



Physical, psychological, and economical effect of patients' elective operations deferral due to the COVID-19 pandemic

الاثار الجسدية والنفسية والاقتصادية لتأجيل العمليات المبرمجة بسبب جائحة كورونا على المرضى

By: Mousa Anwar Qadadha

Supervisor: Dr. Niveen Abu Rmeileh

Birzeit University

This thesis was submitted in partial fulfillment of the requirement of Master's degree in public health from the Faculty of Graduate Studies at Birzeit University, Palestine

Palestine

2022



**Physical, psychological, and economical effect of patients'
elective operations deferral due to the COVID-19 pandemic**

أثر تأجيل العمليات المبرمجة بسبب جائحة كورونا على المرضى جسديا ونفسيا
واقتصاديا

Mousa Anwar Qadadha

Date of thesis defense: 19/5/2022

Thesis defense committee members:

Dr. Niveen Abu- Rmeileh (supervisor)

Niveen Abu Rmeileh

Dr. Rana Khatib

Rana Khatib

Dr. Ayesha al-Rifai

Ayesha al-Rifai

Acknowledgment

I want to thank some people for their help and support during the production of this thesis.

This work would not have been possible without the constant support, guidance, and assistance of my thesis supervisor Prof. Niveen Abu Rmaila. Her levels of patience, knowledge, and ingenuity are something I will always keep aspiring to. She is the true definition of a leader and the ultimate role model.

I gratefully recognize the help of Miss Rula Ghandour, whose help in planning and applying analysis was outstanding.

I am extremely thankful to Aisha Shalash for her great proofreading and several comments on my language style.

Too many thanks to my wife, who suffered a lot during thesis preparation. Her tremendous help, support, and faith are values that lighten up my way all the time.

Special thanks to Dr. Ahmad Al-Beitawy, who supported the idea of doing my master's degree and ended several obstacles for me.

I'm thankful to Dr. Mai Al-Kaila, who suggested the idea of a master's degree in the first place and who I hope to give my recommendation a chance for application.

Finally, a thank you to my family, my colleagues, and ICPH members for continued support during my master's journey.

Table of Content

Contents

Acknowledgment.....	III
Table of Content	IV
ملخص	VI
Summary.....	VII
Introduction:.....	1
Significance	2
Research Question, Hypotheses, and Objectives	2
Chapter I: literature review	5
COVID-19 pandemic	5
Epidemiology of the COVID-19	5
Psychological factors and COVID-19 infection	6
Postponing medical care and non-COVID-19 patients.....	6
COVID-19 and reallocating of resources	7
COVID-19 and operation deferral	8
Deferral of operations and patients' treatment	9
The magnitude of COVID-19 effect on operations	10
Palestinian Authority's response to the COVID-19 pandemic	10
The Palestinian health system.....	11
Chapter II: Methodology	12
First part:	12
Second part:	14
Study Design.....	14
Study population.....	14
Study Tool	15
Chapter III: the Articles.....	17
Article one: Effect of the COVID-19 Pandemic on Palestinian Patients Attending a selected governmental Hospitals: Analysis of Hospital Records	17
Article two: Deferral of surgical operations during the COVID-19 pandemic and its effect on Palestinian patients: A cross-sectional study	36
Chapter IV: Discussion	64
Objective Achieved	64
The summary of the main findings of both studies are:	64
Discussion:	65

Methodological Considerations	69
Article one:	69
Article two:	69
Conclusion	70
Ethical consideration	70
Recommendation	71
References	73
Annexes	78

ملخص

أثرت جائحة كورونا سلباً على النظم الصحية في انحاء العالم بما في ذلك النظام الصحي الفلسطيني. مما اضطر المستشفيات لإلغاء العمليات وإغلاق العيادات وإعادة توزيع الموارد المتاحة. تهدف هذه الدراسة لاستقصاء الآثار الجسدية والنفسية والاقتصادية للجائحة على الفلسطينيين عن طريق مراجعة سجلات العيادات الخارجية وغرف العمليات بالإضافة لدراسة مقطعية للمرضى الذين تم تأجيل عملياتهم المبرمجة بسبب جائحة الكورونا. ولقد وجدنا انه يوجد تراجع في اعداد المرضى المراجعين للعيادات في المشافي الحكومية وتراجع في عدد العمليات التي اجريت بها. وقد تم احصائياً اثبات الآثار الجسدية والنفسية للجائحة في الدراسة. أما الأثر الاقتصادي فقد أقل وضوحاً وبحاجة لمزيد من الاستقصاء. تأثرت نتائج الدراستين بطريقة مواجهة الجائحة مثل اللامركزية ودرجة الجهوزية والتواصل الفعال داخل وخارج المنظومة الصحية. وقد استنتجنا ان هناك تراجع في عدد المراجعين للمشافي الحكومية اثناء الجائحة الا ان المشافي الحكومية قامت باتباع سياسات تناسب بيئتها المحلية لموائمة احتياجات المرضى مع القدرات الاستيعابية للمشافي و ضرورة وجود اكثر من خطة وسياسة معدة مسبقاً لزيادة قدرة النظام الصحي على الاستمرار بتقديم خدماته وخاصة العمليات المبرمجة بشكل شبه اعتيادي اثناء الازمات لتقليل الآثار السلبية على المرضى. وقد خلصنا الى عدة توصيات من شأنها ان تساهم في تقليل الأضرار على المرضى والمواطنين الفلسطينيين بشكل خاص وعلى عموم المرضى والمواطنين بشكل عام ومن اهمها:

التخطيط المسبق لكيفية مواجهة الجائحة وتفعيل اللامركزية في القرارات والسياسات الصحية، وتطوير اساليب التواصل بين صناع القرار والمؤسسات الصحية والمواطنين، و فصل مرضى الجائحة عن باقي المرضى في المرافق الصحية، واسناد ادارة الجائحة لفريق متعدد التخصصات وتشمل متخصصين في الجانب النفسي.

Summary

The COVID-19 epidemic adversely effected health systems around the world, including the Palestinian one. Hospitals had to cancel operations, close clinics, and redirect other resources. We aimed to investigate the physical, psychological, and economic effects of the pandemic on Palestinians by a mixed method research that presented into two articles. Initially, Reviewing clinic and operation records of Patients who attended outpatient clinics or underwent surgery at three governmental tertiary hospitals were targeted during a designated six two-weeks periods. Then, conducting a cross-sectional analysis of patients whose surgical procedures were postponed due to the epidemic in same hospitals in the West Bank. We found a decline in the number of patients who visited government hospitals' clinics or underwent operations there. Significant physical and psychological effects resulted from surgery deferral. The economic effect is still present, but it requires further investigation. The method of pandemic management, including decentralization, preparedness, and communication, affected both outcomes. We reached the conclusion that fewer people visited outpatient clinics. Nonetheless, the healthcare facilities devised context-specific rules that took patient needs and facility capacity into account. In addition, the health system should have many contingency plans and coping mechanisms to mitigate the effect of any crisis on the elective surgery schedule. Recommendations included crisis planning, decentralizing health services, enhancing communication routes, and separating pandemic and non-pandemic patients in health institutions. The problem should also be managed by a multidisciplinary team.

Introduction:

The COVID-19 pandemic started in December 2018(1). The pandemic affected millions of people (1). Of these patients, 1% are asymptomatic while infectious (1). Managing COVID-19 patients was according to previous crisis experience (2). A quick response to this pandemic resulted in many guidelines production for managing patients and resources, and most of them were contraindicating to each other (2).

Medical services became overloaded in a way never witnessed in history before (5). The number of patients who visited the emergency room (ER) due to COVID-19 was horrible (5). On the other hand, many non-COVID-19 patients refused to seek medical attention due to the fear of getting COVID-19 infections(3, 6-8).

In Italy, which experienced an overwhelming situation, COVID-19 aroused problems regarding the amount available blood units, the post-operative care, visiting durations, cancelling the elective operations, shifting of surgeons to do other duties, the necessity of examining for COVID-19 before admission and operating of COVID-19 positive patients(12). Many patients needed to be put on ventilator devices(1, 2, 12-14). The huge number of corvid-19 patients indicated the necessity of resource shifting(1, 2, 12-14). They shifted ventilator devices from operative rooms and intensive care units (ICU) for COVID-19 patients (1, 2, 12-14). Besides the shift of human resources to manage the increasing numbers of COVID-19 patients and cover the newly created ICU beds(1, 2, 12-15). (1, 2, 12-15). Similar shifting happened in most hospitals worldwide, and the net result is reducing the number of operations done globally(1, 2, 12-15).

The cancellation of the operations was justified by multiple causes(1, 12, 13, 15). This cancelation is expected to affect the whole community, especially patients and their health care providers, differently. This study aims at exploring the physical, psychological, and economic effect on the Palestinian patients due to operation cancelation during the crisis.

Significance

The COVID-19 pandemic struck the world quickly, leaving no time to update crisis management protocols. As a result, health plans were improvised, relying heavily on resource reallocation to deal with COVID-19 patients, negatively affecting primarily non-emergency and elective operations. The purpose of this study is to determine the effect of surgical deferral and resource reallocation on the physical, economic, and psychological well-being of the Palestinian community.

To the researcher's knowledge, no similar studies have been conducted in Palestine or other Middle Eastern countries to examine the collateral effect of the crisis on people's physical, psychological, and economic characteristics, as a result of elective surgery cancellations. As a result, the study will provide a thorough understanding of the effect of operations cancellation on patients, enabling providers to minimize patient complications and avoid adverse physical, psychological, and economic consequences. Additionally, the study will assist policymakers in avoiding additional complications and burdens on the health system..

Research Question, Hypotheses, and Objectives

Research Question: What are the physical, psychological, and economic effects on the Palestinian patients suffering surgical deferral due to the COVID-19 pandemic.?

Sub research Questions: o:btained from record review

- What is the relation between the COVID-19 pandemic and the number of patients attending clinics compared to previous periods?
- What is the relation between the COVID-19 pandemic and the pattern of patients attending clinics compared to previous periods?
- What is the relation between the COVID-19 pandemic and the pattern of the elective operation compared to previous records?

Sub research Questions: obtained from the cross-sectional study:

- What is the relationship between surgery deferral and the physical effect on patients?

- What is the relationship between surgery deferral and the psychological effect on patients?
- What is the relationship between surgery deferral and the economic effect on patients?

❖ Hypothesis:

There has been a change in the number and pattern of patients attending clinics and the type of elective surgery done during the COVID-19 pandemic.

There are a physical, psychological, and economic effects on Palestinian patients resulting from the cancelation of surgical operations due to the COVID-19 crisis.

❖ Main objective:

To study the change in the number and pattern of patients attending clinics and the type of elective surgery done during the COVID-19 pandemic.

To study the relation of surgical operation cancelation during the COVID-19 pandemic and the associated physical, psychological, and economic effects in Palestinian patients.

The objectives are to explore:

- The relation between COVID-19 lockdown and the number of operations completed and cancelled.
- The relation between COVID-19 lockdown and the number of patients visiting outpatient clinics.
- The relation between COVID-19 lockdown and the change in patients seeking medical attention.
- The relationship between operations deferral during the COVID-19 pandemic and subsequent medical and physical complications.
- The relationship between operations deferral during the COVID-19 pandemic and psychological effect on patients.

- The relationship between operations deferral during the COVID-19 pandemic and economic effect on patients.
- To identify the causes of operations deferral.

Chapter I: literature review

COVID-19 pandemic

The COVID-19 pandemic started in December 2019 in China(1). It was declared a pandemic by WHO in March 2020(2). COVID-19 transmission between people was not fully understood when it broke out(1, 2). In China, 1% of confirmed laboratory positive cases were asymptomatic while infectious(2). Due to its vague transmission, protocols for preventing its spread were different and sometimes contradictory to each other(3). Some countries like China chose to lock down everything immediately. Other countries like the USA locked down post two weeks of latency. In contrast, countries like the UK decided to bet on herd immunity(4). All countries recommended social distancing, but most people were reluctant to obey these recommendations(4).

COVID-19 resulted in many problems for the population, such as complications of the disease, death, job loss, destroying small projects, affection for teaching at all levels, and increased inequity between different races in receiving health care and social support(5).

Epidemiology of the COVID-19

The number of COVID-19 cases during the different pandemic waves was huge and overloaded hospitals in a way never witnessed in recorded history (6). The presence of COVID-19 patients in the hospitals represented a new situation for non-COVID-19 patients(4, 7-9). There was a significant drop in the number of non-COVID-19 patients who visited the emergency room internationally(4, 5, 7-9). This drop included all causes, even appendicitis, whose incidence rate should not be affected by the pandemic(5). A possible explanation for the observed decline in the non-COVID-19 patients was the attitude of patients and health care providers during the pandemic era(5). Hospital admissions also decreased, which was observed among chronic patients (5, 7); this was attributed to administrative and medical orders' deferral of health care service (5).

The principal factors that led to a decrease in seeking medical care were patients' fear of COVID-19 infection, loss of income due to the pandemic or lockdown, loss of

medical insurance, or patients who could not leave children and the elderly home alone(5, 7).

Psychological factors and COVID-19 infection

The vague nature of the pandemic had dominated the expected complications of the well-known diseases. As a result, the fear of getting a COVID-19 infection was more than the fear of the patient's illness, including all non-COVID-19 conditions (7).

Some patients were worried about their caregivers. They had the inside fear of transferring COVID-19 to the caregivers and harming them(10). Other patients showed the opposite fear. They showed the anxiety of transmitting the infection from health personnel to their beloveds and relatives, especially if they are responsible for taking care of them(10).

Social distancing increased stress and tension deep inside each person via fear, which led to the failure to follow social distancing regulations(4). Moreover, these negative feelings acted as a functional fear, a fear that affects personality and, consequently, affects the attitude of personnel(4).

On the other hand, some patients felt guilty because they considered their non-COVID-19 illness during the crisis; they were selfish and did not care about others (10).

One prominent example is cancer patients. The deferral of management of cancer patients hurts the patients and their friends(3, 10). Cancer patients had complex feelings, and they felt that deferral could protect them from infection, while on the other hand, they felt that deferral would delay their management (a kind of mistreatment)(10).

Postponing medical care and non-COVID-19 patients

COVID-19 pandemic affected the rate of seeking medical care in Emergency Rooms (ER) and hospitals(5). All patients groups are involved: including the vulnerable ones as children and immunocompromised patients. In Canada, the number of children who visited the ER reduced by 30% in March 2020 and 62% in April

2020(9). In the UK, the fear of visiting the hospitals and getting vaccination increased the percentage of preventable death among the population(11). For example, there is a diabetic patient who tried to manage herself without visiting the hospital, which resulted in her leg being amputated(12). In Italy, the number of the child seeking medical attention at ER reduced by 73-88%(8). COVID-19 may not resemble a direct danger to children(13), yet avoiding hospital and late presentation to doctors are serious indirect dangers(13). Children with special needs are more vulnerable(8). For example, the late presentation of a child for a week because of his family's fear of COVID-19 led to a late diagnosis of acute lymphocytic leukemia(13). Many severe cases presented to ER late in Italy, of which one confirmed death due to indirect effect of COVID-19 occurred(8). These cases were mainly due to diabetes mellitus, cancer, infection (pyelonephritis), trauma, and surgical conditions; they are usually easily manageable during the non-COVID-19 era(8).

COVID-19 and reallocating of resources

The massive number of COVID-19 patients who overloaded the hospitals and all medical care facilities indicated the necessity of resource shifting to better face this situation(1, 3, 14-16). In addition, the administrative level had to deal with many problems, such as a shortage of ventilator devices or personal protective equipment (PPE). In addition to challenges due to the infection of medical care providers, the loss of their power in managing patients, and the running of new wards and ICU departments created to face the pandemic(1, 3, 14-16).In Italy, COVID-19 aroused problems regarding the number of available blood units, the post-operative care, visiting durations, cancelling the elective operations, shifting of surgeons to do other duties, and the necessity of examining for COVID-19 before admission and operating COVID-19 positive patients(14).

Shifting ventilator devices from operative rooms and intensive care units (ICU) for COVID-19 patients severely implicates the health system. Still, it increased the capacity to create new ICU beds at the expense of the operative room equipment. (1, 3, 14-17).

The short-term resolution for facing the increasing demand of the pandemic involved the cancellation of the operations. It had been justified by multiple causes(1,

14, 15, 17). Reducing the number of operations means directly reducing the PPE needed for surgical teams to protect them and the patients from infection (1, 14, 15, 17). Reducing the number of operations gives the chance to reallocate part of surgical teams for the new ICU beds created for managing COVID-19 patients(1, 14, 15, 17). The remaining surgeons were allocated for emergency operations only(1, 14, 15, 17). Due to the PPE shortage, postponing non-emergency operations decreases the possible medical team infection rate with COVID-19. It protects the limited number of medical care providers from being neutralized in such situations. (3, 14, 16, 18).

Operations were classified according to the time, the need for ICU postoperatively, expected amount of bleeding, the number of medical team members needed for the procedure, the likelihood of the medical team getting an infection, and the duration of hospital admission(16). The higher the score in this classification indicated that medical team members would be more likely to get infected and less likely the operation would occur (16).

Furthermore, shifting to more conservative management for tumor patients decreased the occupancy rate in hospitals and operative rooms' working hours (15). Doing the minor operations in ER instead of operative room to reduce hospitalization time and save empty beds became accepted(15).

COVID-19 and operation deferral

It is estimated that about 6 million operations take place weekly worldwide, including emergency and elective operations(3). About 2.36 million elective operations were evaluated to be postponed weekly(18), while the total number of cancelled or delayed operations will exceed 28million operations in a year(18). Most of these cancellations are taking place in middle-income countries(18). In the USA, seeking elective surgery appointments decreased hugely during the first surge of COVID-19 cases in April-July 2020. Still, this reduction was not the same in the next wave in November 2020(19); this was attributed to a decreased fear of pandemic(19).

The American College of surgeons classified operations into three categories(14), procedures that needed to be done in hours were indicated(14). While operations scheduled for several days were shifted to a non-COVID-19 surgical centre(14), and

procedures planned for a year were cancelled (14). As a result, the total number of admission in the USA for chronic patients decreased, which was caused by deferring medical services or receiving medical care at home(5). Medical care at home was a double edge sword, it decreased the load in the hospital on the one hand, but on the other hand, there were cases like new strokes which were not appropriately treated,0 resulting in increased death among people at home (5).

Elective operations were decreased by 34.82% in Brazil; the reduction of these operations was dynamic and following the waves of the pandemic(20).

Deferral of operations and patients' treatment

Some elective operations as joint replacement, are easily anticipated in the cancellation list, but predicting cancelation for most procedures is challenging(10). For example, in cardiac operations, the mortality rate for COVID-19 positive patients on day 30 reached 23.8%(21), and lung problems occurred in 51.2% of these patients, which increased their mortality rate on day 30 to 38%(21). In general, the surgeons get in a dilemma as there is a risk of doing the operation and cancelling it(21). Elective neurosurgery post-operative complications were 3-5% before the crisis(22). In the COVID-19 era, the complications in these operations reached up to 50%, with around 19.1-20% mortality during the first month(22). Cancer patients resemble the most challenging patient ethically and technically. On one side, patients with cancer and operations have a higher risk of infection. Conversely, deferring cancer patient operations will increase their complications(20).

The effect of cancelation elective surgery and patient reaction to this cancelation is inconsistent with what was known before the pandemic(23-26). Some patients believe that the cancellation of operations was an administrative decision, and doctors did not correctly evaluate the cancelled cases (10). Unnegotiable consideration of total joint replacement as elective surgery by doctors was rejected by 13.5% of patients in the COVID-19 era(24). Most orthopedic patients suffer negative consequences due to their operation cancelation(24, 25). On the contrary, ophthalmic patients tend to show no consequences for cancelling their operations(23). In Argentina, a reduction of 60% of children's cardiac operations was recorded; most of the reduction affected older children(27), and the effect of this reduction could not be adequately assessed (27).

The magnitude of COVID-19 effect on operations

COVID-19 changed the health system in a week more than all changes in the last 28 years(10). Usually, operative lists are affected by wars, natural disasters, and terrorist attacks, which render too many cases for the health system to handle(3). Nevertheless, the COVID-19 situation is never preceded in medical history(3). In June 2020, there was a projection that seven months are needed to get to 90% of pre-COVID-19 operative room powers(28). The increase of about 20% of operation room power will consume 15 weeks to return to the pre-crisis situation(28). This projection further expanded in the USA to reach up to 2 years(29). This crisis revealed the shortage of crisis management plans internationally(3). WHO should consider operations and their continuity in future planning for crises (3).

Palestinian Authority's response to the COVID-19 pandemic

Following the diagnosis of the first case of COVID-19 infection in Palestine, the Palestinian lockdown measure was described as a practical measure(30). This action was preceded by training the medical staff on the measures to fight infection spread as a part of the national plan for facing the pandemic in late February 2019. (31). the plan also included supplying medical teams with equipment that the Palestinian Authority already meets (31). The national response plan was put on in March 2019. Still, World Health Organization (WHO) said this plan does not contain any strategic or specific action plan for stages of the outbreak based on WHO classification(32, 33). In Palestine, during the first three months of the pandemic in 2020, cases came from travelers, persons from Israel, and their contact persons (32). The national plan clarifies the shortage of equipment such as tests, ventilators, ICU beds, personal protective equipment, and oxygen generators. They raised the international appeal for donations to cover these shortages to prevent the worst(30, 34). Allocation of one department in each governmental hospital for the COVID-19 patients was done, then new hospitals were prepared for the COVID-19 patients. Still, there is a medical team shortage continued up to this day. One of the causes of team shortage was the lack of mapping human resources in terms of numbers and qualifications to describe needs before the pandemic, especially since Palestine is facing continuous mass casualty situations due to the Israeli occupation(30). Multiple committees were established to

manage donations (including governmental and non-governmental), with poor coordination between them leading to decrease efficiency in facing the pandemic(30, 34). Following the surge in cases, the new hospitals could not accommodate the number of patients that needed admission. So, secondary and tertiary hospitals were used for managing COVID-19 patients with the cancelation of elective operations, closure of the clinics in these hospitals, and converting them into inpatient departments to accommodate more COVID-19 patients(35). The COVID-19 pandemic revealed the shortage and unpreparedness of the Palestinian Authority Health System and population to face such a crisis. This pandemic is a golden opportunity for the Palestinians to resolve these issues(32).

