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Quality Management through Self-Assessment (EFQM based): the Palestinian Dental Clinics as a case

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Quality Management through Self-Assessment (EFQM based): the Palestinian Dental Clinics as a case

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Jerusalem - Palestine

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Dedication

to the sun shines of my life ... My role models ...

My parents; Othman & Salwa Barghouthi

to the impenetrable walls always protecting me...

My brothers; Yaqoot & Fajr

to younger sisters from different mothers..

My sisters-in-low (Dana & Aya) and my cousin (Shatha)

to the little angels filling our life with magical joy...

My niece (Rand) & Nephews (Rayan, Bahr, Yaman, and Rakan)

to this family that granted me the great gift of unconditional love;

I dedicate this thesis.

Declaration

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

Signed: Yagouta

Yaqouta Othman Mohammed Kharma

Date: 24th of August 2022

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Abstract

This study aimed to determine the impact that the Enablers of the Palestinian dental clinics have on the Results of these clinics. This cross-sectional study followed a descriptive-correlational approach that included quantitative descriptions. A non-Probability convenience sampling method was applied and data was obtained from the sum of (74) dentists of the West-Bank region. For data collection purposes, an equestionnaire was designed by the researcher as a simplified adaptation of the European Foundation for Quality Management (EFQM) excellence model. The findings estimated; a moderate level of implementation of the EFQM model in the Palestinian dental clinics and centers, hence, moderate levels of self-assessment adoption and of performance in these clinics. In addition, moderate to strong positive correlations between the dental Enablers and the clinics' Results. The study concluded that the Palestinian Dental Clinics' Performance is positively impacted by the following Enablers; Processes, Partnerships & Resources, and Leadership, in a descending order. The most important recommendations of the study were those addressed to the following; the Palestinian dental clinics/centers to hold workshops and training courses that improve their teams' knowledge about leadership and clarify their understanding of its concepts, the Dentistry Faculties of Palestinian universities to include courses related to management in their curricula, the Ministry of Health to develop a more advanced external auditing system that monitors the performance and quality of the Palestinian dental clinics/centers, and to the Palestine Standards Institution (PSI) to establish a Quality Assessment Model derived from the EFQM model that is more specified for implementation within the Dental Care Sector.

Key Words: Quality Management, Self-Assessment, EFQM, Performance, Dental Care Sector, Dental Clinics

إدارة الجودة من خلال التقييم الذاتي بناء على نموذج التميز الأوروبي: عيادات طب الأسنان الفلسطينية كحالة

الباحثة: ياقوتة عثمان محد خرمة

المشرف: د. أحمد حرز الله

الملخص

تهدف هذه الدراسة للتعرف على تأثير الممكنين في عيادات طب الأسنان الفلسطينية على نتائج هذه العيادات. اتبعت هذه الدراسة المقطعية منهجاً وصفياً إرتباطياً باستخدام اساليب كمية. تم جمع البيانات من عينة غير احتمالية مريحة اشتملت على (74) طبيب أسنان من الضفة الغربية. بغرض جمع البيانات؛ قامت الباحثة ببناء استبانة تتبنى هيكلاً مبسطاً من نموذج التميز الأوروبي (EEQM). وقد أشارت نتائج الدراسة إلى؛ توجه عيادات طب الاسنان في الضغة الغربية نحو تطبيق نموذج التميز الاوروبي بدرجة متوسطة؛ مما يدل على تبنيهم لنظام التقييم الذاتي بدرجة متوسطة، ويدل على درجات متوسطة من الأداء في هذه العيادات. كما توصلت الدراسة إلى وجود علاقات ارتباط ايجابية بقوى تتراوح من متوسطة إلى قوية بين جميع معايير بعدي نموذج التمييز الأوروبي؛ الممكنين والنتائج. استنتجت الدراسة أن أداء عيادات طب الأسنان الفلسطينية يتأثر ايجابياً بمعايير الممكنين الأتية: العمليات، الشراكات الخارجية والموارد، والقيادة، مرتبة ترتيباً تنازلياً. قدمت الباحثة عدة توصيات موجهة له عادات الخارجية والموارد، الأسنان الفلسطينية لعقد ورشات عمل ودورات تدريبية لتحسين معرفة طواقم عملها بالقيادة وتوضيح المصطلحات المتعلقة بها، كليات طب الأسنان في الجامعات الفلسطينية لتضمين مساقات متعلقة بالإدارة في مناهجها، وزارة الصحة الفلسطينية لنطوير نظام تدقيق خارجي يراقب جودة وأداء عيادات ومراكز الأسنان الفلسطينية، ولمؤسسة المواصفات والمقاييس الفلسطينية لإنشاء نموذج تقييم جودة خارجي مشتق من نموذج التميز الأوروبي وأكثر موائمة للتطبيق في قطاع طب الأسنان.

الكلمات المفتاحية: إدارة الجودة، التقييم الذاتي، نموذج التميز الأوروبي، الأداء، قطاع الرعاية السنية، عيادات طب الأسنان

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Definitions

- Quality of healthcare: the degree to which health services provided to individuals and populations elevate the likelihood of achieving desired health outcomes, in a way that is consistent with current evidence-based professional knowledge (IOM, 1990)
- Quality management in healthcare: is the systematic measurement and monitoring of structure, process and outcome of care in a continuous improvement process. Where structure refers to buildings, equipment and drugs, the process refers to providing services to a patient and output refers to the parameters of the provided services (Islam, 2014).
- Quality Assurance: is the term used to refer to the conventional approach of monitoring quality. It involves the determination of a set of service standards, to which current services are compared (WHO, 1997).
- **Quality Improvement:** the framework being used to methodically improve the approach in which care is provided to patients (AHRQ, 2013; DQA, 2019).
- **Quality Measures:** the mechanisms enabling a user to quantify a selected aspect's quality of care through comparing it to an evidence-based criterion in which better quality is specified (DQA, 2019).
- Self-assessment: a regularly performed, rigorous, systematic review of an organization's activities, then judging the obtained results against the appropriate valid standards (Criteria) (concluded by the current researcher).
- **Performance excellence:** the integrated approach to managing an organization's performance that results in; providing customers and stakeholders with everimproving value, contributing to sustainability, improving the organization's overall effectiveness and capabilities, and leading to both personal-level (employees-level) and organizational-level learning (ASQ, 2014).
- The EFQM model: a multi-dimensional non-prescriptive TQM framework, which main constituting elements are the fundamental concepts of excellence. The framework of the EFQM Model is based on nine criteria represented in the two dimensions that are; Enablers and Results (Gorji & Emami, 2012; Favaretti et al., 2015, Heydari et al., 2019).

Abbreviations

ASQ: the American Society for Quality **BEMs:** Business Excellence Models **CCM:** Chronic Care Model **CV:** Coefficient of Variation **DMADV:** Define, Measure, Analyze, Design, and Verify DMAIC: Define, Measure, Analyze, Improve, and Control **EFA:** Exploratory Factor Analysis EFQM Model: The European Foundation for Quality Management Model **EOQ:** European Organization for Quality EQA: European Quality Award H₀: the Null Hypothesis **H**_A: the Alternative Hypothesis **HCOs:** Health Care Organizations **IOM:** the Institute of Medicine **ITEA:** International Team Excellence Award MFI: the Model for Improvement **MBNQA:** the Malcolm Baldrige National Quality Award **PDSA Cycle:** Plan-Do-Study-Act (also known as PDCA Cycle; Plan-Do-Check-Act) **PEMs:** Performance Excellence Models **OA:** Quality Assurance **QI:** Quality Improvement **QM:** Quality Management RADAR Logic: Results, Approach, Deployment, Assessment and Review **SD:** Standard Deviation **T:** One-Sample T-test value **TQM:** Total Quality Management **USA:** United States of America **VIF:** The Variance Inflation Factor **VSM:** Value Stream Mapping WHO: World Health Organization

Chapter One: General Framework

Introduction

Major companies of different industries often promote that what demarcate them from their competitors is the quality of their service. However, in healthcare quality of provided services has a direct impact on the health and safety of patients. Therefore, no other industry places a high value on quality of service as healthcare (UL, 2013). Actually, in dentistry as a part of the healthcare system, service quality that does not emulate the minimum required standards of dental care providers could mean the difference between a patient's oral health and well-being or his/her suffering.

That's why; the dental profession has –for a long time- shown an active rooted interest in Self-evaluation, quality assessment, and performance management. Accordingly, various dental stakeholder groups are continuously working hard to build quality dashboards detailing different utilization and cost parameters employed in quality measurement (DQA, 2019).

However, Due to the absence of consensus on a core quality measurement set in dental care or even on a clear definition of quality in dentistry, this, in the case of Palestine, amplified by the absence of an external step-to-step quality assessment process supervised by governmental health agencies or other stakeholders in dental care; the researcher is convinced that the most practical and feasible approach to quality assessment in Palestinian dental clinics, in current circumstances, is the selfassessment approach. This researcher's convention is supported by (Gadbury-Amyot et al., 2015; Stenov et al., 2017) belief that in a profession, such as that of a dentist, in which he/she operates under principles of self-regulation and autonomy; a competent practitioner is one that is a self-directed, lifelong learner.

The European Foundation for Quality Management (EFQM) Model is a multidimensional non-prescriptive Total Quality Management (TQM) framework that is built on the fundamental concepts of excellence (Vallejo et al., 2006; Markkula et al., 2011; Favaretti et al., 2015, Heydari et al., 2019). The model's application as a selfassessment tool has spread within many European organizations since its introduction (Moreno-Rodriguez et al., 2010). Hence, it is considered an invaluable selfassessment tool that is widely used by various European healthcare organizations (Moreno–Rodriguez et al., 2010; Dehnavieh et al., 2012; Favaretti et al., 2015).

The EFQM model provides these organizations with insights into their own activities and outcomes; it helps them determine their strengths and weaknesses. The application of the model was proven by many researchers, including (Gorji & Siami, 2011; Boulter et al., Uygur & Sarıgul, 2013; Favaretti et al., 2015, Van Schoten et al., 2016), to lead to continuous quality improvement and performance excellence.

1.1 Problem Statement

As established above, the EFQM model has been used as a self-assessment tool for a long time by many European healthcare organizations, and its role in leading healthcare organizations towards performance excellence has been confirmed by many. Still, even-though there is an extensive body of literature that addresses the model in general, there is less focus on the Healthcare sector, especially Dental Centers (Khalaf Ahmad et al., 2012). Furthermore, there are few reports of such endeavors being carried out in developing countries (Dehnavieh et al., 2012).

Even-though these researchers noticed this gap in literature few years ago, nonetheless, and as noticed by the current researcher, this gap still exists to our present-day. Actually, in Palestine, research related to the EFQM excellence model is very rare in the Healthcare sector, and almost none existence in the Dental Care Sector.

Hence, the researcher of the current study attempts to contribute -even if in a small way- to filling the gap in literature regarding the EFQM model application in dental care sector, and in developing countries, as represented by Palestine in this study. This is carried out through exerting efforts to determine the impact that the Enablers of the Palestinian dental clinics have on the Results of these clinics.

1.2 Objectives of the study

The main objective of this research is determining the impact that the Enablers of the Palestinian dental clinics in the West-Bank have on the Results of these clinics. In addition, the following are the specific objectives of the research:

• To describe the reality of implementing the EFQM model in the Palestinian dental clinics of the West-Bank.

• To examine the presence of relationships between the two main dimensions of criteria in the EFQM (the Enablers' criteria and the Results' criteria) in the Palestinian dental clinics of the West-Bank.

1.3 Questions of the study

The main question this study strives to answer is "What impact do the Enablers of the Palestinian dental clinics have on the Results of these clinics?". In addition, the following are its secondary questions:

- What is the reality of the EFQM model implementation in the Palestinian dental clinics of the West-Bank?
- Are there relationships between the two main dimensions of criteria in the EFQM (the Enablers' criteria and the Results' criteria) in the Palestinian dental clinics of the West-Bank?

1.4 Significance of the study

• Theoretical Significance:

This research contributes to filling the gap in literature related to the EFQM model in Palestine. It is one of the first studies to address the model in the Palestinian Dental Care Sector. This study contributes to empirical research carried out in the healthcare sector in the Middle-East region, and provides useful guidelines for further research possibilities.

• Empirical Significance of the Study:

The empirical importance of this research comes from the benefits it will provide to the different segments of the community including; households, dentists, and to both; the Palestinian Dental Association, and the Palestinian Ministry of Health (especially the Oral Health Unit).

1.5 Limits of the Study

- **Thematic Limits:** This study is limited to describing the reality of the EFQM model implementation, the relation between its criteria, and the impact enablers have on results.
- **Spatial Limits:** The Study is limited to one sector of one region that is; the Palestinian Dental Care Sector of the West-Bank.
- **Time Limits:** The Academic year 2021-2022
- Human Limits: Palestinian Dentists of the West-Bank.

1.6 Structure of the Study

The study consisted from five chapters arranged in the following sequence:

- First, Chapter one which is this one; draws the general framework of the study.
- Then Chapter two clarifies the picture by discussing the main concepts and terms of the study building up to its conceptual framework, then analyzing the related previous studies of the field.

- Chapter three paves the way for the empirical part of the study through illustrating the applied; procedures, methods, and approaches.
- The statistical analyses of the data and the discussion of its results are then covered in Chapter four.
- Chapter five then completes the whole picture by answering the study's questions and driving its findings, conclusions, and recommendations.

Chapter Two: Theoretical Framework & Literature Review

Introduction

This chapter discusses the main terms and concepts related to the subject of this study and building up its conceptual framework. In addition, the researcher reviews a number of previous studies carried out in the field, while pointing out the main results of such studies.

2.1 Theoretical Framework

2.1.1 Quality Management

The aim of quality management is to continuously improve health services by means of quality planning, control, assurance and improvement, to achieve this aim; available resources must be carefully regarded and used efficiently and effectively with focus on patients' needs (Timofe & Albu, 2016).

Quality of healthcare was defined by the Institute of Medicine (IOM) in 1990 as: the degree to which health services provided to individuals and populations elevate the likelihood of achieving desired health outcomes, in a way that is consistent with current evidence-based professional knowledge (NNOHA, 2012; AHRQ, 2020; WHO, 2022).

As for Quality management in healthcare; it is defined as the systematic measurement and monitoring of structure, process and outcome of care in a continuous improvement process. Where structure refers to buildings, equipment and drugs, the process refers to providing services to a patient and output refers to the parameters of the provided services (Islam, 2014).

The two main aspects of oral health quality programs are quality assurance (QA) and quality improvement (QI). QA encompasses a combination of processes aiming to continually monitor health care delivery. QI builds on basic data obtained from QA processes in order to create a data-driven plan for oral health care improvement. However, both QA and QI measure success through goals accomplished over a predetermined period of time (NNOHA, 2012).

2.1.1.1 Quality Assurance:

Quality Assurance (QA) is the term used to refer to the conventional approach of monitoring quality. QA involves the determination of a set of service standards, to which current services are compared. Services corresponding to the established standards are considered of adequate quality. However, if deficiencies are detected, correction plans are developed to manage the problem (WHO, 1997). Thus, QA guarantees Health Centers' compliance with quality standards and provides stakeholders of the profession with quantifiable performance assessments (NNOHA, 2012).

Even-though there are advances in oral health technology, still, currently there are insufficient evidence-based standards to accurately assess various aspects of patients' care including risk and diagnosis, or to manage dental care provision for the most common oral diseases. Hence, additional methods are required for oral health QA processes to rely on, in order to determine quality of care and the appropriateness of provided services. These additional methods of assessment include (NNOHA, 2012):

- **Objective peer reviews:** objective reviews of the dental records carried out by dental peers to assess patient documentation and evaluate its correspondence to the established criteria. To conduct such reviews, a random sample of patients' dental records is selected by a dental center, this sample is then reviewed by either dentists from the same center (others than those who provided the services), or by contracted expert reviewers. This method is highly recommended to be carried out by all Health Centers to improve quality of care due to its relatively low-cost.
- **IT-tracked service measures:** provided services are tracked through objective information technology. That is; information about these services is attained through electronic practice management programs such as; an electronic dental record (EDR), Patient Electronic Care System (PECS), and Microsoft Outlook, or using other IT systems such as those of billing and registry. An example of this method is the treatment plan completion measure, in which the number of patients who have completed Phase I of their treatment within a one year period after their examinations is traced.
- Validated patient surveys: these surveys are considered a subjective assessment method of patient outcomes. Through using it; a patient's own perception of the effect of provided care on their oral health status is measured. The survey must be

administered as written to maintain its validity, and may be conducted in addition to the patient satisfaction survey which is usually carried out on an annual basis. An example of such validated patient surveys is the Oral Health Impact Profile (OHIP).

Other examples of oral health care surveys are those administered by entities outside the oral health center, such as; state, local agencies, insurance companies, researchers and others. Such surveys often obtain more dependable results, as patients tend to be more objective in their feedback than they are in surveys conducted directly by the health center in which they are treated.

Assuring quality is a challenging process; however, it's the researcher's opinion that it's even more of a challenge in the healthcare sector. In healthcare, dental care being part of it, any treatment decision's responsibility is always shared between the doctor (dentist) and the patient. A healthcare provider can only exert efforts to increase the likelihood that his/her patients will follow the clinical recommendations, but can in no way guarantee a patients commitment, and some patients will always decide not to adhere to these recommendations.

2.1.1.2 Quality Improvement:

The importance of Quality Improvement (QI) in healthcare has grown more and more over recent years. This is due to some conviction of it having direct effect on clinical outcomes, as well as, patient satisfaction. In the Healthcare sector, OI has the ability to improve the quality of patients' lives or even save their lives (Van Schoten et al., 2016).

Quality Improvement (QI) in health care was defined by the Agency for healthcare research and quality (AHRQ), as: the framework being used to methodically improve the approach in which care is provided to patients. Its processes have characteristics that are measurable, analyzable, improvable, and controllable. QI implicates continuous endeavors to achieve as predicted and sustainable process results (AHRQ, 2013; DQA, 2019).

Quality Improvement represents a formal approach to analyzing performance and exerting methodical efforts to improve it. Improving quality of care can be conducted as either an internal process or through an external process, and takes into consideration both; prospective and retrospective reviews. It aims to reduce process variation and to improve the outcomes of these processes for all; the patients, the healthcare centers, and the healthcare system as a whole. In QI approach to create systems that prevent errors from occurring, imputing blame is avoided (NNOHA, 2012; DQA, 2019).

In order for healthcare centers to succeed in improving their patients' experiences and enhancing their Consumer Assessment of Healthcare Providers and Systems (CAHPS) survey scores, it is important to establish QI processes through using a systematic, formal framework that gives feedback on progress. These structured approaches are known as <u>Quality Improvement models</u>, described below are the most prominent ones.

***** The Model for Improvement (MFI):

MFI is a simple, yet powerful model, it allows Health Centers' OI teams to evaluate whether these centers achieved the determined goals, utilized their resources effectively and efficiently, and performed the activities required to produce the desired changes, hence, it's the most commonly used QI approach in health care. The Institute for Healthcare Improvement (IHI) established this model in 1996 as a fusion of two prominent QI models; Total Quality Management (TQM) and Rapid-Cycle Improvement (RCI). This fusion outcome is a framework that tests interventions on a small scale using PDSA cycles (NNOHA, 2012; DQA, 2019).

The Model for Improvement is predicated on **three fundamental questions** that guide the QI team of a health center through the development of their strategy and action plan. Figure (2.1) illustrates these questions (NNOHA, 2012; ACSQHC, 2015; DQA, 2019; AHRQ, 2020).



Figure (2.1): The three fundamental questions of the Model for Improvement

- First Question: What is the heath center team trying to accomplish?

The purpose of this question is to establish an AIM STATEMENT for improvement. This helps focusing the organization's efforts on specific actions or elements of the Care Model. In addition to determining which patients and providers are to participate in the process. The AIM STATEMENT must be time-specific, brief, and measurable. In some cases an AIM requires a few trials of testing before it becomes truly focused.

- Second Question: How will the health center team know that a change is an improvement?

