape one's career (Sears, 1982). McPeck (2001) states, "Career plans are about where you are today and, further outstandingly, where you're going tomorrow'' (p. 11). Thus, career planning is about exploration, opportunities and change. (Statements 9-18) see annex (4).

Developmental Needs: The differences between what individuals actually know or practice and the job required as specified by employees' job description (Stout, 1995).

Figure (3.1) illustrates the conceptual framework of the study and the following definitions of the concepts:

3.3 Conceptual Framework

Figure (3.1): Conceptual framework

3.2.2 Motivation:

Motivation encourages people to achieve goals, influence output, and without it little will be achieved in an organization. A well-motivated worker will perform optimally, and increase productivity which can be determined operationally as how efficiently and qualitatively radiographic and laboratory services are provided to the patients. One of the biggest challenges for hospitals today is the availability of a strong, capable, and motivated workforce (El-Jardali, et al., 2009).

Many employees are facing financial troubles to continuing their education, so decision makers have to develop incentive program to motivate and ensure the adequate and appropriate supply of qualified professionals. Many Palestinians face barriers in pursuing education because they are unable to borrow enough money to pursue relatively expensive training, even if that training would pay off over their professional career (Schoenbaum, Afifi & Deckelbaum, 2005).

3.2.3 Continuous Education Opportunities:

Effective certification standards require the availability of high-quality continuing education programs for all types of health professionals. MoH, NGOs, academic institutions and international organizations can apply these programs. However, all continuing education programs should be relevant to local conditions, and they should be accredited. A factor hindering the development of continuing medical education in Palestine is the economic burden CME imposes on providers. Palestinian organizations have started to use remote learning methods for training in health and other areas. Broad use of these methods may facilitate the quality of continuing programs (e.g., by providing easier access to outside experts and internet) and reduce their costs (Schoenbaum, et al., 2005).

It is widely accepted that all professionals should maintain, update and improve their knowledge and skills through the process of continuous professional development (CPD). This may involve a range of learning activities – formal and informal. Many medical imaging and laboratory technologists have difficulty in accessing CPD opportunities, although these difficulties vary according to a range of factors, not least of which the perceptions of the individual practitioners are concerning viable learning opportunities *http://www.bhert.com*

Technological evolution and innovations have already brought far-reaching changes in how most diseases are treated. Hence, health professionals have to adjust their roles and skills. New information technologies and telecommunications have a high prospective for improving efficiency, by allowing health professionals to exchange experimental data over a distance in real time or to have instant admittance to new knowledge (Dussault & Dubois, 2003).

Through the socioeconomic background and health situation in the area, allied health personnel, being the main group of human resources for health, continue to provide care through all general programmes, often under very difficult conditions (WHO, 2005). There is a rising persistence in the region for better-prepared staff at all levels, especially at the superior professional level, and for a spotlight on implementation of management processes contributing to efficiency and effectiveness to ensure retention and development of the health professionals' workforce. There is also increasing demand for reform of allied health education, and for development of new educational programmes and educational capacity-building in post-conflict countries. In many countries, educational schools need to be extended to have room for the number of incoming students, but are hindered by the shortage of qualified allied health teachers. There continues to be a great need in the region for reforms in the basic education of allied health personnel, regulating their practice, improving quality of performance and meeting the continuing education needs of this important resource (WHO, 2005).

3.2.4 Human Resources Development Policies:

In the recent years, growing awareness has been rewarded to the development of health policies. But side by side with the acknowledged remuneration of policy, numerous analysts contribute to the opinion that a major shortcoming of health policies is their failure to make extent for issues of human resources. Current approaches in human resources suggest a number of weaknesses (Dussault & Dubois, 2003).

The World Health Organization Report (2006) launched the Health Workforce Decade (2006–2015), with high priority given for countries to develop effective workforce policies and strategies. In many countries in the Eastern Mediterranean Region (EMR), particularly those classified as Low-Middle Income Countries (LMICs), the limited

knowledge about the nature, scope, composition and needs of HRH is hindering health sector reform. This highlights an urgent need to understand the current reality of HRH in several EMR countries (El-Jardali, Jamal, Abdullah & Kassak, 2007).

To meet the health policy goals, it depends on being able to recruit, train and retain staff with the necessary skills. Governments must accompany health policy goals with planned staffing, setting priorities and taking into consideration the overall resources (The World Bank Group, 2006).

Attention has been paid increasingly to the development of health policies. Many analysts denote that the major barrier of health policies is to make a room for issues of HR. Current approaches in human resources suggest a number of weaknesses: a reactive, ad hoc attitude towards problems of human resources; dispersal of accountability within human resources management (HRM); a limited notion of personnel administration that fails to encompass all aspects of HRM; and finally the short-term perspective of HRM (El-Jardali, et al., 2007)**.**

3.2.5 Management Support:

Management support depends on managers' styles. Possibly the major problem in starting an improvement exertion is getting management support. The first and most important step is to get superior management sponsorship. Without support from the very top, it is commonly unfeasible to make noteworthy changes. Subsequently, however, one will need dynamic contribution from all the appropriate managers, mostly those managers who frankly manage the work to be impacted by the change **(**Humphrey, 2011).

The reason for expansive management support is that momentous improvement programs generally engage considerable changes in the way people work. If you don't change the professionals' working practices, you can change the organizational formation and all its actions, but nothing much will actually change. Thus, to have a substantial impact on an organization's performance, you must change the way the professionals actually work. Whereas this is feasible, it is very complicated, and it requires the support of all levels of management. Higher managers must establish goals and adjust reward systems. And most important, the working-level managers must make the technologists accessible for training, support process development, and supervise the technologists' work to make sure they follow the improved practices **(**Humphrey, 2011).

Management Styles are concepts and theories that affect the common employment situation of an organization. *Http://www.buzzle.com.*

A management style is referred to as the outline of management which the leadership chooses concerning treating staff, relating them in the decision making process, providing them with specific paybacks and parallels other aspects (Rampur, 2010).

Managers act with their workers in different ways. Some are firm with their staff and like to be in complete control, whilst others are more stress-free and set aside workers the choice to run their own working lives. Whatsoever approach is predominately used, it would be imperative to the success of the organization. An organization is only as good as the person running it. A good manager-staff relationship is crucial to build trust between them, while manager can supervise and foster subordinates to develop themselves and meeting their objectives.

Developing efficient management skills to act with challenges in the organization is the critical need in the rapid changing of technology. The new predisposition of training and development of successful organizations worldwide today is developing effective skills in dealing with specific challenge of their own organization to reach their objectives. Quality of the manager and effective management styles can determine the culture of the organization, the productivity of its staff, and, eventually, success or failure. A manager should have the ability to direct, supervise and coordinate (Francis, 2007).

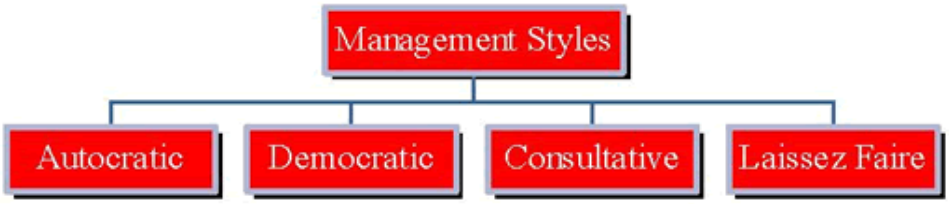
Management styles are as various as the personalities of the people who practice them and the organizations who employ these managers. Although it is generally not a good idea to be too strict or too lax, the success of a range of management styles will ultimately depend on the manager's overall rapport with his employees as well as whether his style is compatible with the culture of the organization. The success of the organization is determined by the means work is organized and by the technique people work with or against each other. The ways in which people work together, the level of their obligation to their organizations depend on the management style. Improving the style of management can increase the effectiveness of operating; improve results obtained and the way in which resources are being used by about 20-30%. The profits made by improving the style of management are very considerable from the point of view of larger satisfaction felt by employees (Davidmann, 2006).

Managers assist employees develop their own and managerial skills. Building the skills of managers is significant to the effective performance of the organization; this is because of the power of a manager to impact the organization through his or her supervision of the work of other employees. Actually, managers in the workplace are the distinct most important feature in employee commitment, employee motivation and building a productive workplace. At the same time, they are the key to employee retention and the principal cause staff leaves their contemporary employer. Accordingly, the need for management development is momentous and can provide a significant payback (Pophal, 1999).

Management styles encompass how they relate to others within and outside the organization, how they view themselves and their position, and - to a very large extent - whether or not they are successful as leaders (Rabinowitz, 2010).

There are several theories discussing the management styles and the followings are summaries of management styles and their effects on an organization:

Figure (3.2.5): Different forms of management styles.



3.2.5.1 Autocratic or Authoritarian style:

It is also known as totalitarianism or dictatorship. In this style, managers have all the power, make all the decisions and the total authority is in their hands and nobody would argue about it. It fabricates an atmosphere of restraint in the organization. Nevertheless, it can cause dissatisfaction and a lack of "creative space" for the employees at different times. The employees are just an expendable resource and not the central part of the organization. The orders are set by the higher level to the lower ones, in which manager thinks in top-down communication. The perception of "employee satisfaction" does not embrace importance for such a manager (Rampur, 2010).

3.2.5.2 Democratic style:

In this style, a democratic manager delegates authority to staff, giving them responsibility to do the task given. Personnel do the tasks using their own methods on time. Employees are involved in decision making giving them a sense of belonging and encouraging individuals and thus the quality of decision making and work also improves. A democratic management style can deliberate decision making because staff needs to be consulted while some employees may take advantage of the fact that their manager is democratic by not working to their complete prospective and allowing other group members to do their jobs. This style is most effective in a situation where the manager wants to teach his workforce how decisions are made (Rampur, 2010).

3.2.5.3 Consultative style:

A consultative management style can be viewed as a combination of the above two. The manager asks perceptions and thoughts from staff, allowing them to feel concerned but will ultimately make the after everything else decision, but keeps “veto power” for final decision. This style focuses on using the skills, experiences and ideas of others (Brown, 2007).

3.2.5.4 Laissez Faire:

Manager sets the tasks and gives staff entire freedom to fulfill the task as they see fit without involving much in the work with a nominal taking part from the manager. The manager however does not sit inactive and watch them work! He or she is there to direct or answer questions, provide information if necessary. The staff is developed to take responsibility that may guide to improved motivation. Yet, with little direct supervision from the manager, employees may start to feel misplaced and not reach the goals originally set within the time frame. The laissez-faire management style is one wherein there is very less communication between the management and the staff (Rampur, 2010).

3.2.6 Career Planning:

There is now an interest in career development by organizations and recognition of a manager’s responsibility for supporting subordinates with career development.

The ultimate aim of each human endeavor is to attain the definitive in one's chosen career. Most often than not, staff move from one job to another in a proposition to catch the essential experience, job satisfaction and eventually increase to the peak of their preferred careers. Certainly, it has not been easy for employers to hold on to most of their esteemed workforce, due to competition. However, career development has been identified as one of the strategic tools which can be used to retain most employees (Grandy, 2010).

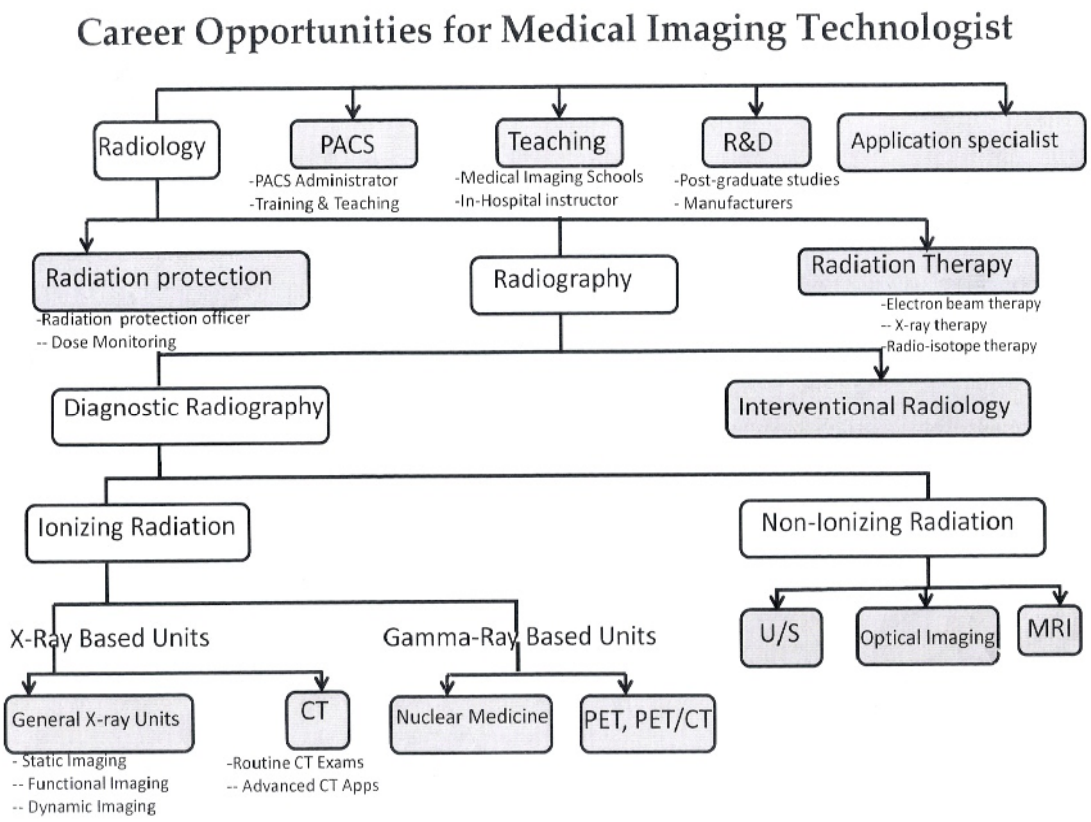
Career development according to Gutteridge (1986) refers to "the outcomes of actions on career plans as viewed from both individual and organizational perspectives". The outcome desired by organizations is achieving the best match between people and jobs. Individuals' desired outcomes range from status to job flexibility to monetary rewards, depending upon the situation (Gutteridge, 1986). Clearly, career development is an important component of human resource management in organizations.

Advances in treatment and diagnosis, require continuous professional development for health workers. In fact, a lifelong learning process must be developed at the beginning of a professional career in the health sector (WHO, 2000). It includes selecting an occupation, getting a job, budding in the job, probably changing careers, and ultimately retiring (Akad Education Group Africa, 2010).

Technologists engaged in large organizations are likely to have improved projections for promotion and can move into management or become specialists in their field e.g. it is commonly possible for medical laboratory technologists to develop an area and become physiologists. Chief laboratory technicians undertake more multifaceted duties, which may include supervision and management responsibilities for a team of staff and the laboratory (Goldfield, 2008). It is relatively frequent for scientific laboratory technologists to hang about in a field for 15-20 years, gaining better management and administrative responsibilities in the fullness of time. Although it is difficult to move from a laboratory technologist position into scientific research, some opportunities do exist and recent evidence of having acquired specialist knowledge or undertaking academic research, such as a Masters Degree or PhD (Goldfield, 2008).

There was widespread consensus that there was a need for improving and retaining highly qualified staff. RAND Corporation recommended the Palestinian institutions to implement a HRD strategy for the health professions to ensure adequate supply of appropriately trained staff (Schoenbaum, et al., 2005).

Figure (3.2.6): Career opportunities for medical imaging technologists



3.3 Summary

This chapter has presented the conceptual framework which consisted of six concepts that was extracted through the available literature reviews. These concepts are: Career Planning, Management styles, Motivation, Human Resources Development Policies, Continuous Education Opportunities and Development and training needs.

Chapter Four: Study Methodology

4.1 Introduction

This study focuses on perceptions of the professional developmental needs of MITs and MLTs in the West Bank. In this chapter, research methodology was presented. The study population and sample size, design, tools and equipment, period, response rate, piloting and the sampling method were described. Moreover, it illustrates validity and reliability of the instrument that constructed and used for the purpose of data collection. The methods of data analysis and ethical matters were also included in this study for both qualitative and quantitative methods.