The Palestinian health system

The Palestinian health system consists of secondary and tertiary facilities of the governmental sector, the non-governmental organization, the united nation for relief and work agency (UNRWA), and the private sector (36). A governmental hospital is present in each West Bank and Gaza Strip governorate. In The West Bank, The largest are Rafedia, Palestine Medical complex, and Alia hospitals (37). Each hospital contains clinics (called outpatient clinics), inpatient wards (regular or closed (as ICU)), operative rooms, and other related supportive services(37). The governmental medical insurance in Palestine covers many people; it covers the governmental employees, workers in Israel, cancer patients, hematology patients, disabled patients, and social aid. Also, it covers the unemployed, children less than three years old, martyr's families, prisoners in Israel, athletes, union members, and anyone who desires to participate in it. In March, 2020all COVID-19 patients added to it(38). The ministry of health provides most services in most governmental hospitals; some services are provided only in governmental referral hospitals. Few services not available at the government hospitals are purchased from other hospitals in the country or abroad (38).

Chapter II: Methodology

This study is divided into two sections. The first part is a review of medical records conducted in three West Bank hospitals in the summer of 2021. The second part is a cross-sectional study that includes an online questionnaire for patients who had their operations deferred in the same hospitals during the COVID-19 pandemic.

First part:

This study is based on secondary data analysis of hospital records from the Palestinian Ministry of Health (MoH). Three tertiary hospitals in the West Bank were chosen: Palestine Medical Complex (PMC) in the West Bank's central region, Rafedia hospital in the West Bank's northern region, and Alia hospital in the West Bank's southern region. During the pandemic, three two-week periods were chosen based on the number of COVID-19 cases and preventive measures taken. The first period, the first two weeks of May 2020, was in the midst of the initial lockdown, during which information about COVID-19 was scarce, suspect, and contradictory.

Between the first and second COVID-19 waves in Palestine, the second period encompasses the first two weeks of September 2020. The population's sense of security increased as a result of the lift of the lockdown and the reopening of the markets.

The third period encompasses the first two weeks of January 2021 and corresponds to the pandemic's second wave. Once again, a deft lockdown was used (closing off markets after 7. pm and on weekends, schools and universities used distance learning, and wedding halls were closed). However, there was a high death rate associated with COVID-19, and people were uncertain yet more hesitant to obey lockdown based on prior experience with the economic effect of lockdown.

These periods were compared to the preceding year, 2019, in order to account for seasonal variations such as school opening, summer vacations, and holidays.

Excel was used to create two data extraction tables for outpatient clinics and operating rooms. The clinic for outpatient care (all non-emergency specialty clinics that need an appointment before attending them) The data table contained information on the

number of visitors, their age, gender, the type of insurance used at each clinic, and the total number of clinics at each hospital. The operation rooms table included information about the number of operations performed in each hospital during each period, the type of operation performed, and the gender distribution.

Patients who attended outpatient clinics or underwent surgery at three hospitals were targeted during the designated six two-weeks periods. As a result, data were included for all patients, disregarding the age and gender information. General surgery, neurosurgery, orthopedic surgery, pediatric surgery, vascular and thoracic surgery, ear-nose-throat (ENT), ophthalmology, gynecology and obstetrics, internal medicine, pediatrics, oncology, cardiology, and neurosurgery are the outpatient clinics.

Extraction of data from the Ministry of Health's computerized registry, which is stored on the Ministry's central computer, began on March 24th, 2021, and ended on August 30th, 2021. Exported data in excel format. The data from outpatient clinics lacked any identifying information. It did, however, contain information about the number of patients who visited clinics, their age (in years-months-days format), gender, the clinic they visited, the type of insurance they had, and the physician's name. On the other hand, the data from the operating rooms included a list of patients without their names, their gender, their age in years-months-day format, and the type of operation (superlong, long, medium, and minor).

Another set of tables was extracted from other hospital sources for data quality checks: Tables containing the number of patients seen by physicians during the same study periods; insurance statistics; and a table containing the gender and age of each clinic patient. They were compared to the original tables extracted from the Ministry of Health.

Excel was also used to analyze the data. The average age, gender distribution, and percentage of uninsured patients for each clinic were calculated using Excel by dividing the sum by the clinic's total patient population. The average and percentage values for all clinics were calculated by dividing the total number of patients by the total number of patients. The records of the operation rooms contained the number of operations extracted directly from the Ministry of Health for each period. According

to the NICE classifications, the reported operations were classified as minor, intermediate, or major(15).

Additionally, using the one-way ANOVA test, we compared the pre-and post-COVID-19 periods using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, N.Y., USA), Palestine, 2022.

The effect of the COVID-19 pandemic on patient attendance at clinics, operations performed, and gender distribution was compared using a one-way ANOVA.

Second part:

Study Design

A cross-sectional study of patients who experienced operation deferral in three governmental hospitals in the West Bank in the Palestinian territories between 8/8/2021 and 6/9/2021 was done.

Study population

The study's target population is all Palestinian patients seeking treatment at governmental hospitals in the West Bank. We studied patients with deferred operations during the pandemic period in three governmental hospitals. The hospitals included in the study were Rafedia hospital (located in the north of the West Bank), Palestine Medical Complex (the center), and Alia hospital (the south).

The study sampling frame was a list of deferred operations during each period of the COVID-19 pandemic (May/2020, Sep/2020, and Jan/2021) from the three hospitals.

The records showed 662, 724, and 587 deferred operations during the study period in the north, the center, and the south. The estimated sample size was 392 patients.

Participants were selected randomly from these lists, and a phone call was placed for the selected person. First, oral informed consent was claimed from the participants on the phone, and then the link was sent to them by SMS to start participating in the survey.

Study Tool

The study utilized an online survey using the kobotool box website.

They included a combination of different validated tools. In addition, the toll was pilot tested on 14 before starting to collect data.

The study tool consists of five parts; the first part is the personal information and data. The second part includes the ability to access health services and the causes of the inability to access them. The third part contains the physical effect of operation deferral on the patient. The fourth part included the financial effect of the operation deferral on the patient. Finally, the fifth (the last) part measures the psychological implications of operation deferral on the patient.

The personal information part included age, gender, residence, history of chronic diseases, name of operations, the hospital in which the operation was supposed to be done, history of COVID-19 infection, and if this infection were at the same time the operation.

The ability to receive health services part used an Arabic validated questionnaire of the Palestinian Central Bureau of Statistics (PCBS) titled Effect of COVID-19 on the Palestinian Households' Socio-Economic Conditions, 2020(39). Use of it was done after reviewing PCBS terms of use which included "a universal, free-of-charge, irrevocable, parallel right of use to the material, Including Copying, distributing, reusing, building, deriving materials, editing and using for commercial or non-commercial purposes." This part included eight main questions about the need to get health services regarding the appointment of operation, the condition for the urgent procedure, the need for non-urgent operation, management due to chronic diseases, management due to acute diseases, the need for buying medications, the need to do laboratory and radiological tests, and the need for getting medical report or medical referral financial coverage. Each main question has two sub-questions, the first about the ability to get the medical service and the second about the cause of the inability to get the medical service if it is applied.

The physical effect of operation deferral on patients used the Arabic validated version of the RAND 36-item health survey 1.0, which allows for non-commercial use(40). This part includes 14 questions covering the physical effect on upper limbs, lower limbs, and ability to walk and work physically.

The financial effect of operation deferral on patients used Arabic validated Palestinian family survey, 2010 questionnaire by PCBS,(41). It has the same allowance for usage as the ability to receive health services. This part included seven questions that measure the work absence, its duration, its cause, the type of work before and after the COVID-19 pandemic, the cost of transportation for re-scheduling the operation, and the cost of medications during the operation deferral period.

The psychological effect of operation deferral on patients used Arabic validated version of the hospital anxiety and depression scale (HADS), which could be downloaded and used for free(42). It consists of 14 questions, seven questions for measuring anxiety and seven questions for measuring depression.

Chapter III: the Articles

Article one: Effect of the COVID-19 Pandemic on Palestinian Patients Attending a selected governmental Hospitals: Analysis of Hospital Records

The manuscript that was submitted to Frontiers in Public Health journal.

Accepted as a poster presentation at the MENA Region conference, 2022, Ghazi Antep, Turkey.

Accepted for oral presentation at the 8th International Conference on Public Health (ICOPH 2022), held on 28th – 29th July 2022 as a Fully Virtual (online) Conference.

Effect of the COVID-19 Pandemic on Palestinian Patients Attending a selected governmental Hospitals: Analysis of Hospital Records

Authors:

Mousa Atary¹, MD, MPH

Niveen ME Abu-Rmeileh¹, MPH, PhD

Institute of Community and Public Health, Birzeit University, Palestine

Corresponding Author: Mousa Atary

Institute of Community and Public Health, Birzeit University, Palestine

Email: mousa.atary@hotmail.com

Tel: +972 2 2982020

Mobile: +972597888655

ORCID ID: <https://orcid.org/0000-0003-0255-6013>

Running Title:

COVID-19 Pandemic Effect on Palestinian Patients

Keywords:

COVID-19 pandemic, outpatient clinics, operation deferral, lockdown, shifting of resources, Palestinian Authority.

Key Messages:

- Decentralization of the health services is expected to improve the health services provided during the pandemic period.
- Separating patients with COVID-19 into different hospitals and those without is an imperative need to decrease the pandemic's effect on non-COVID-19 patients.
- A transparent communication system with patients which involves trustworthy, clear, short, targeted messages would help spread the correct information and prevent false information from adversely affecting people's lives.

Word count: 3331

Abstract (108 words)

Confronted with the COVID-19 epidemic, which has forced the closure or relocation of the majority of health facilities. It is likely that non-COVID-19 patients will suffer collateral effects. To assess the pandemic's effect, an examination of clinic and operating room records was conducted at a selected Palestinian government hospitals. In the West Bank region. The review revealed a considerable decrease in the number of patients attending various clinics; ENT, pediatric surgery, and urology were the most affected, as well as a major decrease in the number of procedures performed and a near-normal level of obstetric services. Decentralization of health services, establishment of dedicated facilities for COVID-19 patients, and enhancement of communication channels between policymakers, health workers, and the general community would all help to mitigate the pandemic's harmful effect on non-pandemic patients.

Introduction

Globally, the number of COVID-19 cases increased significantly during the multiple pandemic waves, overwhelming hospitals in ways never seen before in recorded history (6). The presence of COVID-19 patients in hospitals created a difficult scenario for non-COVID-19 patients who required treatment in an already under-resourced institution. Furthermore, the presence of COVID-19 patients heightened dread among non-COVID patients who visited hospitals (4, 7-9). As a result, foreign emergency room visits by non-COVID-19 patients and admission of chronic diseases patients decreased significantly (4, 5, 7-9), which was linked to administrative and medical orders deferring health care services (5). In Brazil, elective procedures were reduced by 35%; this drop was dynamic in response to pandemic waves (20). As a result of COVID-19, people's health, social lives, and economic status have been affected (5).

Among the various variables that contribute to decreased medical care seeking are social factors such as fear of COVID-19 infection, which is exacerbated while caring for children or the elderly, as well as economic considerations such as lower income or loss of medical insurance. Finally, medical aspects; because many patients who visit emergency rooms are not true emergencies, the psychological effect of the COVID-19 epidemic made it more difficult for individuals to seek medical attention (5, 7).

COVID-19 patients swamped hospitals and medical facilities, necessitating resource reallocation to address the crisis more effectively. Clinics have been transformed into inpatient units. Ventilators were relocated from operating rooms to these newly created wards. Operative teams were reassigned to handle the patient in these wards, and PPE was reallocated to COVID-19 management wards (1, 3, 14-16). In Palestine, the first COVID-19 instances were recognized on March 5th, 2020. On March 13th, 2020, a complete lockdown of the West Bank began (43). The Palestinian ministry of health issued a protocol for the reopening of outpatient clinics in May 2020 to enable the reopening of clinics. Nonetheless, most governmental hospitals' outpatient clinics remained closed until October 2020. In November 2020, a more thorough action plan for dealing with the COVID-19 pandemic was developed, which included the establishment of new facilities to treat COVID-19 patients (44).

The purpose of this study is to determine the effect of COVID-19 pandemic metrics on hospital performance and patient healthcare-seeking behavior. We will analyze the association between the COVID-19 epidemic and the number of patients visiting outpatient clinics, the pattern of healthcare utilization, and the number and kind of procedures performed in Palestinian public hospitals. As a result, we anticipate a decrease in the number of cases, operations, and persons seeking health care.

Materials and methods:

❖ Data source:

This study is based on secondary analysis of data extracted from Palestinian Ministry of Health (MoH) hospitals records. A governmental hospital is present in each West Bank and Gaza Strip governorate. The largest are Rafedia, Palestine Medical complex, and Alia hospitals (37). Each hospital contains outpatient clinics, inpatient wards (regular or closed (ICU)), operating rooms, and other related support services (37). The governmental medical insurance in Palestine covers many people; it covers the governmental employees, workers in Israel, cancer patients, hematology patients, disabled patients, and those receiving social aid. In addition, it covers the unemployed, children less than three years old, martyr's families, prisoners in Israel, athletes, union members, and anyone who willing to participate in it. In March 2020, all COVID-19 patients were added (38). The three tertiary hospitals in the West Bank chosen were; Palestine Medical Complex (PMC) (central in the West Bank), Rafedia hospital (northern area of the West Bank), and Alia hospital (southern area of the West Bank).

Name of hospital	Rafedia	Palestine Medical Complex	Alia
Location	North	Center	South
Number of beds	201	279	252
Allocated Covid-19 beds during waves	50	118	98
Number of beds in the COVID-19 hospital in the same governorate	66	26	77

Table 1: Information on the hospitals comprising the study settings(45).

❖ Patients and setting:

During the pandemic, three two-week intervals were determined based on the number of COVID-19 cases and preventive actions performed. The first phase, the first two weeks of May 2020, was in the midst of the initial lockdown, during which information about COVID-19 was scant, suspect, and contradictory. Between the first and second COVID-19 waves in Palestine, the second period encompasses the first two weeks of September 2020. The lifting of the lockdown and the reopening of markets creates a sense of security. The third period encompasses the first two weeks of January 2021 and corresponds to the pandemic's second wave. A deft lockdown was implemented (closing off markets after 7:00 pm and on weekends, schools and universities used distance learning and closing wedding halls). However, COVID-19 had a high mortality rate (it reached 5.41 percent of cases in the third wave, up from 0.02 percent in the first wave) (38, 46). Due to their prior experience with the lockdown's economic consequences, many felt doubtful and more hesitant to obey.

These periods were compared to the preceding year, 2019, in order to account for seasonal fluctuations such as school starting, summer vacations, and holidays.

Excel was used to create two data extraction tables for outpatient clinics and operating rooms. The outpatient clinic data table comprised information about the number of visitors, their age, gender, the kind of insurance used at each clinic, and the total number of clinics in each hospital. The operation rooms table included information about the number of operations performed in each hospital during each period, the type of surgery performed, and the gender distribution.

During the allocated six periods, patients who attended outpatient clinics or underwent surgery at the three hospitals analyzed were evaluated. The data set includes all patients, despite the fact that some patients lacked age and gender information. General surgery, neurosurgery, orthopedic surgery, pediatric surgery, vascular and thoracic surgery, ear-nose-throat (ENT), ophthalmology, gynecology and obstetrics, internal medicine, pediatrics, oncology, cardiology, and neurosurgery are the outpatient clinics.

Between March 24th and August 30th, 2021, the Ministry of Health extracted data from its central computerized registry. The data was exported to an excel spreadsheet.

❖ Variables:

The outpatient clinic data were devoid of any identifiable information. Nonetheless, it featured information about the number of patients who attended the clinics, their age (in years-months-days format), gender, clinic type, insurance type, and physician's name. Additionally, the data from the operating room included a list of patients without their names, their gender, their age in years-months-day format, and the type of operation (superlong, long, medium, and minor).

Another set of tables was derived from other hospital sources for data quality checks: physicians' tables giving the number of patients seen during the same research periods; insurance statistics; and a table containing the gender and age of each clinic patient. They were compared to the actual tables extracted from the Ministry of Health. For all variables, missing data accounted for less than 1% of total cases.

❖ Statistical Analysis:

Excel was also used to analyze the data. Each clinic's average age, gender, and percentage of uninsured patients were calculated. The operating room records comprised information about the number of operations performed throughout each period that was retrieved directly from the Ministry of Health. The reported operations were classed as mild, intermediate, or major in accordance with the NICE criteria (37).

Additionally, using the one-way ANOVA test, we compared the pre-and post-COVID-19 periods using IBM SPSS Statistics for Windows, version 25 (IBM Corp., Armonk, N.Y., USA), Palestine, 2022.

The effect of the COVID-19 pandemic on patient attendance at clinics, operations performed, and gender distribution was compared using a one-way ANOVA.

.

Results:

The pandemic era saw 2237, 5470, and 3938 patients at the north, center, and south clinics, respectively; the pre-pandemic period saw 7811, 10743, and 11227 people.

A one-way ANOVA revealed a statistically significant difference in the number of patients seen in clinics in the north (Rafedia) and south (Alia), but not in the center (PMC).

Hospital	Numbar of patients per day in all outpatient clinics	Sum of Squares	df	Mean Square	F	Sig.
(South) Alia	Between Groups	8854920.167	1	8854920.167	37.841	.004
	Within Groups	936011.333	4	234002.833		
	Total	9790931.500	5			
Center (PMC)	Between Groups	4618282.667	1	4618282.667	3.208	.148
	Within Groups	5759166.667	4	1439791.667		
	Total	10377449.333	5			
North (RAF)	Between Groups	5178246.000	1	5178246.000	26.376	.007
	Within Groups	785289.333	4	196322.333		
	Total	5963535.333	5			

Table 2: One-way ANOVA test for the clinic visits.

Throughout the epidemic, the total number of patients decreased (Figure 1). The greatest reduction occurred in the May 2020 period, with reductions of 80 percent, 70 percent, and 63 percent in the center, north, and south, respectively. In September 2020, both the south and north hospitals maintained their downward trend, hitting 74% and 90% successively. The decline was 49 percent in the north, 65 percent in the middle, and 55 percent in the south in January 2021. The north and south cores had statistically significant declines.

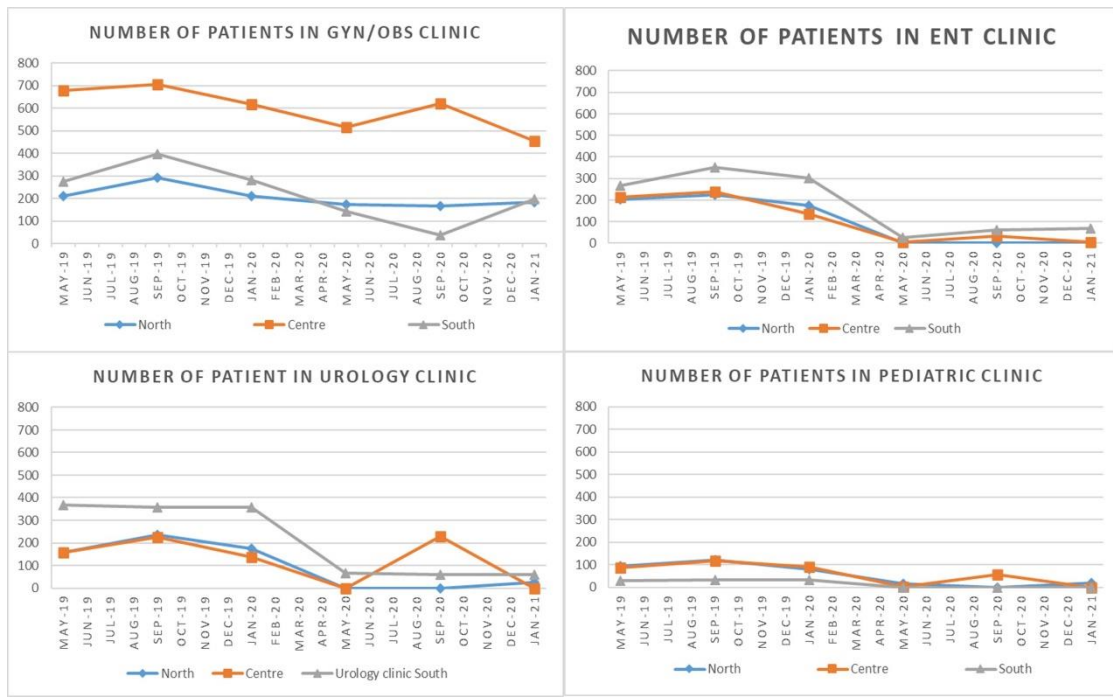


Figure 1: the number of patients attending all clinics and chosen different clinics in each hospital

The decrease in clinic visits had a varying effect on different specializations (Figure 1). The department that was least affected was gynecology and obstetrics, which increased the ratio of female patients in several times. In comparison, the most affected department was the Ear-Nose-Throat (ENT) department, which saw no patients in the north throughout the pandemic, no patients in the center between May 2020 and January 2021, and a major decline in the number of ENT patients in the south during the pandemic (Figure 1). Urology and pediatric surgery departments were also among the hardest hit (Figure 1).