In order to answer this question it is necessary to establish measures and definitions. Data is also required to assess the impact of interventions designed to achieve an AIM. However, learning is further enhanced when shared AIMS and data are used and effective changes are shared between health centers. Using this method, superior performing and best practices are more quickly recognized and their experiences are circulated via benchmarking.

- Third Question: What changes can the heath center team make that will result in an improvement?

Testing a change and learning from its impacts is necessary to deduce if an outcome is considered an improvement.

After answering these questions, the next step in implementing the model, is using the **Plan-Do-Study-Act (PDSA) Cycle (also known as PDCA Cycle or Deming Cycle)** which represents the cornerstone of the model. PDSA, as described in figure (2.2), is a rapid cycle process that uses a scientific trial-and-learning method to assess the effects

of small changes. This is carried out through setting aims, making small changes to achieve these aims, developing measures or selecting ones to evaluate if a change resulted in improvement, and ultimately conveying the determined effective changes throughout the practice (NNOHA, 2012; AHRQ, 2020; FDI, 2020).



Figure (2.2): PDSA Cycle (Deming Cycle)

- **Plan:** After prospective and retrospective assessment, the health center team carefully determines priorities in need of improvement. Such priorities may include elements as; employee satisfaction, cost reduction, stresses to the current system, etc. after goals are established; potential interventions are investigated and the timelines of implementation are determined.
- **Do:** once measures are selected to monitor progress; the plan is put into motion. Impacts of the implemented change on staff, patients and the system as a whole

are monitored, in order to identify and deal with barriers, and to make any required changes to the process.

- Study (or Check when the other abbreviation PDCA is used): After a reasonable period of implementation, the impacts of the improvement initiative are revisited to evaluate and verify that the outcomes are the desired ones.
- Act: Once necessary changes are made, the plan is cycled through again. Additional improvements to be made are determined and assessments are revisited again. Eventually, any successful innovations are generalized.

PDSA cycles are short, quick, and usually, take only hours, days or no more than a few weeks to complete. However, it's worth mentioning that the "study" phase of the cycle is the key to determining the change that will lead to improvement. During this phase the team; learn from the collected data, assess effects on patients, staff, and other parts of the system, and under various conditions (such as; by different practices or in different locations). Most importantly, this phase is an optimal time to evaluate how would the implementation of the Chronic Disease Model help in generating new ideas and approaches to achieving a positive change (NNOHA, 2012).

Chronic Care Model (CCM):

The Chronic Care Model aims to help patients with chronic diseases through applying a coordinated program of QI, research and information sharing. The primary concept of the model was originally suggested in a synthesis of scientific literature in the early 1990's as an approach to re-arrange primary care and apply critical elements that enables it to proactively care for patients suffering from chronic conditions. Since then; the model has been adopted by different health care organizations, and evolved to become a framework being used by health care organizations to develop and implement the Patient-Centered Dental Home (PCDH) concept (Boehmer, et al, 2018).

PCDH is a term used by the dental care providers parallel to that of Patient-Centered Medical Home (PCMH) used by medical care providers. PCDH is an accessible, coordinated, continuous, comprehensive, patient and family centered model of care. It places emphasis on quality and safety as integrated components of a health home¹ for a patient throughout his/her life span (Damiano, et al, 2018).

Chronic Care Model, recently known as "Person-Centered Care", suggests that chronic disease patients must be provided with proven tools and information to aid them in implementing informed changes within their systems that might lead to improvements in both; care and outcomes. The model theorizes that positive interactions among a well-informed, empowered patient and a well-equipped, driven dental team will lead to improvements in dental care outcomes. CCM also identifies the six elements described in figure (2.3) as indispensable to ensuring and improving quality of care (AHRQ, 2017).

As illustrated in Figure (2.3) and according to CCM; for a health care quality improvement program to succeed, the following elements must be ensured (Jaglal et al. 2014):

¹ Health Homes are a Medicaid State Plan created by the USA Affordable Care Act of 2010 to support



Figure (2.3): The Chronic Care Model

- Health Care Organization: having the full support of the organizational structure and leadership.
- **Community Resources and Policies:** the presence of strong links between the Health Center and community resources.
- Self-Management Support: providing the patients with the required support and the appropriate information that enables them to better manage their health.
- **Delivery System Design:** coordinating the entire care delivery system in a way that ensures the integration of all provided health care services (dental care with medical care and other health care services).
- **Decision Support:** utilizing evidence-based protocols as guidelines for daily clinical practice.
- **Clinical Information Systems**: providing the dental care team with the needed relevant information about each patient, in order for suitable clinical decisions to be made.

Findings of a pilot study carried out in USA by Oral Health Disparities collaborative (OHDC) illustrated that CCM could be used to manage the most common chronic oral diseases, that are; dental caries and periodontal disease. The models flexibility enables its successful implementation; in diverse health care settings; to various target populations, and for many chronic health conditions. Consistent application of the model might -after a suitable period of time- lead to; healthier patients, more satisfied care providers, and enhanced cost savings (NNOHA, 2012).

✤ Lean:

Lean is an improvement philosophy brought to light by the Toyota Motor Company. It's used by businesses as a tool to streamline all manufacturing and production processes. Using a set of instruments; Lean embodies a long-term vision aiming to achieve continuous improvement (Cohen, 2018).

Lean focuses on cutting out any unnecessary and wasteful steps included in the process of creating a product or delivering a service. Therefore; any part of a process that does not add value - needed by the customer – is straight-forwardly removed from the equation. This results in a highly streamlined process in which only steps that directly add value are included; a process flowing smoothly and efficiently, in a manner that enhances performance (Cohen, 2018; AHRQ, 2020).

When applied in healthcare; this Lean "thinking" eliminates waste as perceived by the patient, and improves efficiency in work processes, thereby; maximizing quality and safety for the patient. However, implementing Lean requires a clear understanding of the process being reviewed, and of every step involved in it; in order to eliminate

unnecessary steps, and to redesign the process based on the patient needs (AHRQ, 2020).

In order to implement Lean in healthcare sector a technique called Value Stream Mapping (VSM) is considered the starting point. It aims to establish a culture that fosters the satisfaction of patients, staff and managers through continuous improvement built upon personnel's engagement in identifying areas that require improvement (Marin-Garcia et al., 2021). Employing VSM; a visual map of each step in the flow of the current process should be created. To do so; the QI team should discuss and agree on the sequential steps of the current process. This technique helps the team find steps in the process that are of poor value, create waste, or cause poor flow or/and errors, then redesign the process in a manner that improves or if required eliminates these steps (AHRQ, 2020).

After using VSM, the next step of Lean is to carry out **5S workplace organization**, during which QI team members methodically review each environment in order to (UL,2013; Cohen, 2018):

- (1) Sort,
- (2) Simplify,
- (3) Standardize,
- (4) Sweep/Shine, &
- (5) Initiate self-controls (to sustain the sequence for standardization).

5S aims to improve space organization and to eliminate the time wastes of getting prepared to work. VSM coupled with 5S have been proven; to create smoothly flowing, efficient processes that offer more value to those involved "Leaner Processes", and to sustain higher rates of successful improvement processes.

Six Sigma:

Six Sigma is an improvement method that endeavors to decrease variation and defects. The key goal of this method is to eradicate defects and waste, in order to improve quality and efficiency, through streamlining and improving all included processes (AHRQ, 2020).

The term Six Sigma is based on the Greek symbol sigma (σ); it's a statistical term used to measure a process's deviation from the process mean or target. Six Sigma is derived from the bell curve applied in statistics, where one Sigma represents a single standard deviation from the mean. If a process has six Sigmas (three above the mean and three below it); the defect rate is considered "extremely low" (Patel & Chudgar, 2020).

In the health care sector; Six Sigma is used to improve the reliability of processes included in delivering health care services. The method strives to improve the quality of process outputs through minimizing variability in the processes by means of identifying and eliminating any causes of defects/errors (AHRQ, 2020). In Six Sigma a set of quality management methods is applied with a main focus on statistical tools and analysis as means to identify and amend any causes of variation. However, the

two main methodologies used by Six Sigma are DMAIC and DMADV (Wolfe et al., 2021).

DMAIC Methodology: (Define, Measure, Analyze, Improve, Control) is the one most applicable to the process of providing a service, It's used by six sigma in the health care sector as a roadmap through which problems are solved and processes are improved, in order to provide customers with the best quality at every phase of the process of delivering a service (Al-Shamsi & Tareq, 2020).

DAMIC is a data-driven quality strategy with the letters representing the five phases molding the process. DAMIC is sometimes implemented as a standalone quality improvement process, but can also be implemented as a part of other improvement initiatives. However, it is a fundamental part of any Six Sigma initiative with the following being its main five phases (Burke & Silvestrini, 2017; Antony et al., 2018):

- (1) **Define** any problem or any improvement opportunity, goals, and customer requirements.
- (2) Measure performance of current process.
- (3) Analyze current process to discover any causes of variation (defects and errors).
- (4) Improve performance through mending or eliminating any causes of variation.
- (5) Control the improved process and its future performance.

The other methodology used in a six sigma initiative is DMADV methodology consisting of the following phases; (Define, Measure, Analyze, Design, and Verify). However, this complementary set of phases is most applicable to the examination and improvement of the customer relations side of an organization. So Whilst DMAIC is
useful for improving the organization's current processes, DMADV is used in developing a new process, product, or service (Sodhi, 2020).

Studying the previous discussion of the different QI models; it's obvious to the researcher that; even-though there are various established QI models that a dental care center can implement, still, all these models share an undeniable number of common features. Such features include:

- ✓ Focusing of the leadership role in communicating the vision and strategy of improvement beyond any barriers.
- ✓ The importance of setting Clear goals.
- ✓ Determining measures that can be analyzed as a tool of identifying issues and guiding decisions (predetermining transparent clear metrics).
- ✓ Emphasis on involving stakeholders as participants in the improvement processes.
- ✓ Applying a structured framework to implement improvement initiatives.
- ✓ The importance of monitoring the clinical activity through observations and the collection of process data (as feedback) to track the progress of the implementation process.

In Health Centers, quality improvement decisions are guided by numerous variables, such as; available resources, degree of motivation, board priorities, talent of staff and population needs. In accordance to this variation in goals, each healthcare Center must develop its own unique steps to accomplish its desired improvements (NNOHA, 2012). However, it's important to understand that no-matter which QI model is implemented or what unique steps are applied in a healthcare center; QI does not just

spontaneously happen; it demands extensive planning, communication, and commitment.

2.1.1.3 Quality Measurement:

Countries continually strive to improve the overall quality of healthcare for their populations, while making it more affordable. This quest has been guided by a small number of analytic frameworks for quality assessment that have led measure development initiatives in both public and private sectors (AHRQ, 2020; WHO, 2022).

In the United States of America, the Affordable Care Act (ACA) enacted in 2010 has shifted the focus from volume-based care models to those that accentuate quality and value by highlighting the significance of **a triple aim care**. Through this act, the USA National Quality Strategy (NQS) has been developed with the main goal of shaping quality measures that facilitate the alignment of healthcare stakeholders' efforts to the purpose of achieving; **overall quality of care improvement, healthy population/healthy communities, and affordable healthcare** (DQA, 2019).

Measurement represents the corner-stone of assessment and is considered one of the fundamentals of current endeavors to improve healthcare quality. Although there is a lack of a definition of quality in dental care, still, a number of health care providers, in both public and private sectors, continue exerting their efforts to improve the quality of dental care using specific quality measurement tools (Byrne, 2021).

The Institute of Medicine (IOM) in USA defines quality measures as: the mechanisms enabling a user to quantify a selected aspect's quality of care through comparing it to an evidence-based criterion in which better quality is specified. Measuring quality permits stakeholders of the dental profession to quantify care provided to patients. In addition, it is an indicator of the extent to which improvement activities are actually improving care or outcomes of different conditions arising in various settings or over a specific timeframe (DQA, 2019).

Dental care suffers from a scarcity of quality measures. IOM reports have recognized the absence of dental quality measures as a barrier preventing the improvement of oral health and hindering the reduction of oral health disparities. Actually, IOM has stated that quality measures in dental care 'lag far behind' quality measures in other health professions including medicine. The institute has also suggested that establishing quality measures in dentistry would facilitate improvement of oral health and could reduce inequalities in provided dental services (Byrne, 2021).

Over the years efforts have been exerted to assess the different methods in which quality of dental care can be measured. However, there is a growing recognition that one of the most influential quality measure development initiatives is the framework constructed by the Institute of Medicine (IOM). This framework focuses more broadly on reinventing the health system in a way that fosters innovation and improves the delivery of care. To this goal; the following six domains, as illustrated in figure (2.4), have been indicated as fundamental standards for the provision of quality in the healthcare system, and in dental care as a part of it (IOM, 2001; NNOHA, 2012; DQA, 2019; AHRQ, 2018; FDI, 2020; Al-Shamsi & Tariq, 2020; WHO, 2022):

- Safe: avoiding injuries to patients going through treatment.
- Effective: providing services to patients who need it based on scientific knowledge, and abstaining from providing it to those who are not likely to benefit.
- Efficient: achieving the most benefit from available resources and refraining from wasting; equipment, ideas, supplies, or energy.
- **Timely:** minimizing waiting times and, in other situations, harmful delays; for both care takers and care givers.
- Equitable: providing care that does not differ in quality on account of personal characteristics such as; gender, ethnicity, geographic location, and socioeconomic status.
- **Patient-centered:** providing care that corresponds with each individual's preferences, needs and values, and making sure that patient values steer all clinical decisions.



Figure (2.4): IOM domains for healthcare quality

In addition to these six domains; an additional fundamental standard for the provision of quality in the healthcare system is mentioned by the WHO. This standard requires provided health services to be "Integrated", that is, it makes it available to provide the full range of healthcare services throughout a patient's life course (WHO, 2022). Nonetheless, the dental care sector should complement these domains with measures dictated by the patient's desired outcomes. These desired outcomes may include enhancement of the patient's oral health status, improvement of his/her quality of life and respecting his/her personal dignity (Byrne, 2021).

Establishing measures to recognize and keep track of innovative strategies aiming to reduce the incidence of oral disease, while at the same time improving effectiveness and efficiency via focusing on prevention, has always been an important priority of the healthcare system stakeholders. To that purpose, data for measurement can be attained using administrative sources (that is; encounters and claims), patient records, and surveys. Even-though the best predictive of quality is measuring a patient's health status by means of his/her clinical records, still, due to the insufficiency of standardized dental information systems for documentation of clinical records; administrative and claims data continue to be the only cumulative data in dentistry today. However, limited accessibility to claims data is another substantial challenge obstructing the measurement of quality and performance (DQA, 2019).

The researcher believes that the establishment of quality measures in dentistry is even more complicated in the case of Palestine compared to that in developed countries. That is due to the dental information systems of Palestinian dental clinics being even more insufficiently standardized. In addition, administrative and claims data – which is considered the main source of data in dentistry in developed countries- also lacks standardization and do not provide stakeholders in Palestinian dental care with a sufficient amount of information. Actually, in Palestine, a private insurance only covers a predetermined percentage of a patient's required dental care, and a governmental one does not even cover a patient's essentially needed dental care.

Reflecting on that; the current study agrees with a study carried out by Byrne and others in (2019) that, in recent years, there has been an abundance of initiatives striving to develop dental quality measures. However, these initiatives have not been guided by a clear comprehension of the meaning of quality. A consensus is required in order to establish a clear definition of quality in dentistry. Determining the main dimensions of quality in dentistry will lead to the establishment of a core quality measurement set.

2.1.2 Self-Assessment

More than forty-five years ago, a physician and the founder of the study of healthcare quality and of medical outcomes research; Avedis Donabedian, suggested a conceptual model that lays out a framework for healthcare quality assessment based on structure, process, and outcome. The model, known as the Donabedian model of care, defines structure as the environment in which the healthcare service is provided, process as the method by which the healthcare service is provided, and outcome as the end-result of the provided healthcare services. The guidelines of this model, nowadays, form the principles for measures upon which clinicians base performance and quality of care improvement plans (DQA, 2019).

Approaches to quality assessment in healthcare are driven by quality measurement. However, there are considerable distinctions between medical care and dental care. Therefore, merely applying the definitions of quality and its measures from one

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profession to the other would risk forging an incomplete conception of a complex profession; that is dentistry. Hence, a gap is present in the configuration of an approach to quality assessment explicit to dental care. And even-though, the dimensions of quality are often described as separate entities; still, a practical approach to quality assessment in dental care should be orientated towards considering these dimensions as a whole in order to avoid the view of each dimension as a fragmented part (Byrne, 2021).

Due to the absence of a core quality measurement set in dental care or even consensus on a clear definition of quality in dentistry, this, in the case of Palestine, amplified by the absence of an external step-to-step quality assessment process supervised by governmental health agencies or other stakeholders in dental care; the researcher is convinced that the most practical and feasible approach to quality assessment in Palestinian dental clinics, in current circumstances, is the self-assessment approach. This researcher's convention is supported by (Gadbury-Amyot et al., 2015; Stenov et al., 2017) belief that in a profession, such as that of a dentist, in which he/she operates under principles of self-regulation and autonomy; a competent practitioner is one that is a self-directed, lifelong learner.

Self-assessment has been defined by many researchers and in various ways. Moreno– Rodriguez and others in (2010) defined self-assessment as: a thorough, systematic and regularly carried out review of an organization's activities, and referencing this review's results against the EFQM model. In their study, Gadbury-Amyot and others in (2015) agreed with others that self-assessment is: the systematic process of judging one's own performance against suitable established (valid) standards, and suggested that the key to this definition is having standards or criteria that are both suitable and valid. Deriving from (Heydari et al., 2019), Self-assessment is a development process that employs special tools and approaches in order to judge the efficiency of predetermined processes and programs.

For purposes of the current study and using an agreed upon core of these previous definitions; the current researcher defines self-assessment as: a regularly performed, rigorous, systematic review of an organization's activities, then judging the obtained results against the appropriate valid standards (Criteria). And accordingly, the researcher agrees with Gadbury-Amyot and others (2015) that the key to this definition is the establishment of these criteria.

In a care providing center, the main aim of self-assessment is to promote reflection on the center's own performance. This is achieved through its central role in (Care Inspectorate, 2019):

- **Continuous improvement:** through reflecting on what is being done in order to identify strengths and weaknesses.
- **Testing changes and improvement ideas:** determining what works best as means to implementing good practices and supporting innovation.
- Making informed decisions: the self-assessment process forces a care center's team to be involved in; reflection, conversations, challenge and support. This helps them make well-informed decisions which in-turn leads to better outcomes.
- Establishing a baseline (starting point): this helps a care center formulate action plans with clear priorities leading to the improvement of the provided services'

outcomes. It also assists the team in contemplating changes that have led to improvements.

- Monitoring progress: when used effectively, continuous self-assessment helps a care center monitor progress and measure the impact of adapted changes on outcomes (the differences made for patients).
- **Focus on outcomes:** self-assessment is an essential tool in making difference for patients to whom the services are provided.

In summary; the researcher is persuaded that self-assessment is an invaluable tool that helps a dental care center in determining the carried-out processes that are; working well, those that need improvement, and the starting point from which this center's improvement journey could be launched.

In the dental profession, due to self-assessment's important role in the improvement of oral health; all stakeholders in the profession continuously exert efforts to build quality dashboards. However, for these dashboards to consist of the paramount measures of self-assessment needed globally to assure quality of the delivered dental care services and the adequacy of the evaluation; these dashboards must be the extract of collaborative stakeholders' efforts addressing the various utilization and cost parameters in dental care quality measurement (DQA, 2019).

Self-assessment provides a framework within which businesses are able to focus their quality management progress and create a benchmark for internal and external progress. The pursuit of such benchmarks might have a positive effect on the holistic performance of a business (Brown, 2010; Gorji & Emami, 2012) leading to its performance excellence.

Performance excellence is defines as the integrated approach to managing an organization's performance that results in; providing customers and stakeholders with ever-improving value, contributing to sustainability, improving the organization's overall effectiveness and capabilities, and leading to both personal-level (employees-level) and organizational-level learning (ASQ, 2014). Performance Excellence is basically built upon a set of eight fundamental concepts that are; leadership and constancy of purpose, customer focus, people development and involvement, management by processes and facts, results orientation, continuous learning, partnership development, innovation and improvement, and public responsibility (Al-Shemaili, 2009).