4.2 Study Design

This study was quantitative and qualitative in nature; the quantitative part was conducted by utilizing a descriptive correlation cross sectional design. According to Polit, Beck & Hungler (2001), the main objective of descriptive research is the accurate description of persons, situations, groups and the frequency with which certain phenomena or characteristics occur. Grove & Burns (1997) had defined the quantitative research as "descriptive designs provide information about a phenomenon." Polit & Beck (2006) mentioned that the quantitative research is a collection and analysis of numeric information that typically conducted within the traditional scientific method. However, correlation is a method designed to determine two or more variables which are associated with each other.

The qualitative method used face to face semi-structured interviews which were conducted to identify the actual training needs of MITs and MLTs in the West Bank. Interviews are a constructive qualitative data collection technique which can be used for a diversity of purposes, as well as needs assessment, schedule enhancement and subject recognition. Interviews are the mainstream fitting for situations in which one likes to ask open-ended questions that bring forth depth of information from relatively few people (Boyce & Neale, 2006).

4.3 Study Tools

Self-administered questionnaire: The tool was developed after thorough review of literature. The most popular of the questionnaire dimensions were constructed using a Likert-type 5 point scale questionnaire. According to Polit and Beck (2006), a Likert scale consists of several items that express a point of view on topic to indicate the respondent agree or disagree with each statement. A Likert scale was weighed as strongly agree=5, agree=4, neutral=3, disagree=2 and strongly disagree=1. In this study, it was used to express the attitudes of the technologists with the aim to cover the most important areas of interest regarding the development and training needs of technologists as a reference for developing the study questionnaire. Quinn (2000) described the questionnaire as "a sequence of questions that the respondent is required to answer "(p.519). Billings and Halstead (2005) defined the questionnaire as a method in which a person answers questions in writing on a form that is usually self-administered. Structured instruments consist of a set of questions (items) in which the wording of both the questions and response alternatives is predetermined (Polit & Beck 2006).

Semi-structured face to face interviews: Another tool was used for further contextual information, about the training needs of technologists; in-depth semi-structured interviews were held (30 MLTs & 30 MITs).

Rita S.Y. Berry (1999) identified interviewing as a type of interview which researchers use to elicit information for achieving a comprehensive considerate of the interviewee's point of view or situation; it can also be used to investigate motivating areas for supplementary analysis. This type of interview involves asking informants open-ended questions and questioning wherever essential to obtain data deemed functional by the researcher. As interviewing often involves qualitative data, it is also called qualitative interviewing.

4.4 Study Variables

Self-administered questionnaire: consists of independent and dependent variables as follows:

1. Independent variables: are the characteristics of the respondents which included: age, gender, qualification, occupational title, sector, experience, marital status and career. Also, independent variables included the followings:

- Career planning and development: (9-18)
- Management styles: (19-24)
- Motivation: (25-28)
- Human resources development policies: (29-36)
- Continuous education opportunities: (37-46)

2. Dependent variable: This included the following:

Training & development needs: Those were subcategorized into:

- Professional training: (47- 49).
- Management training: (50-54).
- Using updated techniques: (55-57).
- Human relationships: (58-62).

3. Questionnaire encompassed open-ended questions as well.

Semi-structured face to face interviews: The second study tool consists of semi-structured face to face interviews for both professions as follows:

1. Independent variables: career and qualification.

2. Dependent variables: included an open-ended question that asked about which training needs would best help to meet the demands in the technologist's post to pursue technological developments, the identification to what extent the technologists need special trainings (annexes 13,14), the best ways for pursuing technological developments and also asked about necessary hours needed monthly to practice the profession.

4.5 Sampling Methodology

Study population

Polit and Beck (2006, p.727) described a population as "the entire group of persons or subjects that is of interest to the researcher, which also meets the criteria which the researcher is interested in studying". Health care professionals were included in this study are two categories:

- Medical imaging. (322)
- Medical laboratories. (2461)

A tool for self-administered questionnaire: A total of (508) health care professionals was approached {(176) MITs and (332) MLTs} while the respondents were (351) technologists (121 MITs and 230 MLTs).

The sample size was calculated by using the sample size calculator. (*http://www.macorr.com/sscalculator.htm).*

A tool for semi-structured face to face interviews: A total of (60) health care professionals were approached {(30) MITs and (30) MLTs}. Semi-structured face to face interviews were introduced to investigate interviewee's points of view and motivating areas for supplementary analysis and involved asking informants open-ended questions to obtain data deemed functional by the researcher. (Annexes 12, 13, 14 and 15).

4.6 Piloting of the Study Tool

The questionnaire was piloted before using in the field. Ten (10) medical laboratory technologists and ten (10) medical imaging technologists were asked to fill in the questionnaires to examine the clarity, validity and comprehensiveness of the instrument. The data gathered from piloting were not included in the main study. The feedback received on the pilot was used to finalize the presentation and wording of the questionnaire and to clarify any unclear question.

4.7 Validity of the Study Tool

After developing the questionnaire, it was sent to a team of (5) experts (Annex 7) in the field of allied health care professions and who have expertise in research to determine whether the items in the questionnaire were relevant and suitable to study purpose. The questionnaire was modified slightly according to experts' suggestions. The researcher responded to the views of the experts and carried out what is necessary to be edited and to be deleted in the light of their suggestions after registration in a form that was prepared for this purpose. According to Polit and Hungler (2001), validity refers to "the degree to which the instrument measures what is supposed to measure "(p.353). The content validity is the degree to which the items in an instrument adequately represent the universe of the content.

4.8 Reliability of the Study Tool

Reliability of the instrument was tested using internal reliability of Cronbach's Alpha. The questionnaire as a total score, showed an excellent coefficient (α = 0.95) for 62 items, and virtually good coefficients for all domains (career planning, management support, motivation, policies, continuous educational opportunities and training needs) were: 0.67, 0.96, 0.85, 0.9, 0.93, 0.93 and 0.93 respectively.

Table (4.1): Data collection instrument reliability.

No:	Field	No. of items	Reliability coefficient
1	**Career planning**	10	0.67
2	**Management support**	6	0.96
3	**Motivation**	4	0.85
4	**Policies**	8	0.9
5	**Continuous educational opportunities**	10	0.93
6	**Training needs**	16	0.93
7	**Total**	**54**	**0.95**

Polit and Beck (2006) defined the reliability of a quantitative instrument as "a major criterion for assessing its quality and adequacy. Instrument reliability is the consistency with which it measures the target attribute "(p.416). Reliability also concerns a measure's accuracy. A reliable measure maximizes the true score component and minimizes the error component (Polit and Beck, 2006).

4.9 Data Collection

Self-administered questionnaire: Data were collected by using a self-administered questionnaire, developed by the researcher through the literature reviews and written in English and then translated to the Arabic language (Annexes 1, 2, 3 and 4). There was no particular difficulty found in translation.

List of technologists' names were taken from the PMTA and PMIA. The participants were selected randomly. Medical imaging and laboratory technologists filled in the questionnaires. Nine (9) technologists refused to participate in the study. The main reason for non-participation was lack of time mostly. One hundred seventeen (117) questionnaires were not returned. Eleven (11) were returned not completed or were not filled in properly

or were not filled in at all without any comments. Thus, three hundred and fifty one (351) questionnaires were available.

Semi-structured face to face interviews: Data were collected using semi-structured face to face interview questions developed by the researcher through the literature reviews. The interviews were carried out in the work settings. Sixty (60) MITs and MLTs were approached and agreed to participate.

4.10 Ethical Considerations

4.10.1 Formal Letter:

Before beginning the study, letters were sent from Al-Quds University to MoH, UNRWA, NGOs and the private institutions and associations (Annexes 8,9,10 and 11) in which the study purpose was explained. An official permission had been asked for the researcher to visit the clinics, universities and hospitals to distribute the questionnaires and to facilitate data collection procedures. The researcher had visited the targeted institutions before beginning of the study in order to get to know the place and to explain the research purpose.

4.10.2 Informed Consent:

An informed consent was attached to the questionnaire. Participants were given full explanations about the research, including the purpose, nature of the study and importance of participation. In addition, the participants were assured confidentiality of information and voluntary participation, and were given total freedom to accept or reject participation in this research (Annexes1 & 3).

4.11 Data Analysis

Results of self-administered questionnaire: Data were entered and analyzed by using (SPSS version 15) (Statistical Product and Service Solutions (formerly Statistical Package for the Social Sciences)). Descriptive statistics including frequencies, means, percentages and standard deviations were computed for continuous numeric variables. An independent t-test, one-way ANOVA statistical test and correlations were used to test the study hypotheses. The relation between the items in the questionnaire and study variables was established.

Pilot and Beck (2006) defined Analysis of Variance (ANOVA) as “a statistical procedure for testing mean differences among three or more groups by comparing variability between groups to variability within groups” (p.711). Also, they defined t-test as “a parametric statistical test for analyzing the difference between means“(p.734). Moreover, correlation was defined as “an association or connection between variables such as variation in one variable is related to variation in another” (p.715).

For each item, the two lowest response categories were combined (strongly disagree and disagree) and the two highest response categories were combined (strongly agree and agree). The midpoint of the scales and missing answers were reported as a separate category (neutral). The categories were combined to increase the score of the positive response rate and to make the results easier to view in the report (Sorra, 2004). In addition, t-test and One Way ANOVA test were used.

Surveys were excluded from the study when:

1. Less than one entire section of the survey is completed.
2. Fewer than half of the items throughout the entire survey (in different sections).
3. Every item the same (e.g., all “4”s or all “5”s). If every answer is the same, then respondent did not give the survey their full attention.

Semi-structured face to face interviews: Data were entered and analyzed by using (SPSS version 15). Descriptive statistics including frequencies, means, percentages and standard deviations were computed for continuous numeric variables. For further contextual information, about the training needs of technologists, 60 semi-structured interviews were held (30 MLTs & 30 MITs). The interviews contained mainly an open-ended question. (Annexes 12, 13, 14 and 15).

All questions were asked in Arabic. Criteria used by interviewer for accepting a response to each of the questions included:

- Clarity of response.
- Specificity of response.
- Relevance of response.

4.12 Period of the Study

This study was conducted within the period September 2010 -December 2011.

4.13 Summary

This chapter offered a synopsis to the study design, study tool, study variables and operational definition of the concepts, sampling methodology, piloting, validity and reliability of the study tool, data collection, data analysis besides to ethical consideration and statistical analyses used in this study and period of the study.

Chapter Five: Analysis and Results

5.1 Introduction

This chapter introduces the survey results including the characteristics of the respondents and the average percentages of the responses for each of the survey's items for the self-administered questionnaire. Moreover, the results of the semi-structured face to face interviews as well as results of hypotheses are presented.

5.2 Socio-Demographic Characteristics of the respondents

The sum of the respondents was 351 with a response rate of 69 %. Table (5.1) shows the sample characteristics.

Table (5.1): Distribution of the respondents according to characteristics and demographic variables.

Variable	Category	Medical imaging		Medical laboratory	
		Frequency	**Percentage**	**Frequency**	**Percentage**
Job (Occupational Title)	Lecturer	2	25.0%	6	75.0%
	Manager	9	39.2%	14	60.8%
	head department	20	33.4%	40	66.6%
	Technologist	90	35.9%	161	64.1%
	other(owner, supervisor)	0	.0%	9	100%
	Total	**121**	**34.5%**	**230**	**65.5%**
Employment Sector	Public	44	35.8%	79	64.2%
	Private	29	28.4%	73	71.6%
	UNRWA	11	31.4%	24	68.6%
	Private for-non-profit	37	40.7%	54	59.3%
	Total	**121**	**34.5%**	**230**	**65.5%**
	PhD	0	.0%	7	100%
	Master	10	27%	27	73%
	high diploma	6	31.6%	13	68.4%

Qualifications	Bachelor	70	32.4%	146	67.6%
	Diploma	31	47.7%	34	52.3%
	high secondary school	4	57.1%	3	42.9%
	Total	**121**	**34.5%**	**230**	**65.5%**
Years of Experience	2-5 years	28	34.1%	54	65.9%
	6-10 years	20	25.0%	60	75.0%
	11-15 years	30	34.5%	57	65.5%
	more than 15 years	43	42.2%	59	57.8%
	Total	**121**	**34.5%**	**230**	**65.5%**
Age Category	25 years or less	25	38.5%	40	61.5%
	26-35 years	28	27.2%	75	72.8%
	36-45 years	52	40.0%	78	60.0%
	more than 45 years	16	30.2%	37	69.8%
	Total	**121**	**34.5%**	**230**	**65.5%**
Gender	Male	95	44.0%	121	56.0%
	Female	26	19.3%	109	80.7%
	Total	**121**	**34.5%**	**230**	**65.5%**
Current Marital Status	Single	24	34.3%	46	65.7%
	Married	94	34.2%	181	65.8%
	Divorced	2	66.7%	1	33.3%
	Widowed	1	33.3%	2	66.7%
	Total	**121**	**34.5%**	**230**	**65.5%**

Job (Occupational Title)

In this study, vast majority (72%) of respondents was technologists (35.9% MITs and 64.1% MLTs), 17% head departments (33.4% MITs and 36.6% MLTs), 6% managers (39.2% MITs and 60.8% MLTs), 2% lecturers (25.0% MITs and 75% MLTs) and 3% were owners or supervisors (100% MLTs).

Employment Sector

Thirty five percent of respondents were working in public organizations (35.8% MITs and 64.2% MLTs), 29% in the private sector (28.4% MITs and 71.6% MLTs), 26% in the non-for-profit (40.7% MITs and 59.3% MLTs) whereas 10% in the UNRWA sector (31.4% MITs and 68.6% MLTs).

Qualifications

As detailed in table (5.1), 62% of the respondents were having bachelor degrees (32.4% MITs and 67.6% MLTs), diploma 19% (47.7% MITs and 52.3% MLTs), Master 10% (25% MITs and 75% MLTs), high diploma 5%, PhD 2% (all PhD respondents were MLTs and none of the MITs respondents were PhD) and high secondary school or equivalent 2% as well (57.1% MITs and 42.9% MLTs).

Years of Experience

Twenty nine percent of the respondents were having more than 15 years experience (42.2% MITs and 57.8% MLTs), 23.4% having 2- 5 year experience (34.1% MITs and 65.9% MLTs), 23% were having 6-10 years (25.0% MITs and 75% MLTs) and 25% were having 11-15 years experience (34.5% MITs and 65.5% MLTs).

Age Category

Nineteen percent of the study respondents were 25 years or less (38.5% MITs and 61.5% MLTs), 37% at the age between 36-45 years old (40.0% MITs and 60% MLTs), 29.3% between 26-35 years of age (27.2% MITs and 72.8% MLTs) and the least 15.1% older than 45 years of age (30.2% MITs and 69.8% MLTs). With the mean age around 35.5 years, it could be indicated that the population of these two professions is young relative to other professions' populations and the number of MITs in the West Bank is increasing and those who will retire in the coming years will be small relative to the increase in their numbers.

Gender

Sixty two percent of the respondents were males (44.0% MITs and 56% MLTs) and 38% were females (19.3% MITs and 80.7% MLTs).The low percentage of female MITs could be due to fear from danger of radiation on females, especially during pregnancy period. According to PMTA 61% of MLTs are females.

Current Marital Status

Table (5.1) shows that 78.3% of respondents characterized themselves as married (34.2% MITs and MLTs 65.8%), 20% were singles (33.3% MITs and 66.7% MLTs), 1% divorced (66.7% MITs and 33.3% MLTs), 1% widowed (33.3% MITs and MLTs 66.7%) as well.

5.3 Analysis of the Factors Influencing Development Needs of MITs and MLTs

To explain the results, the researcher calculated the means at the fields' level to the tool as a whole and to the statements level in each field. The researcher determined the level of degree as shown in table (5.2). It was specified that the length of cells was determined through the Likert-type-five- scale **(**Lower and upper limits) (Madi, 2010).

Table: (5.2): Likert-type-five-scale approval.

No:	Cell length	Degree of agreement	Percentage (%)
1	**1-2.60**	**Low**	**20-52**
2	**2.61-3.50**	**Moderate**	**More than 52-68**
3	**3.51-5**	**High**	**More than 68-100**

5.3.1 Career Planning of the MITs and MLTs in the West Bank:

Table (5.3): Means of career planning domain.