Patient age and gender:

The average age of patients in the majority of departments remained constant; however, both oncology and ENT departments had a statistically insignificant rise in the average age of patients attending these clinics during the pandemic period compared to the pre-pandemic period (Figure 2).

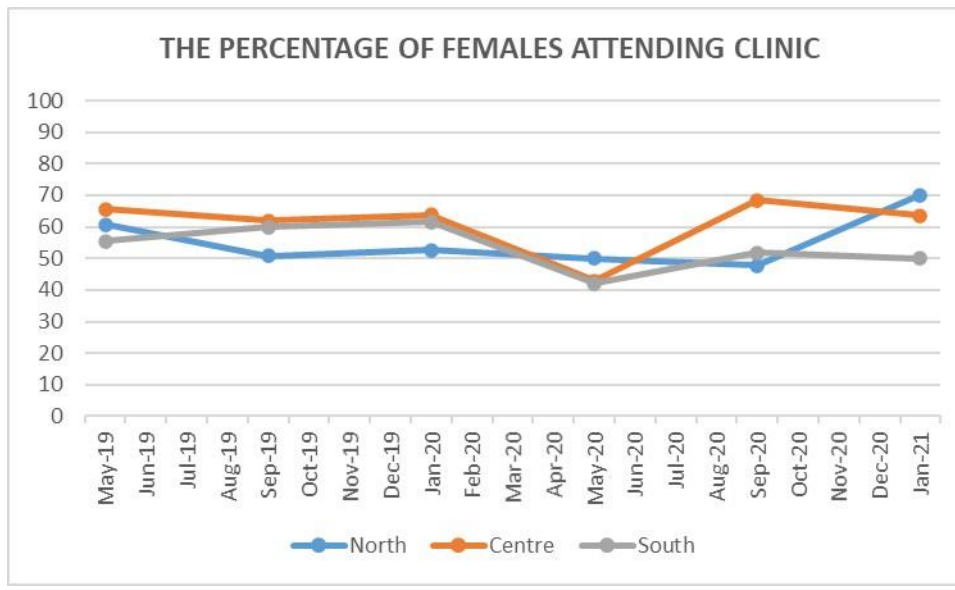


Figure 2: the female percentage attending clinics in each hospital

Prior to the pandemic, the female patient proportion in the three hospitals was around 60%; during the pandemic time, the female patient percentage increased slightly to 62% percent, there was no statistically significant difference in the gender distribution of clinic visits. (Figure 2).

Hospital	percentage of female patients in all clinics	Sum of Squares	df	Mean Square	F	Sig.
Alia	Between Groups	2.233	1	2.233	.252	.642
	Within Groups	35.462	4	8.865		
	Total	37.695	5			
PMC	Between Groups	190.632	1	190.632	2.017	.229
	Within Groups	378.002	4	94.501		
	Total	568.634	5			
RAF	Between Groups	177.888	1	177.888	3.087	.154
	Within Groups	230.463	4	57.616		
	Total	408.351	5			

Table 3: One-way Anove test for clinics' gender distribution.

Number, type, and gender distribution of operations

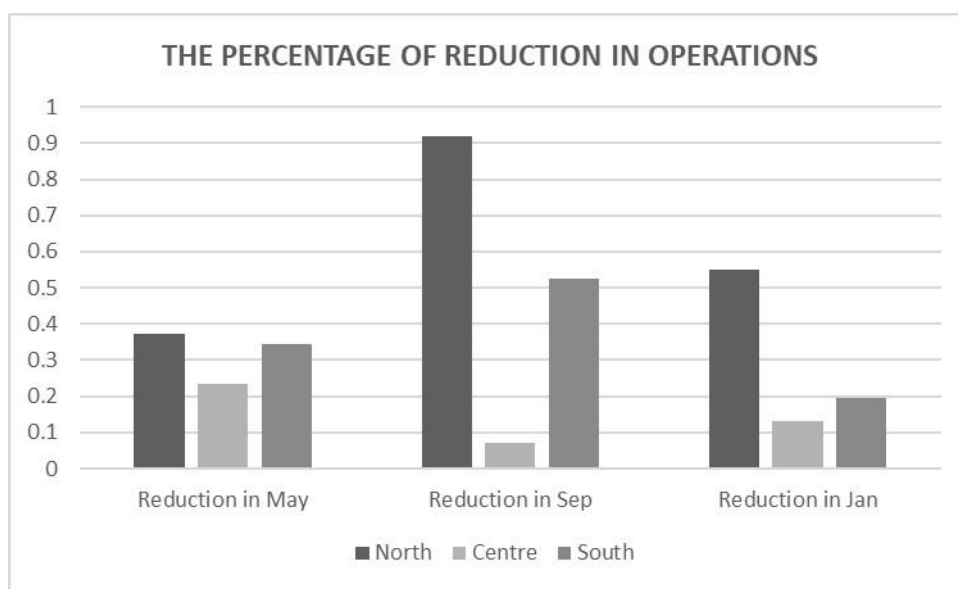


Figure 3: The percentage of reduction in operation in each hospital

A one-way ANOVA revealed a statistically significant difference in the number of operations done at the north (Rafedia) and south (Alia), but not in the center (PMC).

	Female percentage inSum operations	Squares	ofdf	Mean Square	F	Sig.
South (Alia)	Between Groups	6600.167	1	6600.167	19.460	.012
	Within Groups	1356.667	4	339.167		
	Total	7956.833	5			
Center (PMC)	Between Groups	2992.667	1	2992.667	2.244	.208
	Within Groups	5333.333	4	1333.333		
	Total	8326.000	5			
North (Rafedia)	Between Groups	23814.000	1	23814.000	10.920	.030
	Within Groups	8723.333	4	2180.833		
	Total	32537.333	5			

Table 4: One-way ANOVA test for clinics' gender distribution.

A one-way ANOVA revealed a statistically significant difference in the number of operations done at the north (Rafedia) and south (Alia), but not in the center (PMC). The number of operations in the north decreased by 37.1 percent, 91.8 percent, and 55.1 percent, respectively, for the May 2020, September 2020, and January 2021 periods. The reductions were 23.4 percent in the city, 7.1 percent in the suburbs, and 13 percent in the countryside. For the same time periods, the declines were 34.6 percent, 52.7 percent, and 19.6 percent in the south (Figure 3).

Hospital		Sum of Squares	df	Mean Square	F	Sig.
South (Alia)	Between Groups	24320.667	1	24320.667	15.280	.017
	Within Groups	6366.667	4	1591.667		
	Total	30687.333	5			
Center (PMC)	Between Groups	3800.167	1	3800.167	.586	.487
	Within Groups	25948.667	4	6487.167		
	Total	29748.833	5			
North (Rafedia)	Between Groups	68694.000	1	68694.000	15.615	.017
	Within Groups	17597.333	4	4399.333		
	Total	86291.333	5			

Table 5: One-way ANOVA test for the number of operations.

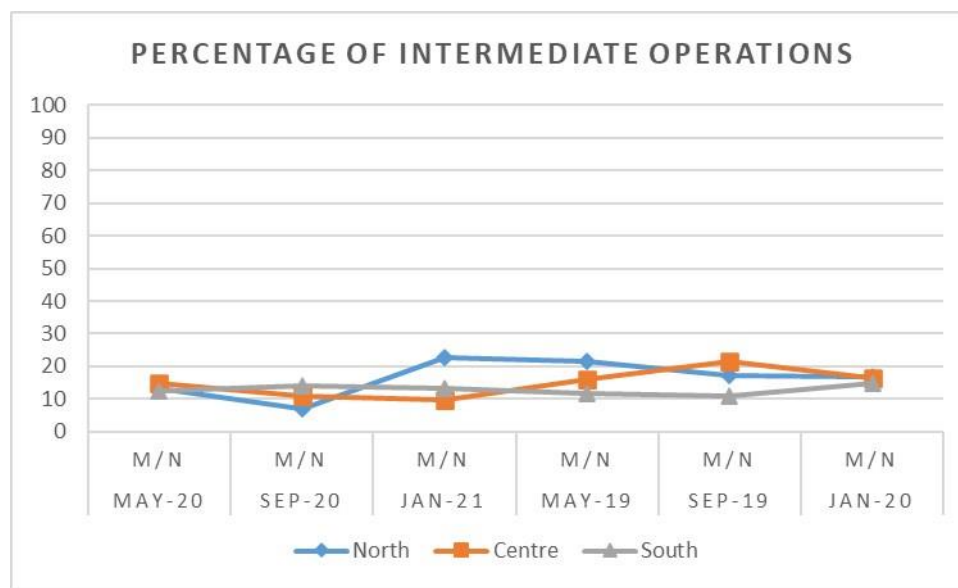


Figure 4: The percentage of intermediate operations among all operations

Major operation percentages were constant throughout the pandemic. However, small operations increased at the expense of intermediate processes (Figure 4). A one-way ANOVA revealed a statistically significant difference in the type of operations done at the north (Rafedia) and south (Alia), but not in the center (PMC).

Hospital	Type of operations	Sum of Squares	df	Mean Square	F	Sig.
South (Alia)	Between Groups	19153.500	1	19153.500	11.939	.026
	Within Groups	6417.333	4	1604.333		
	Total	25570.833	5			
Center (PMC)	Between Groups	3850.667	1	3850.667	1.370	.307
	Within Groups	11244.667	4	2811.167		
	Total	15095.333	5			
North (Rafedia)	Between Groups	43690.667	1	43690.667	14.032	.020
	Within Groups	12454.667	4	3113.667		
	Total	56145.333	5			

Table 6: One-way Anove test for type of operations

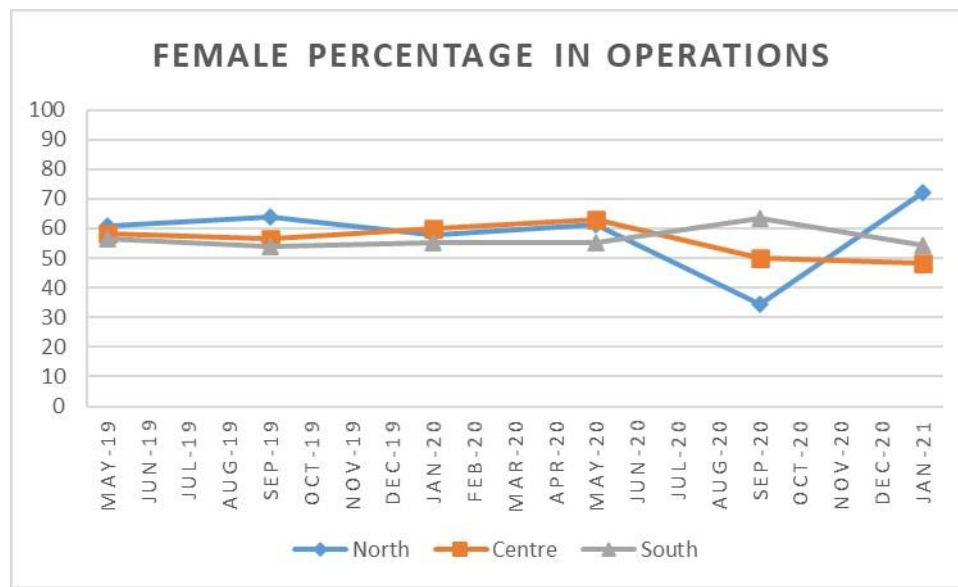


Figure 5: The female percentage among operations.

There was a statistically significant increase in the female percentage of patients who underwent operations between January 2021 and September 2020 in the north and September 2020 in the south (Figure 5).

Discussion:

During the COVID-19 pandemic, this study found a decrease in the number of patients accessing outpatient clinics in Palestinian state hospitals. The decline was greater among ENT patients, while the pandemic had little effect on the number of obstetric patients.

The difference in the number of patients admitted to public hospitals can be attributed to institutional, environmental, and individual factors. The decrease in outpatient clinic visits in Palestinian governmental hospitals was comparable in the north and south (Both did not open their clinics in September 2020). However, there are notable distinctions from the central hospital, primarily because this hospital has semi-independent governance. Additionally, the hospital on the West Bank's central district reopened outpatient clinics in June 2020 and has made significant efforts to compensate for the first lockdown. Thus, the number of patients increased in September 2020 but did not reach the levels seen in September 2019. As a result, more people have accumulated on waiting lists, jeopardizing outcomes (29).

The disparities in patterns, particularly in September 2020 in the center, support the notion that various COVID-19 pandemic management systems would have a lesser effect on patients. This study implies that decentralizing decision-making would be beneficial and could result in improved outcomes, as shown in India. Decentralizing health services and decisions in India under the COVID-19 resulted in more accurate metrics than when they were centralized (47). Thus, the increase in cases in one Palestinian governorate should have no effect on residents of other, less affected governorates. Additionally, in the United States of America, a score system was implemented to determine which operations to perform in hospitals. Each hospital was granted independence to select whether to operate, manage, or reallocate its resources based on real-time review. So, the rise in cases in one governorate in Palestine should not effect people in other less affected governorates. In addition, a scoring system was introduced in the USA to decide on operations in the hospitals. According to real-time

evaluation, each hospital's independence was given to determine when to operate, manage, or shift its resources (16).

To mitigate the pandemic's direct and indirect effects, Palestinian leaders should isolate COVID-19 management facilities from major hospitals. In Australia, facilities devoted to COVID-19 were designated, alleviating fear of hospitalization and emergency services. At the start of the pandemic, it was widely recognized that major hospitals with the best equipment and people would serve as COVID-19 management centers. After progressing through the pandemic and gaining expertise managing the COVID-19 pandemic, it may be prudent to segregate COVID-19 management from the primary centers in order to minimize the impact on non-COVID-19 patients. The reopening of outpatient clinics in Alia hospital in January 2021 demonstrated that the numbers have not returned to normal. The causes were several, including people's reluctance to visit hospitals, staff relocation to other facilities, and a shortage of disposables and other equipment. These factors were also observed in other nations such as Italy, Brazil, and the United Kingdom (15). Thus, an international strategy for combating any future pandemic should be developed while keeping non-pandemic patients in mind and balancing effort and resources to battle the pandemic.

In January 2021, the West Bank was engulfed in a COVID-19 wave. As a result, COVID-19 had a high infection rate and caused a large number of deaths. As a result, patients avoided hospitals, as was the case in other countries such as Pakistan, which reported a 74.5 percent decrease in attendance at health care facilities due to fear of COVID-19 infection (48). Another factor was incorrect information spreading among the public that the clinics remained closed, primarily due to the center's continual partial closure of clinics. As a result, the number of patients visiting clinics was cut in half.

It is critical to increase communication between the many components of Palestine's healthcare system and the general people. In January 2021, inaccurate information exacerbated the pandemic's effect on hospitalized patients, which may have been avoided with unambiguous warnings from an authoritative person. A transparent system based on trustworthy, clear, concise, and targeted messaging would aid in the dissemination of accurate information and prevent incorrect information from negatively affecting people's lives. Communication should be planned for and used appropriately in these instances.

Maintaining near-normal gynecological and obstetric services in Palestine is a success story. Italy experienced a 50.2 percent decrease in attendance in obstetric and gynecological departments during the COVID-19 epidemic (49). Even after the outpatient clinics were converted to COVID-19 facilities, the system continued to serve Palestinian women. According to the United Nations Population Fund, Palestine has the region's highest rate of prenatal coverage, at 99.5 percent. Antenatal care was suspended in primary health clinics but continued as usual in hospitals during the COVID-19 crisis (50, 51).

In contrast to Obs/Gyn, the three central departments most affected were ENT, urology, and pediatric surgery. This drop may be because physicians believe their patients are not emergency cases and can wait. Another possibility is that they feel a high danger of contracting COVID-19 infection due to their close contact with patients' mucous droplets (52). Thus, the ENT department could be considered an example of a setting in which doctors are the primary source of patient influence. This occurred in Italy, where 90% of ENT services were discontinued for the same reason (52). Urologist patient reductions took a different path, owing primarily to the closure of outpatient clinics and the relocation of urology physicians to assist with the COVID crisis. The same thing occurred in New York urology departments, with very comparable reasons and outcomes (53).

Pediatric surgical patients were the most vulnerable. Pediatric surgery operations could not be postponed indefinitely. The private sector's operating costs are considerable, and there is no state coverage referral for patients who do not frequent outpatient clinics. Reduce the number of patients examined in the clinic, which will add to the department's already lengthy surgery lists due to a shortage of pediatric surgeons (54). As a result, there is no widespread desire or policy to safeguard children from the pandemic's effect on their access to health care. A Canadian study found that while COVID-19 had a minimal direct effect on pediatrics, the indirect effect owing to management delays, primarily because it is not urgent, was significant and reached up to a 50% reduction in children seeking health care services. Thus, there is no general will or regulation to protect children from the effect of the pandemic on their health service level. A Canadian study showed that the direct negative effect of COVID-19 on pediatrics was limited, but the indirect effect due to management delay, mainly because it is not urgent,

was significant and reached up to a 50% reduction in children attending health care services (9, 27).

Each hospital saw a decrease in the number of operations. The most dramatic decline occurred in the south and north during the September 2020 period, owing to a longer closure period. In the center, the hospital opened in September 2020, but human resources for COVID-19 departments were reallocated. The American College of Surgeons postponed procedures deemed urgent or overwhelming in order to reallocate resources to COVID-19 patient management. Simultaneously, the national health service (NHS) purchased multiple beds from independent hospitals and constructed numerous field hospitals staffed by NHS employees who had been transferred from their hospitals (14).

The percentage and quantity of intermediate operations rise during the epidemic period. The percentage increase was primarily attributable to a decrease in minor operations (minor operations were closed) and a fairly constant percentage of major operations. While the absolute number of intermediate operations increased in comparison to previous periods, this was owing to the reduced peri-operative hospital stay policy and limited surgical ICU beds, which enhanced resource allocation for COVID-19 patient management. Worldwide, operations have been prioritized to address COVID-19 patients at the expense of non-COVID-19 patients (55, 56).

Conclusion:

The presence of Covid-19 has had an effect on the number of patients seeking outpatient care.

While some services were affected by the epidemic, hospitals in the West Bank were able to provide normal obstetric and gynaecological services and assist patients requiring primary or intermediate surgery. Additionally, the system facilitated the development of context-sensitive policies that are attentive to patient requirements and hospital capacity.

Recommendations:

The health service's decentralization is intended to increase the quality of health care given throughout the pandemic phase. For example, segregating COVID-19 patients from other patients in various institutions is critical to mitigating the pandemic's effect on non-COVID-19 patients.

Additionally, a transparent communication system between authorities, health care providers, and patients based on trustworthy, clear, concise, and focused communications would aid in the distribution of accurate information and prevent erroneous information from negatively affecting people's lives.

Future research is needed to determine the reasons for the decrease in patient numbers and the effect of surgical postponement owing to the COVID-19 pandemic.

Study strength and limitation:

The study provides a better understanding of how the Palestinian healthcare system functioned during the COVID 19 period. The study is based on secondary data with acceptable quality. However, some records had some missing information.

Using of record data without patients' consent for research could be considered unethical in some countries.

Ethical approval:

Ethical approval was obtained from the Master of Public Health Program Council.

Conflict of interest:

The author declares that there is no conflict of interest.

Authors contribution

MA has conceptualized the paper, conducted the fieldwork and data analysis, and prepared the first draft of the manuscript. NMEAR provided support during the conceptualization, data collection, analysis, and manuscript preparation.

Acknowledgment:

We would like to acknowledge Ms. Rula Ghandour for the statistical support and Ms. Aisha Shalash and Dr. Greg Stocks for proofreading the manuscript.

Article two: Deferral of surgical operations during the COVID-19 pandemic and its effect on Palestinian patients: A cross-sectional study

The manuscript that was submitted to Conflict and Health journal.

Deferral of surgical operations during the COVID-19 pandemic and its effect on Palestinian patients: A cross-sectional study

Mousa Atary¹, MD, MPH

Niveen ME Abu-Rmeileh¹, MPH, PhD

Institute of Community and Public Health, Birzeit University, Palestine

Corresponding Author: Mousa Atary

Institute of Community and Public Health, Birzeit University, Palestine

Email: mousa.atary@hotmail.com

Tel:+972 2 2982020

Mobile: +972597888655

ORCID ID: <https://orcid.org/0000-0003-0255-6013>

Word count: 4387

Keywords:

Surgical deferral. Palestine. Anxiety and depression. Physical effect. Economic effect

Abstract: (239 Words)

Background: A shortage of resources in most hospitals worldwide was exacerbated during the pandemic due to the increasing number of patients seeking medical advice. Reallocation of resources utilized to face this shortage includes the reallocation of human power, personal protective equipment, medical devices, medical disposables, and different hospital wards. The elective operation was one of the significant services affected due to this reallocation resulting in the deferral of many operations. It was postponing the scheduled operations that involved each person differently according to different circumstances around the patient and the type of operations. In Palestine, the ongoing long-term Israeli occupation continues to affect the hospitals with various crises now and then. The prolonged exposure to this situation increases the experience of dealing with difficult situations but creates a case of a chronic shortage of resources. This study explores the effect of this deferral during the pandemic on the Palestinian people in three major hospitals in the West Bank in terms of economic, physical, and psychological aspects.

Methods: A cross-sectional study was conducted of patients who experienced operation deferral in Palestine due to the COVID-19 pandemic.

