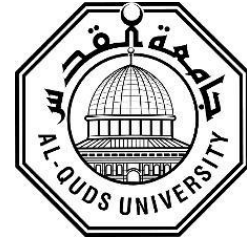


Deanship of Graduate Studies

Al-Quds University



**Assessment of diagnostic ultrasound services in palestine
toward national diagnostic reference levels**

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M.Sc. Thesis

Jerusalem-Palestine

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Prepared By:

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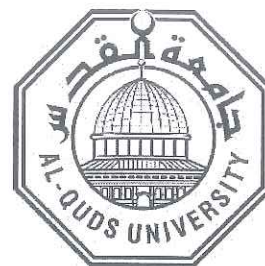
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Al-Quds University
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Thesis Approval

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Dedication

I am most deeply grateful to my whole loving family for the support and the patience during the writing process. I sincerely want to thank my dear wife who provided pragmatic and objective views, help and support, and also for the patience, persistence, and encouragement. The presence of our children brings the most precious moments in my life.

Mohammad Mashahreh

Declaration:

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

Mohammad Hasan Ahmad Mashahreh

Signed 

Date: 15.12.2019

Acknowledgments

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Abstract

Objective: The study was conducted to provide national diagnostic reference levels for ultrasound reporting.

Methods and Materials: The study was carried out in radiology and medical imaging departments in the three sectors representing the Palestinian health system, particularly inside governmental, non-governmental and private health sectors. The sample size comprised 600 ultrasound (u/s) reports of abdomen and pelvis u/s procedures. U/S reports were collected and followed in terms of record name, record number, findings, and all criteria followed the worldwide report of American College of Radiology (ACR).

Results: The Palestinian private health sector u/s report for pelvis and abdominal examinations correlates (P value=0.001) with the ACR standards compared to other Palestinian health sectors. Regarding report structure sections, in the history and indication, our results showed that this section was completely absent from the governmental sector reports. Moreover, the limitation section was absent from all governmental and NGO (u/s) reports while it existed in just 19% of the private sector (u/s) reports. Likewise, in the conclusion section of the report structure, the most noteworthy rate was again in the Palestinian private health sectors as 80% of their (u/s) reports. On the contrary, all the reports included a finding section. Finally, in the previous study section of the report, our results indicated that the highest percentage was in the private health sector, as represented by 57% of their (u/s) reports. When the relationship between the quality of the (u/s) report and health sector was investigated, the results showed that the sort of health sector has a positive effect on the quality of the (u/s) report, where the Palestinian private health sector got the highest quality in writing reports of the ultrasound compared to other sectors.

Conclusion: The Palestinian private health sector have the highest quality u/s reports among Palestinian health sectors.

تقييم التقارير التشخيصية بالموجات فوق الصوتية للبطن والحوض

بين القطاعات الصحية الفلسطينية

إعداد: محمد حسن احمد مشاهره

إشراف: د. محمد حجوج

ملخص

هدف الدراسة: أجريت الدراسة لتوفير مستويات مرجعية تشخيصية وطنية لتقارير جهاز الموجات فوق الصوتية.

منهجية البحث: أجريت الدراسة في أقسام الأشعة والتصوير الطبي في القطاعات الثلاثة التي تمثل النظام الصحي الفلسطيني: القطاعات الصحية الحكومية وغير الحكومية والخاصة. بلغ حجم العينة **600** تقريرا بالموجات فوق الصوتية (U.S) لمنطقتي البطن والحوض وتقارير جهاز الموجات فوق الصوتية تم جمعها ومتابعتها من خلال كتابة اسم المريض ورقم التسجيل والنتائج، وجميع المعايير المتبعة في التقرير العالمي للكلية الأمريكية للأشعة.

النتائج: تلتزم تقارير جهاز الموجات فوق صوتية لفحوصات الحوض والبطن في القطاع الصحي الفلسطيني الخاص التزاما قويا بمعايير الكلية الأمريكية للأشعة مقارنة بقطاعات الصحة الفلسطينية الأخرى. فيما يتعلق بأقسام هيكل التقرير في التاريخ المرضي والأعراض المرضية، تظهر نتائجنا أن هذا القسم كان غائبا تماما عن تقارير القطاع الحكومي. علاوة على ذلك، كان قسم المعوقات غائبا عن جميع التقارير الحكومية وغير الحكومية، بينما كان موجودا في **719** فقط من تقارير القطاع الخاص. وبالمثل، في جزء الخلاصة من هيكل التقرير، كان المعدل الأكثر وجودا مرة أخرى في القطاعات الصحية الخاصة الفلسطينية حيث بلغ **780** من تقاريرهم. أما قسم النتائج، كانت جميع التقارير في العينة تحتوي على هذا القسم. أخيرا في أقسام الدراسة السابقة من التقرير، أشارت نتائجنا إلى أن أعلى نسبة كانت في قطاعات الصحة الخاصة حيث بلغت **757** من تقاريرهم. أما فيما يخص العلاقة بين جودة تقرير (U.S) ونوع القطاع الصحي الذي قدم التقارير، وجدت النتائج أن نوع القطاع الصحي له تأثير إيجابي على جودة التقرير، حيث حصلت القطاعات الصحية الخاصة الفلسطينية على أعلى جودة في كتابة تقارير الموجات فوق الصوتية مقارنة بالقطاعات الأخرى.