Career planning	A Agree N Neutral D Disagree	Mean	SD	Result	Agreement Degree
I keep myself update in my specialty area	85% 8% 7%	4.25	.856	Area of strength	high
I attend training courses even from my own time	70.6% 19.8% 9.6%	3.53	1.262	Area of strength	high
I plan to continue my study to have higher education than what I'm holding now	70.4 17% 12.6%	3.52	1.230	Area of strength	high
I plan to specialize	69.8% 9% 11.2%	3.49	1.278		moderate
I plan to be promoted to a management position	69% 18.2% 12.8%	3.45	1.275		moderate
I allocate part of my salary to continue my study	63.6% 23.1% 13.3%	3.18	1.342		moderate
I plan to be a consultant in my specialty	63.2% 6% 30.8%	3.16	1.240		moderate
I took advantage of development programs inside the organization	61.8% 2% 30.8%	3.09	1.389		moderate
I joined career development programs the last 2 years	59.8% 6.4% 33.8%	2.99	1.339	Potential for improvement	moderate
I intend to move to another job	48.8% 23.4% 27.2%	2.44	1.340	Potential for improvement	Low
Total: Career planning	66.2% 12.3 21.5%	**3.31**	**0.808**		**moderate**

Table (5.3) shows that means were high to the first three statements whereas the means were between (4.25-3.52), and were in moderate degrees to the statements from (4-9) and

the means ranged between (3.49-2.99), and were low to the statement number (10) with a mean (2.44) and a percentage of (48.8).

Generally, there is a notion that the total value of the professional career planning for the technologists was moderate with a mean (3.31) and a general percentage 66.2%.

5.3.2 Management support in regards to employee development:

Table (5.4): Means of management support domain.

Management Support	A Agree N Neutral D Disagree	Mean	SD	Result	Agreement degree
Accepts new initiative ideas	73.6% 12.3% 14.1%	3.68	1.206		High
Fosters employees' positive behavior in regards to self development	72.8% 10.1 17.1%	3.64	1.239		High
Contributes to overcoming obstacles ceasing development	70.4% 6.6 23%	3.52	1.230		High
Dedicated to specify training needs of the employees	69.6% 7.3% 23.1%	3.48	1.211		Moderate
Motivates workers to supply in self development activities	69.4% 7.5% 23.1%	3.47	1.211		Moderate
Offers support to me to develop myself	68% 12.5% 19.5%	3.40	1.274		Moderate
Total: Management Support	70.6% 12.3 17.1%	**3.53**	**1.115**	**Area of strength**	**High**

It is notable, if not perhaps surprising, that technologists were generally much more satisfied with the managers they work with, (70.6%) of respondents rated their relationship with their managers being supported by as good. It is clear from table (5.4) (means of management support) that the statements (1-3) were with high levels and the means ranged (3.68-3.52) and was in moderate level to the last three statements with means ranging (3.40-3.48) while the total value was high degree with a mean (3.53).

5.3.3 Motivation of MITs and MLTs to develop themselves:

Table (5.5) Means of Motivation domain.

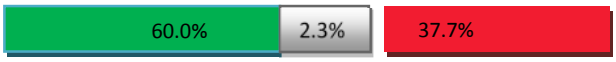
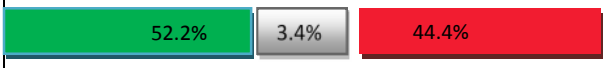
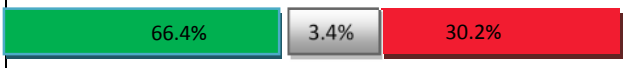
Motivation	A Agree / N Neutral / D Disagree	Mean	SD	Result	Degree of Agreement
The organization offers a study day for employees to continue study		3.19	1.204		moderate
There is a chance for promotion according to qualifications the employee gets		3.13	1.347		moderate
Personnel get financial assistances due to their capabilities		3.00	1.301	Potential for improvement	moderate
The organization grants a financial support for employees to continue study		2.61	1.328	Potential for improvement	moderate
Total: Motivation		**2.98**	**1.077**	Potential for improvement	**moderate**

Table (5.5) shows that the aforementioned statements were with means ranging (2.61-3.19) with moderate values and the total value had also a moderate one with a mean (2.98); this means that the organizations are not introducing acceptable level of motivation to develop the technologists.

5.3.4 Organizations' policies that satisfy the development needs of the MITs and MLTs:

Table (5.6): Means of Policies domain.

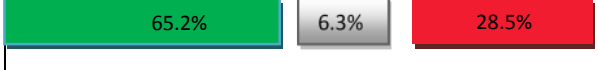
Policies	A Agree N Neutral D Disagree	Mean	Std. Deviation	Agreement Degree
Organization is concerned about keeping up-to date scientific & technological development		3.70	1.225	High
Job descriptions are specifying duties, responsibilities and rights		3.68	1.088	High
Rules and regulations are based on staff development priorities		3.40	1.109	Moderate
Work procedures are simple		3.39	1.143	Moderate
Workshops are conducted to orient employees about evaluation procedures		3.32	1.186	Moderate
Delegation is used as a development tool		3.32	1.045	Moderate
Bachelor degree is the minimum for employment		3.28	1.280	Moderate

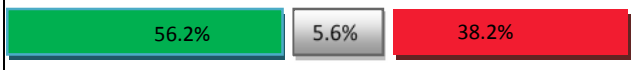
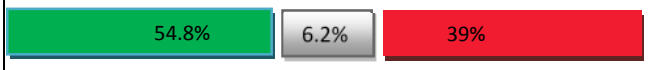
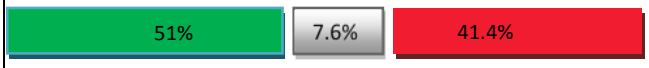
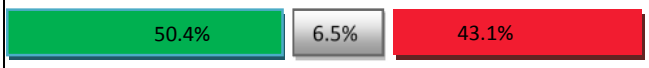
Promotions are based on skills and capabilities		3.28	1.256	Moderate
Total: Policies		**3.42**	**.903**	**Moderate**

To answer this question, analysis was done to the responses of the respondents to the statements of the "policies" domain representing these issues and summed (8) statements. The first and the second statements were of high levels with means (3.70 & 3.68) respectively, and the statements (3, 4, 5, 6, 7, and 8) were of moderate degrees with means ranging (3.40-3.28) and the total value was moderate in its degree with a mean (3.42); this means that the organizations' policies "moderately satisfy" the development needs of the MITs and MLTs in the West Bank.

5.3.5 Continuous education opportunities of the professional developmental needs of MITs and MLTs in the West Bank:

Table (5.7): Means of continuous education opportunities domain.

Continuous education opportunities	Agree / Neutral / Disagree	Mean	Std. Deviation	Result	Agreement Degree
Organization introduces up-to-date information & training to develop human resources		3.36	1.238		moderate
Managers attract qualified trainers to carry out development & training activities		3.30	1.187		moderate
Training courses are set to elevate technical skills		3.27	1.233		moderate
Organization encourages and supports self-development		3.26	1.176		moderate

Organization is keen to attain scholarships abroad to gain international experiences		3.13	1.279		moderate
There are professional development programs in the organization		3.10	1.295		moderate
There is a cooperation with universities & colleges to develop human resources		2.81	1.184	Potential for improvement	moderate
Libraries are equipped with databases and up-to-date information		2.74	1.169	Potential for improvement	moderate
Management allocates part of its budget to staff development		2.55	1.138	Potential for improvement	low
Management is keen to develop staff scientific research skills		2.52	1.146	Potential for improvement	low
Total: Continuous education opportunities		**3.00**	**.951**	Potential for improvement	**moderate**

From the "continuous education opportunities' domain, (table 5.6), respondents felt that their main points of continuing their education opportunities are moderately to low accepted since the first 8 statements gave moderate responses with means ranging (3.36-2.74) and the last 2 statements were of low grades with means (2.55 & 2.52) ,while the total value was moderate with a mean (3.00).

5.3.6 Training needs for the professional development of MITs and MLTs in the West Bank as perceived by them:

Table (5.8): Means of development needs as perceived by respondents

No:	Training needs	Mean	Std. Deviation	Percentage (%)	Degree of Agreement
Professional training:					
1	First aid	3.92	.977	78.4	high
2	Infection & infection control	4.01	.923	80.2	high
3	**Mean**	**3.96**	**.894**	**79**	**high**
Management training:					

4	Laws & rules	3.74	1.029	74.8	high
5	Problem solving & decision making	3.74	1.015	74.8	high
6	Teamwork	3.86	.989	77.2	high
7	Managing stress & conflict	3.79	.989	75.8	high
8	**Mean**	**3.78**	**.927**	**76**	**high**
Using updated techniques:					
9	Using computer related programs	4.42	.744	88.4	high
10	Using related equipment	4.21	1.043	84.2	high
11	**Mean**	**4.32**	**.817**	**86**	**high**
Human relationships:					
12	Communications	3.93	.967	78.6	high
13	Dealing with patients/clients	3.86	.949	77.2	high
14	Dealing with public/relatives	3.90	.975	78.0	high
15	Dealing with employees	3.95	.932	79.0	high
16	**Mean**	**3.91**	**.878**	**78**	**High**
17	**Total: Training needs**	**3.99**	**.879**	**79.75**	**High**

The results of this domain (training needs) demonstrate specifically that the statements have high levels with means ranging (4.42 & 3.74) and the total value was high with a mean (3.99).

5.3.7 Factors that contribute to the professional developmental needs of MITs and MLTs in the West Bank:

Table (5.9): Means of all domains.

No:	Domains	Mean	Std. Deviation	Percentage (%)	Degree of Agreement
1	Management Support	3.53	1.115	70.6	high
2	Policies	3.42	.903	68.4	moderate
3	Career planning	3.31	.808	66.2	moderate

4	Continuous education opportunities	3.00	.951	60.0	moderate
5	Motivation	2.98	1.077	59.6	moderate
6	Training needs	3.99	.879	79.75	high
7	**Total: All domains**	**3.371**	**.955**	**67.42**	**moderate**

The findings from this survey (see table 5.9) demonstrated that (training needs) had a high degree of agreement with a mean (3.99), then (management support) with a high grade and mean (3.53), then in the 3rd place (policies) domain of moderate grade with a mean (3.42) while (career planning) had moderate grade with a mean (3.31), then comes the (continuous education opportunities) domain that had moderate degree with a mean (3.00) and eventually comes (motivation) domain which was the least grade with a mean (2.98) while the total grade was moderate with a mean (3.371).

A conclusion for this could be that the employees revealed that their perceptions towards development needs were highly needed and that they were not motivated enough.

5.4 Suggested training improvements

The results of the answers to the open question of the questionnaire related to suggested training improvements necessary to develop the technologists in the West Bank.

Table (5.10) Suggested training improvements related to open-ended question as perceived by MITs and MLTs:

No	**Suggested training improvements**	**Career**			
			Medical laboratories	**Medical imaging**	**Total**
1	Equitable training opportunities and promote planning for HR through shared responsibilities.	Count	33	18	51
		Percent	64.7%	35.3%	100.0%
2	Improving working conditions, increase of employees numbers.	Count	34	17	51
		Percent	66.7%	33.3%	100.0%
	Reduction of retirement years as low as possible.	Count	23	18	41

3		Percent	56.1%	43.9%	100.0%
4	Improving financial situation, salaries and find incentives and motivation.	Count	25	15	40
		Percent	62.5%	37.5%	100.0%
5	Installment of advanced equipment.	Count	21	14	35
		Percent	60.0%	40.0%	100.0%
6	Internet access to provide CE.	Count	15	12	27
		Percent	55.6%	44.4%	100.0%
7	Holding intensive courses periodically.	Count	18	6	24
		Percent	75.0%	25.0%	100.0%
8	Enlargement of professional association roles.	Count	12	8	20
		Percent	60.0%	40.0%	100.0%
9	Selection & recruitment and contact out of state professionals on internally to update knowledge and train technologists on new technology.	Count	12	4	16
		Percent	75.0%	25.0%	100.0%
10	Leadership courses, peace of mind, promotion of trust in the employee and job security.	Count	12	3	15
		Percent	80.0%	20.0%	100.0%
11	Focusing on specialization to improve results (Angio CT, Endocrinology...).	Count	3	10	13
		Percent	23.1%	76.9%	100.0%
12	Administration support in sustaining employees toward career development & providing opportunities.	Count	7	5	12
		Percent	58.3%	41.7%	100.0%
13	**Total**	**Count**	**212**	**133**	**345**
		Percent	**57.6%**	**42.4%**	**100.0%**

It is worth pointing out that the open-ended part of the questionnaire obtained, revealed appropriate differences in the main concerning points of the participants where most of them asked for equity in the distribution of training and development opportunities without favoritism and preferential treatment; a large number of them revealed that they had been employed for many years and had not a single chance for any training yet. Large part of them proclaimed to have correction of financial measures and demanded for increase in risk allowances, vacations, incentives and rewards. Others asked for emplacing the right

person in the right place, while some of them demanded to activate associations supporting employees' rights. On the whole, respondents were very interested to receive medical education and professional development.

5.5 Hypotheses of the Study

To answer the research hypotheses of the study, the researcher used Anova, t-test and Pearson Correlation.

Hypothesis (1): There are no statistically significant differences at α ≤ 0.05 in the professional developmental needs of technologists according to age.

Table (5.23): Results of hypothesis (1) in the professional developmental needs of technologists according to age.

Hypothesis(1)(Age)		**Sum of Squares**	**DF**	**Mean Square**	**F**	**Sig.**
Training needs	Between Groups	3.673	3	1.224	2.454	0.063
	Within Groups	173.107	347	0.499		
	Total	176.779	350			

Significant at (α ≤ 0.05)

According to table (5.10), the results showed that there are no statistically significant differences at α ≤ 0.05, in the developmental needs of technologists according to age, so we accept the hypothesis to the developmental needs of technologists because the level of significance (0.063) is greater than α ≤ 0.05.

Hypothesis (2): There are no statistically significant differences at α ≤ 0.05 in the professional developmental needs of technologists according to (position) title.

Table (5.24): Results of hypothesis (2) in the professional developmental needs of technologists according to title.

Hypothesis (2) (Title)		Sum of Squares	DF	Mean Square	F	Sig.
Training needs	Between Groups	2.939	6	0.490	0.969	0.446
	Within Groups	173.841	344	0.505		
	Total	176.779	350			

There are no statistically significant differences in the professional developmental needs according to title because level of significance (.446) is greater than α ≤ 0.05.

Hypothesis (3): There are no statistically significant differences at α ≤ 0.05 in the professional developmental needs of technologists according to gender.

Table (5.25): Results of hypothesis (3) in the professional developmental needs of technologists according to gender using one sample t-test.

Hypothesis (3) (Gender)	Gender	N	Mean	SD	T	Sig.
Training needs	male	216	3.88	.718	2.489-	.013*
	female	135	4.07	.684		

This hypothesis was tested using one sample t-test; table (5.18) shows that there are significant differences at ≤ 0.05, so, we reject this hypothesis for the professional developmental needs since the p-value is less than (0.05).Training needs for females were more than that in males since the mean for females was (4.07) and that of the males was (3.88).

Hypothesis (4): There are no statistically significant differences at α ≤ 0.05 in the professional developmental needs of technologists according to qualification.

Table (5.26): Results of hypothesis (4) using One-Way ANOVA in the professional developmental needs of technologists according to qualification:

Hypothesis (4) (Qualification)		Sum of Squares	DF	Mean Square	F	Sig.
Training needs	Between Groups	4.201	5	.840	1.680	0.139
	Within Groups	172.578	345	0.500		
	Total	176.779	350			

This hypothesis was tested using One-Way ANOVA. Table (5.19) showed that there are no significant differences at (α ≤ 0.05) in the professional developmental needs of technologists according to qualification since p-values (0.139) is greater than (α ≤ 0.05).

Hypothesis (5): There are no statistically significant differences at α ≤ 0.05 in the professional developmental needs of technologists according to years of experience.