As an answer to the requirement and demands for more transparent methods of assessing the performance of organizations; various Quality Awards were created by numerous countries. These awards represent Performance Excellence Models that can be used by organizations as tools to recognize their strengths and weaknesses in order to make improvements leading to higher levels of performance. These models are independent performance assessment tools that afford information on how-well an organization operates; hence, organizations that have been granted these awards have exhibited high levels of quality and innovative programs (Kumar, QG, 2022).

These Performance Excellence Models set out from an operations-oriented scope, providing organizations worldwide with the appropriate drive and guidelines needed for their quest of achieving the broader perspective; that is performance excellence (Carvalho & Sampaio, 2020).

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2.1.2.1 The Most Popular Performance Excellence Models (PEMs):

Ever since the world crisis in 1930, the world's organizations' center-of-attention shifted towards quality management as means of facing globalization competition. In this quest, many scientists and professionals proposed various concepts and paradigms of quality. Hence, Different organizations of numerous countries founded quality awards to encourage competition towards performance excellence within the organizations of these countries. These awards criteria set out as assessment tools used by organizations aspiring to be granted these awards of their countries, then become popularly used by organizations all over the world as assessment tools paving organizations path to achieving performance excellence (Santosa & França, 2016). **Nowadays, the most well-known Quality Awards include:**

- Canada Awards for Excellence: founded by Excellence Canada; this organizational awards program aims to recognize exceptional achievements. It has been the most aspired to awards program across Canada since 1984. To receive this award, an organization must meet and exceed meticulous standards and requirements demonstrating exceptional performance in the fitting award category. The award's assessment process includes using elements that fall under the six dimensions of; Leadership, Planning, Customers, People, Processes, and Partners (Excellence Canada, 2022).
- ASQ International Team Excellence Award (ITEA): ITEA is a global performance recognition program founded by the American Society for Quality (ASQ) with the purpose of inspiring excellence. It fosters key strategic initiatives

including; advancements in the field of quality and motivation of organizational excellence best practices. (ASQ, 2022). The ITEA criteria are grouped in a non-prescriptive manner into these five sections; Project selection and purpose, Current situation analysis, Solution development, Project implementation and results, and Team management and project presentation (Broedling & Goodwalt, 2012).

- Deming Prize: the Deming Prize was founded in 1951 by the Union of Japanese Scientists and Engineers (JUSE). It is designated as the "Nobel Prize" in the manufacturing industry. This award was established with the purpose of promoting the development of TQM, and encouraging the development of quality tools that endorse the improvement of organizational performance (Sandeep & Kudtarkar, 2019). This award's criteria in-summary incorporate; the organization's customer-focus orientation, the application of TQM, and the effects of TQM on the organization (Sandeep & Kudtarkar, 2019; the Deming Prize Committee, 2022).
- Malcolm Baldrige National Quality Award (MBNQA): MBNQA is a prestigious QM award introduced by USA Congress in 1987 with the purpose of enhancing competitiveness among USA businesses (NIST, 2019). An organization can apply the MBNQA model to facilitate the implementation of TQM principles and to achieve excellence. The assessment is based on a group of criteria including; Leadership, Strategic Planning, Customer Focus, Measurement, analysis, knowledge management, Workforce focus, Process management, and Results (Lazaros et al., 2016).

European Quality Award (EQA): the award of which introduction led to the launch of the European Foundation for Quality Management (EFQM) Excellence Model to act as an assessment framework for organizations applying for the award. EFQM excellence model is the model forming the conceptual framework of the current study and is discussed in details in following sections.

2.1.2.2 The EFQM Excellence Model:

Organizations granted these quality awards after achieving excellence recognition, have most often shown a long-term attentiveness to quality. Actually most of these organizations have started their quests towards excellence a long time ago. Through their journey, they've searched for means by which superior quality could be delivered, and have strived for a framework allowing for adaptation, at the same time, providing a roadmap towards performance excellence. Many have recognized the implementation of excellence models to be the solution they've been seeking (Dahlgaard et al., 2013; Carvalho & Sampaio, 2020).

Among the most prominent models that have been used to assess the quality of healthcare services are; the Deming Prize, MBNQA, and the European Foundation for Quality Management (EFQM) model (Dahlgaard et al., 2013; Santosa & França, 2016). The first model of those to be introduced was the Deming Prize in Japan, later; the United States launched the MBNQA. These two awards encouraged Europe to

issue the European Quality Award (EQA) (Haktanir & Cengiz, 2020; Setiawan & Purba, 2021).

Following the introduction of EQA in (1991), the EFQM Excellence Model was launched in (1992) to act as a framework for assessing organizations for this award. The model was founded by the European Foundation for Quality Management (EFQM) established with the participation of fourteen major European organizations in (1988) (Nabtiz et al., 2000; Gorji & Emami, 2012; Uygur & Sarıgul, 2013). EFQM formulated the model with the support of both; the European Organization for Quality (EOQ), and the European Commission. The main purpose of this model is to assess excellence levels achieved by organizations, advancing continuous improvement (Vakani et al., 2011; Dehnavieh et al., 2012).

The EFQM model is a multi-dimensional non-prescriptive TQM framework, which main constituting elements are the fundamental concepts of excellence (Vallejo et al., 2006; Markkula et al., 2011; Favaretti et al., 2015, Heydari et al., 2019) illustrated in Figure (2.5). Hence, application of the model could lead to continuous quality improvement and performance excellence. Any kind of organization can apply the EFQM model, regardless of this organization's size, structure, sector or maturity (Moreno–Rodriguez et al., 2010; Uygur & Sarıgul, 2013). The Model is an invaluable self-assessment tool that offers organizations with insights into their own activities and the outcomes of these activities, and helps them determine their strengths and weaknesses (Uygur & Sarıgul, 2013).

In comparison to other quality awards (excellence models); the Deming Prize is known to have a unique approach to assessment. However, the MBNQA and EFQM models are more commonly used as self-assessment tools by organizations that are pursuing performance excellence (Alauddin & Yamada, 2019).



Figure (2.5): Fundamental concepts of excellence

Self-assessment is a systemic dynamic process that continuously provides insights into areas demanding improvement, helps determining the processes and actions required for procuring these improvements. However, the extent and significance of these insights that are derived from self-assessment substantially depend on the comprehensiveness, validity, and assessment power of the implemented assessment approach (Dehnavieh et al., 2012). MBNQA and EFQM models have acquired an undeniable success being used as channels of Total Quality Management, and serving as basis for other Excellence models across the world (Lazaros et al., 2016; Carvalho & Sampaio, 2020).

MBNQA and EFQM frameworks have been compared by many researchers and, In spite of the differences in the construction of these too models; both have been proven valid models in fostering quality through performance. The two models represent frameworks for utilizing the principles of TQM, as well as, providing a performance excellence perspective. Even-though, the excellence criteria of both models have differences, still, both frameworks agree on the same principles and orientation (Carvalho & Sampaio, 2020).

However, the EFQM is the more recently founded of the two models; it actually has integrated lessons learned from MBNQA during its construction (Al-Shemaili, 2009). In fact, Lazaros and others, in (2016), have pointed out that numerous studies previous to theirs have showed that the EFQM Model provides a very suitable framework for quality management. In addition, a study carried out by Dehnavieh and others in (2012) have concluded that numerous previous studies have suggested that; the EFQM model offers a broader framework for quality assessment and improvement in comparison to MBNQA and the Deming Prize. Actually several studies including: (Vallejo, et al, 2006; Dehnavieh, it al., 2012; Gorji & Emami, 2012, Heydari et al., 2019) reported that; the international literature provides documented evidence that nurtures the conception of the EFQM model as not only applicable to healthcare, but it also shows that the model's application in the sector can also lead to improvement in the quality of healthcare organizations (HCOs) and provided healthcare services.

As soon as the year (2006), about 30,000 European organizations were applying the EFQM Model (Heras-Saizarbitoria et al., 2012). The model can be used in various

ways including: as a self-assessment tool; as means of benchmarking with other organizations; and as a structure for the management system of an organization (Vakani et al., 2011). However, its application as a self-assessment tool has spread within many European organizations since its introduction (Moreno-Rodriguez et al., 2010).

The model is actually widely used as a self-assessment tool by various European healthcare organizations, including; Hospitals, Acute Care, Primary Care Centers, Outpatient Services, Specialized Services, and Rehabilitation Clinics (Nabitz et al., 2000; Moreno–Rodriguez et al., 2010; Dehnavieh et al., 2012; Favaretti et al., 2015). In fact, when concerns about quality and harmonization were raising following the European Union expansion, the staffs of European dental schools all-across Europe resorted to the application of the EFQM model as means to establishing quality assurance and harmonization (Vakani et al., 2011).

However, it's important to point out that, although; the healthcare sector in developed countries has - for a long period of time - been embracing standard models such as EFQM for purposes of assessment, management and improvement of quality in its organizations (HCOs), still; there are few reports of such endeavors being carried out in developing countries (Dehnavieh et al., 2012). Hence, for the current study purposes, the researcher uses the EFQM as means to achieving its objectives, and as a small contribution to filling the gap in literature, noticed by the researcher, regarding EFQM model application in dental care sector, and in developing countries (as concluded by Dehnavieh and others above); represented by Palestine in this study.

2.1.2.3 EFQM Criteria:

The founders of the EFQM model view self-assessment as a systematic, regular, and comprehensive examination of an organization's activities, and further suggest the obtained results to be referenced against the EFQM Model. Deep in the center of the model is the logic called RADAR which encompasses five elements. The first element is Results (assumed by the Results criteria of EFQM model), and the remaining elements are; Approach, Deployment, Assessment and Review (undertaken by the Enabler criteria of EFQM model) (EFQM, 2012; Uygur & Sumerli, 2013).

The Radar Logic, a powerful management tool, is a dynamic assessment framework which represents a structural approach through which any organization's performance can be examined. According to RADAR an organization needs to consider the following steps (Al-Shemaili, 2009; Gorji & Siami, 2011, Uygur & Sumerli, 2013):

- ✓ Determine the results that it's aiming to establish as a part of it process of achieving its policy and strategy; [Results]
- ✓ Plan and assemble a set of constant integrated approaches that leads to the determined result; [Approach]
- Run the planned approaches in a systematic way that insures establishment;
 [Deployment].
- ✓ Conduct assessments and reviews of both approaches and results; [Assessment & Review].

The framework of the EFQM Model is based on nine criteria represented in the two dimensions that are; Enablers and Results. The Enabler's dimension of criteria undertakes activities carried out by an organization, and the Results' dimension of criteria broadly represents aspects of performance and attempts to measure the achievements of an organization (Moreno–Rodriguez et al., 2010; Gorji & Emami, 2012; Favaretti et al., 2015, Heydari et al., 2019). As revealed in figure (2.6), there is a Cause-Effect relationship between the two dimensions of criteria. This relationship is due to; Results being generated by Enablers, and Enablers being improved through the feedback obtained from Results (Markkula et al., 2011; Gorji & Emami, 2012).



Figure (2.6): The EFQM Cause-Effect Diagram

The EFQM model addresses its criteria using five evolutionary stages. These stages helps an organization evaluate the aims it achieved from those set forth in each stage, and accordingly estimate its progress along the path towards continuous quality improvement. For that purpose; the following **five levels' structure** has been developed (Markkula et al., 2011):

- ✓ Level [1] No Processes: quality within the organization solely rests on the shoulders of the individual.
- ✓ Level [2] Basic Processes: the awakening of a process within the organization.
- ✓ Level [3] Intermediate Processes: the organization practices vision through processes, professionalization and a guarantee of quality.
- ✓ Level [4] Sophisticated Processes: the organization carries out systematic assessment and improvement processes.
- ✓ Level 5 Excellent Processes: the organization is aiming for external excellence.

The nine criteria forming the basis of the EFQM Model underpin the excellence of an organization and consists of; five Enablers criteria and four Results criteria. These nine criteria are defined as below (as concluded by the current researcher after the review of: Vallejo et al., 2006; Gorji & Siami 2011; Tekic et al., 2011; EFQM, 2012; Gorji & Emami, 2012; Khalaf Ahmad et al., 2012; Van Schoten et al., 2016; Shaaban & Hassan, 2021):

✤ <u>First Dimension of Criteria: Enablers</u>

These criteria address the key activities of the organization and include:

• Criterion [1] - Leadership

To achieve excellence, an organization must have excellent leadership. This excellent leadership is one that;

- ✓ Develops the mission and vision of the organization, clarifies both to the whole staff, and facilitates achievement.
- ✓ Puts in place the organizational values and systems necessary for the organization's sustainable success, and implements these through their actions and behaviors.
- ✓ Retains constancy of purpose during periods of change.
- ✓ Possesses the ability to change direction of the organization, wherever essential, inspiring and motivating others to follow.

• Criterion [2] - Policy and Strategy

Excellence requires an organization to implement its mission and vision through focusing on its beneficiaries (a stakeholder-focused strategy); taking into consideration its sector and the market in which it operates. In order to implement this strategy; plans, policies, objectives and processes are developed and deployed by this organization.

• Criterion [3] - People

Regarding people (staff); an excellent organization is one that:

✓ Manages, develops, releases and benefits from the full potential of its staff at its every level; individual, team-based, and organizational.

- ✓ Promotes fairness and equality within its staff.
- \checkmark Involves and empowers its people.
- \checkmark It cares for, communicates to, and rewards its staff.

When adopted by an organization; these activities motivate its staff and build their commitment; promoting their feeling of responsibility towards the organization. This eventually leads them to deploy the full potentials of their skills and knowledge in achieving the welfare of their organization, ultimately leading it to excellence.

• Criterion [4] - Partnerships and Resources

In order to support the implementation of its policy and strategy, and to insure the effectiveness of its operations; an excellent organizations is one that plans and manages its internal resources, suppliers, and external partnerships. During this process of planning and managing, this organization balances its current and future needs and those of the society and environment.

• Criterion [5] – Processes

To achieve excellence; an organization must design, manage, and improve its processes in a way that fully satisfies and yields increasing value for its internal and external customers (clients, staff, and other stakeholders).

These five Enablers criteria assess whether an organization is implementing the appropriate approaches to accomplish its set targets. These criteria of the model provide a framework for rigorous analysis that helps determine the extent to which the chosen approaches and strategies are established by the organization. An excellent organization is one in which these approaches and strategies are; showing effectiveness and efficiency in delivering results, are being deployed to their full potential, and are displaying continuous improvement (Markkula et al., 2011).

Second Dimension of Criteria: Results

These criteria are concerned with the results being achieved by the organization and include:

• Criterion [6] - Customer Results (Patients' Results in dental care)

To achieve excellence; an organizations must be one that comprehensively measures and accomplishes outstanding results related to its customers.

• Criterion [7] - People (Staff) Results (Dental Care Team in dental clinics) Regarding its staff, an excellent organization is one that rigorously measures and accomplishes outstanding results in these measurements.

• Criterion [8] - Society Results

An excellent organization thoroughly measures and accomplishes outstanding results in relation to the society.

• Criterion [9] - Key Performance Results

To accomplish excellence; an organizations must be one that thoroughly measures and achieves outstanding results relating to key elements of its policy.

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These four Results criteria help an organization determine whether it's using rigorous measures in order to monitor and trace its performance, and to assess the extent to which the determined objectives have been accomplished. These criteria also helps an organization define the degree to which benchmarking is applied and may be exploited to improve performance. An excellent organization is one that thoroughly measures what is important to its customers, people, other stakeholders, the society as a whole, and demonstrates continuous improvement in both achieved targets and obtained results (Markkula et al., 2011).

In the EFQM framework, each criterion consists of several sub-criteria, each subcriterion illustrates detailed "guidance points" that explains what an organization must do to develop the criterion. The total number of sub-criteria evaluating organizational performance of both dimensions Enablers and Results; is thirty-two sub-criteria given the total of one thousand points (1,000 points). Each of the (Enablers) and (Results) criteria are assigned the equal value of five hundred points, with higher point scores indicating higher organizational performance levels. The assessment of the quality of an organization is based on a measuring instrument called "the Blue Card" that explains the scoring procedure for quality of each sub-criterion. The rating of this instrument is a scale consisting of five percentage markers that respectively are; 0 percent, 25 percent, 50 percent, 75 percent, and100 percent. The final rating is always an agreed-upon value of several raters following an agreed-upon process (Gorji & Emami, 2012).

It should be pointed out that; an important step to follow the implementation of the EFQM model is the application of the **PDSA cycle** (the Deming Cycle) which has

been discussed in a previous section of the current study. This cycle is always present in the EFQM model; because once the model's results have been obtained; an organization can learn and improve using those results. Through this process; the EFQM model helps an organization understand its current situation, compare it to its performance goals and standards, and apply adjustments to sustain an improved performance (Heydari et al., 2019).

In 2019, the EFQM Model was reviewed and transformed into a new version. The EFQM aimed to make the new version more fit for purpose, and ready to face a new decade of culture change, transformation, technological advancement, and disruption. This new version produces a clear outline of the RADAR tool due to its importance in the application of the model. The new version's framework embraces three dimensions of criteria that are; Direction, Execution, and Results; each with its own sub-criteria consisting of a total of seven criteria all-over (EFQM, 2021; Arslan & Bektas, 2021).

However, the researcher decided to adopt the older version of the EFQM model (EFQM 2012) for purposes of the current study, due to the researcher's convention of the following findings and observations:

- Dehnavieh and others (2012) were studying the older version of the EFQM model when they concluded that; there is few documented literature about the application on the model in developing countries.
- The current researcher agrees with (Khalaf Ahmad et al., 2012) that there is a gap in documented literature regarding the application of the EFQM model in the

healthcare and dental care sectors all over the world. Even-more, the current researcher believes that in developing countries this gap in research (or even application) is greater.

• The latest version of the model has been very recently published (in 2019). Add to that, the fact that its publication was at the same year in which the world faced the COVID-19 pandemic of which consequences the world still endures in our present day. During COVID-19, the whole world' attention shifted towards fighting the pandemic, and countries all-over the world suffered from economic crises. Therefore, there was no actual time for this new version Of the EFQM model to be embraced by organizations of different industries, and so; there is almost no documented literature of this version's application.

2.1.3 The Conceptual Framework (EFQM Model Framework)

As already discussed in the previous section; the EFQM Excellence Model which represents the conceptual framework of this study, consists of nine main criteria that are categorized in two Dimensions; Enablers (including; Leadership, People, Policy & Strategy, Partnership & Resources, Process) and Results (Consisting of; Customer Results, People Results, Society Results, Key Performance Results). These criteria are given the total of one thousand points (1,000 points) with each dimension of criteria (Enablers and Results) assigned the equal value of five hundred points; higher point scores indicate higher levels of organizational performance (Gorji & Emami, 2012).

Interlinks are found between the criteria of the EFQM model. These linkages occur on four levels as in the following (Markkula et al., 2011):

- Across the entire Model; tracking key themes that represent each dimension of criteria (Enablers & Results).
- Between Enablers and Results; due to the Cause-Effect relationship between the two dimensions of criteria.
- Within Results, between one criterion of the Results and another; attributed to having common indicators (leading and lagging).
- Across Enablers, between one criterion of the Enablers and another; caused by an improvement of one criterion being often dependent on the status of another.

The EFQM Model's framework, illustrated in figure (2.7), demonstrates these linkages and interdependence between the model's criteria. In addition, it details the total score assigned to each of the model's criteria; adopted from the studies of (Gorji & Siami, 2011; Gorji & Emami, 2012; Heydari et al., 2019), and in accordance with the EFQM (2013) Model.



Figure (2.7): The EFQM Model (Conceptual Framework)

2.2 Literature Review

During literature review, the researcher encountered multiple studies related the EFQM model in the healthcare sector and few implementing it in the dental care sector. These studies guided the path of the current one upon several phases that must be highlighted. For instance, a study of (Khalaf Ahmad et al., 2012) carried out in the same sector as the current study (Dental Care Service Sector), and within the same region as the current study (The Middle East) used an EFQM-based questionnaire that covers the model's key aspects. The current study has benefited from that study and those of (Favaretti et al., 2015; Malakzadeh et al., 2019) in adapting an EFQM-based questionnaire as a tool for the self-assessment process of the Palestinian dental clinics.

