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Cesarean Section in the Gaza Strip: Factors and Implications

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Cesarean Section in the Gaza Strip: Factors and Implications

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Dedication

To the person who spent all his life for me, encouraged me to believe in myself

My father

To the woman who didn’t give up, offered me everything to be who I am today

My mother

To the person who loved me and gave me the support to continue with respect and patience

My husband

To the gift from Allah, my real treasure Zaki, Ahmad, Yousef, and especially Mohamed and Adam

My sons

To those who have an inspiration to me

My teachers

I dedicate thesis for all of them

Declaration

I certify that this thesis submitted for the degree of master is the result of my own research, except where otherwise acknowledged, and that this thesis or any of its parts has not been submitted for higher degree to any other university or institution.

Signed:

Samah A. Al-Attar

Date: 16/6/2020

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Samah A. Al-Attar

Abstract

Statistics about the rates of cesarean section in Gaza are showing an alarming increase in the past 10 years, almost double than the internationally recommended figures. This study identifies factors behind the increased rate of cesarean section in Gaza.

A mixed- method approach was used, in which data have been triangulated. In total, 160 (census study) relevant physicians had participated in the quantitative part with 90% response rate, and 390 beneficiaries' records were reviewed. In addition, five in-depth interviews were conducted with purposively selected key informants. Quantitative data were collected through self-administered questionnaire and abstraction sheet were used in records review. The preliminary findings derived from the quantitative part had informed the qualitative data collection. The statistical Package for Social Sciences software was used for the quantitative data entry and analysis while the open coding thematic technique was used to analyze the qualitative data.

Results showed that repeated CS, fetal distress, malpresentation, IVF and obstructed labor were the most common indications for CS as reported by physicians (83.3%, 77.6%, 73.6%, 61.1% and 45.8% respectively). Records review confirmed these factors.

Nearly quarter of respondents (24.3%) admitted that there is no written protocol for management of CS at their work. Work overload, too much duties and lack of supervision (25.8%, 13.4%, 13.4% respectively), were the most commonly reported reasons behind not applying the protocol. Furthermore, fear of litigation was the most common organizational related factor that affects CS, followed by continuous electronic fetal monitoring, lack of protocols and inadequate supervision (53.5%, 45.1%, 39.6% and 39.6% respectively).

Inferential analysis from records review showed that non-governmental hospital has statistically significant higher rate of primary CS than governmental hospitals (p=0.001).

Results from the qualitative study were supportive to the quantitative findings as key informants reported that the rate of CS is increasing. Fear of litigation and social pressure in addition to private sector were among the reasons behind increase the rate.

Findings emphasized the importance of standardization of management of intrapartum CTGabnormalities according to national Obstetric Guidelines and Labor Ward Protocols, enhance Vaginal Birth After Cesarean and pay more attention to decrease primary CS. Moreover, implementation of monitoring, evaluation, accountability and learning system in all health facilities and practices will help to rationalize the use of CS.

Table of Contents

List of Tables

List of Figures

List of Annexes

List of Abbreviations

ACOG	American College of Obstetricians and Gynecologists
AFI	Amniotic Fluid Index
CBR	The Crude Birth Rate
CDMR	Cesarean Delivery on Maternal Request
CPD	Cephalopelvic Disproportion
CS	Cesarean Section
CTG	Cardiotocogram
ECV	External Cephalic Version
EFM	Electronic Fetal Monitoring
FHR	Fetal Heart Rate
MICS	Multiple Indicators Cluster Survey
MNM	Maternal Near Miss
MOH	Ministry of Health
NGOs	Non-Governmental Organizations
PCBS	Palestinian Central Bureau of Statistics
PMMS	Palestinian Military Medical Services
PNA	Palestinian National Authority
PPH	Post-Partum Hemorrhage
RCOG	Royal College Of Gynecology
SDG	Sustainable Developmental Goals
SPSS	Statistical Package of Social Sciences
TFR	Total Fertility Rate
TOLAC	Trial of Labor after Cesarean section
US-NIH	United States National Institutes of Health
UHWC	United of Health Work Committees
UNDP	United Nation Development Program
UNFPA	United Nation Population Fund
UNICEF	The United Nations Children's Fund
UNRWA	United Nations Relief and Work Agency
VBAC	Vaginal Birth After Cesarean section
WHO	World Health Organization

Chapter One

Introduction

1.1 Background

Though it might be a lifesaving decision, Cesarean Section (CS), remains a major surgical procedure with serious complications for the health of the mother and the child. The WHO recommends CS rate to be between 10-15% (World Health Organization-WHO, 2015). Rates above this level might be associated with greater morbidities. Despite these facts; CS rates continue to increase with lack of consensus on the appropriate CS rate and the associated additional short- and long-term risks and costs (Betrán et al., 2016).

In 2011, one in three women who gave birth in the United States did so by CS (Hamilton and et al., 2013). Similarly, the rate of CS in Canada has increased from 17.6% in 1995 to 27.1% in 2012 (Canadian Institute for Health Information, 2013). In Bangladesh, CS rates increased from 3.5% in 2004 to 23% in 2014 (Khan et al., 2017). Regarding the Arab region which is entering an era of dramatic demographic shifts with obvious consequences including maternal health, this leads to great disparities in their CS rates which were attributed to different demographic transition and socioeconomic development. In reference to Palestine, more than two thirds of deliveries take place at Ministry of Health (MOH) hospitals with the rate of CS increased from 17% during 2010 to 22.8% during 2018 (MOH, 2018a). RegardingGazian refugee women, the rate of cesarean section according to UNRWA annual report (2018) was 20.5%, compared to the highest rate among refugees women in Syria with 63.2% (UNRWA, 2019). The trend has been rising gradually since 1996 where it was about 6% reaching 8.8% between 2000-2004, however it was not above the WHO recommended rate till 2009 where it was 17% and continue rising till now (MOH, 2018a). This increase adds more burden to the Palestinian health system, which suffer greatly due to changes in disease pattern, aging and population growth. Moreover, the total expenditure on health increased from USD 397.2 million in 2000 to USD 1.4 billion in 2014 (Courbage, Abu- Hamad and Zagha, 2016). CS as any other surgical procedure will require more doctor visits, delayedthe mother baby contact and breast feeding, negatively affect bonding between mother and her child, in addition to financial costs added (Jurdi&Khawaja, 2004). For these reasons, the hazards of the increase in CS are dramatic on the health status of mothers, their babies and the health care system as well.

1.2 Research Problem

Pregnancy and birth are special events for every woman and that experience may last for the rest of her life (Shalabi, 2012). CS can be a life-saving operation, safe method of delivery for both mother and fetus, giving a happy ending to nine month troubling journey, and some babies would not be born vaginally under any circumstances; however, despite this illuminating side of the view, it is still major surgery with large short and long term impacts (Salih, 2016). The cesarean section rate is often used as an indicator for the quality of healthcare and may therefore reflect improvement of clinical governance at national and international levels (Betrán and et al., 2016). However, the rate of CS is increasing through the previous six years. it increased from 19.6% during 2010 to 21.8%, and 21.6% during 2016 and 2017 respectively (MOH, 2018a). Moreover, if we know that about three quarters of all maternal deaths occur during delivery or the immediate post-partum period, and any woman dies during the reproductive age is a tragic loss to society. Her loss of life touches the lives of her family, friends and healthcare providers who may have cared for her, this will make investigations and research regarding practices during delivery is very important especially during CS (WHO, 2018b).CS complications are well known from regional and general anesthesia, risk ofintraoperativeand post-partum hemorrhage, thromboembolic events, infection and even neonatal respiratory morbidities are all well known. But looking for the long term effect it is the major concern about CS delivery, repeated CS is one of the most common factors associated with Maternal Near miss (MNM).MNM is a new concept adopted to describe the magnitude and amount of complications leading to significant maternal morbidity but not considered as a mortality of course. It is well-known that maternal mortality reviews are critically useful to assess the quality of health care system, but do not necessarily reflect the scope of complications in obstetrics which are more reflected in Maternal Near Miss (MNM) reviews. (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). Shnaina reviewed the maternity files in Gaza and reported that the rate of Near miss is 6.9/1000 delivery, which is much more than what has been reported in 2016 and 2017 (0.6 and 0.7 per 1000) (Shnaina, 2014). Furthermore, according to study conducted by Abohatab (2017), which showed thatthe Cesarean delivery by (68.7%) was the most common procedure associated with MNM in our population, and also the majority of cases reported previous history of cesarean delivery (52.2%).

Little is known about the factors behind the increasing trend of CS. Questions about what motivate doctors to conduct CS remain unanswered. Therefore, accordingly, this study will

fill gaps in information in reference to the factors and implications of CSs in Gaza Strip. It will be the first to discuss this issue, to search deeply and find if there are irrational practices in the field leading to increase rate of CSs with its psychological, medical and economic impacts.

1.3 Justification

It is obvious that the trend of CSs, either primary or repeated, is increasing through years in our country and the much more important according to WHO, this increase will not improve maternal health indicators. Instead it will result in many implications either short or long term. CS is considered very important subject with many details that should be studied in order to spot the light on irrational medical behaviors regarding this issue. This study is the first of its kind in Palestine to handle this topic in the proposed focus way, thus the research will add to the body of knowledge in one of the most important branches in social sciences which is maternal health, therefore it will be of great benefit to the community, healthcare providers, government and society. It will fill the gap in knowledge and will open the road for more research regarding this issue by providing a benchmark for other studies in the field and spotting the light on the practical indications and factors affecting CSs from the patient data available and from obstetrician point of view, thus reflecting the real situation in our hospitals and providing picture that will help concerned persons either practitioners, policy makers or patients themselves to be involved in these lifesaving and critical decisions. Investigating the factors associated with CS deliveries is necessary to inform decision-makers about how to develop context-specific strategies to reduce unnecessary operations and avoid unjustified and costly interventions especially with the situation of rising poverty, interrupted healthcare services, limited human and financial resources and political uncertainty. In addition, it will help healthcare provider to understand the scope of CS and its implications either on the health system or the mothers themselves.

Finally, this study touches the researcher herself, as she works at primary health care, providing antenatal and postnatal care to women and know well how much mother's life is precious for her family and society, and how it is painful to undergo CS with its complications as a surgery and with absence of clear indication. Focusing on the practical indications of CSs in the Gaza Strip will spot the light on gaps and enhance effective and timely interventions by healthcare providers which in turn will reduce irrational CSs.

Moreover, this study will shed the light on obstetric protocols and their implementation, this will enable policy makers to put their strategic plan and set their recommendations in congruence with real practice. Furthermore, it will open the road for more in-depth studies by other researchers especially in issues related to Vaginal Birth after Cesarean (VBAC) and primary CS.

1.4 Aim of the study

To identify factors behind the increased rates of CS in the Gaza Strip in order to set cognizant recommendations to rationalize the use of CS and thus reduce child and women health hazards associated with CS and costs as well**.**

1.5 Specific objectives

1. To identify maternal medical and obstetric conditions contributing to CS.
2. To recognize fetal factors contributing to CS.
3. To assess women characteristics related variables that contribute to CS
4. To ascertain variations in CS in relation to organizational related variables.
5. To ascertain variations in CS in relation to service providers related variables.

1.6 Research questions

1. Are CSs always performed in presence of clear medical and/or obstetric indications?
2. To which extent women preference affect healthcare provider decision?
3. To which extent social pressures influence the decision of CS?
4. What is the association between demographic characteristics of the women and CS?
5. Are there differences between organizational variables and the rate of CS?
6. Is there relationship between healthcare provider characteristics and variations in CS?
7. What is the supervision role regarding decision making process of CS in our hospitals?
8. Do service providers use a protocol that guides the use of CS?
9. What is the variations in CS rates related to organizational characteristic variables?

1.7 Context of the study

This study will be conducted at governmental hospitals in the Gaza Strip. The following paragraphs will provide some information about Palestinian population, and health care system.

1.7.1 Gaza Strip demographic context

The Gaza Strip, 365 km^2, a coastline of 40 km, with a total population of 1,899,291 (PCBS, 2018). The high density (5203 per km^2) of population has many social and service provision implications. It is divided into five governorates: (Gaza, Khan Yunis, Rafah, Deir El Balah and North Gaza) (PCBS, 2018). The average family size at Gaza Strip reached 5.6. Natural Increase Rate in the Gaza Strip, Mid-Year 2016 is (3.3) (PCBS, 2018). That means Gaza is a very crowded area with crowded population. This high population density and narrow place of land creates high demands for health care services and possible work overload for health care providers. On the other hand, it could be positive in terms of accessibility in contrast with West Bank which is characterized by wider spaces and presence of remote areas. In addition to overcrowdings, the unemployment rate which accounts for 48.2% in Gaza Strip according to last PCBS Census (PCBS, 2018). Moreover, about one out of three individuals living below poverty level in 2017, while 53% of population in Gaza Strip are poor (PCBS, 2018). This increase in the poverty contribution from Gaza Strip adds a lot of constrains on health services provided, including CS and obstetric services. As we know CS delivery hinders the initiation of normal breast feeding, which is very important step in establishment of a physical and emotional relationship between the baby and the mother (PCBS, 2015). One can argue that the percentage of ever breastfed babies in Palestine is very high, around 96.6%, but in fact many mothers don't start to breast early enough, which is against the recommendation of The United Nations Children's Fund (UNICEF) and WHO (Courbage, Abu- Hamad and Zagha, 2016). Only 41% of babies are breastfed for the first time within one hour of birth, while 85% of newborns in Palestine start breastfeeding within one day of birth. Moreover, exclusive breastfeeding during the first six months of age is 36.4% in Gaza Strip, with level lower than recommended, while in West Bank it accounts for 40.6% (PCBS, 2015). CS also increases the likelihood of surgical wound infection and hospital visits, this will add more financial burden in such difficult circumstances. Regarding total fertility rate, which is defined as the average number of children born to a woman in her reproductive age, it was 3.7 during 2018 (MOH, 2018a). The issue of fertility structure

concerns women who give birth as adolescents or older than age 35 (both of which are considered high risk). In 1996, the share of the total fertility rate contributed by females aged 14-15 and 35 years and above was 32%. It has jumped to 47% in 2014, according to theMultiple Indicators Cluster Survey (MICS) survey (PCBS, 2015). This is a major public health concern for both adolescent mothers and aged mothers, the latter of which have an increased and nearly doubled infant mortality rate, in addition to increase incidence of CS. The deterioration in economic situation might have its impacts on maternal and child health, it may hinder adequate follow up for women during their pregnancies, increase susceptibility to poverty and stress related diseases such as anemia, hypertension and other diseases that increase likelihood of performing CS.

1.7.2 Health status

Despite progressive decline over the years, the number of live births per 1,000 of population per year is still high compared with other countries. It is obvious in MOH report for the year 2017, which stated that 58,954 live births in the Gaza Strip (MOH, 2018a).While during 2018, it was 57,694 live births (MOH, 2018b). The Crude birth rate (CBR) dropped from 45.4 to 31.8/ 1,000 in the Gaza Strip (MOH, 2016a). This drop continued during 2017 to reach 31/1000 population (MOH, 2018). Based on MICS 2014 (PCBS, 2015), the percentage of women of childbearing age of total population was estimated to be 24.8% in Palestine (23.8% in GS & 25.4% in WB) (MOH, 2016a). Consequently, and expectedly the demand for health care services and especially for reproductive health services in Gaza is high, and the burden of work load over healthcare providers is much higher.

1.7.3 Maternal health

Indeed, since the universal call for action toward achieving Sustainable Developmental Goals (SDGs), child and maternal mortality has been decreasing in many countries for many decades, the same as in our country but there are still disparities between us and neighboring areas. However, there are achievements in many areas regarding maternal heath, for example, 99.4% of deliveries are performed under supervision of professional health employee in 2014, and the rate of births among adolescent girls decline rapidly from high of 144 per 1000 in 1994 to 66.5 in 2012-2014. Moreover, antenatal healthcare coverage increased up to 95.5% in 2014 for the best result of four antenatal visits (Courbage, Abu- Hamad and Zagha, 2016). Moreover, 67.3% of deliveries were at

Governmental hospitals during 2018, while 28.1% at NGOs, 2.6% at military hospitals and 2% at private doctor (MOH, 2018a).