Table (5.27): Results of hypothesis (5) in the professional developmental needs of technologists using One-Way ANOVA according to years of experience.

Hypothesis (5) (Years of experience)		Sum of Squares	DF	Mean Square	F	Sig.
Training needs	Between Groups	1.866	3	0.622	1.234	0.297
	Within Groups	174.914	347	0.504		
	Total	176.779	350			

This hypothesis was tested using One-Way ANOVA. Table (5.27) showed that there are no significant differences at (α ≤ 0.05) in the professional developmental needs due to the years of experience since p-value is greater than (α ≤ 0.05).

Hypotheses: 6, 7, 8, 9 and 10

Table (5.28): Pearson Correlation between independent and dependent variables.

No	Variable	Pearson Correlation of the professional developmental needs of technologists	Sig. (2-tailed)
1	Management support	0.798*	0.000
2	Continuous education opportunities	0.874*	0.000
3	Career planning	0.687*	0.000
4	Policies	0.867*	0.000
5	Motivation	0.864*	0.000

**.Correlation is significant at the 0.01 level (2-tailed).

Hypothesis (6): There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and management support. Table (5.28).

There is a direct correlation between management support and the training needs of technologists since the p-value 0.000 is less than 0.05 and the Pearson Correlation is 0,798 (nearly 0.80) with a high strong value which means that the manager whom the technologists work with promotes the professional development needs of technologists, they would get more development and satisfaction with themselves. (We reject the hypothesis).

Hypothesis (7): There are no correlations at $\alpha \leq 0.05$ between the professional developmental needs of technologists and continuous education opportunities. Table (5.28).

We reject this hypothesis since there is a direct correlation between continuous education opportunities and the training needs of technologists since the p-value 0.000 is less than 0.05 and the Pearson Correlation is 0,874 with a high strong value which means that since there are continuous education opportunities, the professional development needs of technologists would be more beneficial for the technologists.

Hypothesis (8): There are no correlations at α ≤ 0.05 between the professional developmental needs of technologists and career planning. Table (5.28).

There is a direct correlation between the career planning domain and the training needs of technologists since the p-value 0.000 is less than 0.05 and the Pearson Correlation is 0,687 with a moderate value.

Hypothesis (9): There are no correlations at α ≤ 0.05 between the professional developmental needs of technologists and policies. Table (5.28).

There is a direct correlation between the policies domain and the training needs of technologists since the p-value 0.000 is less than 0.05 and the Pearson Correlation is 0,867 with a high strong value which means that since there are policies promoted by the organizations, the professional developmental needs of technologists would be more beneficial for the technologists.

Hypothesis (10): There are no correlations at α ≤ 0.05 between the professional developmental needs of technologists and motivation. Table (5.28).

There is a direct correlation between the motivation domain and the development needs of technologists since the p-value 0.000 is less than 0.05 and the Pearson Correlation is 0,864 with a high strong value which means that since there is motivation offered by the organizations, the development needs of technologists would be more beneficial for the technologists.

5.6 Results of Face to face semi-structured interviews

5.6.1 Medical laboratory technology:

Main Findings

The majority (56.7%) of MLT respondents has BSc degrees followed by diploma holders (20%) then Master holders (13.3%) while the least were from PhD holders (10%).

Table (5.11): Qualifications of MLT respondents

No	Qualification	Frequency	Percentage (%)
1	Diploma	6	20
2	Baccalaureate	17	56.7
3	Master	4	13.3
4	PhD	3	10
5	Total	30	100.0

Requirements that would best help MLTs in meeting post demands. Eighteen (18) comments regarding training and requirement needs were made by the respondents. Comments were categorized into training needs and training requirements.

Table (5.12): Training requirements of MLTs

No:	Training requirements of MLTs	Frequency	Percentage (%)
Management and administration:			
1	Planning and designing programs according to needs.	3	3.3
2	Facilitating approaches that include new scientific advancements.	6	6.6
Advancement and professional development:			
3	Keeping up to date with technology.	7	7.8
4	Updating programs.	2	2.2
5	Opening new opportunities in life and work.	2	2.2
6	Adoption of international standards and protection techniques.	4	4.4
Resources other than human:			

7	Utilizing internal and external resources and courses, missions, lectures, journals and workshops.	27	30
8	Availability and access to internet and video conference facilities for exchanging information.	23	25.5
Teaching/learning process:			
9	Upgrading academic members in teaching and education.	6	6.6
10	Utilization of advanced approaches in learning and education.	2	2.2
11	Increasing opportunity for academic members to continue education and E-learning and remote education.	7	7.8
12	Conducting more evidence based researches.	1	1
13	**Total**	**90**	**100**

The most training requirements that were demanded by MLTs are utilizing internal and external resources and courses, missions (scholarships), lectures, journals and workshops which had a (30%) of responses, also (25.5%) demanded availability and access to internet and video conference facilities for exchanging information, (7.8%) asked for increasing opportunity for academic members to continue education and E-learning and remote education, keeping up-to-date with technology also had a (7.8%) and (1%) demanded for conducting more evidence based researches.

Table (5.13): Training needs of MLTs

No:	Training needs of (MLTs)	Frequency	Percentage (%)
Management and administration:			
1	Offering courses in computer skills.	4	12.9
2	Q.C. and T.Q.M. training.	4	12.9
3	Communication.	2	6.4
4	Patient safety and practices.	2	6.4
5	Management training.	3	9.6
6	Training on new equipment.	16	51.6
7	**Total**	**31**	**100**

In the training needs, more than half of respondents (51.6%) proclaimed for training on new equipment, while (12.9%) demanded courses in computer skills, also (12.9%) asked for quality control and total quality management. (12.8%) asked for communication and patient safety and practices.

Table (5.14): Specialized training needs as identified by MLT respondents.

Descriptive Statistics				
No:	**Test**	**Mean**	**Std. Deviation**	**Percentage (%)**
1	Histopathology	3.17	1.262	63
2	Cytopathology	3.07	1.230	61
3	Electron microscopy	3.23	.898	65
4	Bacteriology	4.80	.407	96
5	Virology	4.27	.691	85
6	Parazitology	4.63	.490	93
7	Immunology	4.63	.718	93
8	Mycology	3.93	1.081	79
9	Enzymology	4.47	.507	89
10	Endocrinology	4.43	.728	89
11	Hematology	4.80	.407	96
12	Genetics	4.03	.999	81

According to this study, hematology, bacteriology, parazitology and immunology were mostly needed as stated by the majority of MLT respondents. The least percentages were cytopathology, electron microscopy and histopathology.

Table (5.15): Best continuous education approaches selected by MLTs for modern technology innovations according to respondents

No:	Approach	Frequency	Percentage (%)
1	Scientific journals	11	11.5
2	Internet	25	26.0
3	Scientific lectures	17	17.7
4	Local trainings	18	18.8
5	Abroad missions	25	26.0
6	**Total**	**96**	**100.0**

The majority of MLTs respondents (26%) privileged internet access scheme as well as abroad missions with the same percentage (26%), followed by (18.8%) did prefer local training approach then (17.7%) advantaged scientific lectures while (11.5%) expressed their interest in medical/health science journals.

Table (5.16): Hours needed monthly by MLTs to update techniques according to respondents

No:	Hours	Frequency	Percentage (%)
1	4 hours	1	3.3
2	6 hours	7	23.3
3	8 hours	3	10.0
4	10 hours	19	63.3
5	**Total**	**30**	**100.0**

Findings regarding the necessary hours the MLT needs in a month to be efficient to practice the profession and to develop oneself indicated that (63.3%) preferred 10 hours followed by (23.3%) chosen to spend 6 hours then (10%) favored 8 hours while one respondent (3.3%) had a preference of 4 hours/month.

5.6.2 Medical imaging:

Table (5.17): Qualifications of MIT respondents

No:	Qualification	Frequency	Percentage (%)
1	High secondary school/practice	1	3.3
2	Diploma	8	26.7
3	Baccalaureate	14	46.7
4	Master	7	23.3
5	**Total**	**30**	**100.0**

Main Findings:

The majority (46.7%) of those MIT respondents has BSc degrees followed by diploma holders (26.7%) then Master holders (23.3%) while the least was one from high secondary school practice.

Table (5.18): Training requirements of MITs according to respondents

No:	Training requirements of MITs	Frequency	Percentage (%)
Management and administration:			
1	Planning and designing programs according to needs	1	1.3
2	Facilitating approaches that include new scientific advancements.	2	2.7
Advancement and professional development:			
3	Keeping up to date with technology.	6	8
4	Updating programs.	2	2.7
5	Opening new opportunities in life and work.	3	4
6	Adoption of international standards and protection techniques.	4	5.4

Resources other than human:			
7	Utilizing Internal and external resources and courses, missions, journals, lectures and workshops.	20	27
8	Availability and access to internet and video conference facilities for exchanging information.	22	29.7
Teaching/learning process:			
9	Having more specialization options in universities.	1	1.3
10	Upgrading academic members in teaching and education	7	9.5
11	Utilization of advanced approaches in learning and education.	2	2.7
12	Increasing opportunity for academic members to continue education and E-learning and remote education.	4	5.4
13	**Total**	**74**	**100**

The most training requirements advantaged by MITs were the availability and access to internet and video conference facilities for exchanging information (29.7%) followed by utilizing internal and external resources and courses, missions, journals, lectures and workshops (27%), upgrading academic members in teaching and education (9.5%) and having more specialization options in universities(1.3%).

Table (5.19): Training needs of MITs according to respondents

No:	Training needs of MITs	Frequency	Percentage (%)
Management and administration			
1	Offering courses in computer skills.	14	39
2	Training on new equipment.	14	39
3	Patient safety and practices.	2	5.4
4	Management training.	6	16.6
5	**Total**	**36**	**100**

The most training needs demanded by MITs were offering courses in computer skills (39%), as well as (39%) asked for training on new equipment, also (16.6%) asked for management training and (5.4%) demanded patient safety and practices.

Table (5.20): Specialized training needs as identified by MIT respondents.

No:	Test	Mean	Std. Deviation	Percentage (%)
1	Plain x-ray	2.87	1.306	57
2	Fluoroscopy	3.93	1.048	79
3	Digital imaging	4.80	.610	96
4	CT	4.73	.450	95
5	MRI	4.43	.774	89
6	Ultrazonography	2.57	1.223	51
7	Mammography	2.50	1.167	50
8	Nuclear medicine	4.20	1.031	84
9	Angio CT	4.33	.959	87

According to this study, digital imaging and CT were highly needed as stated by the majority of respondents followed by MRI and Angio CT. The least percentages were Mammography and Ultrazonography.

Table (5.21): Best continuous education approaches selected by MITs for updating modern technology innovations according to respondents

No:	Approach	Frequency	Percentage (%)
1	Scientific journals	5	5.7
2	Internet	27	30.7
3	Scientific lectures	12	13.6
4	Local trainings	23	26.1

5	Abroad missions(external scholarships)	21	23.9
6	**Total**	**88**	**100.0**

The majority of MIT respondents (30.7%) did prefer internet access to convoy the contemporary technological developments in their area followed by trainings (26.1%) then the abroad missions (23.9%), scientific lectures (13.6%) while the least (5.7%) expressed their interest in medical/health science journals.

Table (5.22): Hours needed monthly by MITs to update techniques according to respondents

No:	Hours	Frequency	Percentage (%)
1	6 hours	4	13.3
2	8 hours	7	23.3
3	10 hours	19	63.3
4	**Total**	**30**	**100.0**

Findings regarding the necessary hours the MITs need monthly to be competent to practice the profession and to expand themselves indicated that (63.3%) preferred 10 hours followed by (23.3%) preferred to spend 8 hours while (13.3%) had a preference of 6 hours/month.

5.7 Summary

This chapter introduced the results of the statistical analyses of the questionnaire in this study, socio-demographic factors and answered the study hypotheses of this study.

Chapter Six: Discussion and Implications

6.1 Introduction

This chapter introduces discussion and implications of the findings of quantitative self-administered questionnaire and qualitative face to face semi-structured interviews.

6.2 Socio-Demographic Factors Associated with the Study Results

230 (66%) of the respondents were medical laboratory technologists and 121(34%) were medical imaging technologists.

As revealed by the responses of the technologists, most of them were clinical technologists (251) with (71.5%) and 40 (11.4%) were head wards and 8 (2.3%) were lecturers. However, there are no significant differences between the needs due to occupational title.

216 (62%) were males and 135(38%) were females, viewing a spacious gap and this could be associated with the socio-cultural factors affecting this observable fact e.g. Arab families have a preference to send their sons rather than daughters to study in a foreign country. There are significant differences at ($\alpha \leq 0.05$) in the training and development needs related to gender since p-values (0.013) is less than (0.05). Training needs for females were more than that in males since the mean for females was (4.07) and that of the males was (3.88).

The researcher attributes that to the willingness and needs of females to develop their skills and knowledge and to prove they are capable of doing the tasks that require skills, and this is consistent with the study conducted by (Obaid, 2009) and contrast to the study of (Lozi, 1998) which indicated the difference in favor to the males who attributed that to the difference of culture due to time dissimilarity.

These results suggest that there are six academic levels ranging from doctorate (Ph.D.) degrees to high secondary school or equivalent ones; 8 of the respondents (2.3%) are doctorate degree holders (all of them are medical laboratory denoting that the highest level of the MITs is the master degree), 36 (10.3%) are Master degree holders, 19 (5.4%) are high diploma holders, 216 (61.5%) are baccalaureate degree holders, and high secondary

school or equivalent are 7 presenting 2% holders. It is worth mentioning that a lot of technologists are orienting towards raising their academic levels to improve their financial and social situations which may lead to less concentration on the mid-level and clinical studies and focus on the high academic studies, baccalaureate, master or doctorate. This – negatively- affected the level of technical and clinical services delivery where the numbers of higher education certification holders have increased at the expense of the clinical personnel who pears the most burden in direct service delivery to patients and this corresponds to the study done by Issa (2005).

It is noted that baccalaureate holders equal 61.5%, and this is consistent with the study done by Abu Asaker (2008), Sheikh Khalil (2008) and Obaid (2009). This is attributed that most of the universities are teaching baccalaureate degrees and above. In Al-Quds University, there are specific programs to upgrade medical imaging technologists who hold the diploma degrees into bachelor holders, increasing and developing the academic cadre, expanding a baccalaureate program in medical imaging to contain major and minor programs such as “medical imaging and computer” and the establishment of a continuous education center (Hjouj, 2010).

Results showed that there are no significant differences at ($\alpha \leq 0.05$) in the training needs related to qualification since p-values (0.139) is greater than ($\alpha \leq 0.05$).

Within our study, the age category to the most of technologists (130) shows that it is ranging between 26-45 (66.3%) years of age signifying that this population of these two professions is relatively young in respect to the populations of other countries e.g. 31% of the population of the United States are less than 40 years (Bouvier, 1998), and the number of the technologists who are going to retire in the coming future is relatively few. According to a study conducted by (Kharouf, 2010), this indicates that the MITs’ population is a young population. Results show that there are no statistically significant differences in the training needs due to the age variable.

6.3 Factors Affecting Development

6.3.1 Career planning:

Table (5.3) suggests that the mean for the degree of agreement of the career planning is (3.31) and the percentage (66.2%) and all means ranging between (4.25-2.44) signifying that the responses of the respondents in this field were relatively moderate due the accredited test in this study. And the percentage (66.2%) is not high enough while this is attributed that most of technologists provide interest as possible to the career planning but did not attain to a high enough degree and had no enormous impact, also technologists were working by themselves and not driven by their organizations.

The study showed that 70.6% of the respondents had joined training courses from their own time and 63.6% allocated part of their salaries to continue their studies. Also 70.4% are planning to continue their studies to attain higher education, and 69.8% and 69% are planning to specialize professionally. 69% are planning to be promoted a management position.

It is also noted that 59.8% of the technologists had joined career developments programs the last 2 years. This reflects the need to develop career planning programs by human resources development.