In accordance with (Favaretti et al., 2015; Malakzadeh et al., 2019); a Likert Spectrum was applied as a scale upon which statements related to the second part (Part II) of the current study's questionnaire were measured. Then in the statistical results phase of the current study and relying on the paper of (Favaretti et al., 2015), the current researcher developed the idea of calculating mean percentages of each dimension of the EFQM model criteria, then calculating the model's scores of these criteria on the scale of 1,000 points as a measure of the Palestinian dental clinics implementation of the EFQM model, hence, as an indicator of the level of these clinic's performance from the dentists' point-of-view. In their study of (2006), Sanchez and colleagues described the mean highest scores for the implementation of the EFQM model in the included health organizations to be achieved for; the 'Partnership and Resources' criteria, the 'Customer Results' criteria, and the 'Key Performance Results' criteria. In addition, the findings of (Vakani et al., 2011) showed that the criteria of; Continuous Learning, Partnerships, Innovation and Improvement; and Social Responsibility were all adequately represented. However, the criteria of; Leadership, People Development and Involvement, Customer Focus, Management through Processes and Facts, and Results Orientation required strengthening.

Both studies by (Gorji & Siami, 2011) and (Gorji & Emami, 2012) showed that the total EFQM-based scores of the hospital's performance were; <u>319.2</u> points for the Enablers' criteria, and <u>243</u> points for the Results' criteria. The descending order of the Enablers' criteria scores being; Policy & Strategy, Process, Leadership, Partnerships & Resources, and the least score for People. And that of the Results' criteria scores being; key Performance Results, Customer Results, People Results, and the least score for Society Results. It's also important to point out that these researchers (Gorji, Siami & Emami) used these measurements and the RADAR logic to determine the performance rate of the hospital under study.

During their research in (2015), Favaretti and others observed better scores on the Enablers criteria than those on the Results criteria. Regarding the study of (Malekzadeh et al., 2019), the lowest obtained scores of EFQM were in the Results and the Process criteria. The current researcher has used the results of these studies

(Sanchez, Vakani, Gorji, Favaretti, Malekzadeh) as a reference to which the current study's EFQM model implementation results in Palestinian dental clinics are related.

As a reference to which the correlation results between the different EFQM model criteria are compared, the current study benefited from the results in (2012) by Gorji & Emami, that concluded the descending order of the strengths of correlations between the Enablers' criteria and the hospital's performance (measured by the Results' criteria) to be the following; leadership, people, process, partnerships & resources, and policy & strategy. In addition, the results of another study by (Khalaf Ahmad et al., 2012) were also used as a reference. These results demonstrated positive Pearson correlations between all of the model criteria.

Included in the findings of (Van Schoten et al., 2016) was a multi-level linear regression analysis of the Enablers' criteria against the Results' criteria. The results of this analysis were, in general, statistically significant and all coefficients were positive. In additions, a main result of the study showed that the application of the EFQM excellence model is related to improved organizational performance. A study by (Khalaf Ahmad et al., 2012) showed significant simple regression coefficients indicating that all of the EFQM model criteria positively impact each other. These results have been applied by the current study as a reference to which its regression analysis results are compared.

Through the course of their study of (2013), Dahlgaard and others reviewed numerous previous studies of different BEMs including the EFQM model; their findings indicated that organizations implementing BEMs will gain significant benefits consisting of increased financial profit as well as non-financial outcomes. In the study of (**Boulter et al., 2013**), after analyzing the publicly shared financial information of both the award winning organizations and those of comparison organizations; no significant differences were noticed in financial results before the award. However, during the post implementation period, five years after winning the award; significant financial differences were found between the two groups of organizations including; increased sales revenues, increased operating income, increased total assets, and reduced cost over sales.

In the paper of (Favaretti et al., 2015); the mean scores of self-assessments conducted by the Terento Healthcare Trust's staff have showed improvement over the courses of the four reviewed assessments. On a scale of 1,000 points, the mean scores increased from having been 290 in 2001, to being <u>610 in 2008</u>, to then leading Trust to being recognized for <u>excellence in 2006</u>. Building on these findings of (Dahlgaard, Boulter, Favaretti); the current researcher has concluded that the EFQM model can act as an effective tool in leading businesses and organizations comparable to the objects of those studies; such as the Palestinian dental clinics, towards performance excellence.

2.3 The Dental Care Sector in Palestine

The dental care sector in Palestine consists of both governmental and private dental clinics and centers. According to information obtained from the 2021 annual report of the Oral & Dental Health Unit (ODHU) of the Palestinian Ministry of Health (through a visit to the unit); the majority of the sector in the West-Bank consists of private

dental clinics and centers, the number of these clinics being about (1,645). These clinics and centers are mostly located in the governorate of Hebron with the next higher concentrations of these clinics and centers being located in the governorates of Ramallah, Nablus, and Jenin.

As for the governmental dental care clinics; these clinics are mainly sections included within the public health care center of the Ministry of Health distributed upon different governorates of the West-Bank, the number of these clinics being (**36**). However, there are **seven** Portable Dental Care Units that are used by the Ministry (ODHU Annual Report, Ministry of Health, 2021).

Regarding the insurance-covered dental care, the governmental health insurance only covers the following dental treatments; Extractions, Fillings, Teeth Cleaning, in addition to necessary oral and maxillofacial surgeries performed in governmental hospitals. However, it must be mentioned that as a part of this insurance-covered care, the ODHU carries out periodical dental teams' visits to elementary schools of different governorates to examine the children's oral health and apply fissure sealants as a preventative measure against dental caries (decay) where indicated (ODHU, Ministry of Health, 2022). As for the private insurance, it covers only conservative dental treatments that vary in nature from one private health insurance company to another (Dr. Bassam Al-Noubani, Head of the Palestinian Dental Association, 2022).

Through a short phone-interview, in the 28th of August 2022, with Dr. Bassam Al-Noubani who is the head of the Palestinian Dental Association; he was asked if there are an institution, such as Palestine Standards Institution (PSI), that has laid out a set of standards for quality management within the Palestinian dental care clinics and centers; Dr. Al-Noubani replied that there was no such endeavors, he explained that the reality is that each dentist is responsible for monitoring the quality of care provided by him/her and for developing his/her own skills and knowledge.

Dr. Al-Noubani was also asked if there was any Palestinian dental care clinic or center that has obtained any kind of international certificate in Quality Management (QM) such as EQA, MBNQA, ISO, or any other; to which he clarified that there was no Palestinian dental care clinic or center that had acquired such certificates but he wished for efforts to be exerted towards that in the future.

Reflecting on that; it is clear to the current researcher that there is a lack of focus on setting standards for quality management within the Palestinian dental care sector. In addition, there is a lack of culture upon dentists regarding the pursuit of international QM certificates. Building consensus by decision-makers in the sector on a general framework for external quality management of the Palestinian dental clinics and centers, according to current circumstances, would require great efforts, funding, and time, still it's a great ambition that must be aspired to and worked towards achieving hopefully within the near future.

As for now, the researcher is convinced that quality management through selfassessment is still the most realistic and practical approach to be adopted by Palestinian dentists. The adoption of such practices might with time build their awareness regarding the importance of acquiring international QM certificates and would for sure get them many steps closure towards achieving these certificates and adhering to core quality management practices.

Chapter Three: Methodology

Introduction

This chapter illustrates the procedures, methods, and approaches applied by this study. This includes; methodology, population, sample's size, sampling method, the tool of the research in terms of its description and related tests' results, and the sample's description.

3.1 Design of the Study

This cross-sectional study followed a descriptive-correlational approach to achieve its objectives. This approach included quantitative descriptions of the studied subject matter (its implementation). In addition, it conducts analyses of the relationships under investigation. This concludes by a set of derived conclusions and recommendations.

3.2 Population

The population of the study is all the Palestinian Dentists of the West-Bank region. According to information obtained from the Oral & Dental Health Unit of the Palestinian Ministry of Health; the number of these dentists is <u>(3,960)</u>. For more detailed information regarding the distribution of this population among different socio-demographic or profession related factors; please review **{Appendix (3.1)}**.

3.3 Sample of the study

A non-probability sampling method was applied due to absence of a complete, accurate, and up-to-date list of information of all the Palestinian dentists of the West-Bank (the Population). That is the list from which the study's sample must be drawn in the case Probability sampling method was to be applied (Saunders et al., 2012). A non-Probability convenience sampling method was applied and data was obtained from the sum of (74) dentists of the West-Bank, in Palestine. An e-questionnaire was used to collect the data as it allow for more accessibility, especially in the presence of time and cost limits.

The included sample consisted of respondents reached through; Facebook, E-mails, WhatsApp (individuals and groups), and direct visits to the clinics/centers. The study's e-questionnaire was posted to different Facebook groups representing official groups for dentists. These groups included; the Palestinian Dental Association official group, few of its sub-committees, and other pages dedicated to Palestinian dentists. The e-questionnaire was also distributed upon few whatsApp groups consisting of Palestinian dentists, and sent by E-mail to the academic staff of the Faculty of Dentistry in Al-Quds University.

In addition, and as a last resort due to the insufficiency in the number of respondents; the researcher carried out multiple direct visits to several dental clinics/centers to ask the present dentist to fill the questionnaire and send it to their colleagues if possible.

3.4 The Tool of the Study

This section addresses the tool used by this study to obtain data from the sample. The applied tool is discussed in terms of; general description, Validity, Reliability.

3.4.1 Description of the Used Tool:

The data for this study was obtained from two sources of data:

- Secondary data: the review of previous literature and studies conducted in the same domain.
- Primary data: an e-questionnaire designed by the researcher {Appendix (3.2)}.

This e-questionnaire was designed by the researcher as a simplified adaptation of the EFQM excellence model, to the purpose of which the researcher benefited from the review of (Markkula et al., 2011; Gorji & Siami, 2011; Tekic et al., 2011; Khalaf Ahmad et al., 2012; Shaaban & Hassan, 2021).

The used questionnaire consisted of two parts; of which the first (**Part I**) inquired the personal information (demographic factors) of the participating dentists. These demographic factors included; Governorate, Gender, Educational Degree, Age, Years of Practice, Place of Work, and Ownership.
The second part (**Pare II**) incorporated the basic framework and fundamental criteria of the model. It consisted of {54} items distributed between the two main dimensions of the model's criteria that are; Enablers and Results. The Enablers' dimension of criteria included items (statements) related to; Leadership, Policy & Strategy, People, Partnership and Resources, and Processes. On the other hand, the Enablers' dimension of criteria included items (statements) related to; Customer Results, People Results, Society Results, and Key Performance Results criteria.

The scale adopted by the researcher through the second part of the questionnaire was a five-point Likert spectrum. This aligns with the studies of (Favaretti et al., 2015; Malakzadeh et al., 2019) in which the same scale was used. Likert scale is applied as a measure of psychometrics, that is; it measures Human Attitude. It was first devised in (1932) with the purpose of measuring 'attitude' in a manner that is accepted and validated scientifically. Nowadays, it is one of the most fundamental and widely used scales in Social sciences and Educational Research (Joshi et al., 2015).

For current study proposes; the used five-point Likert Scale required the participating dentists to determine their level of agreement to the statements of the second part of the questionnaire according to five levels of agreement varying from (strongly disagree) to (strongly agree). Table (3.1) shows all levels of agreement incorporated in the adopted five-point Likert Scale and the weight assigned for each in the current study.

Table (3.1): Five-Point Likert Scale											
Response (Level of Agreement)	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree						
Weight	1	2	3	4	5						

3.4.2 Validity of the Tool:

A Validity of a study's tool helps determine if the collected data actually covers the area under investigation. Simply put; validity tests if the tool measures what it was constructed to measure (Taherdoost, 2016). For current study purposes; two types of validity have been tested. Both Content and Construct Validities of the used questionnaire are discussed in this section.

Content Validity of the used Questionnaire:

Content validity analyzes the degree to which a tool's questions and its scales reflect the domain upon which this tool is to be generalized, that is; whether or not the tool incorporates an adequate set of relevant questions that represent the domain of the concept being measured (Taherdoost, 2016; Mohajan, 2017). Applying content validity is highly recommended during a tool's construction; to ensure that it includes all the essential items of the domain of the concept of interest and eliminate all undesirable items (Taherdoost, 2016).

The more the incorporated items in a tool reflect the domain of the concept being studied, the greater is its content validity. However, there is no statistical test that determines a tool's content validity (Mohajan, 2017). Thus, it's established through literature reviews, then, evaluations and follow-ups with experts in the field; that is, a judgmental panel to review the tool (Taherdoost, 2016).

For current study purposes, content validity of the used questionnaire was insured by first reviewing several studies related to the EFQM model in the dental care and health care sectors, upon which the questionnaire was constructed. Then, the constructed e-questionnaire was E-mailed to several PhD degree holders in fields related to the subject of the study. All remarks and recommendations of the respondents (as of that point, considered the Arbitrators Committee of the questionnaire) were taken into consideration. As a result, all unclear or ambiguous questions were revised and all non-functioning questions were eliminated. Details of the members of the Arbitrators Committee are included in **{Appendix (3.3)}**.

Construct Validity of the used Questionnaire:

The aim of Construct validity is to assess how well a researcher translated a concept, behavior, or idea "the construct" into an operating functioning reality. In other words, it examines operationalization; that is transforming an abstract concept to measurable observations (Taherdoost, 2016). It is critical to establish construct validity of a tool in order to ensure high quality of both; assessment using the tool, and the succeeding use of the outcomes of the data obtained using that tool (Tavakol & Wetzel, 2020).

Literature provides well-documented evidence of the strong association between Construct Validity and Factor Analysis (FA). Using Factor Analysis, namely Exploratory Factor Analysis (EFA), is one of the most prominently used approaches to ensure construct validity, when; developing a new tool, adapting an existing tool to a new population, or during analytical evaluation of existing measures for application in research purposes. Using EFA; a factor's construct validity is examined through its loadings. A factor's loading is defined as its correlation with the item; a factor loading of more than 0.30 is considered an acceptable correlation (Tavakol & Wetzel, 2020).

To verify Construct Validity of the current study; Exploratory Factor Analysis was applied to calculate the correlation matrix and to determine the presence of a positive and statistically significant relationship between the total score of the EFQM model and the statements representing its criteria. In general, all correlation coefficients representing this relationship were found to be statistically significant and have acceptable values. This result demonstrates a good Construct Validity of the study's tool, that is; the tool measures the purpose for which it was constructed. The results of EFA are detailed **in {Appendix (3.4)}**.

3.4.3 Reliability of the Tool:

Reliability evaluates the degree to which a tool has the ability to provide results that are consistent and stable. It also determines the repeatability of a tool. Established reliability reflects consistency across all parts of a measuring tool. Cronbach's Alpha coefficient is the most frequently used measure of internal consistency "Reliability". Actually, when Likert scales are used, Cronbach's Alpha is considered the most suitable measure of reliability. There are no absolute rules for internal consistency values, however, most consent on a minimum coefficient value of (0.70) (Taherdoost, 2016). On the other hand, some suggest that a value of (0.60) is considered acceptable (Twisk, 2006). The Cronbach's alpha coefficient for the items forming the current study's questionnaire had a total value of **{95.8%}**. This value indicates that the used questionnaire has high levels of internal consistency. Hence, it has a high level of reliability; that is, the items of the used questionnaire "hang together" measuring the same construct.

3.5 Sample Description

This section descries the sample of the study. It details the distribution of the participating dentists in terms of certain Demographic Factors. These factors include; Governorate, Gender, Age, Place of Work, Years of Practice, Educational Degree, and Ownership. The dentists' distribution among these factors was as detailed in Table (3.2-a & b) with the following being the most prominent observations:

- ✓ The highest percentages of the included dentists were from the Governorates of; Hebron (25.7%) and Ramallah & Al-Bireh (23.0%).
- ✓ The sample mostly consisted of Males (71.6%).
- ✓ The highest number of the participating dentists was of ages between twenty-five to thirty-five years of age (66.2%).
- \checkmark The majority of these dentists worked at clinics (60.8%).
- ✓ The higher percentage of participating dentists had five to less than ten years of experience (36.5%).
- ✓ Most dentists were Bachelor's degree holders (74.3%).
- ✓ The highest percentage was owners of the clinics/centers in which they worked (54.1%).

Table (3.2): Sample Description												
Demographic variable	The class	Frequency	Percent (%)									
	Hebron	<u>19</u>	25.7									
	Jerusalem	13	17.6									
	Bethlehem	9	12.2									
	Jenin	6	8.1									
C	Ramallah & Al-Bireh	<u>17</u>	<u>23.0</u>									
Governorate	Sulfites	1	1.4									
	Tulkarm	1	1.4									
	Qalqilya	2	2.7									
	Nablus	6	8.1									
	Total	74	100.0									
	Male	53	71.6									
Gender	Female	21	28.4									
	Total	74	100.0									
	Less than 25 years old	2	2.7									
	25 to less than 35 years old	<u>49</u>	<u>66.2</u>									
A go	35 to less than 45 years old	17	23.0									
Age	45 to less than 55 years old	4	5.4									
	55 years old or above	2	2.7									
	Total	74	100.0									
	<u>Clinic</u>	<u>45</u>	<u>60.8</u>									
Place of work	Center	12	16.2									
	Both	17	23.0									
	Total	74	100.0									
	Less than 5 years	20	27.0									
T 7 • /•	5 years to less than 10 years	<u>27</u>	<u>36.5</u>									
Years in practice	10 years to less than 15 years	15	20.3									
	Total	74	10.2									
	Dashalaria dagree	55	74.2									
	Bachelor's degree	<u> </u>	<u></u>									
Educational Degree	Master or Specialization Degree	18	24.3									
0	PhD	1	1.4									
	Total	74	100.0									
	A partner	9	12.2									
Ownership	<u>The owner</u>	<u>40</u>	<u>54.1</u>									
Ownersnip	An employee	25	33.8									
	Total	74	100.0									

3.6 Applied Statistical Tests

After ensuring the validity and reliability of the used questionnaire, data obtained through it was analyzed using the Statistical Package for Social Sciences (SPSS; Version 25.0). The following is a list of all deployed statistical tests:

- Exploratory Factor analysis (EFA) has been used to verify the Construct Validity of the tool.
- **Cronbach's alpha coefficient** has been used to check the reliability of the tool.
- Frequencies and Percentages have been used for analysis of the demographic factors of the participants, as well as, describing the different criteria of the applied model.
- Mean, Standard Deviation, and Coefficient of Variation have been used to assess the levels of agreement and disagreement to the variables of the different criteria of the applied model.
- One sample t-Test has been used to investigate the presence of significant statistical differences between the means of the different model's criteria and the test value.
- Pearson Correlation coefficients have been calculated to investigate the presence of any significant relations between the two main dimensions of the model's criteria (Enablers & Results).
- Multicollinearity Diagnostics have been carried out to ensure that no explanatory variable of the EFQM regression model (of the Enablers' criteria) has a perfect linear correlation to any of the other explanatory variables included in the model.
- Multiple Linear Regression is used to investigate the impact that Enablers' criteria as explanatory variables have on Results' criteria as a response variable.

Chapter Four: Data Analysis & discussion

Introduction

This chapter covers the statistical analyses and its related results and discussion of the collected data arranged in terms of the used statistical tests. The chapter starts with Descriptive Statistics and One-Sample t-Test of the EFQM model criteria. Next, Pearson Correlation is applied upon the model's main dimensions of criteria. At the end of the chapter; Multicollinearity Test and Multiple Linear Regression are carried out.

4.1 Descriptive Statistics and One-Sample t-Test

Calculating descriptive statistics is a first important step during research and should always precede any inferential statistics. It is employed to summarize the raw data in a sample or a population. Descriptive statistics encompasses three main groups of measures. These groups are divided into measures of: Central Tendency, Frequency, and Variability (Kaur et al., 2018). In this section, the descriptive statistics used to summarize data collected by the current study are; Frequencies, Percentages, Means, standard deviations, and coefficients of Variation.