Maternal Mortality Ratio (MMR) is one of the most important indicators to determine the health status of women (WHO, 2018a). Women die as a result of complications during and following pregnancy and childbirth. Most of these complications develop during pregnancy and most are preventable or treatable. Other complications may exist before pregnancy but are worsened during pregnancy, especially if not managed as part of the woman's care. The major complications that account for nearly 75% of all maternal deaths are: severe bleeding, infections, high blood pressure, complications from delivery and unsafe abortion (WHO, 2018a). In Palestine, despite improvement of institutionalized deliveries, there are still many risk factors including unstable political situation and limited resources that raises the questions about quality of natal care (Shalabi, 2012). According to MOH report (2016) and report written by Abu-Hamad about maternal health, there is obvious improvement in MMR across the years 2015, 2016 and 2017 by 15.5, 13.8, and 10.3 per 100,000 live births respectively (MOH,2016a), (Abu-Hamad, 2018). But, this rate returned to increase during 2018 by 83.3% rise rate compared with 2017 to reach 19.1 per 100,000 live birth (MOH, 2018a). However,despite the reported reduction in MMR, still complications are frequently occurring during pregnancy, delivery and during the puerperium. There is a consensus that for each case of mortality, 30 cases of morbidity develop (Courbage, Abu-Hamad, &Zagha, 2016). It doesn't mean that increasing CSs will improve MMR; instead it may increase complications such as Post-Partum Hemorrhage as a result of repeated CS. PPH will lead the women to a state of what called, maternal near miss (WHO, 2011). Studying near miss cases gives better understanding of determinants of mortality, also it helps in assessment of quality of obstetric care (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). The causes which led to the near-miss scenario in Gaza included severe hemorrhage (70.8%), hypertension (16%), uterine rupture (3.7%), sepsis (3.7%) and HELLP syndrome (3.7%) (Courbage, Abu-Hamad, &Zagha, 2016).Furthermore, near miss reviews conclude that it is more associated with prim-parity, previous obstetric problems, previous medical problems, previous cesarean section, poor quality antenatal care, history of abortion and preterm labor $\leq$ 36 weeks (Shnaina, 2014). Moreover, neonatal outcomes have not improved in the past decades. It is well documented that cesarean delivery is associated with increased risk of maternal morbidity and mortality. Furthermore, cesarean delivery can have a negative impact on perinatal outcomes of subsequent pregnancies, with

higher risk of stillbirth and uterine rupture. Increasing number of repeat cesarean deliveries also correlates with increasing maternal morbidity.

1.7.4 Healthcare system

The Palestinian healthcare system is a mixture and composed of five main health providers; Ministry of Health, United Nations Relief and Work Agency (UNRWA), Non-Governmental Organizations (NGOs), Palestinian Military Medical Services (PMMS) and Private sector. MOH which is the main healthcare provider and provides primary, secondary, and tertiary healthcare services (MOH, 2016a). It became under the responsibility of Palestinian national authority (PNA) after Oslo agreement; since that time, MOH started programs focused on ensuring continuity of health services to reform existing system, infrastructure, and equipment (Shalabi, 2012). The second provider is the UNRWA which provides health programs focused on comprehensive, preventive, and primary healthcare, services covering medical care, family health, disease control and prevention, and health education. All of these services are provided free of charge for refugees. The third provider is the NGO's, which provides primary, secondary, and tertiary healthcare services for the population; it owns and operates about 185 PHC centers in Palestine. The NGO sector range from missionary hospitals, to facilities supported by international organizations, to community health centers (WHO, 2018b). Finally, the private sector, which has hundreds of private settings that are operated mainly by private individuals, medical specialists, dentists, physicians, laboratory technicians and x-ray technicians (MOH, 2016a). Although availability of various health providers does not necessarily guarantee covering all of the needed health services. The early mentioned demographic characteristics of the Gaza Strip population imply that there is an increasing load on the health sector which should respond not only to the current challenges of occupation, siege and political divisions but also to the increasing demands for health services resulted from the ongoing increase in population size.It’s well known that health systems have three fundamental objectives which are improving population health; responding to people expectations and providing protection against sudden unplanned payment for health services especially for the poor. In the Palestinian context, MOH is not only responsible for providing those three objectives but also it is responsible for regulating the provision of health services provided by the other providers.

The results of the Palestinian Health Accounts for 2016 in Palestine indicated that the total expenditure on health increased by 7.4% compared to 2015 in all institutional sectors. In 2015 health expenditure totaled USD 1,321.3 million compared to USD 1,419.5 million in 2016. While registered capital expenditure was USD 18.4 million in 2016, compared to USD 28.9 million in 2015 (MOH, 2018b).

During 2015, 2016 the household's out-of-pocket payment scheme contributed to 45.5% of health funding. Government schemes and compulsory contributory health care financing scheme decreased between "2015-2016" from 33% to 30.5% (MOH, 2018b).Most of the total health expenditure was spent by curative care (inpatient curative care and outpatient curative care) with a percentage of about 71.7%, while data shows that about 18.3% of the total health expenditure was spent on medical goods in 2016. And there was expenditure by small part on rehabilitative care, long-term care (health), ancillary services (non-specified by function), preventive care and governance, and health system and financing administration (MOH, 2018b).

1.7.5 Hospitals

There are 30 hospitals in the Gaza Strip, with total number of 6,006 beds are in governmental, non-governmental, private and UNRWA hospitals; 60.1% in West Bank and 39.9% in Gaza Strip, 73% of them are general beds, 19% specialized beds, 3.1% rehabilitation beds and 4.9% maternity beds. MOH is responsible for an important portion of secondary healthcare delivery system. In Gaza Strip there are 13.2 beds per 10,000 of population, 760 general physicians, 496 specialists, 1349 nurses and 75 midwives (MOH, 2016a). This declined to be 12.1 beds per 10,000 populations(MOH, 2018a). Governmental sector faces many challenges such as shortage of human resources including obstetricians and gynecologists as well as midwives. Moreover, policies that empower midwives should be reinforced, as the contribution of midwives to improvements in the quality of health and reproductive services is significant. The better utilization of midwives is associated with less medicalization and less instrumentation of obstetric services, a friendlier environment, and also cost containment (Courbage, Abu- Hamad and Zagha, 2016).

1.7.6 Maternity Services

Maternity services are provided by four main hospitals, Al-Shifa, Nasser, Shohadaa Al-Aqsa, Al Hilal Al Emarati, in addition to other Private and NGOs institutions. The total number of live births was 57,694 during 2018 (MOH, 2018a). Total deliveries at Al-Shifa hospital was 17402, CS rates was 26.0% (MOH, 2016a). The department of obstetrics and gynecology in Shifa offers comprehensive services and meets the needs of all problems related to women health. Services are provided with hospitalization unit, specialty clinic and women emergency room (Shalabi, 2012). Total deliveries were 7,151 at Shohadaa Al-Aqsa hospital, of them 1,185 was by CS. It accounts for 16.6% (MOH, 2016a). Obstetrics and Gynecological department of Yafa hospital started working in 2011, with 13 beds (MOH,2016a). Regarding Nasser hospital, no. of deliveries was 11,735, while CS deliveries was 1,956. It accounts for 16.7% (MOH, 2016a). Regarding Al Emirati hospital which was established in 2006 in Rafah Governorate to provide maternal health services for about 225,538 populations, it contains 43 beds, with total no. of deliveries 5,975; of them 1,285 by CS. It means CS rate of 21.5% (MOH, 2016). Al-Awda Hospital is considered the main Gynecology and Obstetrics provider in the Northern area, and the total deliveries for the year 2013 were 2,844 cases. CS rate was 16% (United of Health Work Comittees- UHWC, 2013). In general, there are around two hundred healthcare providers working in most of institutions provide maternity services. Moreover, all maternity care hospitals are using paper-based medical records as the primary source of medical information. All information regarding the management are written by hand on the file and kept at the medical archive at the hospital (Shalabi, 2012). However, lack of effective documentation, ineffective use of referral system and lack of standardization of assessment and categorization of high risk pregnant women, make management of these women, who are more susceptible to deliver by CS, is unclear (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). According to MOH report, the percentage of newly registered pregnant women who were classified as high risk pregnancy was 44.2% (MOH, 2018b), whereas, 16.7% of pregnant women who registered at UNRWA during 2018, were classified as high risk pregnancies (UNRWA, 2019). Moreover, shortage of specialists, lack of unified national protocols are considered main gaps which should be addressed to improve the quality of services provided to women at reproductive age. In addition to significant performance gaps in the clinical management of maternal complications which may occur during or after delivery especially operative delivery. The high proportion of women at reproductive

age implies that policymakers need to set strategies to ensure access to appropriate quality reproductive health services and information to this very important segment of the community. Delivery sites should obtain an adequate number of obstetric beds and these sites must be equipped with adequate resources and technologies in order to cope with the projected increased proportion of women at the reproductive age (Courbage, Abu- Hamad and Zagha, 2016).

1.8 Definitions of terms

Normal Labor: Uterine contractions that bring about demonstrable effacement and dilatation of the cervix (Cunningham, et al., 2014). Its divided into three stages:

First stage: Starts from the beginning of the effective uterine contraction. It is divided to two phases:

a-Latent phase: The latent first stage is a period of time characterized by painful uterine contractions and variable changes of the cervix, including some degree of effacement and slower progression of dilatation up to 5 cm for first and subsequent labors (WHO, 2018c)

b-Active phase: The active first stage is a period of time characterized by regular painful uterine contractions, a substantial degree of cervical effacement and more rapid cervical dilatation from 5 cm until full dilatation for first and subsequent labors (WHO, 2018c)

Second stage: The second stage is the period of time between full cervical dilatation and birth of the baby, during which the woman has an involuntary urge to bear down, as a result of expulsive uterine contractions (WHO, 2018c).

Third stage: It begins after the birth of the baby and ends at complete expulsion of the placenta(WHO, 2018c).

Cesarean Section: The procedure in which the fetus is delivered through incisions in the maternal anterior abdominal and uterine walls (Sakala, 2018)**.**

Primary CS: Refers to a first-time hysterotomy(Cunningham, et al., 2014)**.**

Secondary CS: Denotes a uterus with one or more priorhysterotomy incision(Cunningham, et al., 2014)**.**

Cesarean section rate: Is expressed as a percentage calculated by dividing the number of cesarean deliveries over the total number of live births(Betrán, et al., 2016)**.**

Trial of Labor after cesarean delivery (TOLAC): Refers to a planned attempt to deliver vaginally by a woman who has had a previous cesarean delivery, regardless of the outcome. This method provides women who desire a vaginal delivery the possibility of achieving that goal- a vaginal birth after cesarean delivery (VBAC). (ACOG, 2017)

Service providers: Physicians at obstetric departments who perform CS.

Cephalpopelvic disproportion: This is the most common indication for cesarean delivery. This term literally means the pelvis is too small for the fetal head. In actual practice, it most commonly indicates failure of the adequate progress in labor, which may be related to dysfunctional labor or suboptimal fetal head orientation. (Sakala, 2018).

Fetal malpresentation: This refers most commonly to breech presentation, but also means any fetal orientation other than cephalic (Sakala, 2018).

Prolonged second stage*:* CS is indicated in the second stage if 1. Fetal distress and presenting part above 0 station. 2. Failure of instrumental vaginal delivery (MOH, 2016b).

Category III EFM strip. The Fetal Heart Rate (FHR) monitor pattern suggests the fetus may not be tolerating labor, and indicate immediate delivery, but commonly associated with a false-positive finding (Sakala, 2018).

Specialist: Physician with less than 5 years' experience after Board certificate or those with Master degree

Consultant: Physician with board certificate or PHD and more than five years of experience.

Robson Ten Group Classification: The Robson system classifies all deliveries into one of ten groups on the basis of five parameters: obstetric history, onset of labor, fetal lie, number of neonates, and gestational age (WHO, 2015).

Low Birth Weight (LBW): is defined as a birth weight of less than 2500 g (up to

and including 2499 g)(WHO, 2004).

Very Low Birth Weight (VLBW): Is defined as birth weight less than 1500 g (WHO, 2004).

Extremely Low Birth Weight (ELBW): Is defined as birth weight less than 1000 g (WHO, 2004).

1.9 Study layout

This research is presented in five chapters: Introduction, conceptual framework and literature review, methodology, results and discussion, conclusion and recommendation.

The first chapter presented general introduction to the study, where a brief background regarding the subject of the study was provided. The researcher illustrated the problem statement, justification for conducting the study, the general goal and specific objectives, research questions. Context overview and operational definitions of key concepts addressed in this study come at the end of the first chapter.

The second chapter included two parts; conceptual framework where the researcher provided a schematic diagram of the conceptual framework of the study, and the second part presented the literature review related to the study topics and variables. In depth detailed theoretical inquiry including previous studies where presented to enrich the study.

The third chapter described methodology including study design, population, sample, instruments, pilot study, data collection method, data analysis and presents information on its reliability and validity, ethical considerations and statistical procedures.

The fourth chapter presented the study results and discussions. The researcher presented the results in the form of figures and tables that make it easy for the reader to understand and make comments. The results were discussed in relation to available previous studies that directly related to the topic of this study and its objectives.

The fifth chapter concluded headline thoughts suggested by the research findings, argued possible implications of them, proposed policy recommendations and recommended further studies on certain areas. The last chapter listed references and resources cited or quoted in this study.

Chapter Two

Conceptual framework and literaturereview

This chapter summarizes the arguments, studies and claims pertaining to the main study concept which is the Cesarean Section in the Gaza Strip with factors related to it and its implications. This is described after introducing the conceptual framework of this study which presents the core of the study, Cesarean Section, beside other domains that the researcher examined their effects on previous main concept.

2.1 Conceptual framework

The researcher constructed the conceptual framework based on the literature review. The framework helped logically linking potential factors that could affect Cesarean Section rate in the Gaza Strip. The researcher divided these factors into five main domains which are healthcare system related factors, women characteristics related factors, clinical factors, standards and protocols and monitoring, supervision and evaluation, as shown in fig. 2.1.

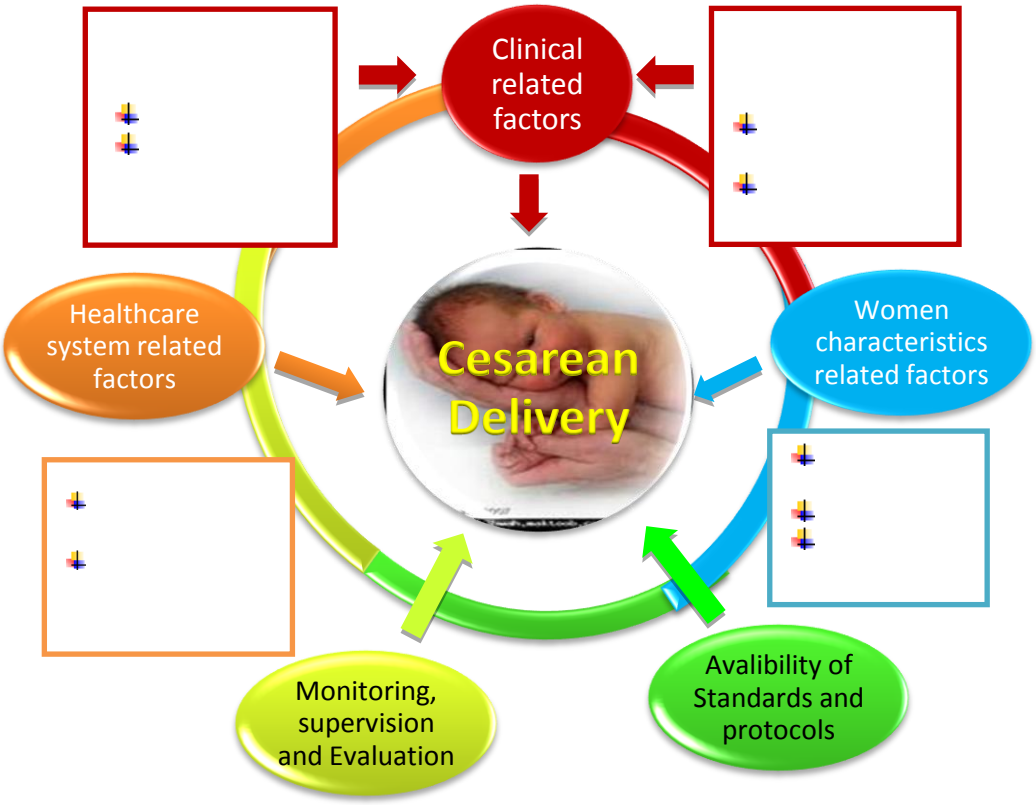

Figure (2.1): Conceptual framework, self-constructed

2.1.1 Healthcare system related factors

2.1.1.1 Healthcare provider factors:

It includes all factors related to the healthcare providers who perform or participate in CS, such as obstetricians' attitude, expertise and available equipment that might affect their performance. (Shaaban and et al., 2012). Healthcare provider side moral hazard issue should be taken seriously and considered under national health policies and regulations, also It is important for healthcare providers to understand the short-term and long-term tradeoffs between cesarean and vaginal delivery, as well as the safe and appropriate opportunities to prevent overuse of CS, particularly primary CS (American College of Obstetrics and Gynecologist-ACOG, 2014).