Utilizing SPSS, a univariate, bivariate (cross-tabulation and one-way ANOVA), and multivariate (linear regression) analyses were done.

Results: There is a severe effects on Palestinian people's different physical, psychological, and economic aspects of life.

Conclusions: negative effects of surgery deferral could be minimized by better crisis management, better worldwide crisis plans, establishing specified tertiary hospitals, and including all types of experts in the crisis committee.

Trial registration: not applicable

What is Already known:

There is a collateral effect of the COVID-19 pandemic.

The deferring of operations is a big problem worldwide.

Palestine's experience in crisis management made the team familiar with dealing with huge number of cases

The Study Added:

The middle age adults were the more affected by the COVID-19 pandemic.

The physical effect is more on orthopedic and neurosurgery patients.

The economic cost of surgical deferral will increase anxiety and depression.

Pre-planning is an important step to decrease the collateral effect of the crisis.

Psychological experts should be part of the managing crisis planning team.

Separation of pandemic patients from other patients will decrease collateral damage.

Policymakers should keep the complete lockdown as last option with follow up plans.

Background

Hospitals in most countries suffer from a shortage of medical resources, which is more prominent in developing countries. (57) The shortage could be in the workforce, infrastructure, protective equipment, or medications. (57) Could this shortage be present in terms of absolute quantitative in some countries (the amount needed exceeded the available), or unfair distribution of medical resources among different hospitals in the same country (the available is enough but not distributed with equity). (58)

During the COVID-19 pandemic, the number of patients overwhelmed the existing capacity of the hospitals in almost all countries. (59) About 17% of COVID-19 patients in the hospitals needed ventilators. (60) There were increasing demands for medication, especially sedatives and neuromuscular blockers. (61) COVID-19 patient numbers exceeded the number of ICU beds available. (60) there was a shortage of personal protective equipment (PPE) due to high demand and cessation of exporting from China during the pandemic. (62) So, to cope with these extra demands, shifting resources from different departments to manage COVID-19 patients was utilized. (58-60)

To manage inadequate resourcing, hospitals worldwide, in general, applied a set of rules; to shift ventilators from operative rooms to ICU. Shift medical teams from surgery to managing COVID-19 patients. Turn different departments into COVID-19 inpatient departments, and defer every operation that could be deferred. (1, 15, 16, 56)

Deferring the operations had been done and justified by multiple causes. (1, 14, 15, 17) Reducing the number of operations means directly reducing the PPE needed for surgical teams to protect them and the patients from infection. (1, 14, 15, 17) Reducing the number of operations allows the reallocation of part of surgical teams for the new ICU beds created for managing covid-19 patients. (1, 14, 15, 17) The remaining surgeons were allocated for emergency operations only (1, 14, 15, 17). Postponing non-emergency operations decreased the possible medical team infection rate with covid-19 due to PPE shortage. They protected the limited number of medical care providers from being neutralized in such situations. (3, 14, 16, 18)

The occupied Palestinian territory has been under occupation for more than 70 years, and the Palestinians are struggling to maintain the health system under chronic conflict

situations. In 2002 the second intifada created severe obstacles in front of the health system in Palestine; physical separation of the West Bank and Gaza district and barriers inside the West Bank. Many challenges to importing goods are due to Israeli objections and a shortage of money and donation. A chronic situation of health instruments shortage created. (36, 63) on the other hand, health teams became more experts in working in conflict and nonoptimal situations(36). Palestinian people have to travel to central governmental hospitals like Palestine Medical Complex in Ramallah, Rafedia hospital in Nablus, and Ali hospital in Hebron because of the high cost of the private sector, and most people lie below the poverty line. (63) The effect of the pandemic on the functionality of the system is limited. Hence, this study explores the effect of surgical deferral due to the COVID-19 pandemic on Palestinian people economically, physically, and psychologically.

Methodology:

Study Design

A cross-sectional study of patients who experienced operation deferral in the three largest governmental hospitals in the West Bank region of Palestine between 8/8/2021 and 6/9/2021 was done.

Study population

The study's target population is all Palestinian patients seeking treatment at governmental hospitals in the West Bank. We studied patients with deferred operations during the pandemic period in three governmental hospitals. The hospitals included in the study were Rafedia hospital (located in the north of the West Bank), Palestine Medical Complex (the center), and Alia hospital (the south).

The study-sampling frame was a list of deferred operations during each period of the covid-19 pandemic (May/2020, Sep/2020, and Jan/2021) from the three hospitals. The records showed 662 724, 587 deferred operations during the study period in the north, the center, and the south. Therefore, the estimated sample size was 392 patients. Participants were selected randomly from these lists, and a phone call was placed for

the selected person. First, oral informed consent was claimed from the participants on the phone, and then the link was sent to them by SMS to start participating in the survey.

Study Tool

The study utilized an online survey using the kobotool box website. A questionnaire included a combination of different validated tools—a pilot test on 14 before collecting data was done.

The study tool consists of five parts. The first part is the personal information and data. The second part included receiving health services and the causes of the inability to access them. The third part included the physical effect of operation deferral on the patient. The fourth part included the financial effect of the operation deferral on the patient. Finally, the fifth (the last) part measures the psychological effect of operation deferral on the patient.

The personal information part included age, gender, residence, history of chronic diseases, name of operations, the hospital in which the operation was supposed to be done, history of covid-19 infection, and if this infection was at the same time operation.

The ability to receive health services part used an Arabic validated questionnaire of the Palestinian Central Bureau of Statistics (PCBS) titled Effect of COVID-19 on the Palestinian Households' Socio-Economic Conditions, 2020(39). Use of it was done after reviewing PCBS terms of use which included "a universal, free-of-charge, irrevocable, parallel right of use to the material, Including Copying, distributing, reusing, building, deriving materials. Editing and using for commercial or non-commercial purposes." This part included eight main questions. These include questions about the need to get health services regarding the appointment of operation, the need for urgent operation, the need for non-urgent operation, management due to chronic diseases, management due to acute diseases, the need for buying medications, the need to do laboratory and radiological tests, and the need for getting medical report or medical referral financial coverage. Each main question has two sub-questions, the first about the ability to get the medical service and the second about the cause of the inability to get the medical service if it is applied.

The physical effect of operation deferral on patients used Arabic validated version of the RAND 36-item health survey 1.0, which allows for non-commercial use. (40) This part includes 14 questions that cover the physical effect on upper limbs, lower limbs, ability to walk, and ability to work physically.

The financial effect of operation deferral on patients used Arabic validated Palestinian family survey, 2010 questionnaire by PCBS,(41). It has the same allowance for usage as the ability to receive health services. This part included seven questions that measure the work absence, its duration, its cause, the type of work before and after the covid-19 pandemic, the cost of transportation for re-scheduling the operation, and the cost of medications during the operation deferral period.

The psychological effect of operation deferral on patients used an Arabic validated version of the hospital anxiety and depression scale (HADS), which could be downloaded and used free. (42) It consists of fourteen questions, seven questions for measuring anxiety and seven questions for measuring depression.

Data Manipulation: Age was categorized into four categories, 15 years each done. The residence is organized into the north, the center, and the south. The specific operation name was grouped based on the department where the operation was done. The categories include (ENT, maxillofacial, ophthalmology, vascular, and urology. The comorbidities are then categorized into three categories (none, one, two, or more). Finally, the number of health services that could not be accessed was classified into five categories starting with no service and ending with four or more services.

The study has three primary outcomes: physical, psychological, and economic scores. The physical score was summed according to the RAND score and categorized into four categories (each quartile), then recategorized into two (affected or not affected). The sum of the score was also used as a continuous variable. The economic score: Absence from work is categorized into four categories: no absence and absence for three months or more. The sum of the direct cost of transportation and medical was done then the results were categorized into three groups (mild, moderate, and severe effect). The psychological score: the sum of anxiety and depression scores from the HAAD score was done (0-21) for each item used as a continuous variable, the recategorization in

normal, borderline, and abnormal categories was done according to the score instructions.

All variables of interest were summarized using frequency and percent for categorical data and mean and SD for quantitative data. Bivariate analyses were done using cross-tabulation and a one-way ANOVA test for all data, especially economic factors. The multivariate analysis utilized Age and Sex adjusted regression for physical effect and all factor adjusted regression for psychological effect.

Results:

A total of 430 answered calls were done, seven patients were found to be passed away before the call, so they were excluded from participation, and eight persons refused participation. Links were sent by SMS to 415 persons, and 402 completed questionnaires were applied. Five people said their relatives advised them not to participate, and two said they did not have enough time to participate. The remaining six people did not respond to the second call.

Characteristic of study population:

The study population was equally distributed according to gender. Patients from the center (35.4%) and north (34.7%) hospitals are equal and slightly more than cases from the south (29.9%) hospitals. Patients' residence, according to the governorates, was (37.9%) in the northern, (33.4%) in the southern, and (28.6%) in the central. Patients who fall in the 46-60 years age group are (36.2%), followed by the 31-45 years age group (28.4%), years between 15-30 years form (20.9%). Most of the operations deferred were orthopedic operations (34.2%), followed by neurosurgery operations (16.1%). ENT operations in third place (12.1%), then general surgery (10.6%), gynecology operations (9.5%), and scope procedures (7.3). The last four are; urology operations (5.5%), ophthalmology operations (2.5%), vascular operations (1.3%), and lastly, maxillofacial operations (1%). A whopping majority of the patients have no comorbidities (63.6%), and only 18.1% have one comorbidity. 56.5% of patients declared they were not infected with covid-19 before, 34.9% were infected apart from scheduled surgery time, and 8.5% were infected at the operation time. Besides elective surgery, 69.8% of the patients reported having access to all health services needed. The

rest distributed 20.9% could not get at least another health service required, 6.5% could not access another two services, 2.5% could not access another three services, and 0.3% could not access four or more services. Patients who continued their work during the covid-19 pandemic formed 42.5%, 28.4% did not work for three months or more, and 14.6% did not go to work for 1 or 2 months. Patients who did not go to work were due to covid-19 infection or quarantine (47.2%), (26.2%) due to other diseases, and the last (26.6%) were compelled to work absence due to administrative orders. Surgery deferral costs more than 200 new Israeli Shekel (about 65 USD) of transportation for 33.7% of patients and medication for 15.4%. An abnormal anxiety scale was found in 45% of patients, while an abnormal depression scale was found in 29.6%. There was no physical affection in 44.5% of patients, 28.4 with minimal affection, 21.9% with moderate, and 5.3% with severe physical affection.

Variable	Items	Frequency (total number 398)	Percentage
Age groups	15-30y	83	20.9
	31-45y	113	28.4
	46-60y	144	36.2
	>60y	58	14.6
Gender	Female	202	50.8
	Male	196	49.2
Hospital	Centre Hospital	138	34.7
	North Hospital	141	35.4
	South Hospital	119	29.9
Residence in West Bank	North	151	37.9
	Centre	114	28.6
	South	133	33.4
Type of surgery deferred	ENT	48	12.1
	Gynaecology	38	9.5
	Maxillofacial surgery	4	1.0
	Neuro	64	16.1

	Ophthalmology	10	2.5
	Orthopaedic	136	34.2
	Scopes	29	7.3
	General Surgery	42	10.6
	Urology	22	5.5
	Vascular surgery	5	1.3
No. of comorbidities	No comorbidities	253	63.6
	1 comorbidity	72	18.1
	2 comorbidities	36	9.0
	3 comorbidities	26	6.5
	4 comorbidities	10	2.5
	5 comorbidities	1	0.3
Covid-19 infection	Yes, At the time of operation deferred	34	8.5
	Yes, at the time other than operation deferral time	139	34.9
	No	225	56.5
No. of health services that could not be accessed by the deferred operation patients	Accessed all other health services	278	69.8
	1 health services	83	20.9
	2 health services	26	6.5
	3 health services	10	2.5
	4 health services	1	0.3
Duration of absence from work during the covid-19 pandemic	No	169	42.5
	1 month	58	14.6
	2 months	58	14.6
	3 months or more	113	28.4
Causes of absence from work	Administrative orders	61	26.6
	Covid-19 infection or quarantine	108	47.2
	Disease (other than covid-19)	60	26.2
	Less than 100 NIS	126	31.7
	100-200 NIS	138	34.6

Cost of transportation due to surgery deferral*	200-300 NIS	78	19.6
	More than 300 NIS	56	14.1
Cost of medications due to surgery deferral*	Less than 100 NIS	268	67.3
	100-200 NIS	69	17.3
	200-300 NIS	19	4.8
	More than 300 NIS	42	10.6
Anxiety scale (HAAD)*	Normal	106	26.6
	Borderline	113	28.4
	Abnormal	179	45.0
Depression scale (HAAD)	Normal	126	31.7
	Borderline	154	38.7
	Abnormal	118	29.6
Physical affection of patient due to surgical deferral	No Effect	177	44.5
	Minimal Effect	113	28.4
	Moderate Effect	87	21.9
	Severe Effect	21	5.3

Table I A: Characteristics of the study population (categorical)

	N	SD	Mean	Median
Age	398	14.59	45.01	46.00
Depression scale	398	4.48	8.93	9.00
Anxiety scale	398	4.73	9.82	10.00
Physical effect due to surgical deferral	398	9.72	11.14	10.00

Table I B: Characteristics of the study population (continues)

The economic effect

The economic effect was measured by two variables, the duration of absence of work and the direct cost of surgical deferral. The direct cost was calculated from the cost of transportation and medication, which was then classified into mild (28.4%), moderate (55.5%), and severe (16.1%) effect. The direct cost was directly related to the age of the

patients; the older the patient, the more influential the economic effect (77.6%) compared to young patients (28.9%) (P-value <0.001). The direct cost was significantly associated with the type of operation (P-Value <0.001). The economic effect is more significant in neurosurgery patients (severe effect in 28.1%, moderate effect in 68.8%) and orthopedic patients (powerful effect in 24.3, moderate effect in 48.5%) compared to other operations. Severe economic effect increases with increasing the number of comorbidities presented in the patient (p-value =0.001). The severe effect is 23.3% with two or more comorbidities, 19.4% with one comorbidity, and 13% with no comorbidities., The more health services could not access by patients (P-value= 0.009), the more severe economic effect was observed (severe effect in 100% of patients with four inaccessible health services). Finally, the physical effect of the surgical deferral (P-value < 0.001) was associated with an increased economic effect on the patient.

Variable	Item	The direct cost effect on participants			Pearson Chi-Square	P-value
		Mild	Moderate	Severe		
Age groups	15-30y	50.6%	42.2%	7.2%	42.397	.000
	31-45y	31.9%	59.3%	8.8%		
	46-60y	17.4%	59.7%	22.9%		
	>60y	17.2%	56.9%	25.9%		
Gender	Female	29.7%	54.5%	15.8%	.348 ^a	.840
	Male	27.0%	56.6%	16.3%		
Hospital of scheduled operation	Centre Hospital	26.1%	52.9%	21.0%	9.159	.057
	North Hospital	25.5%	56.7%	17.7%		
	South Hospital	34.5%	57.1%	8.4%		
Residence in West Bank	North	23.8%	55.6%	20.5%	5.517	.238
	Centre	30.7%	57.9%	11.4%		
	South	31.6%	53.4%	15.0%		
Type of operation	Subspeciality	38.2%	53.9%	7.9%	47.948 ^a	.000
	Gynaecology	39.5%	50.0%	10.5%		
	Neurosurgery	3.1%	68.8%	28.1%		
	Orthopaedic	27.2%	48.5%	24.3%		
	General Surgery	35.2%	62.0%	2.8%		
	None	35.6%	51.4%	13.0%	19.258	.001

No. of comorbidities	One	15.3%	65.3%	19.4%		
	Two or more	16.4%	60.3%	23.3%		
Covid-19 infection regarding the time of scheduled operation	Did not infected	22.4%	59.2%	18.4%	4.686	.321
	Infected in other time than surgery time	29.7%	55.7%	14.7%		
	Infected during surgery time	37.0%	40.7%	22.2%		
The number of health services other than elective surgery which need by the participants	No services needed	31.3%	56.1%	12.6%	20.255	.009
	One service	24.1%	56.6%	19.3%		
	Two services	11.5%	50.0%	38.5%		
	Three services	30.0%	50.0%	20.0%		
	Four services	0%	0%	100.0%		
Absence of work during pandemic	go to work all the time	34.9%	50.9%	14.2%	21.480	.002
	1 month absence	31.0%	60.3%	8.6%		
	2 months absence	29.3%	62.1%	8.6%		
	3 or months absence	16.8%	56.6%	26.5%		
Physical effect of surgical deferral	not affected physically	40.7%	53.7%	5.6%	38.712	.000
	affected physically	18.6%	57.0%	24.4%		

Table 2: Economic effect on patients with deferred surgery

The physical effect:

The physical effect using the RAND score was utilized as a categorical for bivariate analysis and a continuous score for the regression. The physical effect increased significantly with increasing age (77.6% above 60 years, 70.1% in 46-60 years, 45.1% in 30-45 years, and 28.9% in 15-29 years). It was significantly related to the type of operation (P-value < 0.001). Physical impact was presented in (95.3%) of neurosurgery patients (75%) of the orthopedic patient. In comparison, less impact was in gynecology patients (47.4%), general surgery (26.8%), and subspecialty operations (23.6%). Increasing No. of comorbidities increases the patient's physical effect. Two or more comorbidities are associated with (76.7%) physical effect, 66.7% with one, and 46.2% with no comorbidity. The more health services that could not be accessed by the patient, the more the physical effect that affects them (100% with the inability to access four

services, 90% with three services, 80.8% with two services, 62.7% with one service, 49.6% with no services). The increasing direct cost of surgical deferral was significantly related to physical effect (84.4% in severe economic effect, 57% in moderate effect, and 36.3% in mild effect). Anxiety and depression were significantly positively related to the physical effect (more than 64% in abnormal people, less than 39.7% in normal ones).

Age and Sex adjusted linear regression showed that physical effect is statistically significantly related to the age (P -value=0.001), the type of operation (Neurosurgery and orthopedic both with P -value <0.001), the number of health services other than surgery that the patient could not access (two services with P -value=0.01, three services with P -value=0.005).

Item	The physical effect of deferring surgery		Chi-Square	p-value	Mean score	p-value	coefficient	p-value
	No effect	Affected						
Age groups								
15-30y	71.1%	28.9%	52.63	<0.001	1.29	<0.001	.123	0.001
31-45y	54.9%	45.1%			1.45			
46-60y	29.9%	70.1%			1.70			
>60y	22.4%	77.6%			1.78			
Gender								
Female	48.0%	52.0%	2.09	.148	1.52	.149		
Male	40.8%	59.2%			1.59			
Hospital								
Centre Hospital	38.4%	61.6%	5.60	.061	1.61	.061		
North Hospital	43.3%	56.7%			1.56			
South Hospital	52.9%	47.1%			1.47			
Residence in West Bank								
North	40.4%	59.6%	1.66	.437	1.59	.439		
Centre	46.5%	53.5%			1.53			
South	47.4%	52.6%			1.52			
Type of operation								
Subspeciality surgery	76.4%	23.6%	123.47	<0.001	1.24	<0.001	.155	0.900
Gynecology	52.6%	47.4%			1.47		2.817	0.066
Neurosurgery	4.7%	95.3%			1.95		12.245	<0.001
Orthopedic	25.0%	75.0%			1.75		9.506	<0.001
General Operations	73.2%	26.8%			1.27			
No. of comorbidities								
None	53.8%	46.2%	25.71	<0.001	1.46	<0.001	0.084	.934
One	33.3%	66.7%			1.67			
Two or more	23.3%	76.7%			1.77			

Covid-19 infection regarding the time of scheduled operation								
Did not infected	37.8%	62.2%	2.40	.301	1.62	.303		
Infected in other time than surgery time	46.5%	53.5%			1.52			
Infected during surgery time	48.1%	51.9%			1.53			
The number of health services other than elective surgery which need by the participants								
No services needed	50.4%	49.6%	17.93	.001	1.49	.001		
One service	37.3%	62.7%			1.63		1.291	.180
Two services	19.2%	80.8%			1.81		4.031	0.01
Three services	10.0%	90.0%			1.90		6.673	.005
Four services	0.0%	100.0%			2.00			
Absence of work during pandemic								
go to work all the time	47.9%	52.1%	5.41	.144	1.52	.145		
1 month absence	46.6%	53.4%			1.53			
2 months absence	50.0%	50.0%			1.50			
3 or months absence	35.4%	64.6%			1.64			
The direct Cost effect of surgical deferral								
mild effect	63.7%	36.3%	38.71	<0.001	1.36	<0.001		
moderate effect	43.0%	57.0%			1.57			
severe effect	15.6%	84.4%			1.84			
Anxiety Level (HAAD score)								
Normal	64.2%	35.8%	23.12	<0.001	1.36	<0.001		
Borderline	39.8%	60.2%			1.60			
Abnormal	35.8%	64.2%			1.64			
Depression level (HAAD score)								
Normal	60.3%	39.7%	19.23	<0.001	1.40	<0.001		
Borderline	39.0%	61.0%			1.61			
Abnormal	34.7%	65.3%			1.65			

Table 3: Physical effect on patients with deferred operations

The psychological effect: The psychological effect is divided into two main categories: depression and anxiety. Both were measured using the HAAD score, the categorical score used for bivariate analysis, and the continuous score used for regression.