In addition to these descriptive statistics, this section discusses the results of the One-Sample t-Test. The one-sample t-Test is a statistical hypothesis test that is applied to determine whether an unknown population mean differs from a specific hypothetical value (JMP, 2022). For purposes of the current study, the mean of the assigned

weights (detailed in Table 3.1) of the five-point Likert scale (of which value is 3.0)² was assumed as the test's value. According to that, the following suggested Hypotheses were tested:

 H_0 : there are no statistical difference between the sample means of the Criterion and
the test value (3).(Failure to reject at sig. P-value of $\alpha > 0.05$) H_A : there are significant statistical difference between the sample means of the
Criterion and the test value (3).(Accepted at a sig. P-value of $\alpha \le 0.05$)

After establishing these definitions and hypotheses, this section now continues to discuss the results of these tests in regards to the main dimensions of criteria of the EFQM Model that are; Enablers and Results.

4.1.1 First Dimension of Criteria: Enablers

This dimension includes five criteria that address the key activities of the Dental Clinics. These criteria are; Leadership, Policy & Strategy, People, Partnership & Resources, and Processes. Each of the Enabler's criteria has been discussed in terms of descriptive statistics and One-Sample t-Test in this section.

Criterion [1]: Leadership

<u>Table (4.1)</u> detailing dentists' answers regarding variables related to Leadership Criterion; shows that the answers for all of the statements lent towards agreement³

² Mean of Assigned Weights = the Sum of the weights / Number of Levels of Agreement = (1+2+3+4+5)/5 = 15/5 = (3.0).

{Appendix (4.5)} with low to very high percentages that varied from 40.5% to 90.5%.

As for the one sample t-Test results; the sig. (2-tailed) P-values were less than ($\alpha \leq$ 0.05) for all of the statements except the un-highlighted one, this indicates rejecting the null hypothesis; that there are no statistical difference between the sample means of Leadership Criterion and the test value (3), and accepting the alternative hypothesis that there are significant statistical differences in these statements.

As for the sig. (2-tailed) for the un-highlighted statement: The center's management maintains direct links with professional organizations, public and private institutions that provide continuing education; its value is greater than ($\alpha \le 0.05$) indicating failure to reject the null hypothesis for this statement.

The coefficient of variation (CV) is the ratio of the standard deviation to the mean. CV illustrates the degree of variability as related to the mean of the sample. Dispersion increases as CV value increases (DCF, European Commission, 2022). In general, a CV value between (20% - 30%) is an indicator of acceptable variability levels, while a value greater than (30%) is an indicator of high variability levels (Formplus, 2022).

For the **Leadership Criterion variables (Table 4.1)**; All **CV values** are considered of acceptable variability levels except for the un-highlighted statement. The CV value

³ The strength evaluation table for the agreement percentages is included in Appendix (4.5).

for this statement is (41.0%) which is a high value compared to the rest of the statements, and indicates high variability levels between the dentists' answers regarding: (the center's management maintaining direct links with professional organizations, public and private institutions that provide continuing education).

Criterion [2]: Policy & Strategy

Regarding variables related to the Policy & Strategy Criterion and as shown in <u>Table (4.2)</u>; it is found that the dentists' answers for all of the statements lent towards agreement with low to high percentages varying between 39.2% and 71.6%. As for the CV (bold in the table); these values show slightly higher variability levels between the dentists' answers in the related statements in comparison to the rest of the statements.

From the one sample t-Test results detailed in the same table; it is found that the sig. (2-tailed) P-values are less than ($\alpha \le 0.05$) for all of the statements except the two un-highlighted ones, this indicates rejecting the null hypothesis; that there are no statistical difference between the samples means of the Policy & Strategy Criterion and the test value (3), and accepting the alternative hypothesis that there are significant statistical differences in these statements.

As for the sig. (2-tailed) P-value for **the two un-highlighted statements of (Table 4.2);** (The dental care team periodically collects and analyzes information regarding performance indicators) and (There are regular meetings for performance evaluation and assurance of the plan's compatibility with the policy and strategy), its value is

greater than ($\alpha \le 0.05$) indicating **failure to reject the null hypothesis** in these statements.

Criterion [3]: People

The dentists' answers regarding variables related to People Criterion are detailed in <u>Table (4.3)</u>; these answers in all of the statements lent towards agreement with moderate to high percentages that varied from 47.3% to 70.3%. The one sample t-Test results reveals sig. (2-tailed) P-values that are less than ($\alpha \le 0.05$) for all of the statements except the two un-highlighted ones, this indicates rejecting the null hypothesis; that there are no statistical difference between the samples means of the People Criterion and the test value (3), and accepting the alternative hypothesis that there are significant statistical differences in these statements.

However, the greater than ($\alpha \le 0.05$) sig. (2-tailed) P-value for the two unhighlighted statements of (Table 4.3); indicates failure to reject the null hypothesis in these two statements that are; (there is well-defined written profiles including duties, rights, and the selection process of the dental care team members) and (the strategic plan of the clinic/center includes a written training plan of the team on skills that cover its needs). The CV value (bold in Table 4.3) showed slightly high variability levels between the dentists' answers regarding (the presence of welldefined written profiles including duties, rights, and the selection process of the dental care team members).

	Table (4.1): Descriptive Statistics and One-Sample t-Test for Criterion [1]: Leadership variables													
#	Statements related to the Leadership criteria	Mean	SD ⁴	CV ⁵ (%)	Strongly Disagree N ⁶ (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	T ⁷	Sig ⁸			
1	The vision is coordinated with the dental care team and understood	3.55	0.94	26.0	1 (1.4)	12 (16.2)	14 (18.9)	39 (52.7)	8 (10.8)	5.08	0.000			
2	The mission is coordinated with the dental care team and understood	3.64	0.96	26.0	1 (1.4)	13 (17.6)	7 (9.5)	44 (59.5)	9 (12.2)	5.70	0.000			
3	The clinic/center has clearly determined objectives	4.01	0.75	19.0	1 (1.4)	4 (5.4)	2 (2.7)	53 (71.6)	14 (18.9)	11.64	0.000			
4	The clinic/center has clearly determined action plan	3.82	0.87	23.0	2 (2.7)	5 (6.8)	8 (10.8)	48 (64.9)	11 (14.9)	8.19	0.000			
5	The center's management maintains direct links with professional organizations, public and private institutions that provide continuing education	2.97	1.22	41.0	11 (14.9)	16 (21.6)	17 (23.0)	24 (32.4)	6 (8.1)	-0.19	0.849			
6	There are defined channels of communication and regular meetings between the management and the team	3.51	1.02	29.0	5 (6.8)	7 (9.5)	14 (18.9)	41 (55.4)	7 (9.5)	4.32	0.000			

⁴ SD: Standard Deviation
⁵ CV: Coefficient of Variation
⁶ N: Frequency
⁷ T: One-Sample T-test value
⁸ Sig.: Sig (2-tailed)

	Table (4.2): Descriptive Statistics and One-Sample t-Test for Criterion [2]: Policy & Strategy variables													
#	Statements related to the Policy & Strategy criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig			
1	The needs and expectations of stakeholders are taken into account in the creation or modification of the strategic plan	3.66	0.91	0.25	2 (2.7)	8 (10.8)	11 (14.9)	45 (60.8)	8 (10.8)	6.25	0.000			
2	The clinic's/center's policy and strategy including the financial plan and the external partnerships are reviewed and planned annually	3.30	1.04	0.32	6 (8.1)	11 (14.9)	15 (20.3)	39 (52.7)	3 (4.1)	2.45	0.017			
3	The dental care team periodically collects and analyzes information regarding performance indicators	3.23	1.13	0.35	7 (9.5)	13 (17.6)	16 (21.6)	32 (43.2)	6 (8.1)	1.75	0.084			
4	There are regular meetings for performance evaluation and assurance of the plan's compatibility with the policy and strategy	3.00	1.06	0.35	8 (10.8)	15 (20.3)	22 (29.7)	27 (36.5)	2 (2.7)	0.00	1.000			
5	The clinic/center has a specified strategic plan that has been defined with due awareness of its competitive advantages	3.39	0.92	0.27	2 (2.7)	13 (17.6)	16 (21.6)	40 (54.1)	3 (4.1)	3.67	0.000			

	Table (4.3): Descriptive Statistics and One-Sample t-Test for Criterion [3]: People variables												
#	Statements related to the People criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig		
1	There is well-defined written profiles including duties, rights, and the selection process of the dental care team members	3.18	1.01	0.32	5 (6.8)	15 (20.3)	18 (24.3)	34 (45.9)	2 (2.7)	1.49	0.140		
2	The strategic plan of the clinic/center includes a written training plan of the team on skills that cover its needs	3.18	0.94	0.30	3 (4.1)	17 (23.0)	19 (25.7)	34 (45.9)	1 (1.4)	1.61	0.113		
3	Work is organized and distributed upon the dental care team in a way that facilitates the active involvement of its members	3.76	0.86	0.23	2 (2.7)	3 (4.1)	17 (23.0)	41 (55.4)	11 (14.9)	7.60	0.000		
4	Work is organized and distributed upon the dental care team in a way that promotes creativity, innovation, and teamwork	3.64	0.89	0.24	1 (1.4)	7 (9.5)	20 (27.0)	36 (48.6)	10 (13.5)	6.18	0.000		
5	There is a communication system using modern information and communication technologies that is monitored by an appointed member of the team	3.42	0.99	0.29	4 (5.4)	11 (14.9)	13 (17.6)	42 (56.8)	4 (5.4)	3.63	0.001		

Criterion [4]: Partnerships & Resources

From <u>Table (4.4)</u> showing the dentists' answers regarding variables related to the Partnership & Resources Criterion; it is found that the answers for all the statement, except the statement highlighted with red, lent towards (agreement) with moderate to high percentages that varied between 40.9% and 74.3%. As for the statement highlighted with red; (external partnerships follow the internal policy and strategy of the clinic/center), the dentists' answers slightly lent towards (disagreement) with the low percentage of 31.1%.

The one sample t-Test results in the same Table (4.4); revealed that, only for the two statements highlighted with yellow, are the sig. (2-tailed) P-values less than ($\alpha \leq$ 0.05) indicating the rejection of the null hypothesis; that there are no statistical difference between the sample means of the Partnership & Resources Criterion and the test value (3), and the acceptance of the alternative hypothesis that there are significant statistical differences only in these two statements.

As for the sig. (2-tailed) P-value of the three statements that are un-highlighted with yellow (in Table 4.4); the values are greater than ($\alpha \le 0.05$) indicating failure to reject the null hypothesis in these statements. In addition, the CV values of these three statements (bold in the table) show slightly higher variability levels between the dentists' answers in comparison to the rest of the statements.

	Table (4.4): Descriptive Statistics and One-Sample t-Test for Criterion [4]: Partnerships & Resources variables												
#	Statements related to the Partnerships & Resources criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig		
1	External partnerships follow the internal policy and strategy of the clinic/center	2.88	0.92	0.32	<u>6 (8.1)</u>	<u>17 (23.0)</u>	32 (43.2)	18 (24.3)	1 (1.4)	-1.14	0.260		
2	The strategic plan of the clinic/center includes goals to form future partnerships	3.03	0.99	0.33	4 (5.4)	22 (29.7)	17 (23.0)	30 (40.5)	1 (1.4)	0.23	0.815		
3	The clinic/center is concerned with reinforcing its internal resources in order to achieve its competitive advantage	3.73	0.83	0.22	1 (1.4)	7 (9.5)	11 (14.9)	47 (63.5)	8 (10.8)	7.54	0.000		
4	The clinic/center is equipped with appropriate technology that facilitates management through transforming all gathered data into information	3.62	0.92	0.25	0 (0.0)	12 (16.2)	14 (18.9)	38 (51.4)	10 (13.5)	5.83	0.000		
5	There is a member of the team that is responsible for the management of continuing education process, and of informing the team and other stakeholders of any updates through the clinic's/center's web-page	3.16	1.01	0.32	4 (5.40)	19 (25.7)	13 (17.6)	37 (50.0)	1 (1.4)	1.39	0.170		

Criterion [5]: Processes

<u>Table (4.5)</u> detailing descriptive statistics of variables related to Processes Criterion reveals that the dentists' answers for all of the statements lent towards agreement with moderate to high percentages ranging from 44.6% to 74.3%. As for the CV values; the three bold values show slightly higher variability levels between the dentists' answers in the related statements in comparison to the rest of the statements.

The one sample t-Test results (**Table 4.5**) shows sig. (2-tailed) P-values of less than $(\alpha \le 0.05)$ for all of the statements except the two un-highlighted ones, this indicates rejecting the null hypothesis; that there are no statistical difference between the samples means of the Processes Criterion and the test value (3), and accepting the alternative hypothesis that there are significant statistical differences in these statements.

As for the sig. (2-tailed) P-value for the two un-highlighted statements of (Table 4.5); (there is a systematic process designed to collect information regarding competition (procedures, team structure, prices,etc)) and (the clinic/center has a centralized assessment process which is systematic and obligatory), both values are greater than ($\alpha \le 0.05$) indicating failure to reject the null hypothesis in these statements.

Table (4.5): Descriptive Statistics and One-Sample t-Test for Criterion [5]: Processes variables												
#	Statements related to the Processes criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig	
1	Regular surveys to study market needs are conducted by the clinic/center	3.42	0.89	0.26	0 (0.0)	16 (21.6)	15 (20.3)	39 (52.7)	4 (5.4)	4.04	0.000	
2	The training offered meets the current needs of the patients	3.73	0.87	0.23	3 (4.1)	3 (4.1)	13 (17.6)	47 (63.5)	8 (10.8)	7.26	0.000	
3	There is a systematic process designed to collect information regarding competition (procedures, team structure, prices,etc)	3.08	1.03	0.33	5 (6.8)	19 (25.7)	17 (32.0)	31 (41.9)	2 (2.7)	0.68	0.501	
4	The clinic/center has an established marketing plan	3.23	0.94	0.29	3 (4.1)	15 (20.3)	20 (27.0)	34 (45.9)	2 (2.7)	2.09	0.040	
5	There is a systematic process for the management of available resources and materials	3.54	0.97	0.27	3 (4.1)	9 (12.2)	14 (18.9)	41 (55.4)	7 (9.5)	4.80	0.000	
6	All administrative and financial tasks are defined, systemized, and procedural	3.35	1.05	0.31	4 (5.4)	13 (17.6)	17 (23.0)	33 (44.6)	7 (9.5)	2.87	0.005	
7	The clinic/center has a centralized assessment process which is systematic and obligatory	3.19	0.96	0.30	6 (8.1)	9 (12.2)	25 (33.8)	33 (44.6)	1 (1.4)	1.69	0.094	

4.1.2 Second Dimension of Criteria: Results

This dimension includes four criteria concerned with the results being achieved by the Dental Clinics. These criteria are; Patient Results, Dental Care Team Results, Society Results, and Key Performance Results. Each of the Results' criteria has been discussed in terms of descriptive statistics and One-Sample t-Test in this section.

Criterion [6]: Patient Results

Regarding variables related to the Patient Results Criterion and as shown in <u>Table</u> (4.6); it is found that the dentists' answers for all of the statements lent towards agreement with high to very high percentages varying between 73.0% and 87.8%. In addition, the CV values showed acceptable variability levels between the dentists' answers in all of the statements.

The one sample t-Test results detailed in the same **Table (4.6)** reveal that the sig. (2-tailed) P-values are less than ($\alpha \le 0.05$) for all of the statements, this indicates rejecting the null hypothesis; that there are no statistical difference between the samples means of the Patient Results Criterion and the test value (3), and accepting the alternative hypothesis.

Criterion [7]: Dental Care Team Results

From <u>Table (4.7)</u> showing the dentists' answers regarding variables related to the **Dental Care Team Results Criterion;** it is clear that the dentists' answers for all of

the statements lent towards agreement with high percentages ranging from 62.2% to 67.6%. CV of all statements revealed acceptable variability levels between the dentists' answers. As for the one sample t-Test; the sig. (2-tailed) P-values are less than ($\alpha \le 0.05$) for all of the statements, indicating the rejection of the null hypothesis; that there are no statistical difference between the samples means of the Dental Care Team Results Criterion and the test value (3), and the acceptance of the alternative hypothesis.

Criterion [8]: Society Results

<u>Table (4.8)</u> detailing descriptive statistics of variables related to Society Results Criterion reveals that the dentists' answers for all of the statements lent towards agreement with moderate to high percentages ranging from 44.6% to 74.3%. The one sample t-Test results show sig. (2-tailed) P-values of less than ($\alpha \le 0.05$) for the three statements highlighted with yellow, indicating the rejection of the null hypothesis; that there are no statistical difference between the samples means of the Society Results Criterion and the test value (3), and accepting the alternative hypothesis.

As for the sig. (2-tailed) P-value for the two un-highlighted statements of (Table 4.8); (the clinic's/center's team participates in many collaborative development activities in society) and (the clinic's/center's team contributes in seminars aiming to raise societal awareness of oral health), its value is greater than ($\alpha \le 0.05$) indicating failure to reject the null hypothesis.

The **CV** values indicate acceptable variability levels between the dentists' answers regarding: (**Sustainability being a part of the clinic's/center's processes and programs).** However, these values (**bold in Table 4.8**) reveal slightly high variability levels between the dentists' answers in the rest of the statements.

Criterion [9]: Key Performance Results

From <u>Table (4.9)</u> showing the dentists' answers regarding variables related to the Key Performance Results Criterion; it is found that the answers for all the statement, except the statement highlighted with red, lent towards (agreement) with low to high percentages that ranged from 39.2% and 78.4%. As for the statement highlighted with red; (there is an annual surplus generated by the clinic/center), the dentists' answers lent towards (disagreement) with the moderate percentage of 46.0%.

The one sample t-Test results in the same **Table (4.9)**; revealed that, only the five statements highlighted with yellow, have sig. (2-tailed) P-values of less than ($\alpha \leq$ 0.05) indicating the rejection of the null hypothesis; that there are no statistical difference between the sample means of the Key Performance Results Criterion and the test value (3), and the acceptance of the alternative hypothesis. As for the remaining four statements that are un-highlighted with yellow in Table (4.9);

- The revenue from treatment per a patient is suitable.
- The monthly revenue of the clinic/center is suitable.
- The clinic/center benchmarks its activities against others.

• New activities undertaken each year form a percentage not less than 10% of the total activities.

The sig. (2-tailed) P-values of these statements are greater than ($\alpha \le 0.05$) indicating failure to reject the null hypothesis. It is also clear that CV values (bold in the table) show high variability levels between the dentists' answers in many statements related to this criterion.