2.1.1.2 Organizational and health service-related factors:

It includes all factors related to the service provided to women for their delivery, does it private or public institution, and is there protocol applied? the system of monitoring and evaluation, indications of CSs in these institutions, type of CSs either elective or emergency. In addition to characteristics of medical professionals working at different institutions types regarding specialization and time of professional activity.

2.1.2 Women characteristics related factors

Women have a legal right to know the risks associated with their treatment and the right to accept or refuse it (Salih, 2016), women characteristics include the followings:

2.1.2.1 Socioeconomic status:

socioeconomic variables such as living place, economic condition and educational level have significant influence on the increases rate of CS.

2.1.2.2 Women preference:

Cesarean delivery on maternal request (CDMR) defined as primary cesarean delivery at maternal request in the absence of any medical and obstetric indication (Shaaban and et al., 2012).CS rates have been rising for all women in the United States regardless of medical condition, age, race, or Pregnancy of old women and while the number of first cesareans performed without medical indication is increasing, no evidence supports the beliefs that these elective cesareans represent maternal request. (Salih, 2016).

2.1.2.3 Social factors:

Cultural and social factors affect the decision to perform CS; for example, primary or secondary infertility, being married at advanced age, having baby by IVF and male fetus after having female babies. All these factors may affect the decision of delivery mood either by healthcare provider or the mother herself.

2.1.3 Clinical reasons

These include obstetric factors and medical factors, which guide the decision of CS to ensure the safest outcome to the mother and her baby. These factors either related to the fetus or the mother or both.

2.1.3.1 Fetal factors:

It includes all factors related to the fetus medical condition, presentation or lie that may affect the decision to perform CS**.**

2.1.3.2 Maternal medical and obstetric factors:

Maternal medical and obstetric history play great role in determining mode of delivery, category of CS, either electiveor emergency. Elective or planned CSs are performed according to an antepartum indication and at a time to suit the patient and the maternity team. Urgent CSs are commonly performed after labor onset, mostly due to failure to progress or presumed fetal compromise, which is not immediately life threatening. Emergency CSs are performed when there is an immediate threat to the woman or fetus (Stjernholm and et al., 2010). History of abortion, stillbirth, neonatal death, mother age, parity and gravidity are all factors affecting the decision to perform CS. Moreover, in many settings, women are increasingly undergoing cesarean sections without any medical indication which may contribute to the worldwide secular trend towards higher rates of cesarean sections

2.1.4 Standards and protocols

Availability of protocols and guidelines is important but the implementation is the cornerstone in the introducing of services in a proper and organized way. The availability of guidelines and its implementation leads to keep resources from wasting and getting on high quality services and when the guidelines are available. This sub domain measures the presence of a complete & clear instructions regarding the CS decision making process.

2.1.5 Monitoring, supervision and evaluation

Monitoring and evaluation serve several purposes, they provide information on what an intervention is doing, how well it is performing and whether it is achieving its aims and objectives. It also provides guidance on future intervention activities; and considered as an important part of accountability to funding agencies and stakeholders (WHO, 2018d). In the absence of effective monitoring and evaluation, it would be difficult to know whether the intended results are being achieved as planned, what corrective action may be needed to ensure delivery of the intended results (United Nation Development Programme-UNDP, 2009).

2.2 Literature Review

2.2.1 Labor

Parturition corresponds to the major physiological transitions of the myometrium and cervix during pregnancy, the process of labor is one of these transitions, which in itself divided into three clinical stages; stage of cervical effacement and dilatation, stage of fetal expulsion and stage of placental separation and expulsion. Uterine awakening or activation begins during last 6-8wks of pregnancy and includes events which eventually can leads either to preterm labor or delayed labor. These events represent the culmination of a series of biochemical changes in the uterus and cervix, which result from endocrine and paracrine signals emanating from both mother and fetus. Their relative contributions vary between species, and it is these differences that complicate elucidation of the exact factors that regulate human parturition (Cunningham and et al.,2014). Active labor can be reliably diagnosed when cervical dilatation is 5 cm or more in the presence of uterine contractions. What makes cervix sensitive to the power exerted by uterine contractions is the cervical effacement; which manifests clinically by shortening of the cervical canal from a length of approximately 2 cm to a more circular orifice with almost paper-thin edges. Once this cervical dilatation threshold is reached, normal progression to delivery can be expected, most women are if left unaided will delivered within approximately 10 hours (Cunningham and et al., 2014). However, abnormal slow labor progression can occur, which called Dystocia, this can be due to several factors including fetal abnormalities of presentation, position, or development, abnormalities of the maternal bony pelvis and soft tissue abnormalities of the reproductive tract. It is simply categorized into abnormalities of power, passage and/or passenger. Commonly used expressions are cephalopelvic disproportion (CPD) and failure to progress (Cunningham and et al., 2014). Meanwhile, the WHO designed a graphic record, Partograph, to monitor the progress of labor and relevant details of the mother and fetus, and thus detect labor that was not progressing normally. This would allow for timely transfer to occur to a referral center, for augmentation or CS as required, therefore, it increases the quality and regularity of observations made on the mother and fetus, and it also serves as a one ¬page visual summary of the relevant details of labor (WHO, 2008). WHO partograph begins only in the active phase of labor, when the cervix is 5 cm or more dilated. The observations that are recorded will document the maternal wellbeing (pulse rate every 30 minutes, blood pressure and temperature 4¬hourly, urine output and dipstick testing for protein, ketones (if

available) and glucose after voiding, and record all fluids and drugs administered), fetal wellbeing (fetal heart rate for 1 minute every 15–30 minutes after a contraction in the first stage, and every 5 minutes in the second stage), liquor (clear, meconium stained, bloody or absent. Thick meconium suggests fetal distress, and closer monitoring of the fetus is indicated. Check every 30 minutes), uterine contraction, abdominal examination and pelvic examination (WHO, 2008). however, assessment of the quality of natal care at maternities done by Shallabi, reported that partograph was filled in only 35% of cases, which reflects poor implementation of this effective tool and such delay of timely interventions which leads to increase CS rate (Shalabi, 2012)

2.2.2 Electronic fetal heart rate (FHR) monitoring-:

Normal FHR findings are highly reassuring of fetal well-being. Abnormal FHR findings are poor predictors of fetal compromise. External devices are the most common devices used, it picks up fetal cardiac motion and measure the beginning and ending of contractions. Baseline FHR range between 110-160 beats/minute, tachycardia is considered when heart rate is above 160 bpm, while bradycardia is less than 110 bpm. Fluctuations in the baseline FHR that are irregular in amplitude and frequency are called baseline variability. Sympathetic nervous system in response to fetal movements or scalp stimulation triggers what called acceleration; which means visually apparent abrupt increase (onset to peak in less than 30 seconds) in the FHR. In opposite there is what so called deceleration with three patterns; early, late and variable in fetal head compression, placental insufficiency and umbilical cord compression, respectively. Decelerations mean abrupt and gradual decrease and return of FHR with uterine contraction which due to parasympathetic stimulation. There is another pattern called sinusoidal which is smooth sinus- wave like pattern and occurs in case of fetal anemia. A 3-tiered system for the categorization of FHR patterns is recommended, adding that it provides information on the current acid base status of the fetus and the fetus can change from the three categories. What is important in decision of immediate delivery is Category III and persisted category II, in which FHR monitor pattern suggests the fetus may not be tolerating labor, which means recurrent late and variable decelerations, but commonly this is a false-positive finding, which leads to unnecessary CS (Sakala, 2018).

2.2.3 History of CS

The term cesarean may have arisen in the middle Ages from the Latin verb caedere (to cut). Ancient historians are largely responsible for the widely believed myth that a Roman emperor, Gaius Julius Caesar was delivered from his mother via an abdominal incision. Unfortunately, it is unlikely that these historical figures were born in that manner. Whatever the origin of the term, by the mid-sixteenth century, the term cesarean was used to describe abdominal surgical deliveries on in medical literature (O'Grady and et al., 2008).

In the United States, it is customary to use only the letter e in the first syllable of cesarean. In Australia and England, the letters a and e still are used (i.e., caesarean). The words cesarean and section both are derived from verbs that mean to cut; thus, the phrase cesarean section is a tautology. It is preferable to use the terms cesarean delivery or cesarean birth. The exact origin of the term cesarean is unclear. However, the first cesarean was believed to have been performed in 320BC, under the circumstance that the pregnant woman had died and her abdomen was cut open to deliver and, thus, save the baby's life. So historically, cesarean delivery resulted in the death of the mother and was performed when the mother has already deceased or just prior to her death. It was not until the 1500s that the first woman was recorded to have survived undergoing a cesarean delivery. Even during the nineteenth century the mortality from cesarean delivery was greater than 85% (Cheng, 2011).By the early decades of the twentieth century, several important innovations in surgical care began to reduce maternal mortality of women undergoing cesarean delivery. These included adaptations to the principles of asepsis, introduction of uterine suturing, application of a low-transverse uterine incision, advances in anesthesia, blood transfusion, and antibiotics use (Cheng, 2011).

2.2.4 Magnitude of CS

CS rates continue to evoke worldwide concern both in developed and developing countries, because of their continuous rise, which makes it as one of the most common surgical procedures. One in five pregnant women undergoes cesarean section (Betrán, et al., 2016). Moreover, there is lack of consensus on the appropriate CS rate and the associated additional short- and long-term risks and costs (Betrán and et al., 2016). In 2011one in three women who gave birth in the United States did so by CS, this is far from the 1970s when only about 1 in 20 women have cesareans (Hamilton and et al.,

2013).Although, cesarean sections are effective in saving maternal and infant lives, but only when they are required for medically indicated reasons (WHO, 2015).

China was reported to have the highest CS rate; 46.2% in the global survey conducted by WHO from 2004 to 2008 on maternal and perinatal health with 373 health facilities selected from 24 countries across Latin America, Africa and Asia. The rate of CS in Canada has increased from 17.6 % in 1995 to 27.1 % in 2012 (Canadian Institute for Health Information, 2013). While in Bangladesh CS rates increased from 3.5% in 2004 to 23% in 2014 (Khan and et al., 2017). In many settings, women are increasingly undergoing caesarean sections without any medical indication which may contribute to the worldwide secular trend towards higher rates of cesarean sections. Though it is lifesaving decision, but it remains a major surgical procedure with serious implications for the health of mother and child. Furthermore CSs require the use of more medical and healthcare resources compared with normal deliveries, which become as such a real burden to the health system working with limited resources (Jurdi and Khawaja, 2004).

In several Middle Eastern countries, the frequency of CS deliveries is on the rise. However, there are variations from a low of 1.4% in Yemen to a high of 16.0% in Bahrain. From the above results, it is obvious that Arab countries exhibit great disparities in their CS rates and were attributed to different demographic transition and socioeconomic development. In Iraq, the rate increased from 10% in 2000 to 16% in 2002, reaching 30% and 32% during the years 2009, 2010 respectively (including Kurdistan region)(AL-Naimy, Yassin and AL-Kazzaz, 2013). Regarding the Gaza Strip, during 2016, about 56,386 deliveries were registered at Gaza strip hospitals; nearly 70% of them were at MOH hospital, this rate declined compared to 2015, because of increase participation of private sector. 21.9% of deliveries are by CS; this rate was nearly 17% during 2010. (MOH, 2016a). Moreover, during 2018, no. of lived births were 57,694, and 67.3% of deliveries at governmental hospitals, while 28.1% at NGOs, 2.6% at military hospital and 2% at private doctor, with CS rate of 22.8% (MOH, 2018a). Moreover,to manage caesarean section rates at both the individual facility and national level, the WHO proposes the Robson classification system as a global standard for assessing monitoring and comparing caesarean section rates within healthcare facilities overtime, and between facilities. Use of the Robson criteria can inform efforts by identifying how use of different interventions in specific obstetric subpopulations affects overall cesarean section rate. Use of the Robson

classification allows not only an assessment of drivers of trends in caesarean section use, but also an assessment of data quality available from medical records (Vogel, et al., 2015),.

2.2.5 Category of CSs:

2.2.5.1 Emergency CS:

Emergency CSs are performed when there is an immediate threat to the woman or fetus(Stjernholm, Petersson and Eneroth, 2010). A retrospective descriptive study was conducted at the Department of Gynecology & Obstetrics Liaqat Memorial Hospital Kohat KPK; it showed that the rate of cesarean section was 12.46% with no significant change over the last decade. Majority of the cesareans were done in emergency situations. Obstructed labor was the most frequent indication Early detection of risk cases and proper referral in time may reduce the cesarean related morbidity and mortality.(Jabeen, Gul and Nasir, 2017).

2.2.5.2 Elective CS:

Elective or planned CSs are performed according to an antepartal indication and at a time to suit the patient and the maternity team (Stjernholm, Petersson and Eneroth, 2010). The United States National Institutes of Health-(U.S.-NIH) recommended that regarding CDMR, women should be counseled individually regarding risks and benefits. However, women who are considering having >2 children should be aware that a cesarean section causes uterine scarring; these women should avoid a primary cesarean section. And the most importantly, women should not have a cesarean section prior to 39 weeks' gestation (Sakala, 2018). This is in line with national palestininan protocol which recommends that elective CS should not be done before completed 39 weeks, unless consultant decided otherwise (MOH and UNFPA, 2016). Moreover, there are concerns regarding the long-term risks associated with CS, particularly those associated with subsequent pregnancies; for example, the incidence of placenta previa increases with each subsequent CS from 1% with one prior CS to almost 3% with three or more prior CS. After three CS, the risk that placenta previa will be complicated by placenta accrete will be 40% (Silver et al., 2006).

2.2.6 Indications for Cesarean Section

Indications to perform CS varies according to whether it is an emergency or elective, if there is applied national protocol to perform it or not. Also according to fetal or maternal complications facing healthcare provider who perform the operation. In United States,

being nulliparous, older women increases your risk of CS, whereas CS performed primarily for fetal distress compromise only a minority of all such procedures. This can explain the rise of CS rates in US from 4.5% of all deliveries to 32.8%, from 1970 to 2010, respectively (Cunningham and et al., 2014). Moreover, in 2011, one in three women who gave birth in the United States did so by cesarean delivery (Hamilton and et al., 2013). Other indications such as Breech presentation and labor induction especially among nulliparous increases the CS rates. Also most cases with preeclampsia delivered by CS rather than by induction (Cunningham and et al., 2014). A study to explore reasons for performing a cesarean section in public hospitals in rural Bangladesh was conducted by Aminu and et al. (2014), taking 2,503 deliveries occurred in the five public hospitals during period of the study. Of these, 530 (21.2%) were cesarean sections. The five commonest indications for CS were (in descending order): one or more previous CS, fetal distress, cephalopelvicdisproportion, prolonged/ obstructed labor and 'post term dates, together accounting' for 70.6% of all CS conducted. The five commonest indications for an emergency CS almost mirrored those for all CS and were: previous CS, fetal distress, cephalo-pelvic disproportion, prolonged/obstructed labor and rupture of membranes. For elective CS, the five commonest indications were different: previous CS, 'post term dates', poor obstetric history, hypertensive disorders and oligohydramnios. Indications such as 'post term dates', rupture of the membranes, unfavorable cervix and labor pain make up about 12.3% of all CS. An additional 3.7% of all CS might be considered to have been done for non-medical indications (i.e. anemia, older primipara, maternal distress, recurrent urinary tract infections, and poor obstetric history). Of the 530 patients in this study, there were 360 emergency CS (67.9%) and 164 elective CS (30.9%). Moreover, primary CS constituted 63.0% (334/530) of all the patients in this study, while repeat CS accounted for 35.1% (186/530). Fetal distress, CPD, post term, obstructed labor, breech presentation, "rupture of membranes" and failed induction accounted for about half (49.4%) of the primary CS, while 83.4% of the repeat CS had previous CS as sole indication. Primiparous women were significantly more likely to have an emergency CS (193/242) compared to multiparous women (168/288) (79.8% vs. 58.3%). But, 20.2% of all CS in Primiparous women were done as an elective CS (49/242). The most common indication for a CS in Primiparous women was postdates (19%) followed by CPD (9.3%) and fetal distress (8.4%) (Aminu and et al., 2014).