Depression was significantly related to age groups (P-value <0.001), the depression score increasing with age, reaching the maximum of abnormality in the 45-60 years age group (39.6%), while decreasing to (34.5%) in above 60 years age group. It is significantly related to the type of operation (P-value= 0.001), the depression scores were (6.3 normal and 42.2% abnormal) in neurosurgery patients, (28.9% normal and 31.6% abnormal) in gynecology patients, (34.6% normal and 27.9% abnormal) in orthopedic patients, (35.2% normal and 23.9% abnormal) in general surgery patients, and (43.8% normal and 27% abnormal) in subspecialty surgery patients. Depression increased with the COVID-19 infection (P-value= 0.023); Abnormal HAAD score was found in 26.5% of whom did not infect with COVID-19 before, 28.6% of whom got infected with COVID-19 other times than surgery time, and 51.9% of whom infected with COVID-19, during surgery time.

Depression score is significantly positively related to the number of health services the patients could not access. For example, patients who needed four services other than elective surgery were 100% depressed, with three services (60%) and two (50%). While one service (30.1%) and no needed services (26.3%).

Depression is related to the absence of work duration (44.2% in three months or more absence, 32.8% in two months, 12.1% in one-month absence). Also, it is related to the direct cost effect of surgical deferral; (46.9% in severe effect and 26.5% in mild effect) and the physical effect of surgery deferral (34.8% in physically affected, 23.2% is not affected).

All parameters adjusted linear regression of depression was done. Depression score is statistically significantly related to age (P-value <0.001), the number of health services the patient could not access is three or more (P-value= 0.036), and the absence of work duration is three months or more (P-value= 0.001).

Variable	Item	Depression status (HAAD score)			Chi-Square	p-value			coefficient	P-value
		Normal	Borderline	Abnormal			Mean	P-Value		
Age groups	15-30y	54.2%	31.3%	14.5%	36.870	.000	6.70	.000	9.48	<0.001
	31-45y	35.4%	38.9%	25.7%			8.93			
	46-60y	18.1%	42.4%	39.6%			9.79			
	>60y	25.9%	39.7%	34.5%			10.02			
Gender	Female	34.7%	36.1%	29.2%	1.881	.390	8.69	.265		
	Male	28.6%	41.3%	30.1%			9.19			
Hospital	Centre Hospital	31.9%	39.9%	28.3%	1.294	.862	9.17	.753		
	North Hospital	31.9%	35.5%	32.6%			8.82			
	South Hospital	31.1%	41.2%	27.7%			8.80			
Residence in West Bank	North	31.1%	35.8%	33.1%	2.318	.677	9.09	.854		
	Centre	34.2%	37.7%	28.1%			8.90			
	South	30.1%	42.9%	27.1%			8.79			
Type of operation	Subspeciality surgery	43.8%	29.2%	27.0%	27.460	.001	8.27	.000		
	Gynecology	28.9%	39.5%	31.6%			9.37			
	Neurosurgery	6.3%	51.6%	42.2%			11.19			
	Orthopedic	34.6%	37.5%	27.9%			8.52			
	General Operations	35.2%	40.8%	23.9%			8.29			
No. of comorbidities	None	35.6%	39.1%	25.3%	8.282	.082	8.43	.007	0.65	.517
	One	26.4%	38.9%	34.7%			9.40			
	Two or more	23.3%	37.0%	39.7%			10.21			
	Covid-19 infection regarding the time of scheduled operation									
	Did not infected	30.6%	42.9%	26.5%	11.302	.023	9.03	.000		
	Infected in other time than surgery time	34.4%	37.0%	28.6%			12.33			

	Infected during surgery time	7.4%	40.7%	51.9%			8.56			
	The number of health services other than elective surgery which need by the participants									
	No services needed	34.5%	39.2%	26.3%	16.400	0.037	8.42	<0.001	0.11	0.913
	One service	31.3%	38.6%	30.1%			9.40			
	Two services	15.4%	34.6%	50.0%			11.46		1.48	0.141
	Three services	0.0%	40.0%	60.0%			12.50		2.11	0.036
	Four services	0.0%	0.0%	100.0%			12.00			
	Absence of work during pandemic									
	go to work all the time	40.2%	34.9%	24.9%	38.501.	<0.001	8.05	<0.001		
	1 month absence	48.3%	39.7%	12.1%			7.31			
	2 months absence	25.9%	41.4%	32.8%			9.21			
	3 or months absence	13.3%	42.5%	44.2%			10.96		3.318	0.001
	The direct Cost effect of surgical deferral									
	Mild effect	43.4%	30.1%	26.5%	24.225	<0.001	7.85	<0.001		
	Moderate effect	31.7%	42.1%	26.2%			8.8688			
	Severe effect	10.9%	42.2%	46.9%			11.08			
	The physical effect of surgical deferral									
	not affected physically	42.9%	33.9%	23.2%	19.225	<0.001	7.82	<0.001	1.269	0.205
	affected physically	22.6%	42.5%	34.8%			9.82			

Article 4: Depression scores of patients with deferred operations

Anxiety score showed nearly similar relationships to depression but with an increased abnormality score. Age is significantly related to anxiety (P-value < 0.001), with 55.6% abnormalities in the 45-60 years age group and 46.6% in the above 60 years old age group. Type of operation is significantly related to anxiety (P-value<0.001), HAAD score for anxiety were (1.6% normal, 68.6% abnormal) in neurosurgery patients, (31% normal, 46.5% abnormal) in general surgery patients, (30.9% normal and 40.4% abnormal) in orthopedic patients, (32.6 normal and 41.6% abnormal) in subspecialty operations patients, and (31.6% normal and 26.3% abnormal) in gynecology patients). COVID-19 infection is significantly related to anxiety (P-value<0.001). The abnormal anxiety score was 46.9% of patients did not infect with COVID-19, 40.3% of patients infected with COVID-19 other than the surgery, and 85.2% of patients infected with COVID-19 during surgery. The anxiety score was significantly positively related to the number of health services that could not be accessed by the patients other than the surgery (56.2% with two or more services, 47.2% in one service, and 41.1% with no services), the absence of work duration (62.8% in 3 or more months, 58.6% in two months, and 25.9% in one month), and the physical effect of surgery deferral (52% in physically affected and 36.2% in not affected).

All parameters adjusted linear regression of anxiety showed that anxiety score is statistically significantly related to age (p-value <0.001). The patient is infected with COVID-19 during the planned operation time (P-value <0.001). The patient is absent from work for two months or more (P-value< 0.001).

Variable	Item	Anxiety status (HAAD score)			Chi-Square	p-value	Mean score	p- value	Coefficient	p- value
		Normal	Borderline	Abnormal						
Age groups	15-30y	48.2%	25.3%	26.5%	30.738	.000	7.6	<0.001	3.839	<0.001
	31-45y	25.7%	30.1%	44.2%			9.75			
	46-60y	17.4%	27.1%	55.6%			10.74			
	>60y	20.7%	32.8%	46.6%			10.81			
Gender	Female	30.2%	27.2%	42.6%	2.679 ^a	.262	9.703	.672		
	Male	23.0%	29.6%	47.4%			9.933			
Hospital	Centre Hospital	23.9%	27.5%	48.6%	1.377	.848	10.11	.641		
	North Hospital	27.7%	29.8%	42.6%			9.5816			
	South Hospital	28.6%	27.7%	43.7%			9.7563			
Residence in West Bank	North	26.5%	29.1%	44.4%	.434	.980	9.7483	.887		
	Centre	25.4%	27.2%	47.4%			10.0000			
	South	27.8%	28.6%	43.6%			9.7368			
Type of operation	Subspeciality surgery	32.6%	25.8%	41.6%	33.555	.000	9.4944	.000		
	Gynecology	31.6%	42.1%	26.3%			9.3947			
	Neurosurgery	1.6%	29.7%	68.8%			12.3281			
	Orthopedic	30.9%	28.7%	40.4%			9.1912			
	General Operations	31.0%	22.5%	46.5%			9.3803			
No. of comorbidities	None	30.8%	28.1%	41.1%	9.383	.052	9.2095	.001		
	One	25.0%	27.8%	47.2%			10.2500			
	Two or more	13.7%	30.1%	56.2%			11.4932			
	Covid-19 infection regarding the time of scheduled operation									
	Did not infected	20.4%	32.7%	46.9%	23.425	.000	10.0918	.000		

	Infected in other time than surgery time	31.1%	28.6%	40.3%			14.2963		1.173	0.241
	Infected during surgery time	3.7%	11.1%	85.2%			9.2747		3.387	0.001
	The number of health services other than elective surgery which need by the participants									
	No services needed	30.2%	29.9%	39.9%	15.959	.043	9.2518	.000		
	One service	21.7%	27.7%	50.6%			10.45			
	Two services	15.4%	15.4%	69.2%			12.00		1.668	0.096
	Three services	0.0%	30.0%	70.0%			14.40		1.305	0.193
	Four services	0.0%	0.0%	100.0%			12.00		1.794	0.074
Absence of work during pandemic	go to work all the time	38.5%	26.6%	34.9%	46.369.	.000	8.70	.000		
	1 month absence	34.5%	39.7%	25.9%			8.1897		4.163	<0.001
	2 months absence	17.2%	24.1%	58.6%			11.19		4.726	<0.001
	3 or months absence	9.7%	27.4%	62.8%			11.61		3.882	<0.001
	The direct Cost effect of surgical deferred									
	Mild	23.0%	39.8%	37.2%	26.812	.000	8.8673	.000		
	Moderate	32.1%	40.7%	27.1%			9.7059			
	Severe	25.0%	68.8%	6.3%			11.87			
	The physical effect of surgical deferral									
	not affected physically	38.4%	25.4%	36.2%	23.121	.000	8.7288	.000		
	affected physically	17.2%	30.8%	52.0%			10.6878		1.332	0.184

Table 5: Anxiety score of patients with deferred operations

Discussion

The effect of COVID 19 on patients was not limited to medical complications. Our study indicates that patients with deferred operations were affected physically, psychologically, and economically. A large proportion of the Palestinian people suffer from poverty, and 52% of Palestinian families are obligated to access health services in government hospitals due to poverty. (36) The closure of these government hospitals during emergencies will give them no choice except to wait and suffer the implication of deferral. Therefore, the government health sector should offer additional efforts and resources to cope with the new crisis to reduce the negative effect on patients.

The number of health services that patients could not access could indicate how much the disease affects the patients. Usually, patients affected more will search for any way to get the surgery done. They could ask for a report or referral to finish their suffering or repeat the laboratory and radiological test to prove to the physician that they are in real need of not postponing their case management. On the other hand, the more services the patients need, the more severe conditions could eventually affect the patient physically. The relationship between the number of health services that could not be accessed and the physical disability was significant. The explanation of such a relationship is not clear, but its persistence should trigger more investigation. [22]

The direct physical effect of surgical deferral in the COVID-19 pandemic was closely related to orthopedic and neurosurgery operations. This type of operation could affect the patients' mobility if not done. Specifically, in an orthopedic operation that includes lower limbs, especially knee and hip arthritis, the patients' mobility could be severely affected due to deferral of such operations. Other orthopedic operations, such as upper limb operations, could affect the function of the patients but still with no effect on the patients' mobility. Overall, the combination of pain persistence and the limitation of range of motion of joints would affect the ability of the patient to do different physical tasks in-home or on the job. A study in the United Kingdom showed that at least 65% of patients would improve their physical and mechanical status following elective orthopedic operations, especially knee surgery. (64)

Elective neurosurgery operations usually involve spine operations (both lumbar and cervical spine). Deferral of such operations is expected to increase the duration of the magnitude of pain, paresthesia, or muscle weakness of one or more limbs. Hence, the deferral will affect the patients' mobility and possibly affect their physical hand function in everyday or job-related tasks. An odd ratio of 2.1 improvements in the physical status following spine operations inpatient whose disability before the operation reached 40.1%. (65) so deferring these operations will keep these patients with such disability at least if not increased with a longer duration of no management.

Age is related in many aspects to the physical deferral of the operations. Deferring Older people's operations (who usually suffer from back pain or joint pain) will affect them more than younger patients who usually undergo other operations such as lipoma, ingrowing toenails, or even peripheral nerve release. Older patients cannot cope with the physical limitations of their musculoskeletal diseases as their muscle power is weakened. In addition, a study showed that the elderly usually suffer poor sleep quality, which increases the physical disability of older people independent of their psychological status. (66) They tend to believe that physical disability due to their diseases is expected and affects them much more than younger patients with the same disease.

The psychological effect of the surgical deferral appears more clearly in anxiety than depression. Anxiety is expected to be seen as an acute psychological disorder, while depression would take a chronic effect. Several studies found that anxiety symptoms are more profound than depression among patients. (67, 68)

The absence of work during the pandemic could trigger the anxiety status easier than depression one. The absence of two months or more is enough to raise anxiety status, while at least three months are related to depression. The economic effect is an intermediate factor for the indirect psychological effects of surgical deferral. These findings are supported by the results of deferring total knee surgery due to the COVID-19 pandemic. (69)

Depression is closely related to the inability to access health services. Frustration from this inability would trigger depression and increase the feeling of disability. (69) The need for health services on its own is considered a shortage and could have a

psychological effect on the patient. Therefore, the inability to access them could be considered a double-bladed sword, triggering depression.

Being infected with COVID-19 during the time scheduled for operation will increase the fear inside the patients from COVID_19 itself. The fear of infecting relatives, the idea of deferring the surgery and the possible harm or pain that the patient could suffer till his postponed appointment, the fear of deferring the surgery, the fear of hospital admission due to COVID-19 infection, or the fear of death. All result in increasing the levels of anxiety. These interconnected causes are all compatible with what was found in studies on people's mental health during the COVID-19 pandemic. The severity of the psychological effect differs with different circumstances, especially the knowledge about the disease and its route of infection. Nevertheless, other factors such as quarantine, the unavoidable deferral of management, and the economic effect of the crisis all increase the level of depression and anxiety. (70, 71)

The higher abnormal anxiety and depression scores are present in 45-60 years old, as it is the working-age group; usually, they have substantial economic responsibilities, the cost of children's education, and family responsibilities. So deferring operation in this age segment will have more effect than older people (above 60 years old), who usually have less economic responsibility and more religious faith. (72) Studies found that in the COVID-19 pandemic, there are two types of psychological effect; fear of the infection and fear of disease complications in the end. These were more prominent in the younger people than the adult. (73, 74)

Emergency and crises might result from man-made (including conflict and war) and natural (infections, floods, and earthquakes). (75) The planning of crisis management at the world level, including the world health organization, should consider the collateral damage of the crisis. For example, in the COVID-19 crisis, the non-COVID-19 patient's health should be considered from the beginning to decrease the effect on their health. (75) The first period of crisis is always more challenging, but when things start to be clear, there should be a separation in the services offered to continue health services in a near-normal manner and fight the crisis. Separation is hard to do during a crisis, so pre-planning is a perfect way to avoid the harmful effect of the crisis.

Palestine has been under chronic conflict and emergency. The health system has built an adaptation strategy to cope with the acute emergency conflict crisis. During the COVID-19 pandemic, the crisis management committee took the lead in managing the situation. However, our study indicates that special consideration should be focused on the crisis management committee members and specialties'. This committee should include a multidisciplinary team, including psychologists, to minimize the psychological effect of the crisis's decisions. The empirical decision, which had stoppage of life aspects including elective health services, should be made on the minimal needed bases to prevent maximization of the psychological effect on people.

Conclusion:

Surgical deferral's physical and psychological effect on Palestinian patients during the COVID-19 pandemic was expected due to surgical deferral and pandemic psychological effects. Still, the health system should have several plans and coping mechanisms that minimize the effect of any crisis on the elective surgical schedule.

Declarations:

Ethical considerations

Ethical approval was obtained from the Master of Public Health Program Council.

Verbal consent was taken on the phone before sending the link for the survey. The first page of the survey contains written informed consent that, after explaining the survey, states participants' right to stop participating at any time point.

Data are stored with revealing the identity of the patients. Data will be stored on a local hard disk for three months following the submission of the article.

Consent for publication: Not applicable

Availability of data and materials: Tables are included in the manuscript; raw data is available with the author.

Competing interest:

The author declares that there is no conflict of interest.

Funding: No fund was received by any of the authors.

Authors contribution

MA has conceptualized the paper, conducted the fieldwork and data analysis, and prepared the first draft of the manuscript. NMEAR provided support during the conceptualization, data collection, analysis, and manuscript preparation.

Acknowledgments

We would like to acknowledge Ms. Rula Ghandour for the statistical support.

Chapter IV: Discussion

Objective Achieved

Article one: The change in the number of patients visiting clinics corresponded to the hypothesis in article one. Clinic patient numbers fluctuated throughout the pandemic and were related to the COVID-19 lockdown. The study determined which clinics had the greatest effect on patients as a result of the lockdown, which clinics continued to provide services during the lockdown, and the general trends in patient attendance at clinics. The study clarified the effect of the COVID-19 lockdown on the number, type, and percentages of operations conducted.

Article two: According to the study, administrative orders and fear of the COVID-19 were the primary reasons for operation postponement. It established a link between surgical postponement due to the COVID-19 pandemic and its physical, economic, and psychological consequences. It established a connection between various types of effects. Consistent with the hypothesis, the physical and psychological consequences of COVID-19 lockdown were significant and strongly related to surgical deferral and clinic closure.

The summary of the main findings of both studies are:

- ✓ There is a decrease in the number of patients attending hospital clinics, although the decrease varies by department. This reduction had no effect on the distribution of age or sex. The trend in the reduction of clinic patient at the Palestine Medical Complex (Center) is distinct from that of other hospitals. The magnitude of the reduction is primarily determined by the country's lockdown and administrative orders issued by the Ministry Of Health.
- ✓ Operation numbers were reduced in the same way that clinic patient numbers were reduced. However, the type of operations changed; the share of intermediate operations increased at the expense of minor operations.
- ✓ COVID-19 infection or quarantine kept 47.2% of workers from reporting to work. In the pandemic, 16.1 percent of patients experienced severe economic consequences as a result of surgical deferral. Neurosurgery was the most cost effective and physically affecting procedure, followed by orthopedic surgery. Anxiety was significantly more elevated than depression in patients with postponed operations.

Discussion:

In addition to what was mentioned in both articles, the following things will be emphasized:

Shortly after the COVID-19 pandemic started, the study was done. Most of the effects that were looked at were short-term, and the design of the study put more emphasis on the themes in the articles than on the long-term effects.

According to the hospital patients' study findings, a two-part system capable of mitigating the pandemic's effect on people has been identified: an administrative and political system, as well as a hospital system.

To manage the covid-19 epidemic efficiently at the administrative and political levels, it is vital to evaluate the entire system, including law, readiness, communication, and policymaker formation.

Hospital-level planning should include measures to mitigate the first shock, capacity increase during the epidemic, decentralized capacity, and the use of alternative tools.

The organizational structure of the entire system is characterised by lack of preparedness was one of the most serious issues experienced during the COVID-19 pandemic. The interdisciplinary team should develop pre-planned responses to the pandemic, bringing together a varied variety of specialists and policymakers to guarantee that all necessary practical planning is completed in advance. This strategy should be periodically reviewed and evaluated. Sharing plans with neighbouring countries or countries in comparable conditions may assist the country in avoiding costly blunders. This concept was piloted on a lesser scale in Rajasthan, India, and was deemed highly successful(17).

Law and non-traditional tools: While regulation is an essential component of the system, it is also crucial to promote the use of complementary and alternative health resources in hospitals. Legislation governing patient triage, challenging patient prioritization decisions, and the development of new technology such as telemedicine should be enacted prior to the onset of the crisis. Prioritizing legislation enables decision-making to be expedited, protects health-care decision-makers, and avoids the

waste of critical time and resources. Patients and caregivers alike benefit from it because it alleviates their anxiety about an unpredictable future (76).

The degree of readiness: The early phases of resource reallocation and capacity building should be incorporated into existing national and international frameworks for responding to pandemic crises. They should, however, be considered as temporary solutions that will enable the implementation of a more permanent solution later. Thus, the permanent action was carried out in accordance with a previously planned strategy. It is recommended that the permanent application be started concurrently with the temporary one(77).

Communication: Patients will experience the pandemic's physical, psychological, and economic implications in a number of ways. As a result, enhanced communication and capability within the health care system should assist protect patients from such outcomes. PMC encountered this issue in January 2021. Unfortunately, no official report was produced to document this effect in Palestine; as a result, it is vital to increase reporting in Palestine. "The appropriate message delivered by the appropriate person at the appropriate time has the ability to save lives." Barbara Reynolds, a senior advisor for crisis and risk communication, put it this way (78). Both internal communication (between the Ministry of Health, hospital directors, and hospital staff) and outward communication (between the political level, the Ministry of Health, and the general public) should be facilitated. It is critical to maintain an unobstructed communication route. It is vital to ascertain who has the authority to make statements or regulations. To save time, modern communication methods should be used instead of outdated ones (such as hand delivery of orders). Public communication should be concise, thorough, and transparent in all aspects(76).

Policymaker formation: A multidisciplinary team should develop pre-prepared plans to address the pandemic, incorporating a varied variety of professionals and policymakers to guarantee that all practical planning is carried out effectively. This strategy should be periodically reviewed and evaluated. Sharing plans with neighbouring countries or countries in comparable conditions may assist the country in avoiding costly blunders. This concept was piloted on a lesser scale in Rajasthan, India, and was deemed highly successful (79). This team should be operational at all times, with the highest level of activity occurring during times of crisis.

The initial shock preparation: It should involve frequent crisis management training that can be conducted during regular business hours. Each hospital's facilities, drugs, equipment, and personnel should be prepared in the case of a sudden outbreak of tragedy. Preparations should include detailed plans for resource reallocation, interim suspension of some health services, vulnerable group protection, and conversion to long-term solutions. Prior to the start of the medical system, key workers and their roles should be identified, documented, and extensively publicized(76).