	Table (4.6): Descriptive Statistics and One-Sample t-Test for Criterion [6]: Patient Results variables													
#	Statements related to the Patient Results criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig			
1	The patients' satisfaction assessment has positive results	4.04	0.54	0.13	0 (0.0)	0 (0.0)	9 (12.2)	53 (71.6)	12 (16.2)	16.74	0.000			
2	Patient satisfaction with all steps of the treatment process is assessed	3.74	0.76	0.20	1 (1.4)	4 (5.4)	15 (20.3)	47 (63.5)	7 (9.5)	8.42	0.000			
3	Patients are highly satisfied with all steps of the treatment process	3.89	0.69	0.18	0 (0.0)	2 (2.7)	16 (21.6)	44 (59.5)	12 (16.2)	11.06	0.000			
4	Patient satisfaction with the clinic/center environment is assessed	3.85	0.72	0.19	0 (0.0)	5 (6.8)	10 (13.5)	50 (67.6)	9 (12.2)	10.24	0.000			
5	Patients are highly satisfied with the clinic/center environment	3.85	0.73	0.19	0 (0.0)	4 (5.4)	14 (18.9)	45 (60.8)	11 (14.9)	9.97	0.000			
6	Patient satisfaction with interactions with the clinic's/center's dental care team is assessed	3.80	0.79	0.21	1 (1.4)	4 (5.4)	14 (18.9)	45 (60.8)	10 (13.5)	8.64	0.000			
7	Patients are highly satisfied with interactions with the clinic's/center's dental care team	3.74	0.70	0.19	0 (0.0)	5 (6.8)	15 (20.3)	48 (64.9)	6 (8.1)	9.09	0.000			

	Table (4.7): Descriptive Statistics and One-Sample t-Test for Criterion [7]: Dental Care Team Results variables													
#	Statements related to the Dental Care Team Results criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig.			
1	Dental care team satisfaction with the different work aspects is assessed	3.50	0.85	0.24	4 (5.4)	3 (4.1)	21 (28.4)	44 (59.5)	2 (2.7)	5.07	0.000			
2	The dental care team is highly satisfied with the followed contact & communication methods	3.61	0.89	0.25	3 (4.1)	4 (5.4)	19 (25.7)	41 (55.4)	7 (9.5)	5.89	0.000			
3	The dental care team is highly satisfied with the used documentation and archiving systems	3.54	0.81	0.23	1 (1.4)	8 (10.8)	19 (25.7)	42 (56.8)	4 (5.4)	5.71	0.000			
4	The dental care team is highly satisfied with integration of specialties in the clinic/center	3.59	0.83	0.23	2 (2.7)	5 (6.8)	19 (25.7)	43 (58.1)	5 (6.8)	6.19	0.000			
5	The performance of the majority of the team members meets the minimum requirements of their positions	3.57	0.81	0.23	1 (1.4)	9 (12.2)	14 (18.9)	47 (63.5)	3 (4.1)	6.01	0.000			

	Table (4.8): Descriptive Statistics and One-Sample t-Test for Criterion [8]: Society Results variables												
#	Statements related to the Society Results criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig		
1	The clinic's/center's team participates in many collaborative development activities in society	3.24	1.12	0.35	6 (8.1)	14 (18.9)	17 (23.0)	30 (40.5)	7 (9.5)	1.87	0.066		
2	The clinic's/center's team contributes in seminars aiming to raise societal awareness of oral health	3.24	1.16	0.36	8 (10.8)	11 (14.9)	17 (23.0)	31 (41.9)	7 (9.5)	1.81	0.074		
3	Social responsibility is recognized as part of the work and role of the clinic/center	3.50	1.06	0.30	6 (8.1)	6 (8.1)	15 (20.3)	39 (52.7)	8 (10.8)	4.05	0.000		
4	The clinic/center has a positive impact on stakeholders within local, regional, and national community as a whole	3.31	1.02	0.31	6 (8.1)	8 (10.8)	21 (28.4)	35 (47.3)	4 (5.4)	2.62	0.011		
5	Sustainability is a part of the clinic's/center's processes and programs	3.70	0.92	0.25	4 (5.4)	3 94.1)	12 (16.2)	47 (63.5)	8 (10.8)	6.59	0.000		

	Table (4.9): Descriptive Statistics and One-Sample t-Test for Criterion [9]: Key Performance Results variables													
#	Statements related to Key Performance Results criteria	Mean	SD	CV	Strongly Disagree N (%)	Disagree N (%)	Don't Know N (%)	Agree N (%)	Strongly Agree N (%)	Т	Sig			
1	The number of new patients per a month is suitable	3.47	0.94	0.27	3 (4.1)	8 (10.8)	20 (27.0)	37 (50.0)	6 (8.1)	4.33	0.000			
2	The number of patients treated during an hour by each sub-group of the team is suitable	3.64	0.79	0.22	1 (1.4)	7 (9.5)	14 (18.9)	48 (64.9)	4 (5.4)	6.95	0.000			
3	The revenue from treatment per a patient is suitable	3.12	1.07	0.34	6 (8.1)	17 (23.0)	16 (21.6)	32 (43.2)	3 (4.1)	0.98	0.332			
4	The monthly revenue of the clinic/center is suitable	3.12	1.07	0.34	6 (8.1)	16 (21.6)	19 (25.7)	29 (39.2)	4 (5.4)	0.98	0.332			
5	There is an annual surplus generated by the clinic/center	2.62	1.08	0.41	13 (17.6)	21 (28.4)	23 (31.1)	15 (20.3)	2 (2.7)	-3.01	0.004			
6	There are overall metrics for quality that benefits from both patients and management improvement ideas	3.36	0.99	0.29	5 (6.8)	8 (10.8)	20 (27.0)	37 (50.0)	4 (5.4)	3.18	0.002			
7	The clinic/center benchmarks its activities against others	3.19	0.99	0.31	4 (5.4)	15 (20.3)	21 (28.4)	31 (41.9)	3 (4.1)	1.65	0.104			
8	The clinic/center exerts efforts into improving knowledge transfer, communication, and innovation	3.84	0.74	0.19	1 (1.4)	3 (4.1)	12 (16.2)	49 (66.2)	9 (12.2)	9.73	0.000			
9	New activities undertaken each year form a percentage not less than 10% of the total activities	3.07	1.01	0.33	7 (9.5)	12 (16.2)	26 (35.1)	27 (36.5)	2 (2.7)	0.57	0.567			

4.2 Pearson Correlation

Pearson correlation calculates the existence (indicated by the p-value) and the strength (represented by the coefficient r) of a relationship between two variables (X & Y). The limits of the correlation coefficient are; (-1.00) to (+ 1.00), where an absolute value (0.1) is classified as week correlation, an absolute value of (0.3) is classified as moderate correlation and that of (0.5) is classified as strong correlation (Cohen, 1988; Samuels, & Gilchrist, 2014).

<u>Table (4.10)</u> shows the values of Pearson correlation coefficients between the Enablers' criteria and the Results criteria. As highlighted, all sig. (2-tailed) P-values are less than ($\alpha \le 0.05$) indicating the rejection of the null hypothesis: (There is no significant relation between Dental Clinics' Enablers and the Results' of these clinics), and the acceptance of the alternative hypothesis that there are a statistically significant relationship between these two variables.

The correlation coefficients are of values **ranging from** (+0.302) to (+0.685); representing **moderate to strong positive correlations between all Dental Clinics' Enablers and all Results' of these clinics**. The weakest of these correlations is that between the Policy and Strategy and the Patient Results criteria. However the strongest of these correlations is noticed between the Processes criterion and the Key Performance Results criterion.

Table (4.10): Pearson Correlation between the two Dimensions of criteria(Enablers & Results)												
Crit	teria	Patient Results	Dental Care Team Results	Society Results	Key Performance Results							
Leadership	Pearson Correlation	0.491**	0.560**	0.440^{**}	0.462**							
	Sig. (2 tailed)	0.000	0.000	0.000	0.000							
Policy &	Pearson Correlation	0.302**	0.435**	0.388**	0.586**							
Strategy	Sig. (2-tailed)	0.009	0.000	0.001	0.000							
People	Pearson Correlation	0.418**	0.585^{**}	0.480^{**}	0.528**							
-	Sig. (2-tailed)	0.000	0.000	0.000	0.000							
Partnerships	Pearson Correlation	0.473**	0.616**	0.512**	0.537**							
& Resources	Sig. (2-tailed)	0.000	0.000	0.000	0.000							
Processes	Pearson Correlation	0.529**	0.639**	0.571**	0.685**							
	Sig. (2-tailed)	0.000	0.000	0.000	0.000							

4.3 Multicollinearity Diagnostics

Multicollinearity is a phenomenon that occurs when two or more predictors of a model are correlated. This phenomenon is a violation of a basic assumption for a regression model to be successful that is; (no explanatory variable is a perfect linear function of any of the other explanatory variables) (Shrestha, 2020). Multicollinearity exists when any independent variable is correlated to another in the regression model. Its occurrence is a serious problem that must be treated before modeling the data. This is because a model with high multicollinearity must be dismissed, and will not be interpretable (Daoud, 2017).

The Variance Inflation Factor (VIF)⁹ {**Appendix** (4.6)} is a prominent method for estimating multicollinearity. It is a tool that measures and quantifies the degree to which the variance of an estimated coefficient is inflated. VIF examines the degree to which an explanatory variable is explainable through all of the other explanatory variables in the model (equation) (Daoud, 2017; Shrestha, 2020). A VIF value of less than (5.0) is considered an acceptable value (Akinwande et al., 2015). However, for the purpose of this study a threshold-test value of (3.0) is assumed as the acceptable value.

As the highlighted section in <u>Table (4.11)</u> shows; after diagnosing the collinearity between the Enablers' criteria as explanatory variables included in the estimated multiple regressions models of the total Results, all values of VIF were less than the threshold-test value of {3.0}; meaning that there is no multicollinearity among the Enablers' criteria. This result indicates that **the assumption that**; (no Enablers' Criterion is a perfect linear function of any of the other Enablers' criteria) is a TRUE one. Meaning there are no correlations of sufficient magnitudes that have the potential to adversely affect regression estimates between any of the Enablers' criteria.

Table (4.11): Multicollinearity Test for the Enablers' Criteria					
Coefficients					
Nr 11	Collinearity Statistics				
NIOdel	Tolerance	VIF			
Leadership	0.455	2.199			
Policy & Strategy	0.387	2.582			
People	0.342	2.927			
Partnerships & Resources	0.533	1.875			
Processes	0.367	2.722			
a. Dependent Variable: the total Results of the Palestinian dental clinics					

⁹ VIF value Interpretation is included in Appendix (4.6)

4.4 Multiple Linear Regression

Linear regression represents a modeling technique through which data is analyzed in order to make predictions. In a Simple Linear Regression, a response variable (y) is predicted from an explanatory variable (x) through the formulation of a bivariate model. However, in Multiple Linear Regression, more than one explanatory variables ($x_1, x_{2,...,}, x_{p^{10}}$) are incorporated into the formulated model; a multivariate model is built. This multivariate model can be used to investigate the means by which a set of explanatory variables are associated with a specific response variable (Tranmer et al., 2020). The following is the general equation of the Multiple Linear Regression model (Uyanik et al., 2013; Tranmer et al., 2020):

$\mathbf{y}i = \boldsymbol{\beta}_0 + \boldsymbol{\beta}_1 \mathbf{x}_1 \mathbf{i} + \boldsymbol{\beta}_2 \mathbf{x}_2 \mathbf{i} + \dots + \boldsymbol{\beta} p \mathbf{x} p \mathbf{i} + \boldsymbol{e} \mathbf{i}$

Where: y: response variable (dependent variable) x: an explanatory variable (independent variable) β_0 : is the constant (the predicted value of y when all explanatory variables are 0). p: the number of explanatory variables β : the coefficient of each explanatory variable e: error

It must be pointed out that the term 'linear' is used in both of these types of regression due to the assumption of; a direction relation between the response variable (dependent variable) and a linear combination of the explanatory variables (independent variables) (Tranmer et al., 2020).

 $^{^{10}(}p)$ is the number of explanatory variables

Enablers' Criteria as an Explanatory Variable of the total Results

This section endeavors to examine the impact each of the Enablers' Criteria has on the total Results of the Palestinian dental clinics. As means to investigate that; the following equation of the estimated multiple regressions model was formulated:

$$\hat{y} = \beta_0 + \beta_1 L + \beta_2 PS + \beta_3 PP + \beta_4 PR + \beta_5 P$$

Where:

 \hat{y} : a new total variable assumed including all Results' criteria (response variable) β_0 : the constant (the predicted value of *y* when all Enablers' Criteria are 0). L: Leadership Criterion (explanatory variable) PS: Policy & Strategy Criterion (explanatory variable) PP: People Criterion (explanatory variable) PR: Partnerships & Resources Criterion (explanatory variable) P: Processes Criterion (explanatory variable) β_{1-5} : the coefficient of each Enablers' Criterion

Then the specific null hypothesis for the model is:	H ₀ : $β_1$, $β_2$, $β_3$, $β_4$, $β_5 = 0$
And the alternative hypothesis for the model is:	H_A : At least one $\beta_i \neq 0$

With the suggested Null Hypothesis and the Alternative Hypothesis for each of the Enablers' Criteria being:

H₀: The Criterion has NO impact on the total Results of the Palestinian Dental Clinics. (Failure to reject at a βi with a sig. of $\alpha > 0.05$)

H_A: The Criterion has a significant impact on the total Results of the Palestinian

Dental Clinics.