Amniotic fluid estimation is very important in pregnancy as increase or decrease in AFI is indicator of some complication in pregnancy. Oligohydramnios can complicate about 1 – 5% of pregnancies and most commonly it prompts Labor induction. One of the most common ways to assess oligohydramnios is to check for Amniotic Fluid Index (AFI). The amount of amniotic fluid varies with gestational age and it plateaus at 22–39 weeks of gestation with the amount being 700–800 ml and it corresponds to AFI of 14–15 cm. The low AFI or decrease in amniotic fluid volume has many complications and one of these is the increase incidence of cesarean section (Natasha and et al., 2017). Induction of Labor in twin pregnancies increases the risk of caesarean section compared with spontaneous Labor onset, especially if Foley catheter or prostaglandins are required. However, approximately 80 % of induced labors are delivered vaginally (Jonsson, 2015).

2.2.6.1 Fetal indication:

It includes all factors related to the fetus condition, presentation or lie that may affect the decision to perform CS. however, the most common fetal indications to perform CS are malpresentation, no reassuring fetal status, congenital anomalies, Macrosomia and prior neonatal birth trauma (Cunningham and et al., 2014). Fetal distress, malpresentation, cord prolapse, Intrauterine Growth Restriction (IUGR) and pregnancy complicated by multiple fetuses were the most common fetal indications of Cesarean sections done at teaching hospital in Pakistan from January 2009 to December 2010 (Mussarat, Qurashi and Roohi, 2013).

2.2.6.2 Maternal indications:

The decision to perform CS can also be related to maternal medical or obstetric condition or even both, the most common indications are previous CS, cephalopelvic disproportion, failure of induction of normal labor and abnormal placentation. Moreover, maternal medical condition can lead to CS, such as hypertension, preeclampsia, anemia, prior classical hysterotomy, genital tract obstructive mass and pelvic deformity(Cunningham and et al., 2014). Mussarat et al., (2013) found the leading maternal indications were previous caesarean section, severe preeclampsia, postdate& failed induction of labor, placenta Previa, and failure of progression of labor, Premature rupture of membrane (PROM)and cephalopelvic disproportion CPD (Mussarat, Qurashi and Roohi, 2013).

2.2.7 Healthcare system related factors

A good health system delivers quality services to all people, when and where they need them. The exact configuration of services varies from country to country, but in all cases requires a robust financing mechanism; a well-trained and adequately paid workforce; reliable information on which to base decisions and policies; well-maintained facilities and logistics to deliver quality medicines and technologies (WHO, 2018b). The relationship between doctor and patient is the core of the healthcare system, and the doctor-patient interaction continues to be a central focus of the study of health system (Carlsen and Aakvik, 2006). Reproductive health in the Gaza Strip was the concern of healthcare system especially in the reduction of maternal mortality, improving the quality of obstetric care (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). However, there are many structural gaps in access, clinical governance and quality of reproductive health services. Furthermore, identifying gaps in the availability, accessibility, and quality of services in addition to assessment of practices in obstetric care is essential to sustainably promote equitable access to high quality services in congruence with international standards (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). More worryingly, the healthcare system is not financially sustainable, rather it is donor's dependent which may jeopardize all the achievements made recently including the reduction in MMR. (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). Moreover, drug, supplies and staff shortage are most common threats reported by healthcare providers which result in fluctuation of healthcare system achievements. In addition to lack of standardization, system fragility and lack of institutionalization of improvement strategies with high possibility for easy relapse and drawbacks especially during crises (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018).

2.2.7.1 Healthcare provider related factors:

Physicians may play a leadership role in developing, supervising and shaping healthcare systems. They largely control and direct medical resources and act as the gatekeeper to the health system (Courbage, Abu- Hamad and Zagha, 2016).

In studying the various health care factors that might contribute to the rise of CS rate, obstetricians' performance would be at the core of these factors. Obstetricians' attitude, expertise and available equipment might affect their performance (Shaaban and et al. 2012). Descriptive study performed at the 8th annual Obstetrics and Gynecology conference of Suez Canal University held at Ismailia city in Egypt in June 2011 via a

structured self-administered questionnaire. Questionnaire was distributed to 223 conference attendants from the three professional levels (consultants, specialists and registrars) working at the two major institutions in Egypt: University and Ministry of Health. The structured questionnaire was based on informed opinion and professional guidelines. In total, 167 (75%) completed the questionnaire, CS on maternal request was accepted by 66% of the studied group and acceptance was significantly higher among consultants. There was no difference in all physicians' practices of cesarean section in both private and public settings but limited access to medical equipment such as Cardiotocogram (CTG) was shown in consultant group reflecting improper private sector preparations. The study revealed that 59% of obstetricians accepted vaginal breech delivery, and only 14% would consider External Cephalic Version- (ECV). Fetal scalp pH taking in cases of abnormal CTG was accepted by only 16.3% and 49% rejected the practice of instrumental delivery. There were significant differences among the three professional and the two institutional groups regarding these attitudes. There were different views regarding tubal sterilization during CS (Shaaban and et al., 2012).

A cohort of 832 low-risk Primiparous women participated in the investigation from 2010–2012 three consecutive times, from their second to third trimester and, finally, 1–2 days post-partum, shows that Chinese doctors play an important role in the decision of using CS, without justified indications as defined in the guideline. A decision on the use of CS was often made during the third trimester of the pregnancy or during the process of labor. Low maternal childbirth self-efficacy was also a significant risk factor associated with maternal request for CS among Primiparous Chinese women (Ji, 2015). Elective first CS at physician request may, however, play a significant role and the rise in elective repeat surgeries, which has climbed by more than 40% in the last ten years, certainly does. Although 70% of women or more who plan VBAC can birth vaginally and avoid the complications of repeat cesarean surgeries, almost all women today have a repeat operation because most doctors and many hospitals refuse to allow VBAC (Salih, 2016).

Cultural difference among both providers and patients may also impact on CS utilization. A portion of this variation could also be attributed to an increasing professional reliance on technology in urban areas. Also, reluctance among some healthcare providers to take any risks and a fear of litigation may contribute to increased utilization of CS (Khan and et al., 2017).

2.2.7.2 Organizational factors:

In many countries differences in organizational types leads to variation in CS rates in these countries. Does this applied to our country? Or there are other factors related to the system of monitoring and evaluation responsible for increasing trends of CS. One of the studies done to show if there are variations between private and public sector in Bangladesh, was conducted by Rukhsana, (2016), it showed that the increased CS rates in Bangladesh is more likely due to the influence of for-profit private health institutions and the doctors (working hour preferences and financial incentives) working for those private clinics. A comparison of rate of CS between governmental and private hospitals in Baghdad City, showed that the rate of CS to total deliveries was high in both hospitals, yet it was higher in the private than in public (AL-Naimy, Yassin and AL-Kazzaz, 2013). Regarding Egypt, private sector is responsible for increase trends of CS during last years which was revealed by revision of national surveys from 2005-2014; This increase in the private sector is explained by significant increases among mothers who are potentially at low risk for CS; mothers aged 19-24 years vs. ≥35 years; primigravida mothers vs. mothers with ≥4 children; and among normal compared to high risk birth weight babies (Rifai, 2017). There is also a lack of use of evidence-based guidelines or protocols, which may lead to misinterpretation of clinical signs, fear of simple interventions, and an excessive rate of emergency CSs. For example, it may be necessary to revisit the definition of labor dystocia because recent data show that contemporary labor progresses at a rate substantially slower than what was historically taught. Additionally, increasing women's access to nonmedical interventions during labor, such as continuous labor and delivery support, also has been shown to reduce cesarean birth rates (ACOG, 2014)

2.2.8 Women characteristics related factors

As women have taken a more active role in their obstetrical care, some request elective cesarean delivery. Data regarding the true incidence of CDMR are limited. Reasons for requested cesarean delivery include reduced risk of fetal injury, avoidance of the uncertainty and pain of labor, protection of pelvic floor support, and convenience. Thus, the debate surrounding CDMR includes its medical rationale from both a maternal and fetal-neonatal standpoint, the concept of informed free choice by the woman, and the autonomy of the physician in offering this choice. To address this, the National Institutes of Health (2006) held a State-of-the-Science Conference on CDMR. A panel of experts critically reviewed available literature to form recommendations based on identified risks

and benefits. It is noteworthy that most of the maternal and neonatal outcomes examined had insufficient data to permit such recommendations. Indeed, one of the main conclusions of the conference was that more high-quality research is needed to fully evaluate the issues. The ACOG (2014) concluded that data comparing planned cesarean and planned vaginal delivery were minimal and thus should be interpreted cautiously, however, the panel was able to draw a few conclusions from existing information. CDMR should not be performed before 39 weeks' gestation unless there is evidence of fetal lung maturity (ACOG, 2014). Moreover, It should be avoided in women desiring several children because of the risk of placental implantation abnormalities and cesarean hysterectomy(ACOG, 2014). Finally, it should not be motivated by the unavailability of effective pain management (Cunningham et al., 2014). Socioeconomic status and living conditions also affect the CS as noticed by the 2015 Egyptian Demographic and Health survey (EDHS), which revealed that women in urban areas were more likely to have had a caesarean section than rural women, with the highest rate found in urban Lower Egypt (59 percent). The CS level was markedly higher among women in rural Lower Egypt compared with those living in rural Upper Egypt (45% and 33%, respectively). The proportion ever having a caesarean delivery increased directly with the woman's educational level and the wealth quintile and was higher among women who worked for cash than women not working for cash(Ministry of Health and Population [Egypt], 2015). Another Quantitative cross- sectional study to assess the current situation about caesarean births and natural births in Bangladesh showed that women who prefer CS were living in the urban area, admitted into private institution, educated with strong economic background, age above 25 and service holder as well (Jisun and Kabir, 2014). The reasons for rural to urban differences on the rate of CS use could be multifaceted and complex. There are socio-economic differences between rural to urban areas and so are in affordability of CS use. Also, there is variation in availability/accessibility of CS facilities across rural and urban areas (Khan and et al., 2017). The mothers' age has a negative impact on survival, doubling the infant mortality rate for mothers over 35 years of age than for those in their twenties. It is the same for birth order and for the length of the previous birth interval. All of these close relations between demographic characteristics and mortality are as expected, but should be translated into a program of action by advocating for longer birth intervals and discouraging pregnancies at risky ages. A study done by Khan and et al. (2017), showed that younger (less than 19) and advanced maternal age (more than 35), urban place of residence, high socio-economic status, higher education few children delivered (less or equal 2), more antenatal visits, and maternal overweight and obesity were the key factors of the increasing rate of CS use.

Chapter Three
Methodology

This chapter presents information about the methods used to apply this study. It describes the design of selected approach (methodology), the sample selection and sampling methods. The data collection and data analysis methods. Description of piloting stage and modifications pursued in response to piloting results is fleshed herein. In addition, the study period and the response rate are illustrated. Information about the study instrument, its reliability and validity preceded the study limitations which appear at the end of this chapter

3.1 Study design

This study is triangulated; analytic, cross-sectional one adopts a comparative mixed method design, combining both, quantitative and qualitative methods. It was used to identify factors that influence the increased rates of cesarean deliveries in the Gaza Strip in order to set recommendations to prevent unnecessary cesarean sections, and to explore organizational, healthcare providers and women factors that may affect the decision making process of CS. Cross sectional study saves time and provides us with more evidence than simple descriptive study, measurements are made on a single occasion (Fathalla, 2004). Triangulated method which mix quantitative with qualitative method is preferred because finding from one method can be checked against the findings of other method, by this way the validity is enhanced. This study utilized methodological triangulation between quantitative method (group administered questionnaire with health care providers), qualitative method (in depth interviews with key health informants) and retrospective record review to validate findings from one method with another. The quantitative part was conducted to identify factors that may influence the rate of CS, while the qualitative part was through individual interviews with policy makers (five interviews). Such designs also raised a complex set of issues, since the two methods produced such different kinds of data, as quantitative part captures quantifiable perceptions and qualitative part attempts to reveal the reality behind these perceptions. Intensive one-on-one interviewing is a classical method in qualitative research different from quantitative studies based on structured questionnaire, the in-depth interview is of more social encounter, with questions flowing from the answer of the respondents, as a follow up to the answer, or to probe further into the answer open ended questions is a basic tool in qualitative research

the interview may take the form of an informal conversation with little or no preparation and sequencing of questions. Alternatively, a topic guide or outline maybe used to help in focusing the interview, but without pre-structuring the questions. A pre-determined set of open-ended questions is however, the most standardized approach for in-depth interviews (Fathalla, 2004).

3.2 Study setting

For more representativeness and accuracy, the study was conducted at all Governmental hospitals that provide maternity services in addition to Al Adwa hospital, the largest NGOs hospital, these hospitals provide natal services for the majority of Gaza strip population

3.3 Study population

The quantitative part

All governmental hospitals that provide natal services were included. Also, the NGO facilities that provide natal services were also included in the target population. The first one, consisted of all healthcare providers at obstetric departments at the governmental and the selected NGO hospital who perform CS, there number is around 160 healthcare providers as estimated by direct interaction with senior obstetricians and head of departments at obstetric wards.

The second group was medical records of those who underwent CS according to the eligibility criteria during the last four months of the year 2018 (2507 case of CS deliveries).

The qualitative part

this group consists of higher managerial level key informants who are considered as policy makers, they are the head of departments and managers of obstetric wards. their number is five

3.4 Study period

The study was expected to consume 13 months but the researcher passed through many struggles that caused delay. It was initially proposed in July 2018. The research proposal has been submitted to and defended in the front of the School of Public Health (SPH) assigned committee in October 2018. At its development, the research proposal described the entire process and provided information and preliminary designs of the data collection

and data analysis methods and tools. Upon the approval, the researcher developed the required tools depending research objectives and questions to be answers by the tool. The researcher has consulted a group of 14 experts at the arbitration stage before the finalization of the tool, ten of them have responded. The arbitration stage lasted for eight weeks including refining of tools in the light of reviewers and the academic supervisor's feedback.In November and December 2018, the tool was ready to go for data collection. Piloting took place on January 2019. Actual data collection started from January to June 2019. Data collection was during morning hours from 8:00 am to 1:00 pm for questionnaire and till 12:00 pm for record review. Data entry was not in the same period of data collection, it was done during July and August 2019.

Analysis of quantitative data was done between September and October 2019, then the researcher entered Qualitative data collection stage. The researcher extracted findings, created descriptive tables and performed inferential statistical analysis, and then explained findings through linking them to relevant pieces of the literature and inputs obtained during the interviews. The drafted report 'thesis' has been frequently enriched and edited by the research supervisor. The final draft for defense was handed on April 2020.

3.5 Eligibility criteria

Inclusion criteria:

For healthcare providers, this category included all healthcare providers who perform CS with their different degrees of specialties in obstetrics and gynecology.

For the medical records, this category included records of women who underwent CS during the last four months of the year 2018.

Exclusion criteria:

For the healthcare providers, the researcher excluded all healthcare providers who work at obstetric wards but don't perform CS.

For medical records, any record for those who delivered by normal vaginal delivery.

3.6 Sampling process and calculation

Selection of hospitals was done as follows;

All the sites that provide natal services at governmental hospitals were included (4 hospitals).

At NGOs, one hospital was purposively selected.

The first population in this study was the healthcare providers (physicians at obstetric departments who perform CS). All the 160 physicians doing CS were included (census study).

The researcher used sample size calculator (Annex 2), to calculate the sample size of medical records to be reviewed, which is the second sample in the study, using the following parameters:

Table (3.1):sampling calculation

Total deliveries	58950
CS rate	21.7%
Target population	12793
Confidence level	95%
Confidence interval	5%
The suggested sample size	373

The researcher increased the sample size up to 400. But there was loss of ten files. These records were selected by stratified proportionate sampling process according to the percentage of deliveries at every studied hospital. Within each hospital, systematic sampling approach was used. According to MOH report, 70% of deliveries at Governmental hospitals (273 file), while 30% at NGOs (117 file). But as one hospital was taken as a purposive sample from NGOs, so the number of record reviewed from AL-Awda hospital was decreased to 50 record.

Table (3.2):distribution of records reviewed among hospitals

Hospital name	No. of record reviewed
Shifa Hospital	149
Nasser complex	85
Al Emarati Hospital	51
Al Aqsa Hospital	56
Al Awda Hospital	49

The third sample was purposively selected five key informants, who were interviewed about factors and implications of CS deliveries in the Gaza Strip and how to rationalize the use of CS in their hospitals.

3.7 Ethical and administrative considerations

In order to launch this study, the following measures were carried out:

- The proposal was submitted to Al-Quds University- School of Public Health for discussion and academic approval.
- An administrative approval was taken from Ministry of Health and NGOs.
- The Modified International Code of Ethics Principles (1975), known as the Declaration of Helsinki, which is adopted by the World Medical Assembly was followed and an official letter of approval to conduct the research was obtained from the Helsinki Committee in Gaza (Annex 4).
- In accordance with the principles of the Helsinki Ethical Declaration, every participant in the study received a complete explanation of the research purposes, program, and confidentiality.
- Every participant in the study knew that participation in the research is optional, in addition verbal consent was obtained from those who participated in the study.
- Formal permission regarding records review and taking notes was obtained.
- To increase the responses credibility, the researcher maintained adherence to the Ethical Code Principles, through providing and maintaining anonymity and confidentiality.