Statement (1):" I keep myself update in my specialty area." came in the first rank. The mean (4.25) and the percentage 85% imply that technologists agree to this statement with high agreement level. This result assures that the technologists in the W.B. are aware to and working incessantly to be familiar to everything new in their field especially the accelerating computer technology for its crucial role in having improved and better test results. This is consistent with the study done by (Marshall et al., 2006) were 95% who believed that CPD either important or very important and this maybe an indication to the developing tendency worldwide requiring medical technologists to exhibit fitness to perform and being innovative in their knowledge and skills.

Statement (2):"I attend training courses even from my own time". The mean (3.53) and the percentage 70.6% signify that technologists agree to this statement with high approval degree, this result had the second rank. This stresses that technologists are always trying to improve themselves hardly even if that was at the expense of their own time and this is

consistent with the study done by (Marshall et al .,2006) that most technologists would be fervent to spend their own time on CPD with a standard time of seven hours/month.

Statement (3):" I plan to continue my study to have higher education than what I am holing now" where the mean 3.52 and the percentage 70.4% have a high level of agreement where the numbers of higher education certifications holders have increased at the expense of mid-level clinical holders. This is concurrent with the study done by (Issa, 2005).

Statements (4&5):"I plan to be promoted to a management position" and to specialize". The mean 3.45 and the percentage 69% correspond to the study done by (Issa, 2005) that found technologists and nursing are orienting to the field of management towards raising their academic level and also coincides with the study by (Harper, 2005) that showed many allied health care professionals choose to move out from clinical areas into management and educational fields.

Statement (6):" I allocate part of my salary to continue my study" the mean 3.18, percentage 63.6% with a moderate rank suggest that technologists are accepting to spend part of their salaries to continue their studies. This is inconsistent with the findings of the study conducted by (Marshall et al., 2006) that denoted cost was a constraint of the CPD for technologists.

Statement (7):" I plan to be a consultant in my specialty. "The mean was 3.16, percentage 63.2% with a moderate degree signify that technologists are tending to be promoted to a consultancy degree.

Statement (8):" I took advantage of development programs inside the organization" the mean 3.09 and the percentage 61.8% with a moderate to low degree suggesting that technologists had gained slight chances of benefits in their organizations and this coincides with The 5 Year Strategic Plan for the Development of Medical Imaging Department /Allied Health professions/Al-Quds University as denoted with the objectives of increasing and developing the academic cadre and expanding a baccalaureate program in medical imaging to contain major and minor programs such as "medical imaging and computer" (Hjouj, 2010).

Statement (9):" I joined career development programs the last 2 years" The mean 2.99, percentage 59.8%. Despite this statement was moderately ranked, these programs are not

enough and the researcher finds that increasing those programmes for the technologists may improve and upgrade their performances.

Statement (10):" I intend to move to another job." The mean 2.44 and the percentage 48.8% signify that technologists do not agree to this statement with a low rank and intended not to move out from their careers to another job and this is inconsistent with the study done by (Issa, 2005) and also does not coincide with the study by (Harper, 2005) that showed many allied health care professionals choose to move out from clinical areas into management and educational fields.

6.3.2 Management Support:

Table (5.4) suggests what respondents are likely to consider their relationship with managers they work with as good with a high level rank mean 3.53 and a percentage of 70.6%.

Statement (1):"Manager accepts new initiative ideas". The mean 3.68, percentage 73.6% got a high level with the first rank. The researcher indicates the employee–employer relationship derives its vitality from good acceptance of new ideas from the employee to the manager. This is consistent with Burns (1978) who said that the leader is always looking for ideas that move employees in the organization to reach the company's vision, and both have the ability to raise each other to higher levels of motivation.

Statement (2):"promotes employees positive behavior in regards to self development" the mean 3.64, percentage 72.8% signify that the population sample agrees to this statement so that impact is relatively high in promoting positive behavior to the technologists.

Statement (3):"Contributes to overcoming obstacles ceasing development". The mean 3.52 and the percentage 70.4% indicate that technologists agree to this statement with a high degree according to the accreditation test.

Statement (6):"Lends a helping hand and offers support to me to develop myself". The mean 3.4, percentage 68% tell that they agree to this statement with a moderate degree according to the accreditation test.

In general, these results were surprising somewhat. The total mean 3.52, percentage 70.6% with a high grade level signifying that management support had a strong crucial role in coping with technologists. The researcher attributes that a lot of technologists trust their managers or maybe the ability of employers to address employees and convey the objectives is plainly satisfactory. This was on the wane with the study conducted by (Obeid, 2009).

6.3.3 Motivation:

Statement (1):" The organization offers a study day for employees to continue study". The mean 3.19 and the percentage 63.8% show that technologists agree to this statement in a moderate degree. The researcher perceives that most technologists working in the public sectors may have study days, while in other sectors don't, and that requires from the sectors' managements to proffer study days to their employees.

Statement (2):" There is a chance for promotion according to qualifications the employee gets". The mean 3.13, percentage 62.6% mean that the respondents are neutral to this statement and the researcher perceives that impartiality here means negativity because if there was a promotion due to capabilities, this would be apparent unequivocal which indicates managements have to change its procedures in coping with employees to serve them in better ways.

Statement (3):"Personnel get financial assistances due to their capabilities". The mean 3.00 and percentage 60% show that they neutralized this statement in a moderate degree. The researcher considers this neutrality a negative issue because workers either they get financial allowances or they don't. The researcher thinks – according to the mean and percentage– that some get financial assistances while other organizations do not bestow any financial assistance.

Statement (4):" The organization grants a financial support for employees to continue study ".The mean 2.61, percentage 52.2% mean that the respondents do not agree to this statement and this calls for interference to afford financial support for employees to continue their study especially the private sector, NGOs and UNRWA sectors. The private sector is the most organization that offers financial support for employees to continue their studies.

In general, the total mean was 2.98, percentage 59.6% with a moderate grade according to the accreditation test suggesting that technologists are not motivated enough and this was consistent with the study conducted by (Okaro et al., 2010) and also with the study conducted by (Obeid, 2009).

6.3.4 Policies:

Statement (1):"Organization is concerned about keeping up-to-date scientific & technological development". The mean is 3.7 and percentage 74%. This indicates that organizations are keen to bring advanced equipment, machines and technologies to its facilities.

Statement (2):"Job descriptions are specifying duties, responsibilities and rights ".The mean is 3.68, percentage 73.6% with a high grade level implying that most of technologists agree to this statement and this is inconsistent with the study done by (Obeid, 2009) who indicated that there is no real job description specifies duties and responsibilities and that is one of the occupational problems in MoH while this is attributed to the concession of "some authorities' owners".

Statement (3):"Setting priorities and development of rules and regulations that is related to staff development". The mean is 3.4, percentage 68% suggest that the respondents moderately agree to this statement where they see that rules and regulations are designed based on staff development priorities provided by the organizations. Despite that, commitment to update rules related to development requires back-up for carrying out to be successful for both the organization and the individuals reflected eventually to the client's health.

Statement (4):" Work procedures are simple". The mean 3.39, percentage 67.8% with a moderate degree and that was contradictory to the study done by Obeid (2009) and compatible to the study done by Othaqi (1998) that indicated the complexity of regulations and procedures negatively affect the performance and limit developments.

Statement (5):" Workshops are conducted to orient employees about evaluation procedures". The mean is 3.32 and the percentage 66.4% with a moderate degree.

According to Abu Amer (2008), the organization conducts workshops to disseminate quality among employees through workshops to ameliorate performance.

Statement (6):" Delegation is used as a development tool". The mean is 3.32 and the percentage 66.4% with a moderate degree. Delegating employees reflects the necessity in achieving quality management and eventually attaining high satisfaction in self-development.

Statement (7):" Bachelor degree is the minimum for employment". The mean is 3.28 and the percentage is 65.6%. Most employees are bachelor degree holders and that is attributed to most universities graduate bachelor degree certifications. According to that, we find that human resources with bachelor certificates are mostly available.

Statement (8):" Promotions are based on skills and capabilities". The mean is 3.28 and the percentage is 65% with a moderate to low degree had the last rank. The researcher attributes that to two reasons; first: not taking advantage of performance appraisal for promotion purposes, and secondly: most of the time, promotion is based on personal issues or factious (partisan) away from professionalism.

However, it should be noted that, as with these moderate results, the detailed interpretation for these different results revealed weak inadequate levels of the policies offered by health organizations.

One explanation for this could be the lack of specificity of the typical policies descriptions. Another explanation could be that the policy of an organization to develop its employees is not being implemented on equitable and merit basis.

6.3.5 Continuous education opportunities:

Statement (1):"Organization introduces up-to-date information & training to develop human resources". The mean is 3.36, percentage 67.2% imply that most of the respondents agree to this statement in a moderate degree according to the accreditation test. The researcher assures the importance of up-to-date information in achieving tasks well, saving time and effort, fastness and accuracy in the attainment of information and its feedback. Up-to-dating information refers mostly to computerization which in turn is considered as a reference to all employees in the organization and lessens inaccuracy and errors, thus,

increases the competency and quality of work provided. This is consistent with the study conducted by Abbas (2002) that denoted to the existence of mutual and reliable intercourse between health management for quality and updating information.

Statement (2):“Managers attract qualified trainers to carry out development and training activities” The mean is 3.3 and the percentage 66% with a moderate degree. The heed of organizations in attracting qualified trainers and recruiting skilled competencies to undertake development actions is a priority for the organization that demands betterment of staff.

Statement (3):“Training courses are set to elevate technical skills “.The mean is 3.27 and the percentage 65.4%. Despite this statement had a moderate rank, there is a dereliction in the increase of staff experiences through training courses in this domain. This coincides with the study conducted in Indonesia that concluded the need for further development and training of staff in an extensive assortment of tasks. These results provide an efficient and steadfast impression of existing staff roles and development needs and could supply to inform future training.

Statement (4): “Organization encourages and supports self-development”. The mean 3.62, percentage 65.2%, mean that the respondents agree to this statement in a moderate agreement and an example of this was the promotion for head wards by MoH to study health management in Al- Quds Opened University (MoH, 2010). Palestinian minister of health issued a decision for the diploma employees as head wards and head departments that they can study health management in Al-Quds Opened University with the tuitions paid by MoH until 2013 (MoH 2010).

Statement (5): “Organization is keen to attain abroad scholarship to gain international experiences”. The mean 3.13 and percentage 62.6% are of suggestive of not agreement to this paragraph. This is incoherent to the study of (Issa, 2005) which said that mission committee was founded to develop capabilities of health professionals to have more scientific, professional and high studies in different areas and contributions in conferences at all levels. The researcher attributes this contradiction to the partiality and favoritism of some influential persons in their jobs.

Statement (6):“There are professional development programs in the organization”. The mean is 3.1 and percentage 62% with a moderate to low degree according to the accreditation test. The researcher denotes that health organizations do not undertake a substantial importance in concentrating on professional development programs.

Statement (7): “There is cooperation with universities & colleges to develop human resources”. The mean is 2.81 and percentage 56.2% signify that the technologists do not agree to this statement. This is conflicting to the study of (Issa, 2005) which indicated collaboration and unification with academic institutions in the health education field for better determination of actual development needs of HR.

Statement (8): “libraries are equipped with databases and up-to-date information” The mean is 2.74 and percentage 54.8% mean that technologists do not agree to this statement. This is contraindicated to the study of (Issa, 2005) which indicated that MoH had gone through serious steps towards the establishment and development of the libraries in hospitals. MoH founded a lot of libraries in many hospitals, health posts and continuously providing these libraries with the updated references and journals.

Statement (9): “Management allocates part of its budget to self development” Technologists indicated low grade to this statement through a mean of 2.55 and percentage 51%, which is symptomatic of disagreeing of technologists towards this issue which is unswerving to the study by (Obeid, 2009).

Statement (10): “Management is keen to develop staff scientific research skills“. Also technologists pointed out low grade to this statement though a mean of 2.52 with a percentage 50.4% signifying that they don’t agree to this statement which is differing to the study by (Issa, 2005) that stated MoH had developed a research unit to deliver a prominent contribution in maturing scientific research, supporting and refraining researchers to accomplish their researches.

generally, the total mean of “continuous education opportunities” domain equals 3.00, percentage 60% with a moderate to low grade due to the accreditation test suggesting that there are limitations of continuous education opportunities due to lack of integrated plans specifying the development and mismatch of continuous education opportunities with the job requirements while tuitions are a main restriction. This study aligns with the Obeid

study (2009) argument and disagreed with Issa (2005) and consistent with the study by Schoenbaum et al., (2005) which denoted that the economic burden is a factor hindering the development of continuing medical education in Palestine.

6.3.6 Training needs:

Statement (1):"The need for using related equipment" ranked in the first place with a mean 4.42 and percentage 88.4% with a high grade according to the accreditation test signifying that the respondents agree to this need.

correspondingly, statements of all training needs which their means ranging (4.42 – 3.74), percentages ranging (88.4% - 74.8%) indicate high grades of demands signifying that the largest number of MITs & MLTs need these trainings. The ultimate monitoring outcomes revealed that training needs had the highest degree of technologists' needs where the total mean was 3.99 and the percentage 79.75% indicating that they badly in need for training needs and mostly using related equipment and using computers related programs. Addition to this, they concern about the need for attaining training courses in infection & infection control, dealing with employees, communications, problem solving and decision making and team working. Hence, there is a clear need to capture the training needs seriously. Also, national core curricula including teaching skills and knowledge should be tailored to address these needs. There should be adequate instrumentation with an induction process for these technologists' needs while control and supervision by managements must also be insured.

6.4 Discussion of Face to face semi-structured interviews

Findings regarding the necessary hours the technologist needs monthly to be efficient to practice the profession and to develop oneself indicated that 63.3% preferred 10 hours and this is inconsistent with the study conducted by Marshall et al., (2006) that indicated 7 hours per month on CPD.

CT, MRI and Angio CT were mainly the most needed parts for CPD training for MITs and this corresponds to the study conducted by Marshall et al., (2006), while less importance was given to Ultrazonography and Mammography.

According to this study, hematology and bacteriology were highly needed as stated by the majority of MLT respondents. The least percentage was cytopathology and histopathology.

The majority of MIT respondents (30.7%) did prefer internet access to access information related to their field and this is consistent with the study conducted by Shanahan et al., in 2007 that indicated that the majority of practitioners search the internet (87%) to update their professional knowledge.

6.5 Summary

This chapter presented the discussion and implications of the major findings related to this study with the comparison to the results of other studies conducted in the related fields and to the related conceptual models. Consistency and inconsistency of the findings are also compared to other studies related to this field.

Chapter Seven: Conclusions and Recommendations

7.1 Introduction

This is the first study in Palestine which identified the perception of professional developmental needs of MITs and MLTs in the West Bank taking into concern the effect of the socio-demographic factors and the personal characteristics on the development needs of the technologists, more prominently, to put into action the recommendations that are based on the yielded findings. This, in turn, will optimistically lead the pathway for the planners and decision makers to employ the recommendations chiefly for MITs and MLTs and most likely for all health professionals in the West Bank, consequently allowing the technologists to become more developed in their jobs which in turn will yield better health results and be more efficient and effective to their institutions.

7.2 Conclusions

The results of this study showed that the overall professional developmental needs were high in the training needs and management support and moderate in the following domains (policies, career planning, continuous education opportunities and motivation). There were significant relationships between development needs and all variables of management support, continuous education opportunities, career planning, policies and motivation. So, development needs may be influenced by these domains. The answers revealed that the interest in further education is motivated by the chance to rise within the hierarchy of the health system, e.g. managers, to reach a higher status and to increase earnings. It is also clear from these developments that the retort attitudes of respondents have been a matter of consideration due to predominantly judgments that they always try to be familiar to new updates related to their work field. Continuous education opportunities were in low levels of contentment while motivation was not promoted to higher levels. However, motivation schemes must be adopted. In the long term, this opens the prospect of developing health care systems more responsive to the expectations and needs of populations and nurture health workers' personal objectives**.**

The Internet is an important information source widely used by the practitioners. Interviews revealed that technologists have needs and requirements and the most demanded attitude they asked for to update their knowledge and the contemporary

technological developments in their area are the internet access at work and training on new equipment.