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(Accepted at a \beta i with a sig. of \alpha \le 0.05)
```

Including all five of the Enablers' criteria (L, PS, PP, PR, P) as explanatory variables that have impact on the response variable that is the total Results of the dental clinics; multiple linear regressions analysis was conducted. The Findings of this analysis were as shown in **Table (4.12)**; according to which the following is concluded:

- ✓ The sig. p-value of the F-test is less than $\{0.01\}$; ($\alpha < 0.01$). And so, the null hypothesis: (H₀: $\beta_1 = \beta_2 = \beta_3 = \beta_4 = \beta_5 = 0$) is rejected and the alternative hypothesis is accepted indicating that **the overall model is statistically significant**.
- ✓ The Adjusted R Square value indicates that the moderate percentage of (63.9%) of the total Results of the Palestinian Dental Clinics is explained by the significant explanatory variables (significant Enablers' criteria).
- ✓ The regression constant (β_0) has a sig. P-value of less than ($\alpha \le 0.05$), and an estimated value of (+0.979).
- The Leadership Criterion has a sig. P-value of less than (α ≤ 0.05), and so the null hypothesis that this variable has no impact on the total Results of the dental clinics is rejected, and the alternative hypothesis that it has a significant impact is accepted. The coefficient (β₁) of this explanatory variable is estimated to be (+0.182). This indicates that Leadership has a positive impact on the total Results that could be explained by; a one unit increase in the Leadership criterion leading to a (0.182) unit increase in the total score of Results of the Palestinian dental clinics.
- ✓ The Policy & Strategy Criterion has a sig. P-value greater than ($\alpha \le 0.05$) implying failure to reject the null hypothesis that this variable has no impact on the total Results of the Palestinian dental clinics. Hence, this criterion is excluded from the regression model.

- The People Criterion has a sig. P-value greater than (α ≤ 0.05) indicating failure to reject the null hypothesis that this variable has no impact on the total Results of the Palestinian dental clinics. And so; it's excluded from the regression model.
- ✓ The Partnerships & Resources Criterion has a sig. P-value of less than ($\alpha \le 0.05$). This implies rejecting the null hypothesis that this variable has no impact on the total Results of the dental clinics, and accepting the alternative hypothesis that it has a significant impact. The coefficient (β_4) of this explanatory variable is estimated to be (+0.219). This indicates that Partnerships & Resources have a positive impact on the total Results that could be explained by a one unit increase in the Partnerships & Resources criterion leading to a (0.219) unit increase in the total score of the Results of the Palestinian dental clinics.
- ✓ The Processes Criterion has a sig. P-value of less than ($\alpha \le 0.05$), and so the null hypothesis that this variable has no impact on the total Results of the dental clinics is rejected, and the alternative hypothesis that it has a significant impact is accepted. The coefficient (β_5) of this explanatory variable is estimated to be (+0.384). This indicates that **Processes have a positive impact on the total Results.** This could be explained by a one unit increase in the Processes criterion leading to a (0.384) unit increase in the total score of the Results of the Palestinian dental clinics.

Table (4.12): The Impact of the Enablers' Criteria on the Results of the DCs							
Coefficients							
Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.		
	В	Std. Error	Beta		8		
(Constant)	0.979	0.228	-	4.296	0.000		
Leadership	0.182	0.077	0.247	2.366	0.021		
Policy & Strategy	-0.060	0.074	-0.092	-0.812	0.419		
People	0.019	0.091	0.024	0.203	0.840		
Partnerships & Resources	0.219	0.079	0.268	2.782	0.007		
Processes	0.384	0.092	0.484	4.177	0.000		
R = 0.815, Adjusted R square = 0.639, F = 26.864, sig. for F = 0.000							
a. Dependent Variable: The total Results of the Palestinian Dental Clinics							
b. Predictors: (Constant), Processes, Leadership, Partnerships & Resources, Policy & Strategy, People							

Building on these findings derived from Table (4.12) regarding each of the Enablers' criteria impact on the total Results of the Palestinian Dental Clinics; **the following estimated multiple regression equation could be used as a prediction of this impact:**

$\hat{y} = 0.979 + 0.182 L + 0.219 PR + 0.384 P$

Where: ŷ: Total Results' of the Palestinian dental clinics L: Leadership Criterion PR: Partnerships & Resources Criterion P: Processes Criterion

This regression equation shows that the total Results of the Palestinian Dental Clinics are positively impacted only by three out of five of the Enablers' criteria. The descending order of the extent of these positive impacts is; Processes, Partnerships & Resources, then Leadership.

Chapter Five: Results and Recommendations

Introduction

Depending on previous discussions of the different sections of this study; this chapter endeavors to answer the study's secondary questions and its main question as means of investigating the degree to which its objectives have been achieved, and during the process deriving the study's conclusions and recommendations.

5.1 Results of the Study

This section benefits from the previous discussion of the data's statistical analysis in order to answer the study's questions.

Question [1]: What is the reality of the EFQM model implementation in the Palestinian dental clinics of the West-Bank?

Building on the previous discussion of the statistical findings derived from the Descriptive Statistics and One Sample T-test related to the EFQM model in Tables (4.1 - 4.9); the Implementation Reality of both EFQM main dimensions of criteria (Enablers & Results) in the Palestinian Dental Clinics can be induced as illustrated in Tables (5.1) & (5.2).

Examining Table (5.1); two main findings are noticed. **Finding [1]** is that according to the percentage implemented of each Enablers' Criterion in regards to its assigned
points (represented by the mean of agreement percentages) and as clear from Figure (5.1); the descending order is; Leadership, People, Processes, Policy & Strategy, then Partnerships & Resources.

Ta	Table (5.1): the Reality of the Implementation of EFQM Enablers' Criteria in the Palestinian Dental Clinics								
#	Enablers' Criterion	Mean of Agreement Percentages	Assigned Points within EFQM Model	Implementation Score in Clinics	Implementation Percentage within EFQM Model				
1	Leadership	68.5 %	100	68.50	6.9 %				
2	Policy & Strategy	55.4 %	80	44.32	4.4 %				
3	People	58.1 %	90	52.29	5.2 %				
4	Partnerships & Resources	51.6 %	90	46.44	4.6 %				
5	Processes	55.8 %	140	78.12	7.8 %				
	The	total Score of t	the Enablers' Crit	teria is 287.9					



In the current study the Partnerships & Resources Criterion is found to be the least implemented in the Palestinian dental clinics, this finding contradicts that of (**Sanchez et al., 2006**) which concluded this criterion to be the most implemented one in a Spanish Health Service Organization. It also disagrees with that by (**Vakan et al., 2011**) which found the Partnerships Criterion to be among the most adequately represented ones in a Pakistani teaching Dental Hospital.

Findings of (Gorji & Siami, 2011) relatively agreed with those of the current study as the Partnerships & Resources criterion was noticed to be among the least two implemented criteria. However, the current study disagrees with that one in regards to the People criterion which was found to be the least implemented criterion in that study but is the second most adequately represented criterion in the current study. The current study also contradicts that of (Malekzadeh et al., 2019) in which the lowest implementation was of the Process criterion.

Finding [2] of Table (5.1) is that the total score of implementing the Enablers' Criteria in the Palestinian dental clinics is {289.7}, indicating that, in regards to the Total Score of the EFQM Model, this criterion's points are {289.7 out of 1,000} giving the percentage of {29.0 %} as its role in the whole model's implementation in these clinics.

In addition the above two findings, another two main findings can be derived from <u>**Table (5.2).**</u> Finding [3] is that according to the percentage implemented of each Results' Criterion in regards to its assigned points (represented by the mean of agreement percentages) and as illustrated in Figure (5.2); the descending order is;

Patient Results, Dental Care Team Results, Society Results, with the least percentage

being that of Key Performance Results.

J	Table (5.2): the Reality of the Implementation of EFQM Results' Criteria in the Palestinian Dental Clinics									
#	Results' Criterion	Mean of Agreement Percentages	Mean of Assigned In Agreement Points within ercentages EFQM Model		Implementation Percentage within EFQM Model					
1	Patient Results	77.0 %	200	154.0	15.4 %					
2	Dental Care Team Results	64.4 %	90	57.96	5.8%					
3	Society Results	58.4 %	60	35.04	3.5 %					
4	Key Performance Results	51.4 %	150	77.1	7.7 %					
	Th	e total Score of	the Results' Crite	eria is 324.1						



This finding of the current study relatively agrees with that of (**Sanchez et al., 2006**) regarding the Customer Results criterion (designated Patient Results criterion in the current study) being among the top two criterions with high implementation

percentage. Nonetheless, the current study contradicts that study in regards to the Key Performance Results criterion which was among the top three most implemented criteria in **Sanchez's** study, but is the least implemented one in the current study's findings.

The current study contradicts that by (**Vakani, it al., 2011**) which concluded that the Social Results criterion was adequately represented in the organization object of the study; that's since, in the current study, this criterion is among the two with least implementation percentages. Findings of another study carried out by (**Gorji & Siami, 2011**) showed that the Key Performance Results criterion is the most implemented one which disagrees with the current study findings.

As for **Finding [4] concluded from Table (5.2)**; the total score of implementing the Results' Criteria in the Palestinian dental clinics is {324.1}, this implies that, in regards to the Total Score of the EFQM Model, this criterion's points are {324.1 out of 1,000} giving the percentage of {32.4 %} as its contribution to the whole model's implementation in these clinics.

Building on Finding [2] & Finding [4] of both Tables; it is found that the Results' Criteria score and contribution to the total EFQM model is higher than those of the Enablers' Criteria, as demonstrated in Figure (5.3). This finding disagrees with the conclusions of both; (Gorji & Siami, 2011) and (Favaretti et al., 2015).



Figure (5.3): The Contribution of both Dimensions of Criteria to the Total EFQM Model in the Palestinian Dental Clinics

<u>Conclusion:</u> After studying both Tables (5.1) & (5.2) and the derived findings, it can be concluded that the reality of implementation of the total EFQM model in the Palestinian dental clinics is {612 points out of 1,000}. This indicates that **the Palestinian dental clinics MODERATELY IMPLEMET the EFQM model with the reality of this implementation being {61.2%}. The reality of the contribution of each criterion of the nine of the model is demonstrated in Figure (5.4).**



A main induction to point out regarding this finding of the reality of EFQM model implementation in the Palestinian dental clinics is the following one:

It was well-established through Chapter two of the current study, especially; Section (2.1.2): (Self-Assessment) that the EFQM model is a multi-dimensional nonprescriptive TQM framework that is built on the fundamental concepts of excellence. Hence, it is considered an invaluable self-assessment tool that is used by various European healthcare organizations. The model provides these organizations with insights into their own activities and outcomes, and helps them determine their strengths and weaknesses. The application of the model was proven by many researchers (already mentioned) to lead to continuous quality improvement and performance excellence.

Building on these findings; since the model provides a TQM framework that is build on the fundamental concepts of performance excellence, and so can be used as a selfassessment tool to determine the extent to which an organization is on the path to performance excellence, then, it can be induced that **the Palestinian dental clinics moderate implementation of the EFQM model with the reality of {61.2%} is an indicator of both; MODERATE levels of Quality through self-assessment adoption by these clinics, as well as, an indicator of MODERATE levels of performance in these clinics.**

Question [2]: Are there relationships between the two main dimensions of criteria in the EFQM (the Enablers' criteria and the Results' criteria) in the Palestinian dental clinics of the West-Bank? The previous analyses and discussion of Table (4.10) concluded that **there are moderate to strong positive correlations (relationships) between all Dental Clinics' Enablers and all Results' of these clinics with the values ranging from {0.302} to {0.685}.** The weakest of these correlations is that between the Policy and Strategy and the Patient Results criteria. However the strongest of these correlations is noticed between the Processes criterion and the Key Performance Results criterion.

This current study's finding of the presence of positive correlations between both dimensions of criteria agrees with the conclusions of (Gorji & Emami, 2012) and (Khalaf Ahmad et al., 2012). However, it contradicted those of Gorji in the strongest correlations being between the Leadership criterion and the Results' criteria.

Main Question of the study: What impact do the Enablers of the Palestinian dental clinics have on the Results of these clinics?

The Discussion of results related to Table (4.12) showed that the total Results of the Palestinian Dental Clinics are positively impacted only by three out of five of the Enablers' criteria. Displayed in **Figure (5.5)** is the descending order of the extent of these positive impacts which is; Processes, Partnerships & Resources, with the least impact being that of Leadership.

Since three out of five of the Enablers' Criteria were found to have positive impacts on the total Results, then it can be concluded that these findings of the current study relatively agree with those of (**Van Schoten et al., 2016**) in which multiple linear regression analysis of the Enablers' criteria against the Results' criteria were concluded to "in general" be statistically significant with coefficients being positive. In addition, this finding agree –in essence- with those concluded by (**Khalaf Ahmad** et al., 2012) in which significant Simple Regression coefficients indicated that all of the EFQM model criteria positively impact each other.



A main induction to point out regarding this finding of the Palestinian dental clinics' Enablers impact on the Results of these clinics is the following one:

Building on the methods adopted by (Gorji & Siami, 2011; Gorji & Emami, 2012; Van Schoten et al., 2016) and since the Results' Criteria of the EEQM model represent a measurement of the Dental clinics achievements, then, it is considered to be an acceptable measurement of the performance of these clinics. Hence, it could be induced that the levels of the Palestinian Dental Clinics' Performance is positively impacted by the following Enablers; Processes, Partnerships & Resources, and

Leadership, in a descending order. The equation below could be used to estimate the change in the levels of the Palestinian Dental Clinics Performance as the included Enablers' criteria change.

$\hat{y} = 0.979 + 0.182 L + 0.219 PR + 0.384 P$

Where:
ŷ: Levels of Palestinian Dental Clinics' Performance
L: Leadership of Palestinian DCs
PR: Partnerships & Resources of Palestinian DCs
P: Processes of Palestinian DCs

5.2 Main Conclusions of the Study

Depending on the previous sections of the current study, the following are it main conclusions:

- ✓ Palestinian dental clinics moderately implement the EFQM model with the reality of {61.2%} which is induced to also indicate moderate levels of Quality through self-assessment adoption, as well as, moderate levels of performance in these clinics.
- ✓ There are moderate to strong positive correlations between all Palestinian Dental Clinics' Enablers and all Results' of these clinics with values ranging from {0.302} to {0.685}.
- ✓ The total Results of the Palestinian Dental Clinics are positively impacted only by three out of five of the Enablers' criteria. The descending order of the extent of these positive impacts which is; Processes, Partnerships & Resources, with the least impact being that of Leadership.

5.3 Recommendations

Building on the conclusions, this section of the study lists the current researcher's most important recommendations for; the Palestinian Dental clinics/centers, decision-makers of the Palestinian Dental Care Sector and for other researchers in the form of suggested topics for further and future research purposes.

Recommendations directed towards the improvement of the Clinics'/Center's Enablers and Results

During the previous results, discussions, findings, and conclusions; the researcher noticed several prominent problematic areas of the EFQM model implementation within the Palestinian dental clinics and centers. This section lists the researcher's recommendations to the Leadership of these clinics and centers to apply in order to improve the identified areas of lack of implementation. These recommendations are:

- ✓ Holding workshops and training courses to improve the dental care teams' knowledge about leadership and clarify their understanding of its concepts.
- ✓ Improving communication skills within the dental centers across three levels; between management of the center and the dental care team, among the dental care team members, and between the dental care team and the patients. To do so the center can benefit from the ease electronic apps and networks (digital communication) offers, through establishing open channels of communication across all three levels.

- ✓ Emphasizing on the importance of continuing education of the dental care team, and establishing open channels of communication with professional public and private organizations that provide it.
- ✓ Determining key performance indicators (KPIs) and to carry out periodic assessment processes that these KPIs help monitor.
- ✓ Holding regular meetings between the management of the dental center and the dental care team to discuss performance levels and plans of improvement.
- ✓ Establishing circulated documented job description and training plans.
- ✓ Focusing of ensuring the quality of products and materials provided by the different suppliers (Dental technician, and raw material, dental products, instruments, equipments,..... suppliers).
- ✓ Establishing a vision and formulating plans of future strategic partnerships development.
- ✓ Applying information intelligence to collect data related to the external environment and the different aspects of competitors. This information can be utilized as a benchmarking tool to adopt any identified best practices.
- ✓ Adapting a planned centralized assessment process that is systematic and obligatory.
- ✓ Contributing to building society awareness of oral healthcare through holding or participating in different society development activities.

Other General Major Recommendations

This section encompasses the researcher's recommendations to decision-makers of the Palestinian Dental Care Sector and other institutes that might improve quality through self-assessment within the Palestinian dental clinics and centers. The following are these recommendations:

- **First:** for the Dentistry Faculties of Palestinian universities to include courses related to management, business essential, quality management, and communication skills improvement in their curricula.
- Second: for the Palestinian Ministry of Health to:
 - Develop a more advanced external auditing system that monitors the performance and quality of the Palestinian dental clinics/centers.
 - Carry out periodical obligatory Quality Management Exams for Palestinian dentists to take. This aims to ensure the continuous improvement of quality; knowledge and practices.
 - Grant researchers of the Palestinian dental care sector the needed funding to carry out further and future research in the field of quality assessment.
- **Third:** for the Palestinian Dental Association to establish a quality assurance unit that monitors quality within the Palestinian dental clinics/centers.
- Fourth: For Palestine Standards Institution (PSI) to establish a Quality Assessment Model derived from the EFQM model that is more specified for implementation within the Dental Care Sector.

Recommendations of Further & Future Research

As it's the researcher's conviction that the accumulation of research in topics related to that of the current study could gradually build up a nation-wide understanding of Quality Assessment and provide insightful improvement potentials of the Palestinian Dental Clinics. Hence, in this section, the researcher suggests several important topics for further and future research purposes. These topics include:

- Case studies of implementing the EFQM model within the Palestinian dental care centers.
- ✓ Aiming to establish a Quality Assessment Model derived from the EFQM model that is more specified to the Dental Care Sector.
- ✓ Other Self-Assessment tools to be used in the Dental Care Sector.
- ✓ External Assessment practices that promotes self-assessment within the Dental Care Sector.
- ✓ More in-depth research in all aspects related to Quality Assessment in the Palestinian Dental Care Sector.

5.4 Determinants (Limitations) of the Study

The findings of the current study are to be taken with CAUTION due to the following determinants:

- ✓ The researcher adopted an e-questionnaire constructed as a simplified form of the EFQM Model.
- ✓ The study followed a non-probability sampling method due to absence of a complete, accurate, and up-to-date list of information of all the Palestinian dentists of the West-Bank (the list from which the study's sample must be drawn in the case a probability sampling method was to be applied).

- ✓ Difficulties in obtaining response (on the questionnaire) from the dentists which led to a sample size smaller than what is considered a sufficient representative of the population (74 dentists).
- ✓ Small dental clinics form the majority of the Palestinian dental care sector. These clinics' dental care teams only consist of the dentist or of the dentist and one secretary. This highly limits the perspective provided by their answers in regards to the People and People Results Criteria.
- ✓ Some of the nine criteria in the model adapted by the researcher are qualitative which requires some knowledge in the field during self-assessment and allows for errors to arise.
- ✓ The EFQM-based Self-assessment is usually carried out internally by an organization's management which has access for the records needed for a more accurate evaluation of the models' implementation. In addition, to having a part of its budget assigned to the self-assessment process. Nonetheless, in this study it was carried externally by the researcher who lacked; means, funding, and had time limits
- ✓ Assessments were made based on the dentists' perceptions of the criteria which might have led for some overestimation.

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Appendix (3.1): The Population of Palestinian Dentists in the West-Bank

Ministry of Health Oral and Dental Health Unit			Unit									ن	فلسطين الصحة القم والأسنا	دولـــة ف وزارة بحدة صحة
							ب	الأسنان حس	اد أطباء ا	أعد				
		c	الجمير	الأسنان	ضع طبيب	ح و	الجميو	لبيب الأسنان	جنس ط		الجميع	مديرية الصحة		
	سبة	لمجموع الن	أكثر من 60 : ة	51 - 60	41 - 50	31 - 40	30 - 23	غير معروف	أنثى	ذكر	برية الصحة	مد	الرقم	
	0.1	% 2	0	0	0	2	0	0	1	1			1	
	12.1	479	35	35	59	242	121	10	182	297	بة صحة الخليل	مديري	2	
	2.8	% 111	4	4	15	36	49	5	40	71	سحة جنوب الخليل	مديرية ص	3	
	4.0	% 158	6	6	23	54	71	3	76	82	سحة شمال الخليل	مديرية م	4	
	1.4	% 54	3	3	7	20	18	3	29	25	محافظة أريحا والأغوار	مديرية صحة ه	5	
	16.2	2% 639	16	16	66	364	174	15	320	319	بحة محافظة القدس	مديرية ص	6	
	10.8	3% 425	25	25	56	192	127	14	186	239	حة محافظة بيت لحم	مديرية صد	7	
	10.6	5% 419	30	30	65	141	160	3	184	235	حة محافظة جنين	مدير ية ص	8	
	17.0)% 670	57	57	92	295	191	6	302	368	محافظة رام الله والبيرة	مديرية صحة	9	
	2.6	% 101	2	2	18	43	35	1	45	56	حة محافظة سلفيت	مديرية ص	10	
	1.3	% 51	5	5	4	19	22	0	26	25	حة محافظة طوباس	مدير ية ص	11	
	7.0	% 276	25	25	30	119	90	4	137	139	حة محافظة طولكرم	مديرية ص	12	
	2.5	% 99	6	6	24	34	31	1	29	70	حة محافظة قلقيلية	مدير ية ص	13	
	10.7	7% 421	41	41	84	160	114	6	154	267	بحة محافظة نابلس	مدير ية ص	14	
	1.2	% 47	1	1	3	25	12	4	18	29	ِية صحة يطا	مدير	15	
	100.0	0% 3,952	256	256	546	1.746	1.215	75	1 530		6.44			
Sta	ate of Pale	stine				1,740	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	13	1,729	2,223		المح	ـة فلسـطين	دو لـــ