3.8 Study instruments

An interviewed questionnaire consisted of 70 questions was used to collect the quantitative data (Annex 5). It was self-constructed questions thatdesigned to cover all themes of the study and aimed to explore healthcare providers' knowledge, attitude and perspectives towards CS. The questionnaire was divided according to the conceptual framework of the study to the following sections:

- **Service provider related data**; sociodemographic data such as age, Gender, residency and profession. In addition to studying related data such as qualifications, country of graduation and experience. Also, it covered work related data such as hospital nature, private clinic ownership, duties, weekly working hours and training courses.

- Healthcare provider attitude toward all factors related to CS such as trend, the process itself with comparison with vaginal delivery, practices of obstetricians and the effect of their skills, judgment and experience. Also the implications of CS either on the mother, fetus, family and healthcare system in addition to their attitude towards midwifes and their role in CS deliveries through midwifery led model.

Healthcare system related data; it was about Guidelines and management issues in their departments including supervision, protocols, training, policy, regulations, performance indicators and reports generated.

Organizational factors that influence CS from healthcare provider perspectives; such as emergency preparedness, effect of institution type, financial issues, monitoring and evaluations.

Reasons behind CSs from healthcare providers' perspectives; it includes women related factors, fetal factors, and general reasons.

The questionnaire was ended with an open-ended question to find how to rationalize CSs from healthcare provider point of view.

Second instrument was abstraction sheet that enabled the researcher to review sample of files of women who underwent CS during the study period. It contained mother profile, past medical and surgical history, obstetric information and history, current pregnancy, CS history, the cause of CS, operation related data (time, place, surgeon, urgency…etc.), her hemoglobin level before operation and complications post operation. Regarding the outcome; it included the gender of the baby, birth weight, gestational age at delivery, newborn status, fetal abnormalities and if there was SCIBU admission or not.

The third instrument was through open ended semi-structured questions to be discussed during individual in-depth interviews with five key informants in the gynecology and obstetrics field. The questions were designed based on initial findings from quantitative data, the researcher used the percentages obtained from quantitative data to be discussed in depth through interviews and to find explanation from participants' point of view. They were ten questions after welcoming, introduction and experience view in obstetric. The questions designed to seek more information regarding obstetric service in general and CS in specific, the standardization of these services, variations between hospitals in CS rate and process, digging more in some questionnaire results, and how to rationalize the use of

CS. It was ended by asking the participant if he or she wants to add anything before closing the interview.

3.9 Pilot Study

For quantitative part, a pilot study on 10 health care providers (5% of the sample) was done to explore the appropriateness of the study instruments, the clarity of meanings, and the time it takes to fill the questionnaire in, and to expect response rate. As a result of this stage rephrasing, adding some explanations to some questions with eliminations of one question has been done. Moreover, these questionnaires were excluded.

Twenty files (5% of records), were reviewed for the completeness of data required for our study, and the feasibility to obtain missed data if present. As a result of this stage, many modifications to simplify the abstraction sheet in order to get all data from the file without need to call women.

For qualitative part, a pilot interview was done with one interviewee, which allowed for further improvement of the study validity and reliability. On the light of the result of this stage; the questions re-ordered and the way of asking the questions improved to be more deeply.

3.10 Data Collection

In this part the researcher describes the process of data collection

Quantitative part

Following piloting stage by the researcher, data collector started the field work. The eligible healthcare providers, for the study, were met inside hospitals with coordination with management in the obstetric departments, meeting with the study participants was arranged to avoid work disruption, the participants were gathered at their meeting room or conference room at times suitable for their schedules. After gathering them, the data collector explained to them the ethical and administrative consideration in conducting the study then she distributed the questionnaire after reading all questions. According to the piloting stage, the researcher found that questionnaire took time to be filled, so data collector used to attend the hospitals early morning and distribute questionnaires then she returns back at the end of the day to collect them. As instructed, data collector used to remind participants to fill the questionnaire. Generally, researcher and data collector respected and maintained the confidentiality.

For the medical records, 390 record were randomly systematically selected from lists of CSs during study period from the archive of hospitals under the study. Approval to have access in order to review these records was obtained before. It is noteworthy to mention that records confidentiality and client privacy were assured by the researcher. Revision was done by researcher herself and with help of three data collectors. The they reviewed all the files in the archive rooms and all data was obtained from the record without need to call women. Data reviewed documented in an abstraction sheet (Annex 6).

Qualitative part

After the end of quantitative data collection and analysis, one-on-one interviews were conducted with five key personnel (Annex 3), working at the obstetrics and gynecological field and form different levels of managerial positions. Interviews were through semi structured questions and were hold in their offices as agreed upon each of them and each interview lasted from 30min- 60min. The researcher started with thanking the participant for giving her their time. Then introduced the objectives of the study in brief. The first question was about general thought of the participant about obstetric services and CSs in Gaza Strip. Notes were taken and recorded throughout the interview. Also prolonged engagement and probing techniques were used to make sure that ideas are reasonably reflected.

3.11 Response rate

All sampled members were called for voluntary participation based on informed consent from each one of them before administration. For healthcare provider survey, response rate was 90% (144 responded out of 160). Also, all interviewees who were invited to participate in interviews positively responded except one (4 out of 5) with response rate 80%.

3.12 Scientific rigor and trustworthiness

Quantitative part (questionnaire)

Reliability

Reliability is the ability of a measurement instrument to measure the same thing each time it is used. To ensure reliability, during the pilot study, test-retest was conducted with five participants in piloting stage. Data collectors were trained and received detailed instructions to ensure standardization and to reduce filling errors. Checking and

verification the filled questionnaire has been done at the end of each data collection day, so error identification, correction and prevention were more feasible.

To assure the trustworthiness of for qualitative data, an expert was asked to review the questions and peer has assisted re-analyzing the data and recorded transcripts to minimize the effect of researchers' subjectivity. Minutes were taken during interviews and also digital recording took place. Prolonged engagement was done to probe for answers and cover all the interview dimensions. Finally, all the transcripts were kept for tracking the information by others at any time**.**

Validity

Validity is the ability to measure the thing as it was assigned to measure. Validity is of two types. The first is face validity which is defined as the extent to which the tool appears appealing. And to examine this, the questionnaire was nicely formatted. The pilot provided a forum to assess respondents' perception towards the questionnaire, and how they understood the questions. This enhanced the validity of the questionnaire before actual stage of data collection. The second type of validity is content validity which is defined as the extent to which the instrument includes all major elements relevant to the constructs being measured. Therefore, the questionnaire was evaluated by public health and medical experts (10 experts); (Annex 2), to assess its content validity and appropriateness for statistical analysis in order to ensure content related validity, and their comments were taken in consideration.

3.13 Data entry and analysis

Quantitative part

First of all, data checking and verifying by over viewing of the questionnaire was performed, this was followed by designing an entry model and questionnaire and variables were coded and entered into the developed database using the Statistical Package of Social Science (SPSS) program, version 20, for data entry and analysis. After data entry, data cleaning was done by taking random questionnaires and make sure it is correctly entered. This was followed by statistical examination in the form of descriptive statistical testing through frequencies distribution and central tendency calculation. General frequencies were done to figure the responses and to identify missing data for each question. Moreover, cross tabulation for main findings and advanced statistical tests such as chi square test to

compare categorical variables, thus analyze the questionnaires and the abstraction forms data. Descriptive statistics got the authors general information that could describe, organize and discuss the study data in a way or another, including numbers and tables. Moreover, it provided different, up-dated data that happened over a period of time in order to make comparison between them. Inferential statistics are the branch of the statistics dealing with conclusions, predictions, and estimations based on data from samples (Fathallah 2004).

Qualitative part

Debriefing report for each interview was done immediately after the end of each one. Also, objective consideration of non- prompted intimation and non- verbal cues was noted and considered. Open coding thematic analysis method was used to analyze the transcripts of the key informant interviews. The researcher obtained findings from the transcripts of the interviews. Then, categorization of related ideas, and comparison and integration between the quantitative and the qualitative findings to create rich items for discussion and representation.

3.14 Study limitations

The nature of participants was among the study limitations, they were obstetricians with full schedules and always busy. Questions were not so simple and need concentration. Another limitation was the frequent interruptions of research process due to difficult situations the researcher passed through so it took long time.

Chapter Four

Results and Discussion

The results of this study had been consolidated from the responses of the study participants and complemented with interviews with purposefully selected senior obstetricians and policy makers and records review. The researcher started with descriptive findings from surveyed questionnaire and records review then inferential analysis.

4.1 Descriptive findings from surveyed questionnaire

4.1.1 Demographic characteristics

Table (4.1): Distribution of responses by demographic characteristics (N 144)

Item	Category	N	%
Gender	Male	83	57.6
	Female	61	42.4
Age groups	< 30	42	30.0
	31-40	30	21.4
	>40	68	48.6
		Mean 39.26	Median 40
Area of residency	Gaza	58	40.3
	Khanyounis	37	25.7
	Rafah	21	14.6
	North Gaza	14	9.7
	Der El Balah	14	9.7
Professional title	General practitioner	21	13.9
	Specialist	45	31.3
	Resident in Palestinian Board	36	25.0
	Consultant	43	29.8
Level of education	Bachelor	40	27.8
	Post graduate diploma or higher studies (other than board)	47	32.6
	Board	54	37.5
	Others	3	2.1
Place of graduation	Palestine	61	42.4
	Arab countries	37	25.7
	Non-Arab countries	46	31.9

The total number of participants was 144. Those participants were physicians at different positions but all are performing CS at the time of data collection. They were working at hospitals providing natal services and their residency across Gaza Governorates as follows 40.3% in Gaza city, 25.7% in Khanyounis, 14.6% in Rafah and 9.7% in North Gaza and Der El Balah. As shown in Table 4.1, this is consistent with the fact that Shifa Hospital has the highest number of deliveries followed by Nasser complex according to report by MOH (2018b). Male participants have dominated the sample as they represented 57.6% of participants, it seems that the proportions of female physicians working in obstetric department is higher than their representation in other specialties. However, report by PCBS revealed that there are fewer women in Palestinian society than men, although, life expectancy for women is higher (PCBS, 2015). The mean age was 39 years, which means that physicians are young and will serve for long periods, therefore, investing in their training is worthwhile. On the other hand, some studies have found female physicians to have 30–60% increased odds of burnout, female physicians are more likely to experience depressive symptoms than male physicians; however, depression is not more common among female physicians than other females in the general population (Dyrbye, et al., 2017). Younger physicians are also at increased odds of burnout, with those who are less than 55 years old at 200% increased risk compared with those older than 55 (Dyrbye, et al., 2017).

Regarding the specialties of the physicians who were performing CS, about 30% of them were consultants, while 31.3% were specialists, 25% were residents in Palestinian Board program and 13.9% were General practitioners. This reflects that almost 60% of CSs are done by qualified and expert physicians, which goes with national protocol of obstetric care which states that the decision of elective CS should be made by consultant and planned CS should not be done before completed 39weeks unless consultant decided otherwise, also for emergency CS, the decision should be discussed with the consultant (MOH and UNFPA, 2016). According to the study was conducted to show obstetricians perspectives toward CS, and to explore the extent to which professional ranking can affect CS rate and other medical practices related to it, 40% of the sample was consultants (Shaaban, et al., 2012). In connection with the profession, the researcher found that 27.8% of participants have bachelor degree, 32.6% have post graduate diploma or higher studies, while 37.5% had Palestinian Board certificate. Regarding the country of graduation, due to presence of Palestinian Board program and medical schools, 42.4% of participants have their last qualifications from Palestine, while 25.7% from Arab countries and 31.9% from eastern and western countries. This implies that Palestinian standards for CS can be incorporated into the curriculum inside Palestine.

4.1.2 Work related characteristics

Table (4.2): Distribution of respondents according to their experience and qualifications

Item	Category		N	%
Years of experience	Since graduation (N=142)	Up to 5yrs	42	28.2
		6-10	24	16.9
		11-20	54	38
		More than 20	24	16.9
		Median= 13.5 min=1 max 35 SD=8.853		
	Before last qualification (N=114)	Up to 5yrs	53	46.5
		6-10	28	24.6
		11-20	24	21
		More than 20	9	7.9
		Median=6 Min= 1 Max= 42		
	After last qualification (N=131)	Up to 5yrs	53	40.2
		6-10	30	23
		11-20	42	32.2
		More than 20	6	4.6
		Median= 8 Min= 1 Max= 30		
	In the current department (N=131)	Up to 5yrs	53	36.7
		6-10	30	17.3
		11-20	42	36.0
		More than 20	6	10
		Median= 10 Min= 1 Max= 38		
Ownership of the hospital. (N=144)		Governmental	137	95.1
		NGOs	7	4.9
Having private clinic(N=139)		Yes	68	48.9
		No	71	51.1

Median and range of years of experience of the respondents since graduation was 13.5(1-35), whereas, Median and range of years of experience before last qualification was6(1-42), median and range of years of experience after last qualification was 8(1-30). Moreover, the median and range of years of experience in the current department of respondents was 10 (1-38). A study conducted by Shaaban et al., showed that consultants were far more experienced than specialists and registrars. with Median and range of years of experience were: 27(8–42), 12 (5–20) and 2 (1–5) for the 3 groups, respectively (Shaaban, et al., 2012). Furthermore, working in the same place for long period in addition to workloads, organizational climate factors, career stage and specialty; may fuels burnout and job dissatisfaction among healthcare providers (Dyrbye, et al., 2017)

As the main provider for maternity services in the Gaza Strip, 95.1% of the respondents work at governmental hospitals, as their primary place of work, while 4.9% of them work at NGO hospitals. However, some of the government staff are also working in NGOs. Moreover,about 47.9% of respondents work in other places and 48.9% of them have their

own private clinics. The report of MOH, (2016a) showed that 73.8% of deliveries were in governmental hospitals, while 21% in non-Governmental hospitals, 2% in military hospitals and 2.1% in private clinics.

Table (4.3): Distribution of respondents by workload related characteristics data

Item	Category	Number	Percentage
Duties per month (N=144)	0-4	79	54.9
	5-8	33	22.9
	More than 8	32	22.2
	Mean 4.74	Median 4.00	SD 3.8
Working Morning shifts (N=144)	Less than 10	38	26.4
	10-20	72	50
	More than 20	34	23.6
	Mean 14.8	Median 15	SD 7.3
Working hours per week (N=136)	36hrs or less	73	53.7
	More than 36hrs	63	46.3
	Mean 47	Median 36	SD 16.8
Average number of cases delivered by vaginal during morning shift (N=129)	10 cases or less	107	82.9
	More than 10	22	17.1
	Mean 8.67	Median 8	SD 5.295
Average number of cases delivered by vaginal during duty hours (N=99)	Less than 10	40	40.4
	10-20	54	54.5
	More than 20	5	5.1
	Mean 11.5	Median 10	SD 6.631
Average number of cases delivered by CS during morning shift (N=129)	5 or less	91	70.5
	More than 5	38	29.5
	Mean 4.6	Median 4	SD 2.4
Average number of cases delivered by CS during duty hours (N=90)	5 or less	81	90
	More than 5	9	10
	Mean 3.1	Median 2	SD 2.056
Number of doctors in morning shift (N=132)	Less than 10	90	68.2
	10-20	37	28
	More than 20	5	3.8
	Mean 8.73	Median 7.00	SD 6.626
Number of doctors in duty shift (N=127)	5 or less	85	66.9
	More than 5	42	33.1
	Mean 4.46	Median 4.0	SD 2.17

The above table demonstrates that more than half of respondents (54.9%) take less than 5 duties per month, they are working straight morning and on call at nights, they are the category of consultants and most of specialists. While 22.9% take between 5-8 duties per month which is the average duties number for non-residents in the board program. About 22.2% of respondents take more than 8 duties per month, they are mostly residents in

board program and those who are engaged in other places during morning hours. The average number of doctors during morning shifts was 8 while during duty hours it was 4. The average working hours per week of respondents was 47 hours. Studies showed that most surgeons do not perceive that reduced duty hours will noticeably improve quality of care. However, it was perceived that system changes are more likely to enhance patient safety than further hour's limits (Borman, Jones and Shea, 2012).