Capacity growth during a pandemic: It should be prepared in advance of the anticipated capacity expansion. Capacity should be calculated in terms of physical space, equipment, and manpower. Prior understanding of capacity growth enables the successful and efficient management of a number of scenarios. Separate centers for the treatment of pandemic patients have been demonstrated to be highly useful in terms of minimizing collateral damage to other patients. When confronted with a crisis of this magnitude, it would be prudent to divide routine and chronic health care from emergency services. This is also corroborated by information emanating from India (79). Planning for finishing scheduled operations should begin immediately upon the declaration of the pandemic, and planning for compensating for procedures that have been postponed should begin immediately upon the declaration of the epidemic(76).

Decentralization has been shown to be beneficial in terms of resource management and minimizing adverse effects on patient health. Additionally, introducing decentralization into daily activities enables the development of more accessible pandemic-related applications (47). The reduction in the number of patients who visited the hospitals during the COVID-19 lockdown was general. However, the uniform pattern between hospitals and the hospital in the center showed how far the centralization of health services could magnify the effect of the administrative orders. The pandemic affected each governorate differently. The government responded with different executive orders for each governorate to decrease the adverse effects on the economic life of the people. Hospital administrators must be well trained to ensure the successful implementation of decentralization plans. Identification of local supporters for each hospital is a vital component of a successful decentralization approach (including the governorate, the security forces, the civil defense, and the local community). Prior to implementing decentralized orders, their bounds should be

determined. It is critical to continue providing help to local management from the top down. When situations are difficult to control, vulnerable groups such as pediatric surgical patients and cancer patients should be addressed differently than other departments. Patients in this category will suffer more than others, and postponing health care services will increase the likelihood of adverse repercussions (80).

Adaptation and implementation of new tools are necessary. Clinics should be housed in health institutions, telemedicine should be adopted, and cancer and pediatric centers should be built. Private hospitals should be rented in order to maintain routine health services(76).

Methodological Considerations

Article one:

Record review is one of the methods requiring less effort for conduct. It gives the power to examine a large sample with minimal money and time. The recall bias is minimal. Its limitations include the limitation or shortage of data, the inappropriate filing system, and the incorrect data record(81). Our study included clinic records for reviewing; thus, it could not reflect changes that occurred among emergency patients and could not reflect other options patients followed to compensate for this lockdown. Nevertheless, this record review gave us an essential image of the situation in the Palestinian health system during the pandemic and the possible effect to be studied in article two.

An important point regarding record data during the COVID-19 pandemic is using data with well-developed formulas for projecting needs and helping formulate policies to manage the crisis(82). Unfortunately, in Palestine, this data was not utilized during the formulation of policies.

Article two:

Online survey used. The questionnaire was built upon validated Arabic tools. The psychological tools were not built around the Palestinian context. However, it is an Arabic version validated and tested and found useful. The online survey provided an easy and cost-effective way to collect data in the pandemic era. There are fewer errors while entering data on a computer from paper. It gives the ability to perform a large study at country or international levels. Still, an online survey has no interviewers, limiting the ability to clarify questions for each person per need(83). The tool covered people with deferred elective operations; we have limitations in assessing emergency patients' operations deferral. We are limited in knowing the duration of deferral, the times of deferral, and the result of whether the patient could undergo the operation later.

Conclusion

Covid-19 has affected the number of patients seeking outpatients' services.

Although some services were affected by the pandemic, the hospitals in the West Bank managed successfully to keep obstetrics and gynaecology services as usual and serve patients in need of primary or intermediate operations. In addition, the system allowed context-specific policies that are sensitive to patients' needs and hospital capacities.

Surgical deferral's physical and psychological effect on Palestinian patients during the COVID-19 pandemic was expected due to surgical deferral and pandemic psychological effects. Still, the health system should have several plans and coping mechanisms that minimize the effect of any crisis on the elective surgical schedule.

Ethical consideration

Article one: Ethical approval was obtained from the Master of Public Health Program Council. Using record data without patients' consent for research could be considered unethical in some countries.

Article two: Ethical approval was obtained from the Master of Public Health Program Council. Verbal consent was taken on the phone before sending the link for the survey. The first page of the survey contains written informed consent that, after explaining the survey, states participants' right to stop participating at any time point. Data are stored, obscuring the identity of the patients. Data will be stored on a local hard disk for three months following the submission of the article. Consent for publication: Not applicable

Recommendation

- 1) Patient-based prioritization: Prioritize operation during pandemic according to age and comorbidities of patients to minimize the physical, psychological, and economic effects of surgical deferral.
- 2) Deferred operations with a higher physical and psychological effect should be protected from differing until the end. So, decrease the collateral damage of resources shifting by keeping the worst consequence to the last resort.
- 3) Studying the economic effect of each health procedure deferral will aid in deciding which one should be maintained and which could be stopped earlier.
- 4) Equity-based prioritization: Considering being in a continuous war in Palestine, creating a priority system in Palestine is advised. This system will give each patient a score according to these different factors and could be used in crisis and pandemic situations to help protect the most vulnerable from the negative effect of operation deferral or health service suspension.
- 5) The Ministry of health is advised to follow decentralization rules. Decentralization of health services could decrease the economic effect of surgical deferral. Decrease inequity in medical services, especially highly specialized operations such as neurosurgery and arthroplasty.
- 6) Fear of the COVID-19 pandemic and patients was one of the significant causes of deferring health services seeking. Following the initial period of the pandemic, the correct action was to create COVID-19 dedicated hospitals. This action will accumulate more experience for medical teams to deal with the new pandemic. The resources for managing the COVID-19 patient will be targeted and focused without wasting valuable resources. The non-COVID-19 patients will receive health services without deferring and avoid the adverse effects.
- 7) Pre-planning before the next crisis and preparing all logistics in advance will eventually result in better resource utilization, fewer collateral effects on people, and productive health system occupancy.
- 8) The Ministry of health is encouraged to implement the two-tiered plan suggested in the discussion to reduce the pandemic's impact. This strategy should be continually revised in accordance with the WHO guidelines on which it is based.

- 9) Finally, we recommend further investigation of the economic effect of the pandemic on Palestinian patients; also, we recommend expanding the study of the pandemic effect to include all Palestinian patients attending governmental and private hospitals.

References

1. Lei S, Jiang F, Su W, Chen C, Chen J, Mei W, et al. Clinical characteristics and outcomes of patients undergoing surgeries during the incubation period of COVID-19 infection. *EClinicalMedicine*. 2020;21:100331.
2. Al-Kulabi A, Mansour MA, Thahir A. The orthopaedic experience of COVID-19: A literature review. *Journal of Perioperative Practice*. 2021;31(3):102-7.
3. Prachand VN, Milner R, Angelos P, Posner MC, Fung JJ, Agrawal N, et al. Medically-necessary, time-sensitive procedures: a scoring system to ethically and efficiently manage resource scarcity and provider risk during the COVID-19 pandemic. *Journal of the American College of Surgeons*. 2020.
4. Harper CA, Satchell LP, Fido D, Latzman RD. Functional fear predicts public health compliance in the COVID-19 pandemic. *International journal of mental health and addiction*. 2020.
5. DeJong C, Katz MH, Covinsky K. Deferral of Care for Serious Non-COVID-19 Conditions: A Hidden Harm of COVID-19. *JAMA Internal Medicine*. 2021;181(2):274-.
6. Manzia TM, Angelico R, Parente A, Muiesan P, Tisone G, Al Alawy Y, et al. Global management of a common, underrated surgical task during the COVID-19 pandemic: Gallstone disease - An international survey. *Annals of Medicine and Surgery*. 2020.
7. Mantica G, Riccardi N, Terrone C, Gratarola A. Non-COVID-19 visits to emergency departments during the pandemic: the impact of fear. *Public Health*. 2020;183:40-1.
8. Lazzerini M, Barbi E, Apicella A, Marchetti F, Cardinale F, Trobia G. Delayed access or provision of care in Italy resulting from fear of COVID-19. *The Lancet Child & Adolescent Health*. 2020;4(5):e10-e1.
9. Chanchlani N, Buchanan F, Gill PJ. Addressing the indirect effects of COVID-19 on the health of children and young people. *CMAJ*. 2020.
10. Rosenbaum L. The Untold Toll — The Pandemic's Effects on Patients without Covid-19. *New England Journal of Medicine*. 2020;382(24):2368-71.
11. Crawley E, Loades M, Feder G, Logan S, Redwood S, Macleod J. Wider collateral damage to children in the UK because of the social distancing measures designed to reduce the impact of COVID-19 in adults. *BMJ Paediatr Open*. 2020;4(1):e000701-e.
12. Solis E, Hameed A, Brown K, Pleass H, Johnston E. Delayed emergency surgical presentation: impact of corona virus disease (COVID-19) on non-COVID patients. *ANZ J Surg*. 2020;10.1111/ans.16048.
13. Ciacchini B, Tonioli F, Marciano C, Faticato MG, Borali E, Pini Prato A, et al. Reluctance to seek pediatric care during the COVID-19 pandemic and the risks of delayed diagnosis. *Italian Journal of Pediatrics*. 2020;46(1):87.
14. Al-Jabir A, Kerwan A, Nicola M, Alsafi Z, Khan M, Sohrabi C, et al. Impact of the Coronavirus (COVID-19) pandemic on surgical practice - Part 1. *Int J Surg*. 2020;79:168-79.
15. McBride KE, Brown KGM, Fisher OM, Steffens D, Yeo DA, Koh CE. Impact of the COVID-19 pandemic on surgical services: early experiences at a nominated COVID-19 centre. *ANZ J Surg*. 2020;90(5):663-5.
16. Prachand VN, Milner R, Angelos P, Posner MC, Fung JJ, Agrawal N, et al. Medically Necessary, Time-Sensitive Procedures: Scoring System to Ethically and Efficiently Manage Resource Scarcity and Provider Risk During the COVID-19 Pandemic. *Journal of the American College of Surgeons*. 2020;231(2):281-8.
17. Ng JJ, Ho P, Dharmaraj RB, Wong JCL, Choong AMTL. The global impact of COVID-19 on vascular surgical services. *Journal of Vascular Surgery*. 2020;71(6):2182-3.e1.
18. Collaborative C. Elective surgery cancellations due to the COVID-19 pandemic: global predictive modelling to inform surgical recovery plans. *British Journal of Surgery*. 2020.

19. Ratushny V, Moore K, Do D. Evaluation of Public Interest in Mohs Surgery and Other Elective Surgical Procedures During the COVID-19 Pandemic. *Dermatol Surg.* 2021;47(7):931-3.
20. Luizeti BO, Perli VAS, da Costa GG, Eckert IdC, Roma AM, da Costa KM. Impact of the COVID-19 pandemic on surgical procedures in Brazil: a descriptive study. *medRxiv.* 2021:2021.03.17.21253801.
21. Myles PS, Maswime S. Mitigating the risks of surgery during the COVID-19 pandemic. *The Lancet.* 2020.
22. Arimappamagan A, Vilanilam G, Pandey P. Is Elective Neurosurgery Justified During COVID-19 Pandemic? *Neurology India.* 2021;69(1):21-5.
23. Stephanie C, David T, Candice L, Tony W, Kenneth L. Psychological Impact of Cancellation of Elective Surgeries for Ophthalmic Patients During COVID-19 Pandemic. *Research Square.* 2021.
24. Sequeira SB, Novicoff WM, McVey ED, Noble DM, Harb MA, Taliaferro JP, et al. Patient Perspectives on the Cancellation of Elective Primary Hip and Knee Arthroplasty During the COVID-19 Pandemic. *JAAOS - Journal of the American Academy of Orthopaedic Surgeons.* 2021;Publish Ahead of Print:10.5435/JAAOS-D-20-00765.
25. Knebel C, Ertl M, Lenze U, Suren C, Dinkel A, Hirschmann MT, et al. COVID-19-related cancellation of elective orthopaedic surgery caused increased pain and psychosocial distress levels. *Knee Surgery, Sports Traumatology, Arthroscopy.* 2021.
26. Byrnes ME, Brown CS, De Roo AC, Corriere MA, Romano MA, Fukuhara S, et al. Elective Surgical Delays Due to COVID-19: The Patient Lived Experience. *Medical Care.* 2021;59(4):288-94.
27. Rodríguez R, Althabe M, Krynski M, Montonati M, Pílan ML, Desocio B, et al. Impact of the COVID-19 pandemic on a pediatric cardiovascular surgery program of a public hospital from Argentina. *Arch Argent Pediatr.* 2021;119(4):266-76.
28. Jain A, Jain P, Aggarwal S. SARS-CoV-2 Impact on Elective Orthopaedic Surgery: Implications for Post-Pandemic Recovery. *JBJS.* 2020;102(13):e68.
29. Carr A, Smith JA, Camaradou J, Prieto-Alhambra D. Growing backlog of planned surgery due to covid-19. *BMJ.* 2021;372:n339.
30. OCHA OPT. Gaza Strip electricity supply. United Nations Office for the Coordination of Humanitarian Affairs <https://www.ochaopt.org/page/gaza-strip-electricity-supply> (last accessed 1 December 2020). 2020.
31. Authority P. Palestine's COVID-19 response plan. 2020.
32. AlKhaldi M, Kaloti R, Shella D, Al Basuoni A, Meghari H. Health system's response to the COVID-19 pandemic in conflict settings: policy reflections from Palestine. *Global public health.* 2020;15(8):1244-56.
33. Casale M. COVID-19: Can this crisis be transformative for global health? *Global Public Health.* 2020;15(11):1740-52.
34. Organization WH. Operational considerations for case management of COVID-19 in health facility and community: interim guidance, 19 March 2020. World Health Organization; 2020.
35. AlKhaldi M, Abed Y, Pfeiffer C, Haj-Yahia S, Alkaiyat A, Tanner M. Understanding the concept and importance of the health research system in Palestine: a qualitative study. *Health research policy and systems.* 2018;16(1):1-16.
36. Giacaman R, Khatib R, Shabaneh L, Ramlawi A, Sabri B, Sabatinelli G, et al. Health status and health services in the occupied Palestinian territory. *The Lancet.* 2009;373(9666):837-49.
37. Health PMo. Services Map 2022 [cited 2022 4/3/2022]. Available from: <https://site.moh.ps/index/Map/Language/ar>.
38. Health MO. Health Annual Report, Palestine. 2020.

39. Statistics PCBo. Impact of COVID-19 on the Palestinian Households' Socio-Economic Conditions, 2020 2020 [cited 2021 3/3/2021]. Available from: https://pcbs.gov.ps/site/lang_en/1267/default.aspx?lang=en.
40. Coons SJ, Alabdulmohsin SA, Draugalis JR, Hays RD. Reliability of an Arabic version of the RAND-36 Health Survey and its equivalence to the US-English version. *Medical care*. 1998;428-32.
41. Statistics PCBo. Palestinian Family Survey 2010 2010 [updated 20/1/2020. Available from: https://www.pcbs.gov.ps/pcbs-metadata-en-v4.3/index.php/catalog/469/data_dictionary.
42. Terkawi A, Tsang S, AlKahtani G, Hussain S, Musaed S, AlZoraigi U, et al. Development and validation of Arabic version of the Hospital Anxiety and Depression Scale. *Saudi Journal of Anesthesia*. 2017;11:11-8.
43. Rojoub A. Corona...Palestinian lockdown Anodal Agency2020 [Available from: <https://www.aa.com.tr/ar/%D8%A7%D9%84%D8%AF%D9%88%D9%84-%D8%A7%D9%84%D8%B9%D8%B1%D8%A8%D9%8A%D8%A9/%D9%83%D9%88%D8%B1%D9%88%D9%86%D8%A7-%D9%81%D9%84%D8%B3%D8%B7%D9%8A%D9%86-%D8%AA%D8%B9%D9%84%D9%86-%D8%A7%D9%84%D8%A5%D8%BA%D9%84%D8%A7%D9%82-%D8%A7%D9%84%D8%B4%D8%A7%D9%85%D9%84-%D8%A8%D8%A7%D9%84%D8%B6%D9%81%D8%A9-%D8%A7%D9%84%D8%BA%D8%B1%D8%A8%D9%8A%D8%A9-5-%D8%A3%D9%8A%D8%A7%D9%85/2175024>.
44. Health Mo. outpatient clinic opening protocol 2020 [cited 2021 3/10/2021]. Available from: <https://www.facebook.com/mohps/photos/pcb.2854667007992492/2854666904659169>.
45. Health PMo. List of Annexes Report. 2021 2022.
46. Health PMo. Annual Health Report. 2021 2022.
47. Shringare A, Fernandes S. COVID-19 Pandemic in India Points to Need for a Decentralized Response. *State and Local Government Review*. 2020;52(3):195-9.
48. Abdulla DM, Abdulla BMO, Liamputtong P. Psychological response of children to home confinement during COVID-19: A qualitative arts-based research. *International journal of social psychiatry*. 2020:0020764020972439.
49. Salsi G, Seidenari A, Diglio J, Bellussi F, Pili G, Bellussi F. Obstetrics and gynecology emergency services during the coronavirus disease 2019 pandemic. *American journal of obstetrics & gynecology MFM*. 2020;2(4):100214.
50. Fund UNP. The impact of COVID-19 on sexual and reproductive, including maternal health in Palestine: United Nations Population Fund; 2020 [cited 2020 07/04/2020]. Available from: https://www.un.org/unispal/wp-content/uploads/2020/04/HEALTCLUSTERRPT_170420.pdf.
51. Fund UNP. Sexual & reproductive health: United Nations Population Fund; 2020 [cited 2022 07/01/2022]. Available from: <https://palestine.unfpa.org/en/node/22582>.
52. Ralli M, Mannelli G, Bonali M, Capasso P, Guarino P, Iannini V, et al. Impact of COVID-19 on otolaryngology in Italy: a commentary from the COVID-19 task force of the Young Otolaryngologists of the Italian Society of Otolaryngology. *Eur Rev Med Pharmacol Sci*. 2020;24(13):7516-8.
53. Kurtzman JT, Moran GW, Anderson CB, McKiernan JM. A novel and successful model for redeploying urologists to establish a closed intensive care unit within the emergency department during the COVID-19 crisis. *Wolters Kluwer Philadelphia, PA*; 2020.
54. Rahim HFA, Wick L, Halileh S, Hassan-Bitar S, Chekir H, Watt G, et al. Maternal and child health in the occupied Palestinian territory. *The Lancet*. 2009;373(9667):967-77.

55. GPnotebook. grades of complexity of surgery (classification according to NICE) 2018 [cited 2021 14/9/2021]. Available from: <https://gpnotebook.com/simplepage.cfm?ID=x20160504175310544321>.
56. Al-Jabir A, Kerwan A, Nicola M, Alsafi Z, Khan M, Sohrabi C, et al. Impact of the Coronavirus (COVID-19) pandemic on surgical practice - Part 2 (surgical prioritisation). *Int J Surg*. 2020;79:233-48.
57. Abolghasem Gorgi H, Jafari M, Shabanikiya H, Seyedin H, Rahimi A, Vafaei-Najar A. Hospital surge capacity in disasters in a developing country: Challenges and strategies. *Trauma Monthly*. 2017;22(5).
58. Young R. Some criteria for making decisions concerning the distribution of scarce medical resources. *Theory and Decision*. 1975;6(4):439-55.
59. Supady A, Curtis JR, Abrams D, Lorusso R, Bein T, Boldt J, et al. Allocating scarce intensive care resources during the COVID-19 pandemic: practical challenges to theoretical frameworks. *The Lancet Respiratory Medicine*. 2021;9(4):430-4.
60. Supady A, Badulak J, Evans L, Curtis JR, Brodie D. Should we ration extracorporeal membrane oxygenation during the COVID-19 pandemic? *The Lancet Respiratory Medicine*. 2021;9(4):326-8.
61. Montmeat D, Gard C, Raux M, Constantin J-M, Tilleul P. Shortage of sedatives and neuromuscular blockers during COVID-19 pandemic: The result of an overstocking procedure in French hospitals? *Anaesth Crit Care Pain Med*. 2020;39(5):585-6.
62. Boškoski I, Gallo C, Wallace MB, Costamagna G. COVID-19 pandemic and personal protective equipment shortage: protective efficacy comparing masks and scientific methods for respirator reuse. *Gastrointestinal Endoscopy*. 2020;92(3):519-23.
63. Pfeiffer MV, Leader PT. Vulnerability and the international health response in the West Bank and Gaza Strip. *An Analysis of Health and the Health Sector Jérusalem*, Organisation mondiale de la Santé. 2001.
64. Yang SS, Nisonson B. Arthroscopic surgery of the knee in the geriatric patient. *Clin Orthop Relat Res*. 1995(316):50-8.
65. Skolasky RL, Wegener ST, Maggard AM, Riley LHI. The Impact of Reduction of Pain After Lumbar Spine Surgery: The Relationship Between Changes in Pain and Physical Function and Disability. *Spine*. 2014;39(17):1426-32.
66. Chien M-Y, Chen H-C. Poor Sleep Quality is Independently Associated with Physical Disability in Older Adults. *Journal of Clinical Sleep Medicine*. 11(03):225-32.
67. Meneghetti CC, Guidolin BL, Zimmermann PR, Sfoglia A. Screening for symptoms of anxiety and depression in patients admitted to a university hospital with acute coronary syndrome. *Trends in psychiatry and psychotherapy*. 2017;39:12-8.
68. Goh AC, Wong S, Zaroff JG, Shafaei N, Lundstrom RJ. Comparing anxiety and depression in patients with Takotsubo stress cardiomyopathy to those with acute coronary syndrome. *Journal of cardiopulmonary rehabilitation and prevention*. 2016;36(2):106-11.
69. Cisternas AF, Ramachandran R, Yaksh TL, Nahama A. Unintended consequences of COVID-19 safety measures on patients with chronic knee pain forced to defer joint replacement surgery. *Pain Reports*. 2020;5(6).
70. Fancourt D, Steptoe A, Bu F. Trajectories of anxiety and depressive symptoms during enforced isolation due to COVID-19 in England: a longitudinal observational study. *The Lancet Psychiatry*. 2021;8(2):141-9.
71. Rosen Z, Weinberger-Litman SL, Rosenzweig C, Rosmarin DH, Muennig P, Carmody ER, et al. Anxiety and distress among the first community quarantined in the US due to COVID-19: Psychological implications for the unfolding crisis. 2020.
72. Fernández-Ardèvol M, Ivan L, editors. Why age is not that important? An ageing perspective on computer anxiety. *International Conference on Human Aspects of IT for the Aged Population*; 2015: Springer.