Sta Mir Oral and	ate of Pale nistry of H d Dental H	estine Iealth Iealth Ur	it			1,740			1,729	2,223		المع بندان	ـة فلسـطين ارة الصحة حة الفم والأ	دولــ وز وحدة ص
Sta Min Oral and	ate of Pale nistry of H d Dental H	stine Iealth Iealth Ur	iit			1,740	حسب	اء الأستان	عداد أطب	1		المع سقان	ـة فلسـطير: ارة الصحة حة الفم والأ	دول وز وحدة ص
Sta Min Oral and	ate of Pale nistry of H d Dental H	stine Iealth Iealth Ur الجميع	it بن	طييب الأسذ	وضع ه	الجميع	حسب منان	ر اء الأستان نس طبيب الأم	عداد أطب	2,223 j	حرع معة الجني	المع سنان مديرية الم	ـة فلســطين ارة الصحة حة الفم والأ	دول۔ وز وحدۃ ص
Sta Mir Oral and	ate of Pale nistry of H d Dental H المجموع	stine Iealth Iealth Ur الجنيع تور معروف	it ان البلد	طبيب الأسن	وضع م	الجميع ر ممارس	حسب سنان غیر	اء الأستان سطيب الأم	عداد أطب	2,223	مرع سمة الجميع مة	المع بنتان مديرية الص مديرية الصد	لة فلسطين ارة الصحة حة الفم والأ	دول وز وحدة صا
Sta Min Oral and النسبة 0.1%	ate of Pale nistry of H d Dental H المجعوع 2	stine Iealth Iealth Ur الجميع الجميع آلير معروف	ان انبلد عن م	نیب الأسن ن خا	وضع ه متوفر 0	الجميع ر معارس 0	حسب سنان غیر	اء الأستان نس طيب الأم ممارس	1,729 عداد أطب ج	2,223 ا نکر ا	مرع سمة الجني مة	المع سنان مديرية الص مديرية الصد	ـة فلسـطين ارة الصحة حة الفم والأ	دول وز وحدة صد الرقم 1
Sta Mir Oral and مرابع النسبة النسبة الاسبة الاربع	ate of Pale nistry of H d Dental H دانمجنوع 2 480	stine Iealth Iealth Ur الجنيع نير معروف 0 8	it البلد : ارج البلد : 0 0	طیب الأسن ن خا	وضع ه متوفر 0 1	الجميع ر ممارس 0 39	حسب سنان ن غیر	اء الأستان سطيب الأس	البرايي عداد أطب أنثى 1 182	2,223 ز ا 1 298	حرع سحة الجميع عة خليل	المع ستان مديرية الص مديرية الصد مديرية صحة ال	ـة فلسـطين ارة الصحة حة الفم والأ	دولـ وز وحدة صر وحدة مر الرقم 1 2
Sta Mir Oral and النسبة 0.1% 12.1% 2.8%	ate of Pale nistry of H d Dental H دانمجنوع 2 480 111	stine Iealth Iealth Ur الجميع فير معروف 0 8 5	it ارج البلد : 0 0 0	نیپب الأسن ن خا	وضع ه متوفر 0 1 0	الجميع ر ممارس 0 39 1	حسب سان ب غیر	ربي الأستان الم الأمينان الم الم الم الم الم الم الم الم الم الم	عداد أطب عداد أطب ب انٹی 1 182 40	2,223 ذکر 1 298 71	حرع سعة الجميع علم خليل ب الغايل	المع ستان مديرية الص مديرية الصد مديرية صحة ال	ـة فلسـطين ارة الصحة حة الفم والأ مد	دولـ وز وحدة صر وحدة صر الرقم 1 2 3
Sta Min Oral and النسبة 0.1% 12.1% 2.8% 4.0%	ate of Pale nistry of H d Dental H دالمجموع 2 480 111 158	stine Iealth Iealth Ur الجنيع 0 8 5 0	it البلد : ارج البلد : 0 0 0 4	نیب الأسن ن خا	وضع ه متوفر 0 1 0 0	الجميع ر ممارس 0 39 1 8	حسب منان ن غیر	ريم الأستان اء الأستان تس طبيب الأس 432 105 146	ا,729 عداد أطب غداد أطب أنثى 1 182 40 76	2,223 ذکر 1 298 71 82	حرع سعة الجميع عليان ب العليان) الغليان	المع سنان مديرية الص مديرية الصد مديرية صحة ال برية صحة إميار	لة فلســطين ارة الصحة حة الفم والأ مد مد	دولـ وز وحدة صا وحدة صا الرقم 1 2 3 4
Sta Min Oral and النسبة 12.1% 2.8% 4.0% 1.4%	ate of Pale nistry of H d Dental H للمجموع 2 480 111 158 56	stine Iealth Iealth Ur الجنع قرر معروف 0 8 5 0 2	it البلد ع ارج البلد ع 0 0 0 4 0	يليب الأسن غليب الأسن	وضع م متوفر 0 1 0 2	الجميع ر معارس 39 1 8 6	حسب منان ا غرر	باء الأستان اء الأستان مسارس 432 105 146 46	1,729 عداد أطب انٹی 1 182 40 76 29	2,223 ذکر 1 298 71 82 27	حرع سحة الجميع ية خليل ب الخليل ي الخليل يحا والأغوار	المع سنان مدیریة الص مدیریة الصد مدیریة صحة ال یریة صحة جنور یریة صحة مسال یریة صحة مانظة أر	ة فلسطين ارة الصحة حة الفم والأ مد مديرية مديرية	دولـ وز ودة صا وحدة صا الرقم 1 2 3 4 5
St: Mir Oral and آلاسية 12.1% 2.8% 4.0% 1.4% 16.1%	ate of Pale nistry of H d Dental H 2 480 1111 158 56 639	stine Icalth Icalth Ur الجنيع مروف الجنيع 0 8 5 0 2 4	it ان المحمد المحم المحمد المحمد المحمد المحمد المحمد المحم المحمد المحمد المح المحمد المحمد المحم المحمد المحمم المحمم المحمم الم	غيب الأسن	وضع ه متوفر 0 1 0 0 2 0	الجميع ر ممارس 39 1 8 6 31	حصب منان المراجع	ريم الأستان اء الأستان ممارس 432 105 146 46 604	النائي عداد أطب عداد أطب غداد النائي 40 76 29 320	2,223 ذکر 1 298 71 82 27 319	حرع سحة الجميع ية بالخليل يحا والأغوار لية القدس	المع سنان مدیریة الص مدیریة الصد مدیریة صحة ال یریة صحة جنور یریة صحة مدافظة آر ریة صحة محافظة آر	لة فلسطين ارة الصحة حة الفم والأ مد المرية مديرية مديرية	دولـ ورز صر ورز صر ورز ورز ورز ورز ورز ورز ورز ورز ورز ور
St: Mir Oral and النسبة 12.1% 2.8% 4.0% 1.4% 16.1% 10.7%	ate of Pale nistry of H d Dental H 2 480 111 158 56 639 425	stine Iealth Iealth Ur الجنيع معروف الجنيع معروف الجنيع معروف الجنيع معروف الجنيع معروف الجنيع معروف المحالي المحالية المحالي المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحاليمانية المحاليمالية المحالية المحالية المحالية المحالية المحاليمانية المحاليمالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحالية المحاليماليماليماليماليماليماليمالماليمالمالماليمالمالماليمالماليمالمالمالمالمالماليمالمالمالمالمالمالمالمالمالمالمالمالمالم	it البلد ارج البلد ا 0 0 0 4 0 0 0 0 0	غيب الأسن	وضع ه متوفر 0 1 0 0 2 0 0 0	الجميع ر ممارس 39 1 8 6 31 49	حصب منان غور مراجع	ريم الأستان اء الأستان عمارير 432 105 146 46 604 370	النائي عداد أطب عداد أطب غداد النائي 40 76 29 320 186	2,223 ذکر 1 298 71 82 27 319 239	حرع محة الجميع عة ب الخليل ب الخليل يحا والأغوار يت الحم قر يت لحم	المع بنتان مدیریة الص مدیریة الصد مدیریة صحة ال یریة صحة جنور یریة صحة محافظة أر ریة صحة محافظ	لة فلسطين ارة الصحة حة الفم والأ مد المرية مديرية مدير	دولـ وحدة صا وحدة صا وز وز
Sta Min Oral and النسبية 12.1% 2.8% 4.0% 1.4% 16.1% 10.7% 10.6%	ate of Pale nistry of H d Dental H 2 480 111 158 56 639 425 420	stine Iealth Iealth Ur الجنيع معروف البر معروف 8 5 0 2 4 6 5 5	it ان	ی خا	وضع م متوفر 0 1 0 0 2 0 0 0 1	الجبيع ر ممارس 0 39 1 8 6 31 49 33	حسب سنان م	بع الأستان اء الأستان عمارير الأعمارير الأمينان المان المانان الأمينان الأمينان الأمينان الأمينان المانان الأمينان الأمينان الأمينان الأمينان المانان الأمينان الأمينان الأمينان المانان المانان المانان المانان المانان المانان المان المانان المانان المانان المانان المانان المانان المان المانان المان المانان المان المانان المان المانان المان المانان المان المانان المان المان المانان المان المانان المانان المان المان الممان المان المان الممان المان المان الم	انڈی اطبا عداد أطبا انڈی الڈی الڈی الڈی 29 320 186 184	2,223 ذکر 1 298 71 82 27 319 239 236	حرع حمدة الجميع عند ب الخليل ب الخليل يحا والأغوار لذة القدس نذي تحم ينا يحم	المع بنتان مديرية الص مديرية الصد مديرية صحة ال برية صحة داند محافظة آر يرة صحة محافظ ير محة محافظ	لة فلس طين حة القم والأ حة القم والأ مديرية مديرية مدير مدير	دول وردة صر وردة صر وردة صر وردة صر وردة مر الرقم 3 4 5 6 6 7 8
Sta Min Oral and النسبية 12.1% 2.8% 4.0% 1.4% 16.1% 10.7% 10.6% 17.0%	ate of Pale nistry of H d Dental H 2 480 111 158 56 639 425 420 673	stine Iealth Iealth Ur در معروف انبر معروف 0 8 5 0 0 2 4 6 5 18	it ان	یب الأسنان خا	وضع ه متوفي 0 1 0 0 2 0 0 0 1 3	الجبيع ر ممارس 0 39 1 8 6 31 49 33 70	حسب سنان ا غیر	بع الأستان اء الأستان عماريس الأم اع الأستان عماريس الأم اع الأستان الأستان اع الأستان الأستان اع الأستان اع الأستان اع الأستان اع الأستان اع الأستان الأستان الأستان الأم الأستان الأم الأم الأم الأم الأم الأم الأم الأم	انڈی اطبا عداد أطبا انڈی انڈی الا الا الا الا الا الا الا الا الا ال	2,223 ذکر 1 298 71 82 27 319 239 236 371	حري محة الجميع يق ب الخليل ب الخليل يحا والأغوار يحا والأغوار يت يت لحم إم القر وليبرة م	المع بنتان مدیریة الص مدیریة الصد مدیریة صحة ال بریة صحة بنور بریة صحة محافظة آر یو صحة محافظ بریة صحة محافظ	لة فلس طين ارة الصحة حة القم والأ مد المرية مديرية مديرية مديرية مديرية	دول وردة صر وردة صر وردة صر وردة صر وردة مر الرقم 3 4 5 6 6 7 8 9 9
Sta Min Oral and النسية المرابع المع المرابع المرابع المرابع المماع المماعم المماع الماع المماع المما	ate of Pale nistry of H d Dental H 2 480 111 158 56 639 425 420 673 101	stine Iealth Iealth Ur نور معروف معروف معروف 0 8 5 0 0 2 4 6 5 18 4	it ان	یب الأمنا غ	وضع ه متوفع 0 1 0 0 2 0 0 0 1 3 0	الجبيع ر ممارس 0 39 1 8 6 31 49 33 70 13	حسب سنان ا غیر ا	اء الأستان اع الأستان عنى طيب الأر الأعمارير عماري عمارير عمارير عماري عمار عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عماري عمار عماري عماري عماري عماري عماري عمار عماري عمار عماري عمار عمار عمار ممار عمار ممار عمار ممار م	انٹی عداد أطنیا عداد أطنیا انٹی النٹی	2,223 ذکر 1 298 71 82 27 319 239 236 371 239 236 371 56	حرع محة الجميع ية ب الخليل ب الخليل يحا والأعوار يحا والأعوار يت لم القدس لم القدس لم الفروليبرة لم الفيرة لم اليبري	العج سنان مدیریة الص مدیریة الصد مدیریة صحة ال یریة صحة بنور یریة صحة محافظة آر یریة صحة محافظ یریة صحة محافظة ر ریة صحة محافظة ر ریة صحة محافظة ر	لة فلس طين ارة الصحة حة القم والأ مد القر مديرية مديرية مديرية مديرية	دول وردة صر وردة صر وردة صر وردة صر وردة مر الرقم 4 5 6 7 8 8 9 10
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Appendix (3.2): Questionnaire of the Study



Al- Quds University Deanship of Higher Education Master of Business Administration

Dear Dentist,

The researcher is conducting this research in order to determine the impact of quality management through self-assessment on the performance of Palestinian dental clinics.

Please take a few minutes to answer this questionnaire for the research titled: (Quality Management through Self-Assessment and Its Impact on the Performance of Palestinian Dental Clinics). Your individual answers will not be disclosed and will only be used for academic purposes. The questionnaire is anonymous and you are not required to put your name. Your answers will be combined with those of other participants and reported only as summary statistics.

Efforts will be put in publicizing the results of this research. So your honest opinions are very important to help you, other dentists, the Palestinian Dental Association, the Palestinian Ministry of Health, and other stakeholders in the profession; in improving provided dental care services.

Thank you in advance for your cooperation...

Best regards,

Researcher: Yaqootah Barghouthi Supervisor: Dr. Ahmad Herzallah

Dear participant, please take the following instructions into consideration while answering the questionnaire:

- ✓ Please read headlines and explanations.
- ✓ Please mark the most suitable choice with a (✓) sign.
- ✓ Please read carefully.

Part I: Personal Information

This part inquires some of your personal information, please mark the most suitable choice with a (\checkmark) sign:

 Governorate: ______ Gender: • Male [] Female [] **Educational Degree:** ٠ Bachelor's Degree 1 [Master or Specialization Degree [] PhD 1 Γ Age: • Less than 25 years old [] 25 to less than 35 years old [] 35 to less than 45 years old [] 45 to less than 55 years old [1 55 years old or above [] Years in practice: • Less than 5 years 1 5 years to less than 10 years [] 10 years to less than 15 years [] 15 years or more [] Place of work: • Center ſ 1 Clinic [1 Both ſ 1 **Ownership:** • An employee [] The owner ſ 1 A partner Γ 1

Part II: Dimensions of the study

Please determine your level of agreement with the following statements according to your expertise through marking the suitable choice with a (\checkmark) sign.

1st Dimension: Enablers

	Criterion (1): Leadership									
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree				
1.	The vision is coordinated with the dental care team and understood									
2.	The mission is coordinated with the dental care team and understood									
3.	The clinic/center has clearly determined objectives									
4.	The clinic/center has clearly determined action plan									
5.	The center's management maintains direct links with professional organizations, public and private institutions that provide continuing education									
6.	There are defined channels of communication and regular meetings between the management and the team									

	Criterion (2): Policy & Strategy								
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree			
1.	The needs and expectations of stakeholders are taken into account in the creation or modification of the strategic plan								
2.	The clinic's/center's policy and strategy including the financial plan and the external partnerships are reviewed and planned annually								
3.	The dental care team periodically collects and analyzes information regarding performance indicators								

4.	There are regular meetings for performance evaluation and assurance of the plan's compatibility with the policy and strategy			
5.	The clinic/center has a specified strategic plan that has been defined with due awareness of its competitive advantages			

	Criterion (3): People								
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree			
1.	There is a well-defined written profiles including duties, rights, and the selection process of the dental care team members								
2.	The strategic plan of the clinic/center includes a written training plan of the team on skills that cover its needs								
3.	Work is organized and distributed upon the dental care team in a way that facilitates the active involvement of its members								
4.	Work is organized and distributed upon the dental care team in a way that promotes creativity, innovation, and teamwork								
5.	There is a communication system using modern information and communication technologies that is monitored by an appointed member of the team								

	Criterion (4): Partnerships & Resources								
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree			
1.	External partnerships follow the internal policy and strategy of the clinic/center								
2.	The strategic plan of the clinic/center includes goals to form future partnerships								
3.	The clinic/center is concerned with reinforcing its internal resources in order to achieve its competitive advantage								
4.	The clinic/center is equipped with appropriate technology that facilitates management through transforming all gathered data into information								
5.	There is a member of the team that is responsible for the management of continuing education process, and of informing the team and other stakeholders of any updates through the clinic's/center's web-page								

	Criterion (5): Processes								
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree			
1.	Regular surveys to study market needs are conducted by the clinic/center								
2.	The training offered meets the current needs of the patients								
3.	There is a systematic process designed to collect information regarding competition (procedures, team structure, prices,etc)								
4.	The clinic/center has an established marketing plan								

5.	There is a systematic process for the management of available resources and materials			
6.	All administrative and financial tasks are defined, systemized, and procedural			
7.	The clinic/center has a centralized assessment process which is systematic and obligatory			

2st Dimension: Results

	Criterion (6): Patient results								
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree			
1.	The patients' satisfaction assessment has positive results								
2.	Patient satisfaction with all steps of the treatment process is assessed								
3.	Patients are highly satisfied with all steps of the treatment process								
4.	Patient satisfaction with the clinic/center environment is assessed								
5.	Patients are highly satisfied with the clinic/center environment								
6.	Patient satisfaction with interactions with the clinic's/center's dental care team is assessed								
7.	Patients are highly satisfied with interactions with the clinic's/center's dental care team								

	Criterion (7): Dental Care Team results								
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree			
1.	Dental care team satisfaction with the different work aspects is assessed								
2.	The dental care team is highly satisfied with the followed contact & communication methods								
3.	The dental care team is highly satisfied with the used documentation and archiving systems								
4.	The dental care team is highly satisfied with integration of specialties in the clinic/center								
5.	The performance of the majority of the team members meets the minimum requirements of their positions								

Criterion (8): Society results						
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1.	The clinic's/center's team participates in many collaborative development activities in society					
2.	The clinic's/center's team contributes in seminars aiming to raise societal awareness of oral health					
3.	Social responsibility is recognized as part of the work and role of the clinic/center					
4.	The clinic/center has a positive impact on stakeholders within local, regional, and national community as a whole					
5.	Sustainability is a part of the clinic's/center's processes and programs					

Criterion (9): Key performance results						
No.	Statement	Strongly Disagree	Disagree	Don't Know	Agree	Strongly Agree
1.	The number of new patients per a month is suitable					
2.	The number of patients treated during an hour by each sub-group of the team is suitable					
3.	The revenue from treatment per a patient is suitable					
4.	The monthly revenue of the clinic/center is suitable					
5.	There is an annual surplus generated by the clinic/center					
6.	There are overall metrics for quality that benefits from both patients and management improvement ideas					
7.	The clinic/center benchmarks its activities against others					
8.	The clinic/center exerts efforts into improving knowledge transfer, communication, and innovation					
9.	New activities undertaken each year form a percentage not less than 10% of the total activities					

THANK YOU FOR YOUR TIME & COOPERATION

Name	University		
Dr. Salwa Barghouthi	Al-Quds University		
Dr. Sharif AbuKarsh	Al-Quds University		
Dr. Shaher Aloul	Arab American University		
Dr. Orobah Barghouthi	Al-Quds University		

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Appendix (3.3): Arbitrators Committee

Appendix (3.4): Exploratory Factor Analysis (EFA) (Construct Validity of the Questionnaire)					
Correlation Matrix					
Model	Criteria	Correlation	Sig. (1-tailed)		
	The vision is coordinated with the dental care team and understood	0.529	0.000		
	The mission is coordinated with the dental care team and understood	0.502	0.000		
	The clinic/center has clearly determined objectives	0.589	0.000		
	The clinic/center has clearly determined action plan	0.634	0.000		
	The center's management maintains direct links with professional organizations, public and private institutions that provide continuing education	0.497	0.000		
	There are defined channels of communication and regular meetings between the management and the team	0.673	0.000		
EFQM	The needs and expectations of stakeholders are taken into account in the creation or modification of the strategic plan	0.505	0.000		
	The clinic's/center's policy and strategy including the financial plan and the external partnerships are reviewed and planned annually	0.653	0.000		
	The dental care team periodically collects and analyzes information regarding performance indicators	0.592	0.000		
	There are regular meetings for performance evaluation and assurance of the plan's compatibility with the policy and strategy	0.658	0.000		
	The clinic/center has a specified strategic plan that has been defined with due awareness of its competitive advantages	0.583	0.000		

There is well-defined written profiles including duties, rights, and the selection process of the dental care team members	0.561	0.000
The strategic plan of the clinic/center includes a written training plan of the team on skills that cover its needs	0.509	0.000
Work is organized and distributed upon the dental care team in a way that facilitates the active involvement of its members	0.657	0.000
Work is organized and distributed upon the dental care team in a way that promotes creativity, innovation, and teamwork	0.665	0.000
There is a communication system using modern information and communication technologies that is monitored by an appointed member of the team	0.589	0.000
External partnerships follow the internal policy and strategy of the clinic/center	0.488	0.000
The strategic plan of the clinic/center includes goals to form future partnerships	0.459	0.000
The clinic/center is concerned with reinforcing its internal resources in order to achieve its competitive advantage	0.383	0.000
The clinic/center is equipped with appropriate technology that facilitates management through transforming all gathered data into information	0.651	0.000
There is a member of the team that is responsible for the management of continuing education process, and of informing the team and other stakeholders of any updates through the clinic's/center's web-page	0.581	0.000
Regular surveys to study market needs are conducted by the clinic/center	0.678	0.000
The training offered meets the current needs of the patients	0.625	0.000
There is a systematic process designed to collect information regarding competition (procedures, team structure, prices,etc)	0.404	0.000
The clinic/center has an established marketing plan	0.489	0.000
There is a systematic process for the management of available resources and materials	0.671	0.000
All administrative and financial tasks are defined, systemized, and procedural	0.672	0.000
The clinic/center has a centralized assessment process which is systematic and obligatory	0.671	0.000
The patients' satisfaction assessment has positive results	0.428	0.000
Patient satisfaction with all steps of the treatment process is assessed	0.491	0.000
Patients are highly satisfied with all steps of the treatment process	0.576	0.000
Patient satisfaction with the clinic/center environment is assessed	0.582	0.000
Patients are highly satisfied with the clinic/center environment	0.467	0.000

Patient satisfaction with interactions with the clinic's/center's dental care team is assessed	0.589	0.000
Patients are highly satisfied with interactions with the clinic's/center's dental care team	0.602	0.000
Dental care team satisfaction with the different work aspects is assessed	0.763	0.000
The dental care team is highly satisfied with the followed contact & communication methods	0.675	0.000
The dental care team is highly satisfied with the used documentation and archiving systems	0.640	0.000
The dental care team is highly satisfied with integration of specialties in the clinic/center	0.758	0.000
The performance of the majority of the team members meets the minimum requirements of their positions	0.383	0.000
The clinic's/center's team participates in many collaborative development activities in society	0.576	0.000
The clinic's/center's team contributes in seminars aiming to raise societal awareness of oral health	0.581	0.000
Social responsibility is recognized as part of the work and role of the clinic/center	0.624	0.000
The clinic/center has a positive impact on stakeholders within local, regional, and national community as a whole	0.595	0.000
Sustainability is a part of the clinic's/center's processes and programs	0.582	0.000
The number of new patients per a month is suitable	0.351	0.001
The number of patients treated during an hour by each sub-group of the team is suitable	0.550	0.000
The revenue from treatment per a patient is suitable	0.542	0.000
The monthly revenue of the clinic/center is suitable	0.423	0.000
There is an annual surplus generated by the clinic/center	0.217	0.032
There are overall metrics for quality that benefits from both patients and management improvement ideas	0.687	0.000
The clinic/center benchmarks its activities against others	0.404	0.000
The clinic/center exerts efforts into improving knowledge transfer, communication, and innovation	0.576	0.000
New activities undertaken each year form a percentage not less than 10% of the total activities	0.541	0.000

Appendix (4.5): Strength of Agreement Levels

The strength evaluation method adopted by the current study was assumed through dividing the 100.0% points by five points (as in the used Likert Scale) which resulted in a range of twenty points assigned for five intervals. Each of these percentages' intervals was then given a specific strength level starting from Very Low to Very High, as detailed in the following Table titled: **{Appendix (4.5)}**.

Agreement Percentage interval (Value of Agreement)	Strength of Agreement	
0.0 %	None	
1.0 % – 20.0 %	Very Low	
21.0 % - 40.0 %	Low	
41.0 % - 60.0 %	Moderate	
61.0 % - 80.0 %	High	
81.0% - 99.0%	Very High	
100.0 %	Perfect	

Appendix (4.5): Strength of Agreement Levels

Appendix (4.6): Variance Inflation Factor (VIF)

The Variance Inflation Factor (VIF) is one of the prominent methods used for estimating multicollinearity. VIF assesses the degree to which the variance of an estimated regression coefficient increases in the case predictors are correlated. If the VIF value is equal to (1.0); there is no multicollinearity between the predictors. If VIF is greater than (1.0) and less than (5.0); then the predictors are considered moderately correlated. However, a VIF value between (5.0) and (10.0) indicates a high correlation, and is considered problematic. A VIF value of less than (5.0) is considered an acceptable value that indicates no explanatory variable is a perfect linear function of any other explanatory variables of the assumed Regression Model (Akinwande et al., 2015).

In accordance with this and adopted from the study by (Daoud, 2017); the following Table titled: {**Appendix** (4.6)} shows the interpretation of the VIF different values. However, for the current study's purposes a threshold-test value of (3.0) is assumed as the acceptable value.

VIF Value	Conclusion of Multicollinearity Interpretatio	
$\mathbf{VIF} = 1.0$	Not Correlated	Preferred
$1 < \text{VIF} \le 5$	Moderately Correlated	Acceptable
VIF > 5	Highly Correlated	Problematic

Appendix (4.6): VIF Interpretation