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List of Abbreviations

U/S: Ultrasound

MRI: Magnetic Resonance Imaging

3-D: Three Dimensional

TDI: Tissue Doppler Imaging

AAA: Abdominal Aortic Aneurysm

L: Lumbar

S: Sacrum

CT: Computed Tomography

ACR: American College of Radiology

NGO: Non-Governmental Organization

CPT: Current Procedural Terminology

GP: General Practitioner

SR: Structure Report

FTR: Free Text Report

ESR: European Society of Radiology

LV: left ventricle

IRRR :Image Rich Radiology Reports

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CHAPTER ONE

Introduction

Medical u/s imaging is an essential service in the diagnosis and monitoring of disease. When a patient has undertaken a radiology examination, a radiologist or a radiographer usually reports on these images summarizing the findings and making recommendations. This report is sent to the physician who referred the patient to discuss the results and act on any findings. Therefore, accurate and clear reporting is critical for proper cross-care communication and the provision of quality and safe healthcare. Despite the lack of concordance in what constitutes a “good” ultrasound (u/s) report, there is some agreement around the necessary elements of a satisfactory report^[1, 2]. The American College of Radiology (ACR) standard of correspondence provides brief common sense guidelines concerning the wording of reports^[3].

Medical u/s imaging framework is of an at most significance in the finding and assessment of the abdominal cavity, clinical u/s performs tests for kidney, liver, gallbladder, bile ducts, pancreas, spleen, stomach aorta and other blood vessels. Furthermore, it can be used to analyze abdominal pain or distention, unusual liver capacity, kidney stone, gallstones and Abdominal Aortic Aneurysms (AAA)^[4].

An interventional u/s might be utilized for biopsy guiding. Furthermore, Doppler u/s image can assist radiologists with seeing and diagnosing, blockage to blood stream, narrowing of vessels, tumors and congenital vascular abnormalities, reduce or absent blood flow to various organs such as the testes or ovary, increased blood flow which may be a sign of infection^[5].

Hazel Edward et al. (2014) reported that, it was essential for the management of the patient that radiologist produce reports based on their study that were accurate and clear. Perfect report should endeavor to respond to the first clinical inquiry, subsequently recommend instructive asset that are accessible to improve poor report composing. They proposed a system, which professionals may find helpful when constructing u/s reports^[6].

Collard et al. (2-14) reported that improvement in reporting skills of radiology residents with a structured reporting curriculum, significantly improved the detailing scores of the residents through their residency preparing. This demonstrated that there might be an advantage in utilizing a sorted out announcing educational plan to follow occupant progress in creating reports that may improve patient consideration^[7].

Speets et al. (2006) revealed the importance of the upper abdominal u/s in general practice, and improved diagnosis for 64% of patient after upper abdominal u/s. Abdominal u/s considerably diminished the quantity of planned referrals to a therapeutic authority^[5].

Acute pelvis pain, characterized as the unexpected beginning of lower abdominal or pelvis pain enduring less than 3 months^[8] is a regular urgent clinical presentation. Women frequently present to the emergency department after hours. More than 33% of women of reproductive age experience non-menstrual pelvis pain^[9].

Acute pelvis pain can represent an analytic test on the grounds that the clinical history, manifestations, and physical assessment discoveries are regularly vague, and the clinical presentation of the hidden gynecologic, obstetric, urologic, and gastrointestinal conditions regularly differ broadly and much of the time unclear. Although some of the common conditions, for example, ruptured or hemorrhagic ovarian cysts are self-limiting, it is basic that pressing conditions that may require a medical procedure, for example, ovarian torsion, pelvic inflammatory disease, and appendicitis, be viewed as when a premenopausal woman has acute pelvic pain^[8].

The ACR appropriateness criteria list pelvic sonography as the favored first-line imaging methodology in the assessment of acute pelvis pain in pregnant women and non-pregnant women of reproductive age when an obstetric or gynecologic condition is suspected and in the starting evaluation of a suspected non-gynecologic condition in a pregnant patient^[10].

Maiorana et al. (2011) showed that u/s finding of pelvis endometriosis was the primary line indicative strategy for the analysis of pelvic endometriosis. Rectal endoscopic sonography could recognize the nearness and the degree of wall infiltration of bowel sites in any case in patients with a predictable clinical doubt of profound endometriosis MRI is a decent "across the board" assessment to analyze and characterize the definite degree of deep infiltrating endometriosis^[11].

Some studies investigated the impact of u/s report, particularly the impact of abdomen and pelvis u/s reports[12]. The primary goal of this research is the evaluation of the reporting of ultrasound (u/s) findings of the abdominal and pelvic regions in order to improve, optimize and standardize the reporting of u/s findings and facilitate communication across healthcare specialties.

1.1 Problem statement

Ultra-sound of the abdomen and the pelvis is considered a key diagnostic tool in the healthcare system. In Palestine, there is a diversity in the method of ultrasound reporting between the different healthcare premises. This diversity originates from the lack of standardization and quality control in the radioimaging field in general which is consequently reflected on the accuracy and the quality of reporting. Thus, there is an urgent need to evaluate the reporting system used in the abdominal and the pelvic ultrasound in the different healthcare sectors to roadmap policies and to improve the reporting system to meet the American Standards of Radiology.

1.2 Study objective

The objective of this study was to assess the reporting quality of diagnostic abdominal and pelvic u/s service in the Palestinian healthcare premises in order to establish national ultrasound reporting meeting the international standards applied by the American College of Radiology.

1.3 Research questions

1. Does Palestinian reporting of abdominal and pelvic u/s adhere to the model provided by the ACR?
2. Are there differences between the Palestinian healthcare sectors (governmental, non-governmental, and private) in their commitment to the report format provided by the ACR?