In 2003, the Accreditation Council for Graduate Medical Education (ACGME) implemented rules limiting work hours for all residents, with the key components being that residents should work no more than 80 hours per week or 24 consecutive hours on duty, should not be "on-call" more than every third night, and should have 1 day off per week. But despite reduced duty hours, burnout and fatigue—known risk factors for poor job performance—remain common among residents. Moreover, their overall educational experience may have worsened, because they have less time available for teaching and to attend educational activities (Fargen and Rosen, 2013). So, maintain long duration of every shift will enhance responsibility toward cases and reduce delaying of decision from one shift to another. Regarding the average number of cases delivered by CS, it was 4 during morning shifts and 3 during duty hours, while for vaginal delivery, it was 8 during morning hours and 11 during duty.

Table (4.4): Distribution of respondents by training related data

Item	Category	No.	%
Participation in any courses in obstetrics in the last 3 years. (N=142)	Yes	77	54.2
Receiving any training related to CS in the last 3 years.(N=141)	Yes	18	12.8
Reading updated articles related to CS. (N=144)	Yes	117	81.3
Timing of reading updated article (N=117)	During last week	46	39.3
	Last three months	53	45.3
	More than three months	18	15.4
Receiving any training courses on the protocol for CS(N=144)	Yes	58	40.3
The last training course was provided (N=144)	Few months ago	31	21.5
	Before one year	19	13.2
	More than one year	31	21.5
	Never received	63	43.8
Gaining any knowledge about these protocols (N=144)	Yes	93	64.6
Requesting more training on the protocols (N=144)	Yes	90	62.5
The stage in CS process which he/she needs more training on. (N=90)	Decision making	49	54.4
	Preparation	13	14.4
	Operation	25	27.8
	Post operation	3	3.4

Nearly half (54.2%) of participants participated in courses in obstetric in the last three years, while 45.8%didn't. Concerning courses related to CS, only 12.8% had received training during the last three years while 87.2% didn't. lack of training was the reason behind differences among Egyptian obstetricians toward using maneuvers and interventions like External Cephalic Version as Trial of Labor in mild Cephalo-pelvic Disproportion (Shaaban, et al., 2012). 81.3% of respondents read updated articles related to CS, whereas, 18.8% didn't. Of those who had read, 39.3% was during last week, while 45.3% during last three months and 15.4% during more than three months.

Regarding the training courses on CS protocol, nearly 60% of respondents didn't have any training course related to the protocol, and 35.4% hadn't gain any knowledge related to these protocols. Moreover, 62.5% of respondents agreed that they need more training to refresh their knowledge, more than half of them, 54.4%, need more training on decision making process, 27.8% on operation, 14.4% on pre operation and 3.3% on post operation care. These findings go with the clinical audit done in obstetric operation wards in Gaza Strip hospitals, which revealed that poor adherence to the WHO guidelines some of this might be due to a lack of local guidelines for surgical site infection prevention, othersto a lack of regular training and awareness among obstetricians (Elshami, et al., 2017). Also, what reported from interviews with senior obstetricians showed that there is urgent need to update national Palestinian protocol to include guidelines of CS as indications, procedure and care.

4.1.3 Healthcare providers' attitudes related variables

Physicians may play a leadership role in developing, supervising and shaping healthcare systems. They largely control and direct medical resources and act as the gatekeeper to the health system (Courbage, Abu-Hamad and Zagha, 2016).

As the backbone of the medical system, physicians' perspectives and practices can shed some light on the underlying reasons for the increases in CS rates, physicians would prefer CS in some cases due to their overload and exhaustion, unavailability of proper tools and instrument, avoiding taking the risk (Shaaban, et al., 2012). It is unfortunate that the option to choose or perform a CS is not so simple. Even elective CS carries serious risks for mother and child; it had a 2.84-fold greater chance of maternal death as compared to vaginal birth (Mukherjee, 2006). In UK, a twofold increase in mortality with CS was detected (Kee, 2005). The researcher in this study wanted to know the healthcare provider attitude toward CS compared with vaginal delivery as shown in the below table.

Table (4.5): Distribution of respondents by their attitudes toward Cesarean Section

Item	Category	No.	%
VBAC is much easier than repeated CS(N=144)	Yes	86	59.7
Mode of delivery that is more convenient to the woman (N=144)	Vaginal birth	110	76.4
	CS	19	13.2
	No difference	15	10.4
Vaginal birth is safer for the woman than CS (N=144)	Yes	131	91
Vaginal birth is safer for the fetus than CS (N=144)	Yes	103	71.5
Vaginal birth is safer for the HCS than CS (N=142)	Yes	126	88.7
Vaginal birth is safer for the family than CS (N=143)	Yes	124	86.7
The trend of CS at respondent's department (N=144)	Increased	92	63.9
	The same	39	27.1
	Decreased	13	9.0
The increase, if present, is mainly in; (N=92)	Primary	21	22.8
	Repeated CS	33	35.9
	Both of them	38	41.3
The cesarean delivery process in respondents department is (N=144)	Standardized	107	74.3
	Not standardized	37	25.7
Type of standardization (N=107)	Indications	84	78.5
	Procedure	20	18.7
	Care	3	2.8
Physicians at this department do unnecessary CS (N=143)	Yes	71	49.7
Physicians at this department don't do CS for some cases although they need (N=143)	Yes	33	23.1
Some cases develop complications because physicians do unnecessarily CSs (N=143)	Yes	39	27.3
Some cases develop complications because physicians don't do CSs although indicated (N=143)	Yes	52	36.4
Physicians at other departments do unnecessarily CSs (N=142)	Yes	82	57.7
Physicians at other departments don't do CS for some cases although indicated (N=142)	Yes	39	27.5
At other departments, some cases develop complications because physicians do unnecessarily CSs (N=142)	Yes	36	25.4
At other departments, some cases develop complications because physicians don't do CSs although indicated (N=142)	Yes	52	36.6

The majority of respondents agreed that vaginal birth is more convenient and safer for the women than CS, 76.4% and 91% respectively. They also agreed that it is safer for the fetus, healthcare system and the family, 71.5%, 88. % and 86.7% respectively. Hawkins et al, (1997) found that 82% of anesthesia related maternal deaths occurred in women undergoing CS and general anesthesia was most prevalent among them. Overall intraoperative complications like uterocervical and bladder lacerations, blood loss greater than 1L and need for hysterectomy occur in 12-15% of cesarean deliveries (Bergholt et al, 2003).Overall postoperative complications – major (pelvic infection, sepsis, deep vein thrombosis etc.) and minor (fever, urinary infection, wound sepsis etc.) – occurred in 35.7% of cases (Van Ham, van Dongen& Mulder,1997). CS is also a significant risk factor for emergent postpartum hysterectomy, mainly for adherent placenta, uterine atony, uterine rupture, fibroids, sepsis, and extension of uterine scar (Kaemar et al, 2003). Despite that, 28.5% of respondents admitted that CS is safer for the fetus. This finding go with the fact that most CSs are currently performed to benefit the fetus, not the mother, such as fetal distress and prolonged labor (Mukherjee, 2006). However, it contradicts with studies that showed the risk for babies from rising CS rates, mostly respiratory distress syndrome (RDS) and prematurity due to inadequately calculation of effective date for elective CS. Moreover, RDS and prematurity are major causes of neonatal mortality and morbidity (Das, 2016). Also, what explored from interviews done with key informants and policy makers, they didn't agree that CS is safer for the fetus as it constitutes risk factor for prematurity and RDS. The proponents of CS claim that CS is an extremely safe operation with a negligible mortality and morbidity. This could be open to question and there must be many potentially fatal problems which might occur unpredictably that are often not counted in any national audit (Mukherjee, 2006)

Regarding vaginal birth after CS, nearly 40% of obstetricians found CS is easier than VBAC, this may reflect the fact that they prefer more invasive management, when faced with complicated obstetrics, which may be explained by having poor skills, poor equipment, and lack of training. Recurrent sections for three or four or more times are now frequently performed for various reasons. A trial for vaginal birth after a previous CS is considered safer than a routine repeated CS. But, it is unfortunate that there is currently less enthusiasm for VBAC by trial of scar or of Labor (Mukherjee, 2006). It is evident that whereas CS is doctor friendly, VBAC is not (Mukherjee, 2006). During interviews, one of the senior obstetricians reported that VBAC should be enhanced to reduce the rate of CS in

Gaza Strip, and from his opinion the results of VBAC in Gaza is much better than other countries which was detected from an audit done in Shifa hospital in 2014; which showed that more than 70% of cases with prior CS were succeeded to deliver vaginally."*Our experience in VBAC was successful, even we were working in the dark without clear picture regarding the previous CS the woman has passed"* . Moreover, Royal College of Obstetricians and Gynecologists (RCOG) recommended that all women previously delivered by one lower segment CS should be offered an opportunity to Labor during their next pregnancy by promoting a trial of Labor (RCOG, 2001). One can conclude from the respondents' perspective, that there is need for encouraging VBAC and other interventions methods to reduce irrational CSs.

more than two thirds (63.9%) of respondents agreed that the trend of CS has increased in their departments, of them, 35.9% said it is in repeated CS, while 22.8% said the increase mainly in primary CS and 41.3% in both. Which goes with the report of MOH (2018a), which revealed that CS rate reached 22.8% during 2018 compared with 20.3% during 2017. Nearly two thirds (74.3%) of respondents found the CS process at their departments is standardized with 78.5% of them agreed the standardization mainly in indication. This goes with what was mentioned in national protocol regarding the indication and the decision for CS (MOH and UNFPA, 2016). Little percentage find it standardized in the care, 2.8%, which should rise the importance of updating the protocol as reported by senior obstetricians during interviews. This may reflect similarities in CS rates among hospitals in Gaza Strip, though there are still some differences especially inShifa hospital as it is referral one. On other hand, some studies in United States showed great regional variation in the rate of total CS ranging from low 23% to a high of nearly 40% which indicates variation in clinical practice patterns and hospital level variation (Kozhimannil, law &Viring, 2013). So standardization of the whole process is very important to reduce variation of rates and to control health care providers' practices in CSs.

Regarding their perspectives toward practice of CSs in their departmentsand practices of their colleagues in other departments, it was nearly the same; with about half of the respondents agreed that they and their colleagues sometimes do unnecessarily CSs (49.7% and 57.7% respectively), which goes with what was reported from interviews with senior obstetricians, that fear of litigations may force the obstetricians to perform CS even if not indicated. Moreover, he said *"we don't respect each other in the obstetric ward".*More than one third (36.4%) of the respondents admitted that some cases develop complications

because they don't do CS although indicated and their colleagues as well. This goes with what mentioned by senior obstetricians during interviews regarding the importance to standardize the indications of CS especially in the vague indications such as variability in CTG, fetal distress, IVF and tubal ligation. *"Each department depends on his head division regarding the indication and procedure of CS*". This was revealed by the study conducted on Egyptian obstetricians in which consultants were the most to accept tubal ligation intraoperatively based on maternal request (Shaaban et al., 2012). Many obstetricians are still occupied with the ideal CS rate that was considered since 1985 by the international healthcare community to be between 10% and 15% (WHO, 2015). However, WHO statement on CS rates published on 2015 emphasized that "Every effort should be made to provide cesarean sections to women in need, rather than striving to achieve a specific rate" (WHO, 2015).

Table (4.6): Distribution of respondents by their perspectives about factorsaffecting CS rate (N=144)

Item	Category	No.	%
Obstetrician's skills and experience influence the rate of CS	Yes	133	92.4
Obstetrician's personal judgment is a major factor influencing the rate of CS	Yes	117	81.2
Sometimes obstetricians perform CS to solve conflicts regarding the mode of delivery	Yes	59	41
The respondent performs CS based on maternal request.	Usually	72	50
	Rarely	39	27.1
	Never	33	22.9
There is midwifery led model	Yes	125	86.8
The midwifery led model influences CS rate.	Yes	60	41.7
The way that midwifery led model influences CS	Increases CS	26	43.3
	Decreases CS	34	56.7
Believing that Hospitals ownership influences CS rate (N=144)	Yes	126	87.5
The highest CS rate is at (N=126)	Governmental	50	39.7
	Private & NGO	76	60.3
Financial benefits to the institution influence the decision to perform CS. (N=142)	Yes	98	69

The majority of respondents agreed that skills, experience and personal judgment of healthcare provider influence the rate of CS (92.4%) and (81.2%) respectively. 41% of respondents said that they may do CS to solve the conflict between obstetricians about the mode of delivery, and half of them (50%) may perform CS based on maternal request. This goes with what was reported during interviews with senior obstetricians, "*Sometimes, colleagues' opinion affects each other in decision making process", "Sometimes social factor enforce us to take the decision for CS".* According to the study conducted in Egypt to explore the obstetricians' perspective towards CS, it showed that consultants were the most likely group to accept CS based on maternal request (Shaaban et al., 2012). Concerning midwifery led model, which means that low risk cases delivered by skilled midwives, 86.8% of respondents have this model applicable in their departments. Moreover, 41.7% think that the model influences the rate of CS, and 56.7% said it decreases CS rate, while 43.3% of them believed it increases the rate. This contradicts with what was reported from senior obstetricians during interviews about the importance of midwifery led model in reducing the Unnecessary and early interventions in delivery and such decrease CS rate; "*Safe delivery is to make delivery pass naturally without complications and it is only done by enhancing the role of midwifes".* Nurses play an integral role in the healthcare system; they have been recognized as the heart of healthcare(Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). Although it has been significantly improved (almost doubled) in the past 15 years, nurse proportions (including midwives) according to the population are significantly low with around 29 nurses per 10,000 people (Courbage, Abu-Hamad and Zagha, 2016). Meanwhile, Palestine has at least 3000 deficits in midwives to reach the international standards (UNFPA, 2018). More importantly, the utilization of midwives in providing reproductive health services is limited. For instance, midwives can't perform normal delivery independently although they are entitled to that(Abu-Hamad, Abu-Hamad and Bani-Oda, 2018), they can't do episiotomy or repair unless the available obstetricians are supportive to that. This goes against the result that nearly half of respondents reported that midwifery led model increases CS rate. Policies that empower midwives should be reinforced, as the contribution of midwives to improvements in the quality of health and reproductive services is significant. The better utilization of midwives is associated with less medicalization and less instrumentation of obstetric services, a friendlier environment, and also cost containment (Courbage, Abu-Hamad and Zagha, 2016). Some case studies have been published recently pointing to interventions such as high-quality midwifery-led unit

for delivery as an effective way to reduce CS (Betrán, et al., 2016)**.** However, the MOH senior management is very supportive to midwives as in some MOH hospitals there is a department at maternities designated for the delivery of normal cases by midwives which contributes to reduction of invasive and instrumental delivery such as augmentation of labor and caesarean section (Abu-Hamad, Abu-Hamad and Bani-Oda, 2018). Regarding the effect of type of institution on CS rate, the majority of respondents (87.5%) agreed that the ownership of hospital affects CS rate with 60.3% of them agreed that NGO and private hospitals have the highest rate of CS while those who said that Governmental hospitals have the highest CS rate constitute 39.7% of respondents. According to study conducted by Mukherjee, (2006), in private health care services, CS is one of the most common major surgical procedures. Doctors and hospitals earn much more money from a CS than from a vaginal delivery. High CS rates financially benefit doctors, hospitals, and industries and this goes with the finding that nearly 70% of respondents agreed that financial benefit of the organization affects CS rate. This goes with findings of interviews, as one of senior obstetricians reported *"I can pay, I go to deliver by CS in private hospital to have better care*".

The respondents have variety of opinions regarding the organizational factors which mostly affect CS rate, nearly half of them 53.5% believed that fear of litigation is the most powerful factor. Other studies show that defensive obstetrics is another common reason for high rates of CS, it has been observed that 82% of physicians performed CS to avoid negligence claims (Qazi and Saqib, 2018). The second factor as shown in figure 1, was continuous electronic fetal monitoring by 45.1%. Lack of protocols and inadequate supervision (40%), presence of second opinion (34.7%), weak monitoring system (31.9%), adherence to partogram (31.5%), absence of specialist (24.3%), immediate availability of emergency team (21.5%) and availability of medical personnel (18.1%). These findings go with findings from interviews with key informants that disclosed the common factors behind increase CS rate in Gaza Strip, fear of litigation was one of the most common reasons. He reported; "*When you protect yourself, you protect the baby*". Moreover, one of the recommendations to rationalize CS was the availability of electronic fetal monitoring which control misinterpretation of CTG and thus help to standardize the indications such as fetal distress and obstructed labor.