73. Solomou I, Constantinidou F. Prevalence and predictors of anxiety and depression symptoms during the COVID-19 pandemic and compliance with precautionary measures: Age and sex matter. *International journal of environmental research and public health*. 2020;17(14):4924.
74. Varma P, Junge M, Meaklim H, Jackson ML. Younger people are more vulnerable to stress, anxiety and depression during COVID-19 pandemic: A global cross-sectional survey. *Progress in Neuro-Psychopharmacology and Biological Psychiatry*. 2021;109:110236.
75. Aliyu A. Management of disasters and complex emergencies in Africa: The challenges and constraints. *Annals of African Medicine*. 2015;14(3):123.
76. World Health Organization ROftEM. Strengthening hospital resilience in the Eastern Mediterranean Region: a policy paper on facility-level preparedness 2022 [updated 1/4/2022; cited 2022 3/5/2022]. Available from: <https://apps.who.int/iris/handle/10665/352841>.
77. Gust ID, Hampson AW, Lavanchy D. Planning for the next pandemic of influenza. *Reviews in medical virology*. 2001;11(1):59-70.
78. Eldridge CC, Hampton D, Marfell J. Communication during crisis. *Nursing Management*. 2020;51(8):50-3.
79. Elhence A, Sureka B, Garg MK, Bhardwaj P, Kanchan T, Sinha A, et al. Preparing for a COVID-19 pandemic: Redefining roles of multidisciplinary team in a large tertiary hospital in Rajasthan. *Journal of Family Medicine and Primary Care*. 2020;9(11):5439.
80. Tsamakis K, Gavriatopoulou M, Schizas D, Stravodimou A, Mougkou A, Tsiptsios D, et al. Oncology during the COVID-19 pandemic: challenges, dilemmas and the psychosocial impact on cancer patients. *Oncology letters*. 2020;20(1):441-7.
81. Sarkar S, Seshadri D. Conducting Record Review Studies in Clinical Practice. *Journal of clinical and diagnostic research : JCDR*. 2014;8:JG01-4.
82. Manca D, Caldiroli D, Storti E. A simplified math approach to predict ICU beds and mortality rate for hospital emergency planning under Covid-19 pandemic. *Computers & Chemical Engineering*. 2020;140:106945.
83. Regmi PR, Waithaka E, Paudyal A, Simkhada P, van Teijlingen E. Guide to the design and application of online questionnaire surveys. *Nepal J Epidemiol*. 2016;6(4):640-4.

Annexes

Annex I: Characteristics of the study population

Variable	Items	Frequency (total number 398)	Percentage
Age groups	15-30y	83	20.9
	31-45y	113	28.4
	46-60y	144	36.2
	>60y	58	14.6
Gender	Female	202	50.8
	Male	196	49.2
Hospital	Centre Hospital	138	34.7
	North Hospital	141	35.4
	South Hospital	119	29.9
Residence in West Bank	North	151	37.9
	Centre	114	28.6
	South	133	33.4
Type of surgery deferred	ENT	48	12.1
	Gynaecology	38	9.5
	Maxillofacial surgery	4	1.0
	Neuro	64	16.1
	Ophthalmology	10	2.5
	Orthopaedic	136	34.2
	Scopes	29	7.3
	General Surgery	42	10.6
	Urology	22	5.5
	Vascular surgery	5	1.3
No. of comorbidities	No comorbidities	253	63.6
	1 comorbidity	72	18.1
	2 comorbidities	36	9.0
	3 comorbidities	26	6.5
	4 comorbidities	10	2.5
	5 comorbidities	1	0.3

COVID-19 infection	Yes, At the time of operation deferred	34	8.5
	Yes, at the time other than operation deferral time	139	34.9
	No	225	56.5
No. of health services that could not be accessed by the deferred operation patients	Accessed all other health services	278	69.8
	1 health services	83	20.9
	2 health services	26	6.5
	3 health services	10	2.5
	4 health services	1	0.3
Duration of absence from work during the COVID-19 pandemic	No	169	42.5
	1 month	58	14.6
	2 months	58	14.6
	3 months or more	113	28.4
Causes of absence from work	Administrative orders	61	26.6
	COVID-19 infection or quarantine	108	47.2
	Disease (other than COVID-19)	60	26.2
Cost of transportation due to surgery deferral*	Less than 100 NIS	126	31.7
	100-200 NIS	138	34.6
	200-300 NIS	78	19.6
	More than 300 NIS	56	14.1
Cost of medications due to surgery deferral*	Less than 100 NIS	268	67.3
	100-200 NIS	69	17.3
	200-300 NIS	19	4.8
	More than 300 NIS	42	10.6
Anxiety scale (HAAD)*	Normal	106	26.6
	Borderline	113	28.4
	Abnormal	179	45.0
Depression scale (HAAD)	Normal	126	31.7
	Borderline	154	38.7
	Abnormal	118	29.6
Physical affection of patient due to surgical deferral	No Effect	177	44.5
	Minimal Effect	113	28.4
	Moderate Effect	87	21.9
	Severe Effect	21	5.3

	N		Mean	Median	Std. Deviation	Minimum	Maximum	Percentiles		
	Valid	Missing						25	50	75
Age	398	0	45.01	46.00	14.593	18	78	34	46	55.25
Depression scale	398	0	8.9347	9.0000	4.47616	0	21	6	9	11
Anxiety scale	398	0	9.8166	10.0000	4.73255	0	21	7	10	12
Physical effect due to surgical deferral	398	0	11.1382	10.0000	9.72744	0	34	0	10	19

Annex II: Economic effect of surgery deferral

Variable	Item	Direct cost impact on participants			Pearson Chi-Square	P-value
		Mild	moderate	Severe		
Age groups	15-30y	50.6%	42.2%	7.2%	42.397	.000
	31-45y	31.9%	59.3%	8.8%		
	46-60y	17.4%	59.7%	22.9%		
	>60y	17.2%	56.9%	25.9%		
Gender	Female	29.7%	54.5%	15.8%	.348 ^a	.840
	Male	27.0%	56.6%	16.3%		
Hospital of scheduled operation	Centre Hospital	26.1%	52.9%	21.0%	9.159	.057
	North Hospital	25.5%	56.7%	17.7%		
	South Hospital	34.5%	57.1%	8.4%		
Residence in West Bank	North	23.8%	55.6%	20.5%	5.517	.238
	Centre	30.7%	57.9%	11.4%		
	South	31.6%	53.4%	15.0%		
Type of operation	Subspeciality	38.2%	53.9%	7.9%	47.948 ^a	.000
	Gynaecology	39.5%	50.0%	10.5%		
	Neurosurgery	3.1%	68.8%	28.1%		
	Orthopaedic	27.2%	48.5%	24.3%		
	General Surgery	35.2%	62.0%	2.8%		
No. of comorbidities	None	35.6%	51.4%	13.0%	19.258	.001
	One	15.3%	65.3%	19.4%		
	Two or more	16.4%	60.3%	23.3%		
Covid-19 infection regarding the time of scheduled operation	Did not infected	22.4%	59.2%	18.4%	4.686	.321
	Infected in other time than surgery time	29.7%	55.7%	14.7%		
	Infected during surgery time	37.0%	40.7%	22.2%		
The number of health services other than elective surgery which need by the participants	No services needed	31.3%	56.1%	12.6%	20.255	.009
	One service	24.1%	56.6%	19.3%		
	Two services	11.5%	50.0%	38.5%		
	Three services	30.0%	50.0%	20.0%		
	Four services	0%	0%	100.0%		
Absence of work during pandemic	go to work all the time	34.9%	50.9%	14.2%	21.480	.002
	1 month absence	31.0%	60.3%	8.6%		
	2 months absence	29.3%	62.1%	8.6%		
	3 or months absence	16.8%	56.6%	26.5%		
Physical impact of surgical deferral	not affected physically	40.7%	53.7%	5.6%	38.712	.000
	affected physically	18.6%	57.0%	24.4%		

Annex III: Physical effect of surgical deferral

Variable	Item	Physical impact of deferring surgery		Pearson Chi-Square	p-value	Mean score	p-value	coefficient	p-value
		No effect	Affected						
Age groups	15-30y	71.1 %	28.9%	52.625	.000	1.2892	.000	.123	.001
	31-45y	54.9 %	45.1%			1.4513			
	46-60y	29.9 %	70.1%			1.7014			
	>60y	22.4 %	77.6%			1.7759			
Gender	Female	48.0 %	52.0%	2.090	.148	1.5198	.149		
	Male	40.8 %	59.2%			1.5918			
Hospital	Centre Hospital	38.4 %	61.6%	5.596 ^a	.061	1.6159	.061		
	North Hospital	43.3 %	56.7%			1.5674			
	South Hospital	52.9 %	47.1%			1.4706			
Residence in West Bank	North	40.4 %	59.6%	1.655	.437	1.5960	.439		
	Centre	46.5 %	53.5%			1.5351			
	South	47.4 %	52.6%			1.5263			
Type of operation	Subspecialty surgery	76.4 %	23.6%	123.471	.000	1.2360	.000	.155	.900
	Gynecology	52.6 %	47.4%			1.4737		2.817	.066
	Neurosurgery	4.7%	95.3%			1.9531		12.245	.000
	Orthopedic	25.0 %	75.0%			1.7500		9.506	.000
	General Surgeries	73.2 %	26.8%			1.2676			
No. of comorbidities	None	53.8 %	46.2%	25.712	.000	1.4625	.000	0.084	.934
	One	33.3 %	66.7%			1.6667			
	Two or more	23.3 %	76.7%			1.7671			
Covid-19 infection regarding the time of scheduled	Did not infected	37.8 %	62.2%	2.402	.301	1.6224	.303		
	Infected in other time than surgery	46.5 %	53.5%			1.5185			

Annex IV: depression effect during surgery deferral

Variable	Item	Depression status (HAAD score)			Pearson Chi-Square	p-value			coefficient	P-value
		Normal	Borderline	Abnormal						
Age groups	15-30y	54.2%	31.3%	14.5%	36.870	.000	6.6988	.000	9.482	<0.001
	31-45y	35.4%	38.9%	25.7%			8.9292			
	46-60y	18.1%	42.4%	39.6%			9.7917			
	>60y	25.9%	39.7%	34.5%			10.0172			
Gender	Female	34.7%	36.1%	29.2%	1.881	.390	8.6881	.265		
	Male	28.6%	41.3%	30.1%			9.1888			
Hospital	Centre Hospital	31.9%	39.9%	28.3%	1.294	.862	9.1667	.753		
	North Hospital	31.9%	35.5%	32.6%			8.8227			
	South Hospital	31.1%	41.2%	27.7%			8.7983			
Residence in West Bank	North	31.1%	35.8%	33.1%	2.318	.677	9.0861	.854		
	Centre	34.2%	37.7%	28.1%			8.9035			
	South	30.1%	42.9%	27.1%			8.7895			
Type of operation	Subspecialty surgery	43.8%	29.2%	27.0%	27.460	.001	8.2697	.000		
	Gynecology	28.9%	39.5%	31.6%			9.3684			
	Neurosurgery	6.3%	51.6%	42.2%			11.1875			
	Orthopedic	34.6%	37.5%	27.9%			8.5221			
	General Surgeries	35.2%	40.8%	23.9%			8.2958			
No. of comorbidities	None	35.6%	39.1%	25.3%	8.282	.082	8.4348	.007	0.648	.517
	One	26.4%	38.9%	34.7%			9.4028			
	Two or more	23.3%	37.0%	39.7%			10.2055			
Covid-19 infection regarding the time of scheduled operation	Did not infected	30.6%	42.9%	26.5%	11.302	.023	9.0306	.000		
	Infected in other time than surgery time	34.4%	37.0%	28.6%			12.3333			
	Infected during surgery time	7.4%	40.7%	51.9%			8.5641			
The number of health services other than elective surgery which need by the participants	No services needed	34.5%	39.2%	26.3%	16.400	.037	8.4209	.000	0.110	0.913
	One service	31.3%	38.6%	30.1%			9.3976			
	Two services	15.4%	34.6%	50.0%			11.4615			
	Three services	0.0%	40.0%	60.0%			12.5000			
	Four services	0.0%	0.0%	100.0%			12.0000			

Annex V: Anxiety score during surgery deferral

Variable	Item	Anxiety status (HAAD score)			Pearson Chi-Square	p-value	Mean score	p-value	Coefficient	p-value
		Normal	Border line	Abnormal						
Age groups	15-30y	48.2%	25.3%	26.5%	30.738	.000	7.6	<0.001	3.839	<0.001
	31-45y	25.7%	30.1%	44.2%			9.7522			
	46-60y	17.4%	27.1%	55.6%			10.7361			
	>60y	20.7%	32.8%	46.6%			10.8103			
Gender	Female	30.2%	27.2%	42.6%	2.679 ^a	.262	9.7030	.672		
	Male	23.0%	29.6%	47.4%			9.9337			
Hospital	Centre Hospital	23.9%	27.5%	48.6%	1.377	.848	10.1087	.641		
	North Hospital	27.7%	29.8%	42.6%			9.5816			
	South Hospital	28.6%	27.7%	43.7%			9.7563			
Residence in West Bank	North	26.5%	29.1%	44.4%	.434	.980	9.7483	.887		
	Centre	25.4%	27.2%	47.4%			10.0000			
	South	27.8%	28.6%	43.6%			9.7368			
Type of operation	Subspecialty surgery	32.6%	25.8%	41.6%	33.555	.000	9.4944	.000		
	Gynecology	31.6%	42.1%	26.3%			9.3947			
	Neurosurgery	1.6%	29.7%	68.8%			12.3281			
	Orthopedic	30.9%	28.7%	40.4%			9.1912			
	General Surgeries	31.0%	22.5%	46.5%			9.3803			
No. of comorbidities	None	30.8%	28.1%	41.1%	9.383	.052	9.2095	.001		
	One	25.0%	27.8%	47.2%			10.2500			
	Two or more	13.7%	30.1%	56.2%			11.4932			
Covid-19 infection regarding the time of	Did not infected	20.4%	32.7%	46.9%	23.425	.000	10.0918	.000		
	Infected in other time	31.1%	28.6%	40.3%			14.2963			0.241

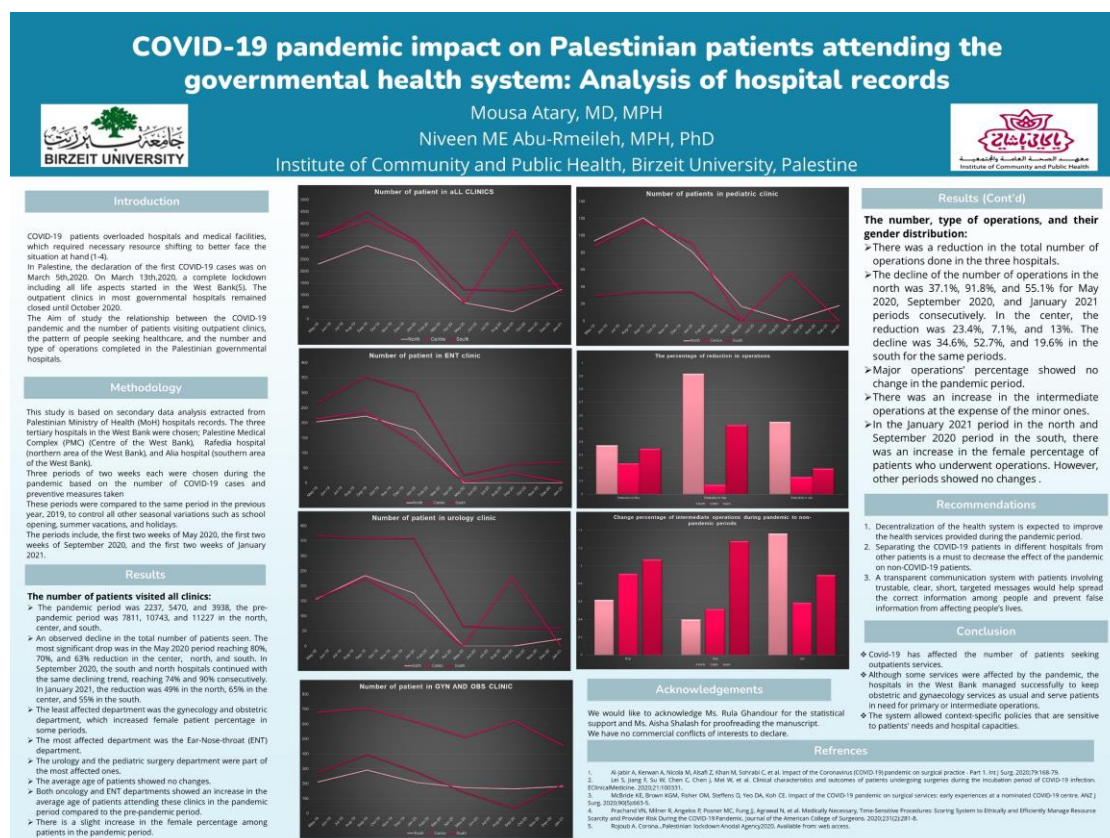
Annex VI Excel table for clinic information extraction in article one

Item	Pandemic periods									Previous periods								
	May 1-14			Sep 1-14			Jan 1-14			May 1-14			Sep 1-14			Jan 1-14		
period	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average
Number of patients, clinic average and their percentage																		
Number of patients per day in all outpatient clinics																		
Number of patients per day for general surgery clinic and its relation to the average																		
Number of patients per day for urology clinic and its relation to the average																		
Number of patients per day for orthopedic surgery clinic and its relation to the average																		
Number of patients per day for pediatric surgery clinic and its relation to the average																		
Number of patients per day for vascular and thoracic surgery clinic and its relation to the average																		
Number of patients per day for cardiac surgery clinic and its relation to the average																		
Number of patients per day for ENT clinic and its relation to the average																		
Number of patients per day for ophthalmology clinic and its relation to the average																		
Number of patients per day for Gyn and Obs clinic and its relation to the average																		
Number of patients per day for internal medicine (all branches) clinic and its relation to the average																		
Number of patients per day for pediatric clinic and its relation to the average																		
Number of patients per day for oncology clinic and its relation to the average																		
Number of patients per day for cardiology clinic and its relation to the average																		
Number of patients per day for Neurosurgery clinic and its relation to the average																		
Average age (sum of all ages in year/No. of patients)	Sum ages	N	Average	Sum ages	N	Average	Sum ages	N	Average	Sum ages	N	Average	Sum ages	N	Average	Sum ages	N	Average
Average age of patients in general surgery clinic.																		
Average age of patients in urology clinic.																		
Average age of patients in orthopedic surgery clinic.																		
Average age of patients in pediatric surgery clinic.																		
Average age of patients in vascular and thoracic surgery clinic.																		
Average age of patients in cardiac surgery clinic.																		
Average age of patients in ENT clinic.																		
Average age of patients in ophthalmology clinic.																		
Average age of patients in Gyn and Obs clinic.																		
Average age of patients in internal medicine (all branches) clinic.																		
Average age of patients in pediatric clinic.																		
Average age of patients in oncology clinic.																		
Average age of patients in cardiology clinic.																		
Average age of patients in Neurosurgery clinic.																		
Number and total number	n	N	n/N	n	N	n/N	n	N	n/N	n	N	n/N	n	N	n/N	n	N	n/N
Number of female patients and total in general surgery clinic.																		
Number of female patients and total in urology clinic.																		
Number of female patients and total in orthopedic surgery clinic.																		
Number of female patients and total in pediatric surgery clinic.																		
Number of female patients and total in vascular and thoracic surgery clinic.																		
Number of female patients and total in cardiac surgery clinic.																		
Number of female patients and total in ENT clinic.																		
Number of female patients and total in ophthalmology clinic.																		
Number of female patients and total in Gyn and Obs clinic.																		
Number of female patients and total in internal medicine (all branches) clinic.																		
Number of female patients and total in pediatric clinic.																		
Number of female patients and total in oncology clinic.																		
Number of female patients and total in cardiology clinic.																		
Number of female patients and total in Neurosurgery clinic.																		
Number of not insured patients and total in general surgery clinic.																		
Number of not insured patients and total in urology clinic.																		
Number of not insured patients and total in orthopedic surgery clinic.																		
Number of not insured patients and total in pediatric surgery clinic.																		
Number of not insured patients and total in vascular and thoracic surgery clinic.																		
Number of not insured patients and total in cardiac surgery clinic.																		
Number of not insured patients and total in ENT clinic.																		
Number of not insured patients and total in ophthalmology clinic.																		
Number of not insured patients and total in Gyn and Obs clinic.																		
Number of not insured patients and total in internal medicine (all branches) clinic.																		
Number of not insured patients and total in pediatric clinic.																		
Number of not insured patients and total in oncology clinic.																		
Number of not insured patients and total in cardiology clinic.																		
Number of not insured patients and total in Neurosurgery clinic.																		