7.3 Recommendations

Based on the findings of this study, the following research, management and training recommendations are suggested:

7.3.1 Management Recommendations:

- Creation of a general health plan to better align policies for health workers, and reform the training policy for health professionals.
- Creation of an incentive system to promote and foster workers. Improving their incentive system will create a powerful engine in inspiring others to understand their drawbacks and turning them into opportunities.
- There is a necessity to improve more on the current level of motivation among technologists since the study revealed that they are highly dissatisfied. By improving the motivation system and the nucleus skills, the optimism and resiliency of the technologists will also increase, which will lead to increased capacity to accept challenges, bounce back and thrive in development. This will also result into developing their full potentials and encouraging them to put their best effort and to maximize their performances that will eventually result to better organizations. Inasmuch as the level of job satisfaction is not very high among the technologists, there is a need to improve more on the kind of motivation the institution is giving to technologists. The study recommends providing strategies on how managements can improve working conditions of the technologists, especially the availability of study days and financial support needed to perform their jobs effectively and efficiently. Remuneration is also an important factor to improve. This can be achieved by providing additional benefits, incentives and privileges to keep technologists motivated and satisfied in performing their duties. If a development scheme is to be successful, working conditions and human resources management at facility and personnel level must be improved, as well as access to professional support e.g. through the Internet.
- Promotion schemes to the employees they deserve according to their capabilities can be very successful in retaining employees to make them fully outfitted with gainful

skills and proficiency. The provision of incentives should be clearly linked to performance.

- Modernism and activation of governmental libraries and the establishment of others in the other sectors should be set and clearly communicated to everyone involved. If possible, it should include all crucial staffing categories and should be simple to manage.
- Activation of cooperation and collaboration between health services organizations and educational institutions.
- Availability of internet access at work for technologists to update the contemporary technological developments in their fields.

7.3.2 Training Recommendations:

- Development strategies are required such as offering continuous education opportunities, and creating advanced planning through a long-term plan more evident and comprehensive.
- Since the technologists are not practicing training adequately, updated technology or human relations courses, they should be encouraged to maintain such behavior. However, managers must keep on exploring opportunities and finding conditions that will facilitate the success of participation. These conditions include first aid, infection and infection control courses, managerial training on work team, expertise in problem solving and decision making, using updated technology and human relations' workshops must be tailored. It is also recommended that management should improve the skills, knowledge and competencies among them through national and international seminars and symposia.
- Further, the researcher is adopting the recommendation in urging organizations to send its employees for scholarships to gain acquaintance of international experiences and not to restrict such knowledge and missions to a specific category.

7.3.3 Research Recommendations:

- It is recommended that this current study may be reviewed, critiqued, and even replicated using more varied samples, variables and other survey and measurement

techniques and other health professionals (nursing, physiotherapy …) to provide an opportunity for comparison of results.

- Future work could usefully replicate the research described here focusing on the following:
  - Improvement of employees' performance and competence and its relationship with development in the health organizations.
  - Assessment of staff development management on the quality of services provided in healthcare facilities.
  - Identifying factors counteracting development in healthcare facilities.
  - Identifying factors affecting health worker motivation and satisfaction as part of a 'continuous education opportunity'.

7.4 Summary

Based on the findings obtained from the study results, post discussion and comparison to other studies done in the field and theoretical model; this chapter presented the conclusions, recommendations and future recommendations.

References:

Abbas, Aydah, (2002). Total Quality Management: Access to Reliability of Information Management in the University Education. Education Magazine No: 6, Year 5, pp 73-93.

Abu Asaker, F. (2008).Styles of struggle management and its impact on the organizational development /application study on MoH in Gaza. Islamic University, Palestine. (Master thesis).

Akad Education Group Africa, (2010). Careers & Educational Excellence Training; http://www.akadeducationafrica.com. (Accessed on line 12 May 2011).

Al-Quds University. (2010) The sixth Palestinian Conference of Laboratory Medicine "Laboratory Medicine : The Heart of Health Care System March 12-13 May 2010" *http://www.ifcc.org/PDF/congresses/auspices/2010_Mar12-13_Jerusalem.pdf* (Accessed online at 28 November 2010)

Alsheikh Kh., A., M. (2008) .Assessment of means of prevention and safety used in governmental hospitals in Gaza Strip and its impact on workers' performance. Palestine. (Master thesis).

Bacal,R. (2009). Where Does Training and Staff Development Fit With Human Resources Planning? Ontario, Canada.

Bahm,A.,W., (1977).The Macmillan Company of India Ltd; Based Medical Undergraduate Education in Negeria "Education for Health 15(2):139-48.

Balmer C, (2011), http://www.reuters.com/article/2011/04/07/us-palestinians-israel-worldba idUSTRE73603N20110407 (accessed on line at 8 May 2011).

Bedeian, A. G. (1993). Management (3rd Ed.). New York: Dryden Press.

Berry, R. S. Y. (1999). Collecting data by in-depth interviewing. British Educational Research Association Annual Conference, University of Sussex at Brighton, September 2 - 5 1999.

Billings, D. M., and Halstead, J.A. (2006). Teaching in Nursing: A Guide for Faculty. (2nd ed.).USA.

Birch, S. (2002). "Health Human Resources Planning for the New Millennium: Inputs in the Production of Health, Illness and Recovery in Populations," Canadian Journal of Nursing Research, 33:109-14.

Bouvier, L. (1998) .Doctors and Nurses: A demographic profile: physicians in United States in 190.

Boyce, C. & Neale, P. (2006). Conducting In-depth interviews: A Guide for Designing and Conducting In-depth Interviews for Evaluation Input. Online. http://www. pathfind.org/site/DocServer/m_e_tool_series_indepth_interviews. pdf?docID=6301

Brown E. (2007). Leadership Styles: Dictatorial, Authoritative, Consultative, Participative. (Accessedonlineat4March2011).*http://weirdblog.wordpress.com/2007/09/04/leadership-styles-dictatorial-authoritative-consultative-participative/.*

Brown, A., Green, A., Pitcher, J. & Simm, C. (2000) Employers skill survey: case study - health and social care. National Skills Task Force Research Report No. 35. Dfee, Nottingham.

Buford, J. A., Jr., Bedeian, A. G., & Lindner, J. R. (1995). Management in Extension (3rd ed.). Columbus, Ohio: Ohio State University Extension.

Burns, J. M. (1978). Leadership. New York: Harper and Row Publishers Inc.

Continuous education opportunities.*http://www.bhert.com/publications/newsletter/B-HERTNEWS20.pdf.* (Accessed on line 30 March 2011).

Curran V.R.,& Sharpe D. (2007). A framework for integrating interprofessional education curriculum in the health sciences. Educ Health (Abingdon). 2007 Nov;20(3):93. Epub 2007 Nov 23.

DavidmannM.(2006).StyleofManagementandLeadership.*http://www.solhaam.org/articles/clm2.html.* (Accessed on line 9 January 2011).

Dictionary of the English Language, 2000.

Doyle, M. E., & Smith, M., K. (2001) 'Classical leadership', the encyclopedia of informal education, http://www.infed.org/leadership/traditional_leadership.htm. (Accessed on line 30 September 2010).

Dussault, G., & Dubois, C.A. (2003) .Human resources for health policies: a critical component in health policies.USA and UK. 10.1186/1478-4491-1-1

Education and Professional Development Strategy: (2010) New Directions Published on SCoR Document Library. UK.

El-Jardali, F., Jamal, D., Abdallah, A. & Kassak, K. (2007). Human resources for health planning and management in the Eastern Mediterranean region: facts, gaps and forward thinking for research and policy. *Human Resources for Health,* **5**:9 American University of Beirut, Lebanese Republic.

El-Jardali, F., Tchaghchagian, V., & Jamal, D. (2009).Assessment of human resources managementpracticesinLebanesehospitals.*HumanResourcesforHealth,* **7**:84 10.1186/ 1478-4491-7-84 American University of Beirut, Beirut, Lebanon.

Eraut, M., Alderton, J., Cole, G. & Senker, P. (1998) Development of knowledge and skills in employment. Research Report 5. University of Sussex Institute of Education, Falmer.

FrancisM.(2007).EffectiveManagement.UK.*http://changingminds.org/articles/articles/effective_management.htm*

Goldfield, T. (2008).Scientific laboratory technician**:** Career development. **(**Accessed on lineat22October2010)*http://www.prospectsnet.com/p/types_of_job/scientific_laboratory_technician_career_development.jsp*

Grandy, M. (2010). Ben Final Work. (Accessed on line at 12 September 2010). *http://www.scribd.com/doc/42186796/Ben-Final-Work*

Grove, S., and Burns, N. (1997). The Practice of Nursing Research: Conduct, Critique and Utelization. (3rd ed.). USA.

Gutteridge, T. G. (1986) Organizational Career Development Systems: The State of the Practice. In Career Development in Organizations, Edited by D.T. Hall. San Francisco: Jossey-bass Publisher

Hamad, B. (2001) .Determinants of job satisfaction and motivation among Gaza Nurses. Doctoral Thesis. Sheffield Hallam University ,UK.

Hamdan, M. & Defever. M. (2003) Human resources for health in Palestine: a policy analysis Part I: Current situation and recent developments. Palestine. Health Policy, 64 (2), pp. 243-259.

Harber R. Health Professions Council of Australia (2005) .The allied health professional workforce in Australia: Challenges and Opportunities. Page 4.

Hennessy D, Hicks C, Hilan A & Kawonal Y. (2006). A methodology for assessing the professional development needs of nurses and midwives in Indonesia: paper 1 of 3. BioMed Central Ltd. 10.1186/1478-4491-4-8. UK and Indonesia.

Hennessy, D., Hicks, C., Hilan, A., & Kawonal, Y. (2006). (2006). A methodology for assessing the professional development needs of nurses and midwives in Indonesia: Decision, Vol 36, No 5. BioMed Central.

Higgins, J. M. (1994). The management challenges (2nd Ed.). New York: Macmillan.

Hjouj, M. (January 2010). Al-Quds University, Private communication.

Houle, C. O. (1980) Continuing learning in the professions. (London, Jossey-Bass) Jaeschke, R., Singer, J., and Guyatt, GH (1990), A comparison of 7-point and visual analogue scales: data from a randomized trial, Control of Clinical Trials, 11 (1), pp43-5.

Human Resources hrninet (2011). http://www.humanresources.hrvinet.com/what-is-career-planning (Accessed online HumanResources.hrninet.com at 10 May 2011).

Humphrey .W (2011). Getting Management Support for Process Improvement. http://www.sei.cmu.edu/library/abstracts/news-at-sei/wattssep99.cfm **(**Accessed online HumanResources.hrninet.com at 10 December 2011).

IMET2000 (2009), Need Assessment Survey For the Health Education in Palestine. Submitted By Alpha International for Research, Polling and Informatics. Ramallah, Palestine.

Issa, W. Health Human Resources Development in Palestine. *http://www.moh.gov.ps/pmj/hrd.PDF* (Accessed on line 24 September 2010).

Joint Learning Initiative. (2003) Human resources for health and development: a joint learninginitiative.GlobalHealthTrust,*http://globalhealthtrust.org/doc/JLIBrochure.pf*

Kharouf, M. (2010) .Retention of radiographers in the Palestinian healthcare system. Master Thesis, Al-Quds University, Palestine.

Lozi, M, (1998), Workers' orientations towards change in the Jordanian governmental foundations, managerial science magazine, folder 25, number 2. Jordan.

Madi, I. (2010). The Role of Knowledge Management in Higher Education Quality Assurance – Case Study Islamic University of Gaza (I.U.G), Palestine.

ManagementStylesListofDifferentTypesofManagementStyleshttp://www.buzzle.com/articles/management-styles-list-of-different-types-of-management-styles.html. (Accessed on line 30 October 2010)

Marshall, M., Punys, V., & Sykes, A. (2006).The continuous professional development (CPD) requirements of radiographers in Europe: An initial survey. UK. Volume 14, Issue 4, Pages 332-342

Mataria, A., Donaldson, C., Luchini, S., & Moatti, JP, (2004). A stated preference approach to assessing health care-quality improvements in Palestine: from theoretical validity to policy implications. Elsevier. Journal of Health Economics 23 (2004) 1285–1311.

McPeck, P. (2001). Unlock your potential. *Nurse week, 14*(16), 11.

Miller-Keane Encyclopedia and Dictionary of Medicine, Nursing, and Allied Health, Seventh Edition. © 2003 by Saunders, an imprint of Elsevier, Inc. (accessed on line 22 October 2010).

MoH. (2010) Ministry of Health. Palestinian Health Information Center (PHIC).

National Strategic health plan (1999-2003), MoH 1998. , 2009)

Nightingale, J. & Hogg, P. (2003). The gastrointestinal advanced practitioner: an emerging role for the modern radiology service. Radiography 9**,** 151-160.

Obaid A.(2009), Reality of change management in Palestinian Ministry of Health and its impact on the employees' performance through case study in Al-Shifa medical complex, Palestine.

Okaro, A.O., Eze C.U., & Ohagw, C.C. (2010). Impact of Motivation on Productivity of Radiographers in Two Tertiary Healthcare Institutions in Enugu Metropolis Southeastern Nigeria American Journal of Scientific Research.

Othaqi, H, (1998), Organizational development obstacles on security forces performance Saudi Arabia.

Palestinian Medical Imaging Association (PMIA, 2010). Internal instructions.

Palestinian Medical Technology Association (PMTA, 2010). Internal instructions.

Palestinian Ministry of Health (PMoH), Palestinian Health Information Center (PHIC), Midyear Report, 2009.

Palestinian National Authority (PNA) (2001). National Plan for Human Resources Development and Education in Health, report # 5, professionals sub plans, Palestine.

Palestinian National Authority MoH, (NSHP 2008-2010).

Panteghini, M. (2004). The Future of Laboratory Medicine: Understanding the New Pressures. 25(4): 207–215.

Polit, F. & Beck, Ch .T. (2006).Nursing Research, Principles and Method.(7th ed.).USA: Lippincott Williams and Wilkins.

Polit, F., Beck., C., & Hungler, B. (2001). Essentials of Nursing Research. (4th Ed). USA: Lippincott Inc.

Pophal, L., G. (1999). Management Development: A Strategic Initiative. Reviewed August2002.http://www.ispi.org/pdf/suggestedReading/Grensing_Pophal_No2.pdf. (Accessed on line at 17 May 2011).

Quinn, F. (2000). Principles and Practice of Nurse Education. (4th ed). United Kingdom.

Rabinowitz, P. Edited by Berkowitz, B., (, 2010) Styles of Leadership the Community Tool Box.

Rampur S. (2010). Management Styles. *http://www.buzzle.com/articles/management-styles.html* (Accessed on line at 22 January 2011).

Sample size calculator: (*http://www.macorr.com/ss_calculator.htm)* and the program (WINPEPI) *Abramson, J.H. WINPEPI (PEPI-for-Windows): computer programs for epidemiologists. Epidemiologic Perspectives & Innovations 2004, 1: 6*

Schoenbaum, M., Afifi, A., K., & Deckelbaum, R.,J. (2005) .Strengthening the Palestinian Health System. , RAND Corporation. http://www.rand.org/ http://www.rand.org/

Scientificlaboratorytechnician:Careerdevelopment(2008).http://ww2.prospects.ac.uk/p/typs_of_job/scientifivlaboratorytechnician career devlopment.jsp (Accessed on line at 17 December 2010).

Sears, S. (1982). A Definition of Career Guidance Terms: A National Vocational Guidance Association perspective, Vocational Guidance Quarterly, Vol. 31, p. 137-143.

Shanahan, M., Herrington, A., & Herrington, J. (2009). The Internet and the medical radiation science practitioner. Australia. Volume 15, Issue 3, Pages 233-241.

Sorra, J., & Nieva, V. (2004). "Pilot study: reliability and validity of the hospital survey on patient safety. Technical report prepared by Westat under Contract No.290-96-004.

Speck, M. & Knipe, C. (2005). Why can't we get it right? Designing high-quality professional development for standards-based schools (2nd ed.). Thousand Oaks: Corwin Press.

Stout, D. (1995), "Performance Analysis for Training", Niagara Paper Company, Niagara, WI.

The American Heritage. Dictionary of the English Language, Fourth Edition copyright ©2000 by Houghton, Mifflin Company. Updated in 2009. Published by Houghton Mifflin Company.