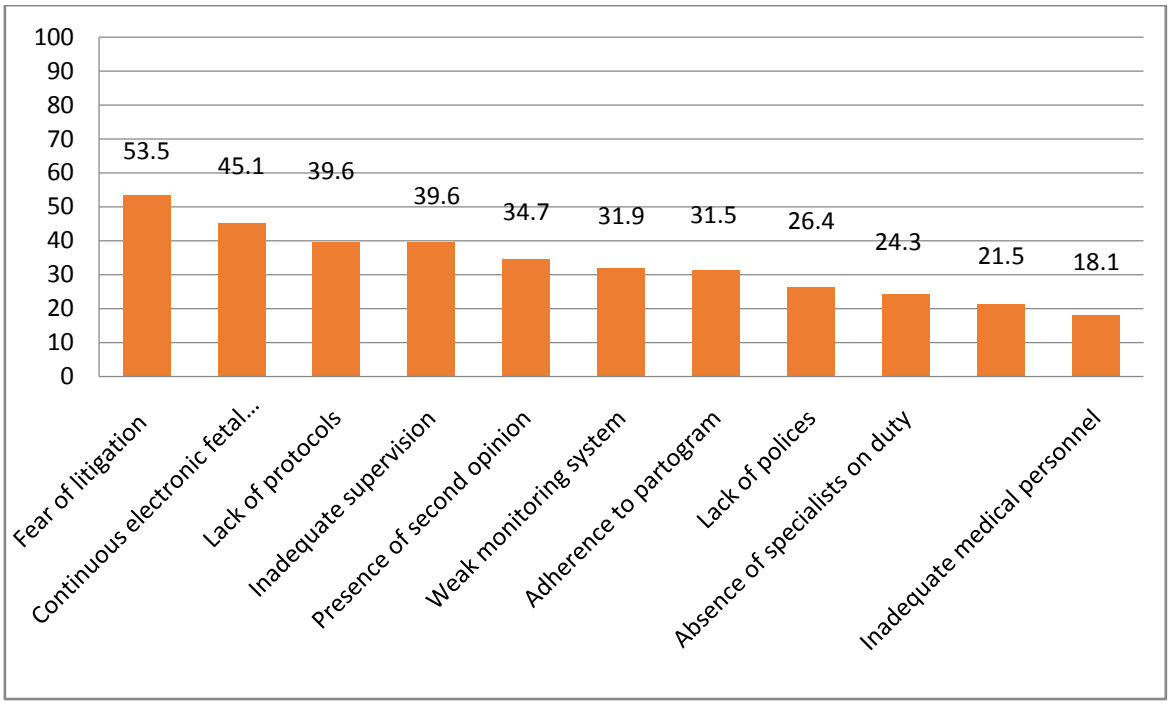

Figure (4.1): The organizational related factors are mostly affecting the CS rates, from respondents own perspective

4.1.4 Governance-related data

Table (4.7): Distribution of respondents by protocols and guidelines related data

Item	Category	No.	%
There are written protocol or guidelines for the management of labor in respondents' department. (N=144)	Yes	130	90.3
There are written protocol or guidelines for the management of VBAC in respondent's department. (N=144)	Yes	116	80.6
There are written protocol or guidelines (as a separate document or integrated into the larger protocol) for the management of CS in respondent's department. (N=144)	Yes	109	75.7
	No	35	24.3
The protocols, if present, are unified across all institutions. (N=109)	Yes	78	71.6
The respondent follows those protocols in his/her practice. (N=144)	Yes	117	81.3
There is written policy for controlling the implementation of obstetric protocols in the respondent's department. (N=144)	Yes	96	66.7
	No	48	33.3
Policy to control the implementation of obstetric protocols through (N=96)	Checklist	61	63.5
	Audit	22	22.9
	Committee	13	13.6

The majority of respondents admitted that they have written protocols regarding the management of labor and VBAC (90.3%) and (80.6%) respectively, this is what documented in our national Palestinian protocol (MOH and UNFPA, 2016). But for CS, there is need for more efforts to establish unified protocol as one of senior obstetrician reported during interview, this may explain the result that 24.3% of respondents admitted that they don't have any protocols related to CS in their department. Moreover, the majority of them reported that they are following these protocols and it is unified across all institutions (81.3%), (71.6%) respectively. The MOH launched the fourth edition of obstetric guidelines and labor ward protocols in Dec, 2016. This protocols are considered a very important unification and standardization way of different medical practices which aim to improve the maternal and neonatal care and decrease maternal morbidity and mortality, it was updated and revised by local consultants and experts from Gaza and WB, and going with the standards practices according to evidence based medicine and WHO recommendations (MOH and UNFPA, 2016). Continuous training and refreshing all over the year have been done, senior obstetrician reported during interview, so more than two thirds (66.7%) of the respondents stated that there is a written policy for controlling the implementation of obstetric protocols in the respondents' departments.

Concerning the reasons behind not using the protocols, the researcher asked about variety of causes, 25.8% of respondents agreed that work overload is the most important reason behind not using protocols, while 13.4% of them agreed that lack of supervision, too much duties and not applicable protocols are the reasons. Meanwhile 11.2% of them returned the reasons to lack of system monitoring, 10.1% due to lack of motivation and 7.8% due to lack of enough training-what others find.

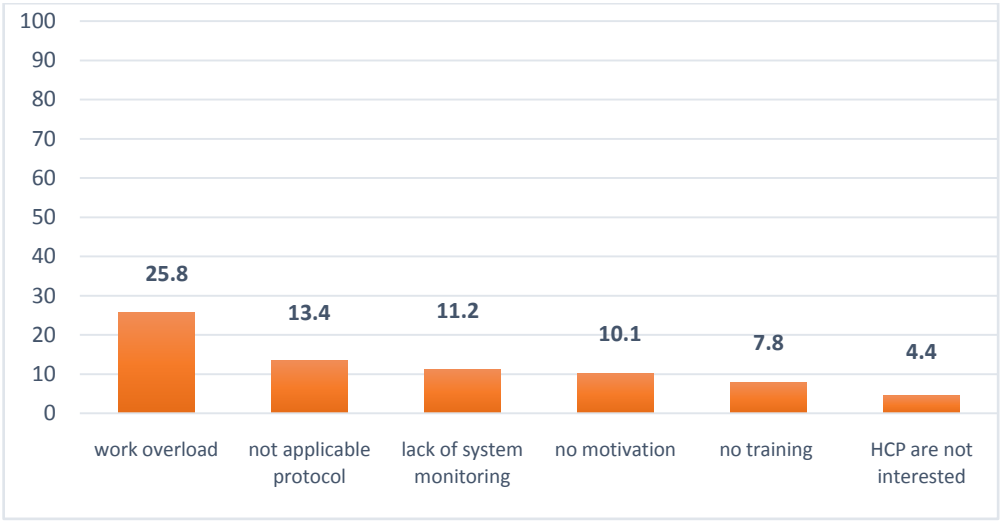

Figure (4.2): Distributions of respondents by reasons behind not using protocols from the respondents' points of view.

Table (4.8): Distribution of respondents by management and supervision-related data

Item	Category	No.	%
The department has a clinical supervisor	Yes	127	88.2
Clinical supervisor discusses CS related issues with the respondent.	Yes, always	82	64.6
	Sometimes	37	29.1
	Rarely	8	6.3
The decision to perform CS is taken by.	GP	6	4.2
	Specialist	38	26.4
	Consultant	23	16.0
	Both specialist or consultant	77	53.5
Consultant of the department is notified in any emergency CS.	Yes	121	84
There is a formal list of performance indicators in respondent's department. (N=144)	Yes	66	45.8
The formal list, if present, includes indicators about CS. (N=66)	Yes	58	87.9
There are statistical reports/ published about CS operations done in respondent's hospital. (N=144)	Yes	115	79.9
Frequency of statistical reports production (N=115)	Weekly	13	11.3
	Monthly	65	56.5
	Quarterly	15	13.0
	Annually	22	19.1
Availability of regular meetings to discuss the CS rate in respondent's department. (N=144)	Yes	102	70.8
Availability of special meetings for CS only in the respondent department (N=102)	Yes	34	33.3
The management disseminate regulations about CS (N=144)	Yes	100	69.4
The last time respondent has seen regulations about CS was. (N=144)	Last month	63	43.8
	Last year	28	19.4
	More than year	20	13.9
	Never seen	33	22.9
In complicated cases, usually there are available personnel for emergency CS.	Yes	119	82.6

In obstetrics as most of the surgical specialties, the head of department is considered the clinical supervisor who will discuss and follow up cases with healthcare providers; however, 12% of respondents didn't see that with their head of departments. Moreover; nearly one third (29.2%) of respondents reported that they are not regularly been involved in the discussion of CS. The majority (95.5%) of respondents admitted that the decision of CS in their departments been taken by either specialist or consultant or mostly by both, and the majority of them (84%) admitted that they notify their consultants in every emergency case. This goes with national policy regarding CS and continuous monitoring and auditing by quality management of MOH. All elective cases should be confirmed by head of

department and all emergency cases revised and discussed by them (MOH & UNFPA, 2016). Regarding performance indicators which are the measurable way to monitor practices of obstetricians; nearly half (45.8%) of respondents admitted that there is formal list of performance indicators in their departments. The majority of them (87.9%), said it includes indicators related to CSs. Most indicators of obstetric care in MOH are outcome indicators such as CS rate (MOH, 2018b). The effects of CS rates on other outcomes, such as maternal and perinatal morbidity, pediatric outcomes, and psychological or social well-being are still unclear, more research is needed to understand the health effects of cesarean section on immediate and future outcomes (WHO, 2015). About 80% of respondents said that there are statistical reports published about CS operations in their hospitals, 56.5% of them said it is on monthly base, however, 20.1% of respondents denied that they have such these reports. Furthermore, more than two thirds (70.8%) of respondents have meetings to discuss CS rate, and nearly one third of them admitted that those meetings are special for CS only. Though, it is important to have special meetings for CS cases, these meetings could be used for training also, according to what was reported by senior obstetricians; "*It is difficult to standardize the procedure of CS, but what we have to do is to be oriented and trained for all methods"*. Moreover, nearly one third (30.6%) of respondents admitted that their management doesn't disseminate regulations about CS in their departments and 22.9% of them never seen regulations about CS. "*This would be an alarm to emphasize on the need to update Palestinian protocol and implement regulations with system of monitoring and evaluation*", senior obstetrician reported during the interview. Moreover, the application of Robson Use of the Robson classification allows not only an assessment of drivers of trends in cesarean section use, but also an assessment of data quality available from medical records (Zimmo, et al., 2018).

4.1.5 Women related factors data

Table (4.9): Distribution of respondents by women characteristics related data (N=144)

Item	Category	No.	%
Women request for CS	Increases CS rate	112	77.8
	It decreases CS rate	10	6.9
	It has no effect	22	15.3
The women have the right to choose CS.	Yes	91	63.2
the respondent response toward woman request for CS (N=144)	Accept	72	50
	Rarely accept	39	27.1
	Never accept	33	29.9
At your department, do women ask for CS.	Sometimes	117	81.3
	Always	24	16.7
	Never	3	2.1
There is unified written policy and guidelines to manage women request for CS.	Yes	75	51.7
	No	63	44.1
	DK	6	4.2
These policies, if present, support women request for CS.	Yes	46	61.3
	No	20	26.7
	DK	9	12.0
	Media	19	13.2
	Don't know	8	5.6
Women who usually ask more for CS regardless of the medical indication are	Educated women	86	59.7
	Older age	80	55.6
	Those delivered CS before	76	52.8
	Pregnant with a boy	62	43.1
	Nulliparous	58	40.3
	Prim gravida	40	27.8

The above table is about women characteristics that may influence CS rates. 63.2% of respondents agreed that woman has the right to choose CS in the absence of any medical indication, which is according to the committee for the ethical aspects of human reproduction and women's health, FIGO, is not ethical (FIGO, 2015). However, CS on

demand threatens national resources (Mukherjee, 2006). 77.8% of respondents believe that women request for CS increase the rate, 6.9% while 15.3% of them say it has no effect. Regarding their response toward women request for CS, half (50%) of respondents accept to do CS based on maternal request, whereas, one third(29.9%) of them never perform CS based on woman request only. Comparing with cross sectional study done for Egyptian obstetricians' view toward CS on maternal request, which revealed that 66% of the studied group accept CS on maternal request and the acceptance was significantly higher among consultants (Shaaban and et al., 2012). The majority of respondents find that women usually ask for CS, which from their own perspective led to increase the trend of women who ask for CS during the past three years. Furthermore, there are many reasons push the woman to ask for CS regardless of her medical condition, as illustrated in figure 4.3, the most three causes that lead woman to ask for CS from respondents' points of view, were anxiety and fear of vaginal labor, complications from previous birth and precious baby. This goes with what was reported by senior obstetrician during interview; "*My daughter had bad experience with normal delivery with lack of pain management, so she decided to deliver by CS in the next pregnancy".* Women views toward mode of delivery may influence the physician's decision, for example in Jordan, women preferred cesarean delivery for the fear of long-term sequel (stress incontinence and anal sphincter damage) and the wish to preserve sexual function (Lataifeh et al, 2009). Nearly 60% of respondents think that educated women ask more for CS regardless of medical indication compared with 21.5% of them finds that non-educated women ask more. However, 52.8% of respondents say that those delivered by CS before usually ask more for CS compared with those delivered vaginally. Regarding the sex of the baby, 43.1% of respondents think that pregnant women with male baby ask more for CS than those pregnant with female baby. This goes with finding from Zaidan study (2016); which showed that level of education, living in a village, pregnant woman with male baby and history of previous CS, were significantly contributing factors of CS (Zaidan, 2016). However, the probability of CS delivery increased with improved socio-economic status, higher education, lower birth order, higher age, and with more number of Antenatal Care use and presence of bad obstetric history (Begum, et al., 2017).

With reference to gravity and parity, 27.8% of respondents say that primigravida usually asks more for CS than multigravida, and 40.3% of them see that nulliparous usually asks more. Moreover, 55.6% of respondents see that older age mothers ask more for CS than

younger age mothers. Many other studies were done for women characteristics, one of them is the Egyptian demographic and Health survey which revealed significant differences by different characteristics of women, CS rate was significantly higher among older (35 and older), educated (secondary education and more), working for cash, living in urban and rich women, for these women, CS rate ranged between 32 and 45%. CS rate was found to be significantly higher for first birth (33.4) and in cases where the delivery was carried out in private health facilities (41.7% for private health facility vs. 33.2% for public health facility)(Ministry of Health and Population [Egypt] 2015). Meanwhile, considering solely medical factors is likely to be a futile effort to reduce unnecessary CS. factors associated to women's fear and lives and societal and cultural beliefs are very likely contributing to the increase in rates (Betrán, et al. 2007).