Annex VII: Excel table for operation information extraction in article one

Item period	Pandemic periods									Previous periods								
	May 1-14			Sep 1-14			Jan 1-14			May 1-14			Sep 1-14			Jan 1-14		
Number of patients, clinic average and their percentage	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average	number	Average	n/Average
Number of operations per week																		
Number of operations per week for general surgery specialty .																		
Number of operations per week for urosurgery specialty .																		
Number of operations per week for orthopedic surgery specialty .																		
Number of operations per week for pediatric surgery specialty .																		
Number of operations per week for vascular and thoracic surgery specialty .																		
Number of operations per week for cardiac surgery specialty .																		
Number of operations per week for ENT specialty .																		
Number of operations per week for ophthalmology specialty .																		
Number of operations per week for Gyn and Obs specialty .																		
Number of operations per week for Neurosurgery specialty .																		
Number of operations per week for endoscope specialty .																		
type of operation (long, intermediate, or short)	L	L/N	M	M/N	S	S/N	L	L/N	M	M/N	S	S/N	L	L/N	M	M/N	S	S/N
Number of type of operation of operations per week for general surgery specialty .																		
Number of type of operation of operations per week for urosurgery specialty .																		
Number of type of operation of operations per week for orthopedic surgery specialty .																		
Number of type of operation of operations per week for pediatric surgery specialty .																		
Number of type of operation of operations per week for vascular and thoracic surgery specialty .																		
Number of type of operation of operations per week for cardiac surgery specialty .																		
Number of type of operation of operations per week for ENT specialty .																		
Number of type of operation of operations per week for ophthalmology specialty .																		
Number of type of operation of operations per week for Gyn and Obs specialty .																		
Number of type of operation of operations per week for Neurosurgery specialty .																		
Number of type of operation of operations per week for endoscope specialty .																		
type of anaesthesia (General, Spinal, or local)	G	G/N	S	S/N	L	L/N	G	G/N	S	S/N	L	L/N	G	G/N	S	S/N	L	L/N
Number of type of anaesthesia of operations per week for general surgery specialty .																		
Number of type of anaesthesia of operations per week for urosurgery specialty .																		
Number of type of anaesthesia of operations per week for orthopedic surgery specialty .																		
Number of type of anaesthesia of operations per week for pediatric surgery specialty .																		
Number of type of anaesthesia of operations per week for vascular and thoracic surgery specialty .																		
Number of type of anaesthesia of operations per week for cardiac surgery specialty .																		
Number of type of anaesthesia of operations per week for ENT specialty .																		
Number of type of anaesthesia of operations per week for ophthalmology specialty .																		
Number of type of anaesthesia of operations per week for Gyn and Obs specialty .																		
Number of type of anaesthesia of operations per week for Neurosurgery specialty .																		
Number of type of anaesthesia of operations per week for endoscope specialty .																		
Number and total number	n	N	n/N	n	N	n/N	n	N	n/N	n	N	n/N	n	N	n/N	n	N	n/N
Number of female patients and total in operations per week for general surgery specialty .																		
Number of female patients and total in operations per week for urosurgery specialty .																		
Number of female patients and total in operations per week for orthopedic surgery specialty .																		
Number of female patients and total in operations per week for pediatric surgery specialty .																		
Number of female patients and total in operations per week for vascular and thoracic surgery specialty .																		
Number of female patients and total in operations per week for cardiac surgery specialty .																		
Number of female patients and total in operations per week for ENT specialty .																		
Number of female patients and total in operations per week for ophthalmology specialty .																		
Number of female patients and total in operations per week for Gyn and Obs specialty .																		
Number of female patients and total in operations per week for Neurosurgery specialty .																		
Number of female patients and total in operations per week for endoscope specialty .																		

Annex VIII: Poster presentation or article one at COVID 19 in the MENA Region conference, 2022, Ghazi Antep, Turkey



Annex IX: Second article questionnaire

استبيان اراء المرضى الذين تأجلت او الغيت عملياتهم بسبب جائحة الكورونا

***يقوم بهذا الاستبيان طالب ماجستير من جامعة بيرزيت. هذا الاستبيان لقياس تأثير تأجيل العمليات بسبب جائحة الكورونا على المرضى في المشافي الفلسطينية...الوقت المتوقع لتعبئة الاستبيان هو 5 دقائق...لك مطلق الحرية عزيزي المواطن/عزيزتي المواطنة بالمشاركة او عدم المشاركة في الاستبيان بالإضافة لحقك بالتوقف في اية وقت تشاء**

OK ☐

ما هي سنة ميلادك

. ادخل السنة من اربع خانات رجاء. يقبل فقط الارقام الانجليزية

هل انت

☐ ذكر

☐ انثى

ما هو مكان سكنك

☐ جنين

☐ طوباس

☐ قلقيلية

☐ طولكرم

☐ سلفيت

☐ نابلس

☐ رام الله

☐ أريحا

☐ بيت لحم

☐ الخليل

☐ القدس

ما هي العملية التي كان من المفروض ان تخضع لها

في اية مستشفى كانت العملية مقررة

- ☐ مجمع فلسطين الطبي
- ☐ مستشفى رفحيا
- ☐ مستشفى عالية

هل تشكو من اية امراض مزمنة سابقة

- ☐ نعم
- ☐ لا

هل كنت تشكو من امراض مزمنة سابقة تستطيع اختيار كل الخيارات الصحيحة

- ☐ ضغط الدم
- ☐ السكري
- ☐ اضطرابات في الغدة
- ☐ القلب
- ☐ الدم
- ☐ الكوليسترول او الدهون الثلاثية
- ☐ الشرايين والاوعية الدموية

هل اصبت من قبل بمرض كورونا

- ☐ نعم
- ☐ لا

هل اصبت بالكورونا في الفترة المحددة للعملية

- ☐ نعم
- ☐ لا

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة لاجل موعد عملية

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من الحصول على موعد العملية

- ☐ نعم
☐ لا
☐ لم نحاول

ما هو السبب الرئيسي لعدم تمكنكم من الحصول على موعد العملية

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
☐ العيادات الخاصة كانت مغلقة
☐ نفاذ الأدوية من الصيدليات
☐ الصيدليات المتأخرة كانت مغلقة
☐ عدم المقدرة على الدفع (تغطية التكاليف)
☐ القيود على الحركة (منع التجول/ الإغلاق)
☐ عدم توفر مواصلات
☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة لعملية جراحية طارئة

- ☐ نعم
☐ لا
☐ لا ينطبق

هل تمكنت من اجراء العملية الجراحية الطارئة

- ☐ نعم
☐ لا
☐ لم نحاول

ما هو السبب الرئيسي لعدم تمكنك من اجراء العملية الجراحية الطارئة

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الادوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم المقدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الاغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة لعملية غير طارئة

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من اجراء العملية الغير طارئة

- ☐ نعم
- ☐ لا
- ☐ لم نحاول

ما هو السبب الرئيسي لعدم تمكنك من اجراء العملية غير الطارئة

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الادوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم المقدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الاغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة للعلاج او الرعاية نتيجة الأمراض المزمنة

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من الحصول على العلاج او الرعاية نتيجة الأمراض المزمنة

- ☐ نعم
- ☐ لا
- ☐ لم نحاول

ما هو السبب الرئيسي لعدم تمكنكم من الحصول العلاج او الرعاية نتيجة الأمراض المزمنة

- ☐ عدم توفر (تواجد/درام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الادوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم القدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الإغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة للعلاج او الرعاية نتيجة الأمراض غير المزمنة

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من الحصول على العلاج او الرعاية نتيجة الأمراض غير المزمنة

- ☐ نعم
- ☐ لا
- ☐ لم تحاول

ما هو السبب الرئيسي لعدم تمكنكم من الحصول على العلاج او الرعاية نتيجة الأمراض غير المزمنة

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الادوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم المقدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الاغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة لشراء الأدوية/ المضادات الحيوية

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من شراء الأدوية/ المضادات الحيوية

- ☐ نعم
- ☐ لا
- ☐ لم تحاول

ما هو السبب الرئيسي لعدم تمكنكم من شراء الأدوية/ المضادات الحيوية

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الأدوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم المقدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الاغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة لاجراء صور اشعة/فحوصات/ مختبر

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من اجراء صور اشعة/فحوصات/ مختبر

- ☐ نعم
- ☐ لا
- ☐ لم نحاول

ما هو السبب الرئيسي لعدم تمكنك من اجراء صور اشعة/ فحوصات/ مختبر

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الأدوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم المقدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الاغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

منذ بدء الجائحة هل كنت انت او احد افراد الاسرة بحاجة لتقارير طبية/تحويله طبية

- ☐ نعم
- ☐ لا
- ☐ لا ينطبق

هل تمكنت من الحصول على التقارير الطبية/تحويله طبية

- ☐ نعم
- ☐ لا
- ☐ لم نحاول

ما هو السبب الرئيسي لعدم تمكنكم من الحصول على التقارير الطبية/تحويله طبية

- ☐ عدم توفر (تواجد/دوام) مقدم الخدمة
- ☐ عدم استقبال المراكز الصحية/ المستشفيات للمرضى
- ☐ العيادات الخاصة كانت مغلقة
- ☐ نفاذ الادوية من الصيدليات
- ☐ الصيدليات المتاحة كانت مغلقة
- ☐ عدم المقدرة على الدفع (تغطية التكاليف)
- ☐ القيود على الحركة (منع التجول/ الاغلاق)
- ☐ عدم توفر مواصلات
- ☐ الخوف من مغادرة المنزل

الى اية مدى تقييدك حالتك الصحية من ممارسة الأنشطة الشاقة مثل الجري, حمل الاشياء الثقيلة او مزاوله الانشطة الرياضية المجهد

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

- ☐ نعم تقييدني كثيرا
- ☐ نعم تقييدني قليلا
- ☐ لا تقييدني اطلاقا

الى اية مدى تقييدك حالتك الصحية من ممارسة الأنشطة متوسطة الجهد مثل تحريك الطاولة او التنظيف باستخدام المكنسة الكهربائية او تنظيف حديقة المنزل او العناية بها؟

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

نعم تقيدي كثيرا ☐

نعم تقيدي قليلا ☐

لا تقيدي اطلاقا ☐

الى اية مدى تقييدك حالتك الصحية من حمل المشتريات من البقالة او السوق المركزي (السوبرماركت)؟

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

نعم تقيدي كثيرا ☐

نعم تقيدي قليلا ☐

لا تقيدي اطلاقا ☐

الى اية مدى تقييدك حالتك الصحية من صعود الدرج لعدة ادوار

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

نعم تقيدي كثيرا ☐

نعم تقيدي قليلا ☐

لا تقيدي اطلاقا ☐

الى اية مدى تقييدك حالتك الصحية من صعود الدرج لدور واحد فقط

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

نعم تقيدي كثيرا ☐

نعم تقيدي قليلا ☐

لا تقيدي اطلاقا ☐

الى اية مدى تقييدك حالتك الصحية من الانحناء او الركوع او السجود؟

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

نعم تقيدي كثيرا ☐

نعم تقيدي قليلا ☐

لا تقيدي اطلاقا ☐

الى اية مدى تقيدك حالتك الصحية من المشي لأكثر من كيلومتر ونصف (60 دقيقة متواصل)؟

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

- ☐ نعم تقيدني كثيرا
- ☐ نعم تقيدني قليلا
- ☐ لا تقيدني اطلاقا

الى اية مدى تقيدك حالتك الصحية من المشي لمسافة نصف كيلومتر (25 دقيقة متواصل)

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

- ☐ نعم تقيدني كثيرا
- ☐ نعم تقيدني قليلا
- ☐ لا تقيدني اطلاقا

الى اية مدى تقيدك حالتك الصحية من المشي لمسافة مئة متر (خمس دقائق متواصل)؟

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

- ☐ نعم تقيدني كثيرا
- ☐ نعم تقيدني قليلا
- ☐ لا تقيدني اطلاقا

الى اية مدى تقيدك حالتك الصحية من الاستحمام او ارتداء الملابس بنفسك؟

يتعلق هذا السؤال بأنشطة يمكن ان تقوم بها خلال يومك العادي في وقت تأجيل العملية

- ☐ نعم تقيدني كثيرا
- ☐ نعم تقيدني قليلا
- ☐ لا تقيدني اطلاقا

هل تسببت حالتك الجسمية في التقليل من الوقت الذي تقضيه في العمل او اية أنشطة أخرى؟

يتعلق هذا السؤال بأنشطة يمكن ان تواجهك خلال تأدية عملك او الانشطة اليومية المعتادة خلال وقت تأجيل العملية

- ☐ نعم
- ☐ لا

هل تسببت حالتك الجسمية في التقليل مما تود انجازه من العمل او اية أنشطة أخرى؟

بتعلق هذا السؤال بأنشطة يمكن ان تواجهك خلال تأدية عملك او الأنشطة اليومية المعتادة خلال وقت تأجيل العملية

☐ نعم
☐ لا

هل تسببت حالتك الجسمية في تقييد اداء نوع معين من الاعمال او اية أنشطة أخرى؟

بتعلق هذا السؤال بأنشطة يمكن ان تواجهك خلال تأدية عملك او الأنشطة اليومية المعتادة خلال وقت تأجيل العملية

☐ نعم
☐ لا

هل تسببت حالتك الجسمية في ان تجد صعوبة في تأدية العمل او اية أنشطة أخرى؟ (مثلا احتجت جهد اضافي لتأديتها؟)

بتعلق هذا السؤال بأنشطة يمكن ان تواجهك خلال تأدية عملك او الأنشطة اليومية المعتادة خلال وقت تأجيل العملية

☐ نعم
☐ لا

هل تعطلت/تغيبت عن العمل خلال فترة الجائحة (من شهر آذار/ مارس 2020 وحتى الآن)؟

☐ نعم
☐ لا

ما هي الفترة التي تعطلت/تغيبت بها عن العمل

اذكر عدد الاشهر. يقبل الارقام الانجليزية فقط

ما هو سبب تعطلك/غيابك الرئيسي عن العمل خلال فترة الجائحة

- ☐ اعلان حالة الطوارئ واغلاق كافة المرافق والمؤسسات العامة والخاصة نتيجة القيود الناتجة عن فيروس كورونا
- ☐ اغلاق ما بين التجمعات/المحافظات وما ترتب عليه من توقف/صعوبة التنقل
- ☐ التزام البقاء في البيوت وفقاً لاعلان حالة الطوارئ
- ☐ الخوف من مغادرة المنزل (الخوف من التلوث العدوى)
- ☐ الالاهل منعه من مغادرة المنزل / الذهاب الى العمل
- ☐ عدم الحاجة للعمل
- ☐ توقف مؤقت لعدم توفر مدخلات الانتاج
- ☐ طبيعة عملي موسمية
- ☐ كنت في اجازة/عطلة
- ☐ مرض/إصابة عمل
- ☐ التزامات عائلية
- ☐ اجازة امومة
- ☐ الإصابة بمرض كورونا/ الحجر نتيجة المخالطة

كيف كانت علاقتك بعملك قبل جائحة كورونا

- ☐ كنت اعمل من 14-1 ساعة اسبوعياً
- ☐ كنت اعمل من 15-34 ساعة اسبوعياً
- ☐ كنت اعمل 35 ساعة فأكثر
- ☐ لا اعمل وكنت ابحث عن عمل
- ☐ لا اعمل ولم اكن ابحث عن عمل بسبب اليأس
- ☐ متفرغ/ة للدراسة
- ☐ متفرغ/ة لأعمال المنزل
- ☐ متقاعد/ لذي راتب شهري
- ☐ كبير/ة بالسن/ أعاني المرض/أعاني العجز
- ☐ لذي مشروع خاص

كيف كانت علاقتك بعملية بعد بداية جائحة كورونا

- ☐ كنت اعمل من 1-14 ساعة اسبوعيا
- ☐ كنت اعمل من 15-34 ساعة اسبوعيا
- ☐ كنت اعمل 35 ساعة فأكثر
- ☐ لا اعمل وكنت ابحت عن عمل
- ☐ لا اعمل ولم اكن ابحت عن عمل بسبب الوباء
- ☐ متفرغ/ة للدراسة
- ☐ متفرغ/ة لاعداد المنزل
- ☐ متقاعد/ لذي راتب شهري
- ☐ كبير/ة بالسن/ اعاني المرض/اعاني العجز
- ☐ لدي مشروع خاص

كم كانت تكلفة المواصلات عند تأجيل/الغاء العملية الجراحية والزيارات اللاحقة لاعادة برمجة العملية

- ☐ اقل من 100 شيكل
- ☐ 101-200 شيكل
- ☐ 201-300 شيكل
- ☐ اكثر من 300 شيكل
- ☐ لا ينطبق

كم كانت تكلفة الأدوية بسبب تأجيل/الغاء العملية الجراحية ؟

- ☐ اقل من 100 شيكل
- ☐ 101-200 شيكل
- ☐ 201-300 شيكل
- ☐ اكثر من 300 شيكل
- ☐ لا ينطبق

خلال فترة تأجيل/الغاء العملية احسست اني هامد (فاقد للطاقة) الاجابة بدون استغراق بالتفكير

- ☐ تقريبا في كل وقت
- ☐ في كثير من الاحيان
- ☐ في بعض الاوقات
- ☐ لا اشعر بذلك مطلقا

خلال فترة تأجيل/الغاء العملية شعرت بالتوتر الشديد الاجابة بدون استغراق بالتفكير

- ☐ أكثر الوقت
- ☐ عدة مرات
- ☐ أحيانا
- ☐ لا اشعر بذلك مطلقا

خلال فترة تأجيل/الغاء العملية انتابني شعور بالخوف الاجابة بدون استغراق بالتفكير

- ☐ لا، على الإطلاق
- ☐ أحيانا
- ☐ كثيرا
- ☐ في اغلب الاوقات

خلال فترة تأجيل/الغاء العملية لازلت اتمتع بالأشياء التي اعتدت ان استمتع بها

الاجابة بدون استغراق بالتفكير

- ☐ بالتأكيد كما كنت
- ☐ ليش تماما
- ☐ قليلا
- ☐ بالكاد/على الإطلاق

خلال فترة تأجيل/الغاء العملية فقدت الاهتمام بمظهري الاجابة بدون استغراق بالتفكير

- ☐ بالتأكيد، فقدت كل الاهتمام
- ☐ انا لا اهتم بمظهري كما يجب ان اهتم
- ☐ قد لا اعتني بمظهري كما يجب
- ☐ اعتني بمظهري بشكل جيد كما كنت سابقا

خلال فترة تأجيل/الغاء العملية شعرت بنوع من الخوف، وكأن شيئا مروعا على وشك الحدوث

الاجابة بدون استغراق بالتفكير

- ☐ بالتأكيد، وبشكل مزعج
- ☐ نعم، ولكن اقل سوءا
- ☐ قليلا، لكنه لا يقلقني
- ☐ لا اشعر بذلك على الإطلاق

خلال فترة تأجيل/الغاء العملية احسست بضيقه صدر دون مجهود

جسدي

الاجابة بدون استغراق بالتفكير

- ☐ في الواقع, كثيرا جدا
- ☐ كثيرا, لا بأس به
- ☐ اشعر بذلك قليلا
- ☐ لا اشعر بذلك على الإطلاق

خلال فترة تأجيل/الغاء العملية استطعت الضحك ورؤية الجوانب

المتعنة في الاشياء

الاجابة بدون استغراق بالتفكير

- ☐ كما كنت سابقا
- ☐ اقل مما كنت سابقا
- ☐ بالتأكيد, ليش كثيرا الان
- ☐ لا اشعر بذلك الان

خلال فترة تأجيل/الغاء العملية كنت اطلع للاشياء حولي باستمتاع

الاجابة بدون استغراق بالتفكير

- ☐ بقدر ما يمكنني فعله
- ☐ نوعا ما اقل مما اعتدت على فعله
- ☐ بالتأكيد اقل مما اعتدت على فعله
- ☐ لا, على الإطلاق

خلال فترة تأجيل/الغاء العملية كانت تأتيني دائما افكار مقلقة

الاجابة بدون استغراق بالتفكير

- ☐ أغلب الأوقات
- ☐ معظم الأوقات
- ☐ من وقت لآخر ولكن ليش كثيرا
- ☐ أحيانا

خلال فترة تأجيل/الغاء العملية كان يتناوبني احساس مفاجيء

بالهلع

الاجابة بدون استغراق بالتفكير

- ☐ في الواقع, في كثير من الأحيان
- ☐ غالبا
- ☐ ليش كثيرا
- ☐ لا اشعر بذلك على الإطلاق

خلال فترة تأجيل/الغاء العملية كنت اشعر بالبهجة الاجابة بدون استغراق بالتفكير

- ☐ لا، على الاطلاق
- ☐ ليس كثيرا
- ☐ في بعض الاحيان
- ☐ في اغلب الاوقات

خلال فترة تأجيل/الغاء العملية كان يمكنني الاستمتاع بقراءة كتاب جيد او مشاهدة البرامج التلفزيونية او الاستماع الى الاذاعة الاجابة بدون استغراق بالتفكير

- ☐ غالبا
- ☐ في بعض الاحيان
- ☐ ليس كثيرا
- ☐ نادرا جدا

خلال فترة تأجيل/الغاء العملية كان يمكنني الجلوس بالراحة والشعور بالاسترخاء الاجابة بدون استغراق بالتفكير

- ☐ بكل تأكيد
- ☐ عادة ما
- ☐ ليس كثيرا
- ☐ لا يمكنني ذلك، على الاطلاق