The International Bank for Reconstruction and Development / The World Bank. Internet: www.worldbank.org Washington DC.

The World Bank Group, (2006). A custom publication of the Disease Control Priorities Project.©2006

U.S. Bureau of Labor Statistics. (2009). Clinical Laboratory Technologists and Technicians.

White P. & McKay J. (2002) Guidelines and legal requirements which inform role expansion in radiography. Radiography 8, 71–78.

WHO (2007). Assessing Financing, Education, Management and Policy Context for Strategic Planning of Human Resources for Health.

WHO, Regional Health System Observatory EMRO, (2006).Health System Profile – Palestine,

WHO. Eastern Mediterranean Region. (2004). Annual Report of the Regional Director.

WHO. Health systems and services development. (2005).The work of WHO in the Eastern Mediterranean Region, Annual Report of the Regional Director

Annexes:

Annex (1): Arabic Version of the Consent Form:

استبانة

أختي الكريمة / أخي الكريم

يقوم الباحث بإجراء دراسة بعنوان" تقييم وجهات نظر فنيي وأخصائيي المختبرات الطبية و التصوير الطبي حول الاحتياجات التطويرية لهم في الضفة الغربيـة" وذلك استكمالا لمتطلبات الحصول على درجة الماجستير في السياسات والإدارة الصحية.

لهذا تم تصميم هذه الاستبانة بهدف الإطلاع على احتياجاتكم التطويرية. إننا وإذ نقدر ونثمن وقتكم ومشاركتكم ،فإننا نستأذنكم بتخصيص عشرة دقائق تقريبا لتعبئة هذا الاستبيان الذي يتمتع بكامل السرية ولكم كامل الحرية في المشاركة أو عدمها، لذا نرجو من حضرتكم التكرم بتعبئة هذه الاستبانة بعد قراءة كل عبارة من عبارات الاستبانة قراءة متأنية لما له من أثر كبير في الحصول على نتائج دقيقة، ووضع علامة (X)في الخانة التي تعبر عن مدى موافقتكم عليها علما بأن المعلومات المقدمة لن تستخدم إلا لأغراض البحث العلمي فقط .

إن مشاركتكم في هذه الدراسة هي طوعية ونؤكد لكم بأن المعلومات ستعامل بسرية تامة ، وعليه لا داعي لكتابة الاسم أو أية معلومات تدل على شخصكم الكريم وسيزودكم الباحث بالنتائج التي تتوصل إليها الدراسة إن رغبتم في ذلك.

إذا كانت لديكم أية تساؤلات، الرجاء عدم التردد في الاتصال بنا.

شاكرين لكم حسن تعاونكم وتقبلوا فائق الاحترام.

الطالب : عبد السلام دراغمة

Mobile: 0599758385

Mail: obaidaraghad@yahoo.com

Annex (2): Arabic Version of the Questionnaire:

أولا : المعلومات الشخصية :

الرجاء وضع إشارة (X) أمام الإجابة المناسبة :

1. المهنة:
□ تصوير طبي □مختبرات طبية

.....

2. المسمى الوظيفي:
□محاضر\ة □ مدير\ة دائرة □ نائب\ة مدير □ رئيس\ة قسم □ رئيس\ة دائرة أكاديمية
□فني\ة □ غير ذلك حدد\ي.....

.....

3. طبيعة المؤسسة :
□قطاع عام (حكومي) □ قطاع خاص □وكالة غوث □ منظمة غير ربحية \ جمعية خيرية
□ غير ذلك حدد\ي.....

.....

4. المؤهل العلمي:
□دكتوراه □ ماجستير □دبلوم عالي □ بكالوريوس □دبلوم متوسط □ ثانوية عامة \ تدريب عملي
□ غير ذلك حدد\ي.....

.....

5. سنوات الخبرة :
□ 2 -5سنوات □ 6 -10سنوات □ 11- 15سنة □أكثر من 15سنة

.....

6. الفئة العمرية :
□ 25سنة فأقل □ 26 – 35سنة □ 36 – 45سنة □أكثر من 45سنة

.....

7. الجنس:
□ذكر □أنثى

.....

8. الحالة الاجتماعية:
□أعزب \ عزباء □متزوج\ة □مطلق \ة □أرمل \ة □منفصل\ة

ثانيا :الرجاء وضع إشارة(x) أمام الإجابة المناسبة :

الرقم	التطوير الوظيفي	موافق بشدة 5	موافق 4	محايد 3	غير موافق 2	غير موافق بشدة 1
9	التحقت ببرامج التطوير الوظيفي في السنتين الأخيرتين	5	4	3	2	1
10	استفدت من برامج تطويرية داخل المؤسسة	5	4	3	2	1
11	أخطط لإكمال دراستي للحصول على درجة دراسية أعلى من التي أحملها حاليا	5	4	3	2	1
12	أخطط للتخصص مهنيا	5	4	3	2	1
13	أخطط للانتقال إلى وظيفة أخرى	5	4	3	2	1
14	أعمل على الإطلاع على الجديد في مجال تخصصي	5	4	3	2	1
15	أخطط للارتقاء بوظيفتي إلى درجة في الإدارة في مجال تخصصي	5	4	3	2	1
16	أخطط للارتقاء بوظيفتي لدرجة مستشار في مجال تخصصي	5	4	3	2	1
17	اخصص جزءا من دخلي لإكمال تعليمي	5	4	3	2	1
18	التحقت بدورات تدريبية حتى لو كانت من وقتي الخاص	5	4	3	2	1
دعم القيادة: المدير الذي أعمل معه :						
19	يعزز السلوك الايجابي عند العاملين الذين يريدون تطوير أنفسهم	5	4	3	2	1
20	يتقبل الأفكار الجديدة المبادرة	5	4	3	2	1
21	يساهم في تذليل العقبات التي تحول دون التطوير	5	4	3	2	1
22	يحفز العاملين للمشاركة في برامج ونشاطات التطوير الذاتي	5	4	3	2	1
23	يوفر لي المساعدة والعون لتطوير ذاتي	5	4	3	2	1
24	يحرص على تحديد الاحتياجات التدريبية للعاملين	5	4	3	2	1
التحفيز :						
25	هناك فرصة في المؤسسة للترقية وفقا للمؤهلات والقدرات التي يحصل عليها الموظف	5	4	3	2	1
26	يحصل الموظفون على علاوات مادية نتيجة لتطوير قدراتهم ومهاراتهم	5	4	3	2	1
27	توفر المؤسسة فرصة للعاملين لمواصلة تعليمهم بإعطائهم يوما دراسيا	5	4	3	2	1
28	توفر المؤسسة فرصة للعاملين لمواصلة تعليمهم بإعطائهم دعما ماديا	5	4	3	2	1

السياسات :						
29	يوجد وصف وظيفي يحدد المسؤوليات والواجبات والحقوق لكل موظف	5	4	3	2	1
30	العمل على مبدأ توكيل المهام كفرصة لتطوير العاملين	5	4	3	2	1
31	العمل على عقد ورشات تعريفية للموظفين حول العمل وآليات التقييم	5	4	3	2	1
32	الاهتمام بمواكبة التطور العلمي والتكنولوجي	5	4	3	2	1
33	العمل على تبسيط إجراءات العمل	5	4	3	2	1
34	تحديث الأنظمة والقوانين بناء على الاحتياجات التطويرية للكادر	5	4	3	2	1
35	الترقية تعتمد على مستوى القدرات والمهارات	5	4	3	2	1
36	تعمل الادارة باتجاه قبول بكالوريوس كحد أدنى	5	4	3	2	1
فرص التعليم المستمر:						
37	تدعم الإدارة الدوائر بكادر مؤهل للقيام بالدور التدريبي والتطويري على الوجه الأمثل	5	4	3	2	1
38	تعمل المؤسسة على تقديم المعلومات والتدريب بأسلوب حديث يهدف إلى تنمية الموارد البشرية	5	4	3	2	1
39	تشجع المؤسسة وتدعم فكرة التعليم الذاتي للأفراد	5	4	3	2	1
40	تتوفر مكتبات وتقنيات المعلومات المزودة بمصادر معلومات حديثة	5	4	3	2	1
41	تتوفر شراكات مع المؤسسات الجامعية والكليات لتطوير الموارد البشرية	5	4	3	2	1
42	تخصص الادارة جزءا من ميزانيتها لتطوير العاملين	5	4	3	2	1
43	تحرص الادارة على تطوير مهارات البحث العلمي للعاملين	5	4	3	2	1
44	تحرص الادارة على ابتعاث موظفين للإطلاع على تجارب وخبرات دولية	5	4	3	2	1
45	تنظم الادارة دورات تدريبية لرفع المهارات الفنية للموظفين	5	4	3	2	1
46	يوجد برامج تطوير وظيفي في المؤسسة	5	4	3	2	1
ثالثاً : الاحتياجات التدريبية:						
الرجاء وضع إشارة (X) على المربع الذي يتوافق مع احتياجاتكم:						
التدرب المهني :						
47	الإسعاف الأولي	5	4	3	2	1
48	طرق ومنع انتقال العدوى	5	4	3	2	1
49	تدريبات أخرى غير ذلك حددي.....	5	4	3	2	1
التدرب الإداري :						

50	الأنظمة و القوانين	5	4	3	2	1
51	حل المشاكل واتخاذ القرارات	5	4	3	2	1
52	العمل الجماعي	5	4	3	2	1
53	حل النزاعات	5	4	3	2	1
54	غير ذلك حدد/ي.....	5	4	3	2	1
استخدام التقنيات الحديثة:						
55	استخدام برامج حاسوب لها علاقة بالتخصص	5	4	3	2	1
56	استخدام أجهزة في مجال التخصص	5	4	3	2	1
57	غير ذلك حدد/ي.....	5	4	3	2	1
العلاقات الإنسانية :						
58	الاتصال و التواصل	5	4	3	2	1
59	التعامل مع المنتفعين	5	4	3	2	1
60	التعامل مع الجمهور/ الأهل	5	4	3	2	1
61	التعامل مع الموظفين	5	4	3	2	1
62	غير ذلك حدد/ي.....	5	4	3	2	1

رابعاً : حدد\ي الاحتياجات الضرورية لتمكين التدريب و التي تعتقد أنها ضرورية في مجال عملك :

1) .....
2) .....
3) .....
4) .....
5) .....
6) .....

شاكرين لكم حسن تعاونكم

الباحث : عبد السلام دراغمة

Annex (3): English Version of the Consent Form:

Dear Colleagues,

The researcher is doing a study entitled “Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank.” with the objective to have the Master degree in Health Management and Policies. A questionnaire was determined to update your development needs. I am highly appreciated with your cooperation if you could take the time to go through this questionnaire and answer the relevant questions. Hopefully, it will not take you longer than 10 minutes to fill in this questionnaire post careful reading each single statement because of its high impact to attain accurate results, so, please be completely honest in your assessments and answer the questions as fully as possible. For every item, please place an 'X' in the scoring box that most closely matches your conformity noting that the introduced information will not be used but for scientific research only.

Your participation in this study is optional, I can assure you that this information will be treated confidentially, hence, you are not being asked to write your name or any information leads to your noble personality. The researcher will offer you the results if you would like to. Please if you have any other queries, please do not hesitate to contact me.

Thank you for your time and consideration.

Researcher: Abdel Salam Daraghmeh

Mobile: 0599758385

Mail: obaidaraghad@yahoo.com

Annex (4): English Version of the Questionnaire:

<u>First:</u> Socio-Demographic Characteristics:

Please insert (X) sign in the scoring box in front of the appropriate answer:

1. **Career:**

□ Medical Imaging □ Medical Laboratories

---

2. **Job (Occupational title):**

□ Lecturer □ Manager □ Vice-Manager □ Head Ward

□ Head of Academic Department □ Technologist □ Other; Specify ……..

---

3. **Sector:**

□ Public □ Private □ UNRWA □ Non-for-Profit □ Other; Specify .....

---

4. **Qualification**:

The highest level of education you have completed:

□ Doctoral (PhD)□ Master's □High Diploma □ Bachelor's

□Diploma(Vocational\Technical School [2years])

□ High Secondary School or Equivalent □Other; Specify……

---

5. **Years of Experience:**

□ 2- 5 years □ 6-10 □11-15 □ More than 15 years

---

6. **Age Category :**

□ 25 or under □ 26 - 35 □ 36 - 45 □ older than 45 years

---

7. **Gender :**

□ Male □ Female

---

8. **Your Current Marital Status:**

□ Single □Married □ Divorced □ Widowed □ Separated

Second:

Please insert (x) sign in the scoring box in front of the correct answer:

No:	Statement	Strongly agree 5	Agree 4	Neutral 3	Disagree 2	Strongly disagree 1
Career Planning :						
9	I joined career development programs the last 2 years	**5**	**4**	**3**	**2**	**1**
10	I took advantage of development programs inside the organization	**5**	**4**	**3**	**2**	**1**
11	I plan to continue my study to have higher education than what I'm holding now	**5**	**4**	**3**	**2**	**1**
12	I plan to specialize	**5**	**4**	**3**	**2**	**1**
13	I intend to move to another job	**5**	**4**	**3**	**2**	**1**
14	I keep myself update in my specialty area	**5**	**4**	**3**	**2**	**1**
15	I plan to be promoted to a management position	**5**	**4**	**3**	**2**	**1**
16	I plan to be a consultant in my specialty	**5**	**4**	**3**	**2**	**1**
17	I allocate part of my salary to continue my study	**5**	**4**	**3**	**2**	**1**
18	I attend training courses even from my own time	**5**	**4**	**3**	**2**	**1**
Management Support:						
19	Fosters employees' positive behavior in regards to self development	**5**	**4**	**3**	**2**	**1**
20	Accepts new initiative ideas	**5**	**4**	**3**	**2**	**1**
21	Contributes to overcoming obstacles	**5**	**4**	**3**	**2**	**1**

	ceasing development					
22	Motivates workers to supply in self development activities	**5**	**4**	**3**	**2**	**1**
23	Offers support to me to develop myself	**5**	**4**	**3**	**2**	**1**
24	Dedicated to specify training needs of the employees	**5**	**4**	**3**	**2**	**1**
Motivation:						
25	There is a chance for promotion according to qualifications the employee gets	**5**	**4**	**3**	**2**	**1**
26	Personnel get financial allowances due to their capabilities	**5**	**4**	**3**	**2**	**1**
27	The organization offers a study day for employees to continue study	**5**	**4**	**3**	**2**	**1**
28	The organization grants financial support for employees to continue study	**5**	**4**	**3**	**2**	**1**
Policies:						
29	Job descriptions are specifying duties , responsibilities and rights	**5**	**4**	**3**	**2**	**1**
30	Delegation is used as a development tool	**5**	**4**	**3**	**2**	**1**
31	Workshops are conducted to orient employees about evaluation procedures	**5**	**4**	**3**	**2**	**1**
32	Organization is concerned about keeping up-to date scientific & technological development	**5**	**4**	**3**	**2**	**1**
33	Work procedures are simple	**5**	**4**	**3**	**2**	**1**
34	Setting priorities and development of rules and regulations that is related to staff development	**5**	**4**	**3**	**2**	**1**

35	Promotions are based on skills and capabilities	**5**	**4**	**3**	**2**	**1**
36	Bachelor degree is the minimum for employment	**5**	**4**	**3**	**2**	**1**
Continuous Education Opportunities:						
37	Managers attract qualified trainers to carry out development & training activities	**5**	**4**	**3**	**2**	**1**
38	Organization introduces up-to-date information & training to develop human resources	**5**	**4**	**3**	**2**	**1**
39	Organizations encourages and supports self-development					
40	Libraries are equipped with databases and up-to-date information	**5**	**4**	**3**	**2**	**1**
41	There is a cooperation with universities & colleges to develop human resources	**5**	**4**	**3**	**2**	**1**
42	Management allocates part of its budget to staff-development	**5**	**4**	**3**	**2**	**1**
43	Organization is keen to develop staff attain scientific research skills	**5**	**4**	**3**	**2**	**1**
44	Organization is keen to send abroad scholarships to gain international experiences	**5**	**4**	**3**	**2**	**1**
45	Training courses are set to elevate technical skills	**5**	**4**	**3**	**2**	**1**
46	There are professional development programs in the organization	**5**	**4**	**3**	**2**	**1**
<u>Third</u>: **Training & development needs:**						
Professional training:						
47	First aid	**5**	**4**	**3**	**2**	**1**

48	Infection & infection control	**5**	**4**	**3**	**2**	**1**
49	Other trainings; specify…….	**5**	**4**	**3**	**2**	**1**
Management training:						
50	Laws & rules	**5**	**4**	**3**	**2**	**1**
51	Problem solving & decision making	**5**	**4**	**3**	**2**	**1**
52	Teamwork	**5**	**4**	**3**	**2**	**1**
53	Managing stress & conflict	**5**	**4**	**3**	**2**	**1**
54	Others; specify……..	**5**	**4**	**3**	**2**	**1**
Using updated techniques:						
55	Using computer related programs	**5**	**4**	**3**	**2**	**1**
56	Using related equipment	**5**	**4**	**3**	**2**	**1**
57	Others; specify……	**5**	**4**	**3**	**2**	**1**
Human relationships:						
58	Communications	**5**	**4**	**3**	**2**	**1**
59	Dealing with patients/clients	**5**	**4**	**3**	**2**	**1**
60	Dealing with public/relatives	**5**	**4**	**3**	**2**	**1**
61	Dealing with employees	**5**	**4**	**3**	**2**	**1**
62	Others; specify……	**5**	**4**	**3**	**2**	**1**

Fourth:

Are there any other areas/ aspects of discussion/comments agreed, not noted elsewhere?

Please, specify the technical needs you think it is necessary in your domain:

1……

2.....

3 ……

4 ……

5 ……

6 ……

Annex (5): Means and Proposed Points for Accrediting the PMLTs by the PMTA:

Means	Proposed points	Documentation required
Attendance of local specialized conference	8 points	Certificate of attendance
Attendance of international specialized conference	12 points	Certificate of attendance
Attendance of specialized conference/branch committee	6 points	Certificate of attendance
Attendance of medical non laboratory conference	4 points	Certificate of attendance
Attendance of workshop (2-4 hours)	4 points	Certificate of attendance
Attendance of prolonged workshop	Number of points is proportionate to the size of workshop	Certificate of attendance
Attendance of periodic lectures	3 points for each lecture	Presence record or accredited means by regulating committee
Reciting a lecture in any of branch committees of the association	4 points	Request to deliver a discourse or accreditation by regulating committee
Answering questions of association journal	2 points for each number	Journal edition authority
Writing an essay in association journal	3 points	Journal edition authority
Writing a research in specialized scientific journal	8 points	Copy of disseminated essay
Commenting on an essay in a specialized journal	2 points	Copy of disseminated essay/ journal edition authority
Arbitration of an essay in a specialized journal	3 points	Request to arbitrate an essay/journal edition authority
Attendance of public authority meetings	3 points	Presence record of at least one meeting annually
Voluntary participation in free medical days	2 points	accreditation by regulating committee
Any other means accredited by the association		

Annex (6): Health Professions Educational Programs:

Program	Diploma	Baccalaureate	High Diploma	Master	Aggregate
1. Nursing	**9**	**7**	**5**	**3**	24
2. Public health, community health, PHC	**3**	**1**	**4**	**6**	**14**
3. Pharmacy	**5**	**3**	**-**	**2**	**10**
4. Medical laboratory	**3**	**5**	**1**	**1**	**10**
5. Physiotherapy	**1**	**5**	**-**	**-**	**6**
6. Midwifery	**-**	**3**	**1**	**-**	**4**
7. Medicine	**-**	**3***	**-**	**-**	**3**
8. Medical imaging	**-**	**4**	**-**	**-**	**4**
9. Disorders & rehabilitation of speech	**1**	**-**	**-**	**1**	**2**
10. Occupational therapy	**-**	**2**	**-**	**-**	**2**
11. Dentistry	**-**	**2**	**-**	**-**	**2**
12. Optics	**-**	**2**	**-**	**-**	**2**
13. Hospital management	**-**	**1**	**-**	**-**	**1**
14. Handicapped rehabilitation science	**1**	**-**	**1**	**1**	**3**
Total	**23**	**38**	**12**	**14**	**87**

*Main program in Al-Quds University and there are other branches in Annajah and Al-Azhar Universities.

Annex (7): List of Persons Shared the Questionnaire Preparation and Critique:

Name	Title	Location
Dr. Asma Imam	Supervisor/Dean of Public Health College	Al-Quds University
Dr. Rasmi Abu Hiluo	Dean of Medical professions	Al-Quds University
Dr. Mo'taem Hamdan	Lecturer	Al-Quds University
Mr. Mohammed Hjouj	Lecturer	Al-Quds University
Mr. Ala' Rahhal	Statistician	Arab American University

Annex (8): The College Letter to the Palestinian Medical Imaging Association:

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2011/6/19
الرقم: ك ص ع/ 765/2011

حضرة السيد محمد حجوج المحترم
مدير نقابة التصوير الطبي

الموضوع: مساعدة الطالب عبد السلام عويضات

تحية طيبة وبعد،،

يقوم الطالب عبد السلام عويضات برنامج ماجستير السياسات والإدارة الصحية/ جامعة القدس بإجراء بحث بعنوان:

"Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank."

كمتطلب لبحث رسالة الماجستير. لذا أرجو من حضرتكم التكرم وتسهيل مهمة الطالب في الحصول على قائمة بأسماء فنيي الأشعة وجمع المعلومات الأولية الخاصة للدراسة. علماً بان هذه المعلومات خاصة للبحث العلمي فقط.

وتقبلوا مع فائق الاحترام،،

د. أسمى الإمام
عميدة كلية الصحة العامة

نسخة: الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2878166,2878177
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-2878166-2878177

Annex (9): The College Letter to the Palestinian Medical Laboratory Association:

Al-Quds University
Jerusalem
School of Public Health

جـامـعـة الـقـدس
القدس
كلية الصحة العامة

التاريخ: 2011/6/19
الرقـم: ك ص ع/764/2011

حضرة السيد أسامة نجار المحترم
نقيب المختبرات الطبية

الموضوع: مساعدة الطالب عبد السلام عويضات

تحية طيبة وبعد،،

يقوم الطالب عبد السلام عويضات برنامج ماجستير السياسات والإدارة الصحية/ جامعة القدس بإجراء بحث بعنوان:

"Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank".

كمتطلب لبحث رسالة الماجستير. لذا أرجو من حضرتكم التكرم وتسهيل مهمة الطالب في الحصول على قائمة باسماء فنيي المختبرات وجمع المعلومات الأولية الخاصة للدراسة. علماً بان هذه المعلومات خاصة للبحث العلمي فقط.

وتقبلوا مع فائق الاحترام،،

كلية الصحة العامة
Faculty of Public Health
د. أسامي الأيام
عميدة كلية الصحة العامة

نسخة: الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2878166,2878177
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-2878166-2878177
ص.ب. 51000 القدس

Annex (10): The College Letter to PMoH and to facilitate the Student's Mission:

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2011/1/4
الرقم: ك ص ع/ 503/2011

حضرة الدكتور سعيد الهموز المحترم
مدير عام التعليم الصحي/ وزارة الصحة الفلسطينية

الموضوع: مساعدة الطالب عبد السلام عويضات

تحية طيبة وبعد،،

يقوم الطالب عبد السلام عويضات برنامج ماجستير السياسات والإدارة الصحية/ جامعة القدس بإجراء بحث بعنوان:

" Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank ".

كمتطلب لبحث رسالة الماجستير. لذا أرجو من حضرتكم التكرم وتسهيل مهمة الطالب في جمع المعلومات الأولية الخاصة للدراسة من جميع المستشفيات الحكومية في الضفة الغربية. علماً بان هذه المعلومات خاصة للبحث العلمي فقط.

وتقبلوا مع فائق الاحترام،،

د. أسمى الإمام
عميدة كلية الصحة العامة

نسخة: الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2878166,2878177
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-2878166-2878177
ص.ب. 51000 القدس

Annex (11): The College Letters to UNRWA to facilitate the Student's Mission:

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2011/1/4
الرقم: ك ص ع/2052/2011

حضرة الدكتور أمية خماش المحترم
مدير الخدمات الصحية/ وكالة الغوث

الموضوع: مساعدة الطالب عبد السلام عويضات

تحية طيبة وبعد،،

يقوم الطالب عبد السلام عويضات برنامج ماجستير السياسات والإدارة الصحية/ جامعة القدس بإجراء بحث بعنوان:

"Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank".

كمتطلب لبحث رسالة الماجستير. لذا أرجو من حضرتكم التكرم وتسهيل مهمة الطالب في جمع المعلومات الأولية الخاصة للدراسة من جميع عيادات الوكالة في الضفة الغربية، علماً بان هذه المعلومات خاصة للبحث العلمي فقط.

وتقبلوا مع فائق الاحترام،،

د. أسمى الإمام
عميدة كلية الصحة العامة

نسخة: الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2878166,2878177
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-2878166-2878177
ص.ب. 51000 القدس

Al-Quds University
Jerusalem
School of Public Health

جامعة القدس
القدس
كلية الصحة العامة

التاريخ: 2010/12/15
الرقم: ك ص ع/ 80/ 2010

حضرة الدكتور سعيد الدين المحتسب المحترم
مدير مستشفى المحتسب

الموضوع: مساعدة الطالب عبد السلام عويضات

تحية طيبة وبعد،،

يقوم الطالب عبد السلام عويضات برنامج ماجستير السياسات والإدارة الصحية/ جامعة القدس بإجراء بحث بعنوان:

"Perception of Medical Imaging and Medical Laboratory Technologists of Their Professional Developmental Needs in the West Bank".

كمتطلب لبحث رسالة الماجستير. لذا أرجو من حضرتكم التكرم وتسهيل مهمة الطالب في جمع المعلومات الأولية للدراسة. علماً بان هذه المعلومات خاصة للبحث العلمي فقط.

وتقبلوا مع فائق الاحترام،،

د. أسمى الإمام
عميدة كلية الصحة العامة

نسخة: الملف

Jerusalem Branch/Telefax 02-2799234
Gaza Branch/Telefax 08-2878166,2878177
P.O. box 51000 Jerusalem

فرع القدس / تلفاكس 02-2799234
فرع غزة / تلفاكس 08-2878166-2878177
ص.ب. 51000 القدس

Annex (12):Semi-Structured face to face interviews with MITs. (Arabic).

المهنة: التصوير الطبي

1. **المؤهل العلمي:**

□ ثانوية عامة \ تدريب عملي □ **دبلوم متوسط** □ بكالوريوس □ **دبلوم عالي** □ ماجستير

2. **ما هي الاحتياجات التدريبية التي تعتقد أنها ضرورية للعاملين في أقسام الأشعة حتى يكونوا على كفاءة لممارسة المهنة وحتى يستطيعوا متابعة التطورات التكنولوجية**

_____

_____

_____

3. **الرجاء تحديد مدى حاجة العاملين في أقسام الأشعة إلى التدريبات التالية وذلك حتى يكونوا على كفاءة لممارسة المهنة وحتى يستطيعوا متابعة التطورات التكنولوجية:**

الضرورة / الفحص	ضروري جدا 5	ضروري 4	محايد 3	غير ضروري 2	لا ينطبق 1
Plain x-ray					
Fluoroscopy					
Digital imaging					
CT					
MRI					
Ultrazonography					
Mammography					
Nuclear medicine					
Angio CT					

4. **برأيك، ما هي أفضل السبل لمواكبة التطورات التكنولوجية الحديثة في مجال تخصصك ؟ <u>(يمكن الإجابة على أكثر من خيار)</u>**

□ المجلات العلمية □ **الانترنت** □ المحاضرات العلمية □ التدريبات □ البعثات الخارجية

5. **ما هي عدد الساعات اللازمة في الشهر لمتابعة التطورات في مجال تخصصك والتي تؤهلك حتى تكون على كفاءة لممارسة المهنة وأن تطور نفسك ؟**

□ **2ساعة** □ **4ساعات** □ **6ساعات** □ **8 ساعات** □ **10ساعات**

Annex (13): Semi-Structured face to face interviews with MITs. (English).

Career: Medical Imaging

1. Qualification:

□ High secondary school/practice □ Diploma □ Baccalaureate □ High Diploma □ Master

2. What **training needs** would best help you to meet your demands in your post that you think it's necessary to be efficient to practice the profession and to pursue the technological developments?----------

---

---

3. Please, identify to what extent the technologists need the following trainings to be efficient in their practice

Necessity / Test	Very necessary 5	Necessary 4	Neutral 3	Unnecessary 2	Not applicable 1
Plain x-ray					
Fluoroscopy					
Digital imaging					
CT					
MRI					
Ultrazonography					
Mammography					
Nuclear medicine					
Angio CT					

4. In your opinion, what are the best ways to convoy the modern technological developments in your area? You may choose more than option!

□ Scientific journals □ Internet □ Scientific lectures □ Local trainings □ Abroad missions

5. What are the necessary training hours you need in the **month** to be efficient to practice the profession and to develop yourself?

□ 2 hours □ 4 hours □ 6 hours □ 8 hours □ 10 hours

Annex (14):Semi-Structured face to face interviews with MLTs. (Arabic).

المهنة:المختبرات الطبية

1. **المؤهل العلمي:**

□ ثانوية عامة \ تدريب عملي □ **دبلوم متوسط** □ بكالوريوس □ **دبلوم عالي** □ ماجستير □ **دكتوراه**

2. **ما هي الاحتياجات التدريبية التي تعتقد أنها ضرورية للعاملين في أقسام المختبر حتى يكونوا على كفاءة لممارسة المهنة وحتى يستطيعوا متابعة التطورات التكنولوجية ؟**

_____
_____
_____

3. **الرجاء تحديد مدى حاجة العاملين في أقسام المختبر إلى التدريبات التالية وذلك حتى يكونوا على كفاءة لممارسة المهنة وحتى يستطيعوا متابعة التطورات التكنولوجية:**

الضرورة / الفحص	ضروري جدا 5	ضروري 4	محايد 3	غير ضروري 2	لا ينطبق 1
Histopathology					
Cytopathology					
Electron microscopy					
Bacteriology					
Virology					
Parazitology					
Immunology					
Mycology					
Enzymology					
Endocrinology					
Hematology					
Genetics					

4. **برأيك، ما هي أفضل السبل لمواكبة التطورات التكنولوجية الحديثة في مجال تخصصك ؟ (يمكن الإجابة على أكثر من خيار)**

□ **المجلات العلمية** □ **الانترنت** □ **المحاضرات العلمية** □ **التدريبات** □ **البعثات الخارجية**

5. **ما هي عدد الساعات اللازمة في الشهر والتي من خلالها تكون قادرا على متابعة التطورات التكنولوجية والتي تؤهلك حتى تكون على كفاءة لممارسة المهنة وأن تطور نفسك ؟**

□ **2ساعة** □ **4ساعات** □ **6ساعات** □ **8 ساعات** □ **10**ساعات

Annex (15): Semi-Structured face to face interviews with MLTs. (English).

Career: Medical Laboratory

1. Qualification:

□ High secondary school/practice □ Diploma □ Baccalaureate □ High Diploma □ Master □ PhD

2. What **training needs** would best help you to meet your demands in your post that you think it's necessary to be efficient to practice the profession and to pursue the technological developments?----------

3. Please, identify to what extent the technologists need the following trainings to be efficient tin their practice

Necessity / Test	Very necessary 5	Necessary 4	Neutral 3	Unnecessary 2	Not applicable 1
Histopathology					
Cytopathology					
Electron microscopy					
Bacteriology					
Virology					
Parazitology					
Immunology					
Mycology					
Enzymology					
Endocrinology					
Hematology					
Genetics					

4. In your opinion, what are the best ways to convoy the modern technological developments in your area? <u>You may choose more than option!</u>

□ Scientific journals □ Internet □ Scientific lectures □ Local trainings □ Abroad missions

5. What are the necessary hours you need in the **month** to be efficient to practice the profession and to develop yourself?

□ 2 hours □ 4 hours □ 6 hours □ 8 hours □ 10 hours