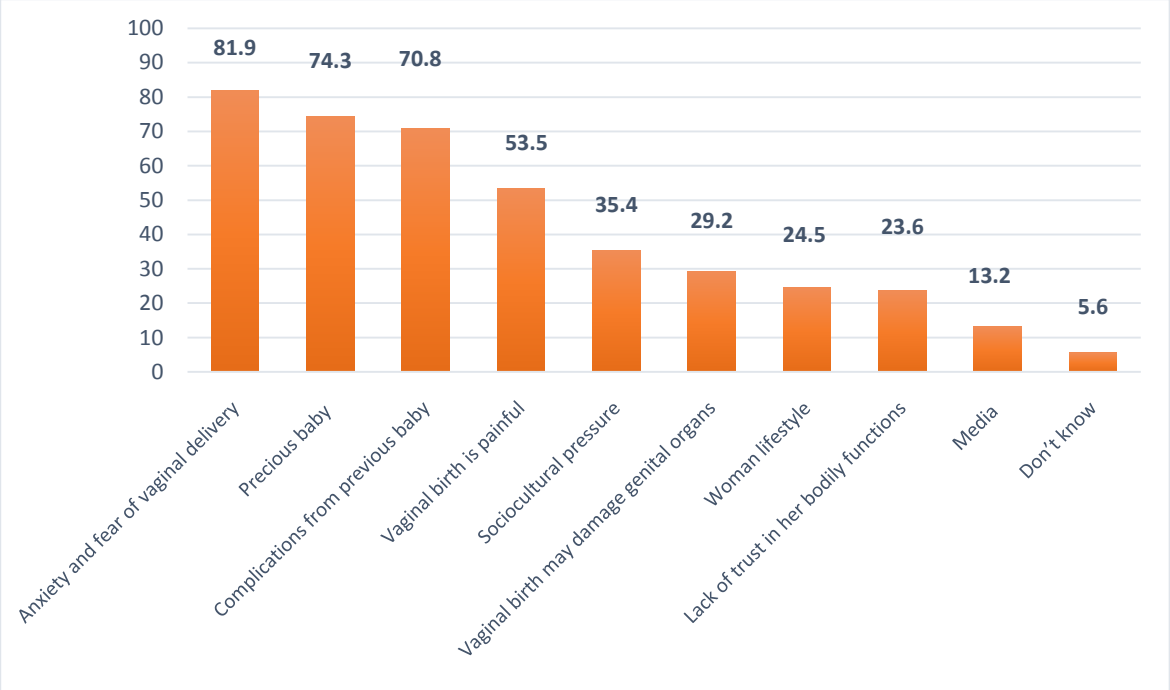

Figure (4.3): Distributions of respondents by reasons behind maternal request for CS from respondents points of view

4.1.6 Clinical reasons for CS

Table (4.10):distribution of respondents by Indications for CS related data

Item	Category	No.	%
Most common three indications of CS in respondents department	Repeated CS	120	83.3
	Fetal distress	111	77.6
	Obstructed labor	66	45.8
Most common three maternal causes that lead to perform CS at respondents department	Repeated CS	120	83.3
	Previous one CS	69	47.9
	Medical disorder	44	30.6
Most common three fetal causes that lead to perform CS at respondents department	Non reassuring fetal status	116	80.6
	Malpresentation	106	73.6
	Cord prolapse	63	43.8

The most common three indications of CS according to respondent's opinions, are repeated CS, fetal distress and obstructed labor by 83.3%, 77.6% and 45.8% respectively. This goes with other studies which showed that some common and important indications for CS include fetal distress, prolonged labor, breech presentation, multiple gestations, previous section, and CS on demand. It is sad that CS are frequently and arbitrarily performed for fetal distress and prolonged labor without respect to correct diagnosis and unbiased decision (Mukherjee, 2006). The most common three maternal causes are repeated CS, previous one CS, and medical disorder represented by 83.3%, 47.9% and 30.6% respectively. Which goes in line with finding from study conducted by Mussarat et al., (2013), which showed that previous CS was the most common maternal indication, which means that primary CS is an important target for reduction of CS rate (Mussarat, Qurashi and Roohi, 2013). Moreover, study done in Nablus in 2016 to explore risk factors of CS showed that there are maternal related factors can significantly increase likelihood of CS other than previous CS such as; mother weight before pregnancy, duration of pregnancy, face and ankle edema, bleeding during pregnancy, fixative use and preeclampsia (Zaidan, 2016). Regarding fetal cause, the most common three causes are non-reassuring fetal status, malpresentation and cord prolapse, represented by 80.6%, 73.6% and 43.8% respectively. This goes with Mussarat et al, (2013) study, which showed that fetal distress, malpresentation and cord prolapse were the most common fetal indications (Mussarat, Qurashi and Roohi, 2013). The last question of the questionnaire was about the reasons of

increased CS rate in general, which illustrated in the below figure and on the above table. 61% of respondents reported that IVF is one of the most important contributing factors of increasing CS rate while, results from records review showed that only 6.1% of CS were due to IVF; this reflect over estimation of IVF participation to increase CS in Gaza Strip. Moreover, fear of complication was contributing factor in their perception which also reflected from aforementioned question regarding fear of litigation as organizational factor contributing to increase in CS. Other factors such as women request and age represented by 36.1% and 34.7% respectively. According to global, regional and national estimates done by Betrán, et al., (2016)for theincreasing trend in cesarean section rates, they found that some possible reasons for increasing CS rate are repeatedly reported in studies from many countries such as fear of pain; concerns about genital modifications after vaginal delivery; misconception that CS is safer for the baby, the conveineince for health professionals and also for the mother and the family; fear of medical litigation and lower tolerance to any complications or outcomes other than the perfect baby. Although there will certainly difference in population characteristics such as prevelance of obesity, the proportion of nulliparous or of older women or multiple births, these differences are unlikely to explain the wide vaiation in CS rates among countries.

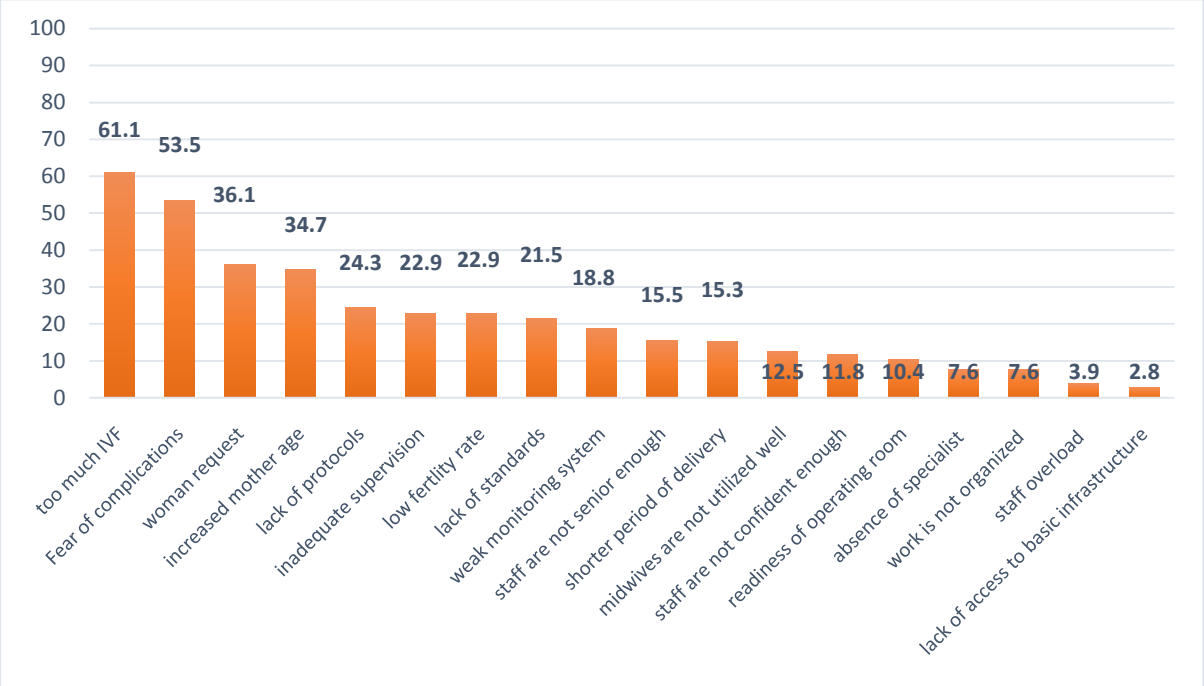

Figure (4.4):distribution of responses in relation to causes behind increase CS rate

4.2 Descriptive findings from record review

In this part, the researcher presents findings derived from the review of medical records for women who delivered by CS from Sep 1, 2018 to Dec 31, 2018. A random sample of 390 file were reviewed from four governmental hospitals which provide maternal services in Gaza Strip in addition to Al-Awda hospital as NGO. The data was compiled and organized using an abstraction sheets containing parameters that were selected to be available in the records without need to call the women.

4.2.1 Women profile data

Table (4.11): Distribution of women related variables including their medical history as extracted from medical records

Item	Category	N	%
Current age of mother (N=387)	Less than 20	t	2.6
	20-34	285	73.6
	35-40	62	16
	>40	30	7.8
Mother age	Mean 30.6	Median 30	SD 6.6
Gravidity including the last one (N=390)	Primigravida	75	19.2
	G2-G6	244	62.6
	>6	71	18.2
Parity except the last delivery (N=390)	Nulliparous	82	21
	Multiparous	308	79
Presence of any previous history of medical illness (N=390)	Yes	74	19
	No	316	81
Last pregnancy (N=387)	Normal	362	93.5
	Assisted reproductive technology	25	6.5
Placental problems during last pregnancy (N=385)	Yes	20	5.2
Diseases during last pregnancy	Anemia	154	50
	Hypertension	39	10.1
	Bleeding	15	3.9
	Diabetes	13	3.3

The researcher as shown in the above table examined records for maternal variables including age, pregnancy history (gravidity and parity), whether assistive reproductive technology methods were used to achieve the last pregnancy, previous medical history and presence of placental problems during last pregnancy. More than two third (73.6%) of

them were in age between 20-34 years old, followed by 16% aged 35 to 40 years old, while those above 40 years old constituted 7.8% of them and those below 20 years old constituted only 2.6% of the total. The mean age of mothers was 30 years old which goes with finding from the clinical audit done in 2017 in the Gaza Strip to examine the adherence of infection control measures in CS (Elshami, et al., 2017), in which also the mean age of mothers underwent CS was 30 years old. If we compare these findings with results from retrospective cohort study done on women who delivered in an Ontario hospital between April 1, 2011 and March 31, 2012, giving an overall CS rate of 28.7%. Only 26.2% of younger women aged 20 to 34 delivered by CS, while 35.9% of women aged 35 to 40 delivered by CS. Moreover, women over 40 years of age had the highest CS rate of any age group (43.1%). However, age alone should not be considered as contributing factor to CS rate, other associated clinical conditions in addition to healthcare provider preference and the mother may play key role and require more investigation (Janoudi, Kelly and et al.,2015). Moreover, 19.2% of women were primigravida, while 18.2% of them were multigravida (gravidity more than 6 times). Moreover, the main bulk (62.6%) was range from gravidity two to six. Regarding parity, 79% of women were multiparous whereas 21% were nulliparous. This goes with findings from Zimmo, et al., (2018) study in which nulliparous women with single cephalic full term pregnancies represented one quarter of the obstetric population, so focusing on the management of nulliparous women will affect the CS rate.

Regarding the last pregnancy, the majority of women had their pregnancy by normal way and 6.5% by assistive reproductive technology. In Gaza, pregnancies resulting from IVF may be more likely to be delivered by CS. Although the reason for this has not been studied (Zimmo, et al., 2018). Furthermore, 5.2% of women suffer from placental problem during their pregnancy.

Regarding medical condition of the women, as shown in figure 4, half of them (50%) have anemia (hemoglobin level below 11 g/dl), 10.1% have high blood pressure, 3.9% have bleeding during pregnancy, and 3.3% have diabetes. Compared from findings of study conducted in Nablus in 2016, which revealed that 16% of CS cases have anemia during their pregnancy, 14.7% of cases have high blood pressure, 6.7% have bleeding during pregnancy and 2% of CSs have gestational diabetes (Zaidan, 2016). Studies showed that mothers 35 and older had a higher overall prevalence of maternal health conditions included chronic hypertension, gestational diabetes, diabetes mellitus, preeclampsia and

placental problems, these women have higher rates of CS compared to mothers aged 20 to 34 with the same health condition (Janoudi, Kelly and et al., 2015).

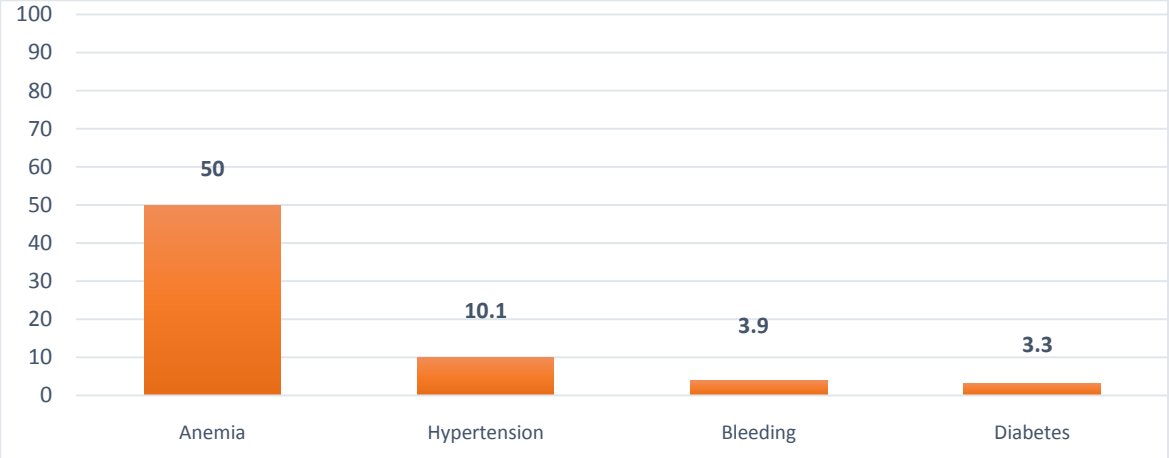

Figure (4.5):distribution of data related to diseases during last pregnancy

4.2.2 CS history-related data

Table (4.12): Distribution of CS history related variables obtained from medical records

Item	Category	N	%
Previous delivery by CS (N=390)	Yes	222	56.9
	No	168	43.1
Number of CSs (N=390)	Primary CS	168	43.1
	Previous one CS	81	20.8
	Previous two CS	74	19.0
	More than two	67	17.2
Type of first CS (N=222)	Urgent	82	37
	Elective	30	13.5
	Not documented	110	49.5
Cause of first CS (N=119)	Malpresentation	34	29
	Fetal distress	27	23
	Obstructed labor	18	15.2
	Failure to progress	8	7
	Medical disorder	7	6
	Primary infertility	6	5
	Big baby	5	4.2
	Preeclampsia	4	3.3
	Old prim gravida	3	2.5
	Precious baby	2	1.6
	Maternal request	2	1.6
	Placental problem	2	1.6

More than half (56.9%) of women have delivered by CS previously, while 43.1% of them underwent primary CS. regarding those who underwent repeated CS, 20.8% of them have

previous one CS, while 19% have previous two CS and 17.2% have more than two CS. comparing these findings with the results from Janoudi et al. (2015) which showed that previous CS was the best indicator of repeat CS, the CS rate for mothers with at least one previous CS was 82.1%, compared with 19.1% for mothers with no previous CS, we can conclude that we have high percentage of primary CS in addition to repeated CS, so more efforts should be put to reduce primary CSs and to enhance VBAC in cases with prior CS. this was the same conclusion that reported from one of the senior obstetrician during the interview; he reported thattrial of VBAC was successful at his hospital despite lack of data regarding the previous delivery of the mother, he also said that VBAC should be enhanced to decrease CS rate. Moreover, a study conducted by Zimmo, et al., (2018) in which Robson Ten Group Classification (TGCS) was used to categorize women from three hospitals who gave birth between Jan 1,2016 and April 30, 2017, into ten groups according to five obstetrical characteristics that are routinely documented and easy to implement (parity, fetus presentation, gestational age, onset of labour, number of fetuses), the overall rate of CS was 22.9% and the largest contributers to overall CS rate were multiparous women with single cephalic full term pregnancy who had undergone at least one CS (group 5, 42.6%). These results go with the below findings which showed that 79% of women were multiparous, 66.3% were full term at delivery, and 89.9% of them had singletone fetus.

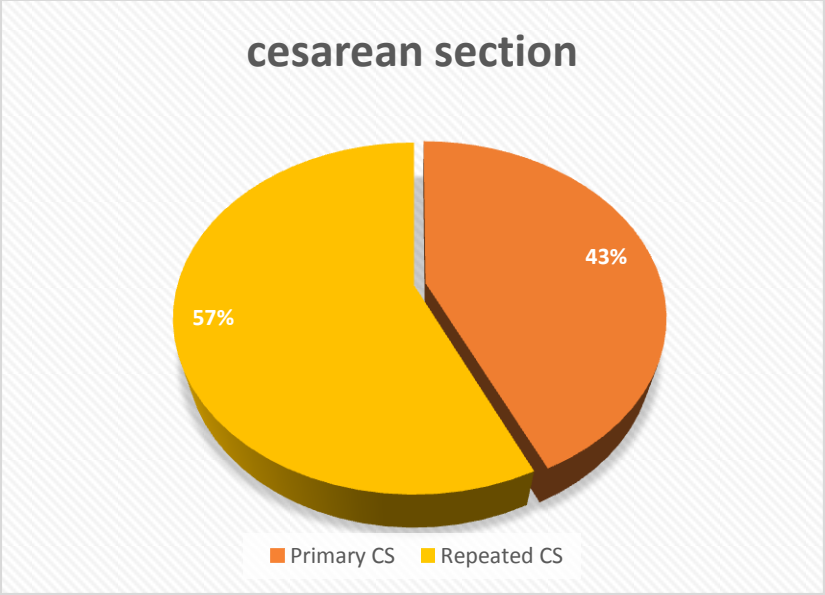

Figure (4.6): Distribution of data according to previous history of CS

Concerning repeated CS, the type of first CS was urgent in 37% of cases, while it was elective for 13.5% and 49.5% of files were not documented. Moreover, the cause of the

first CS is illustrated in the below graph, malpresentation of the fetus was the most common cause followed by fetal distress and obstructed Labor. In order to understand the degree to which CS maybe preventable, it is important to know why CSs are performed. In a 2011 population- based study, the most common indications for primary CS included, in order of frequency, labor dystocia, fetal distress, malpresentation, multiple gestation and suspected fetal macrosomia, obstructed labor and fetal distress accounted for more than one half of all primary CSs (ACOG, 2014).

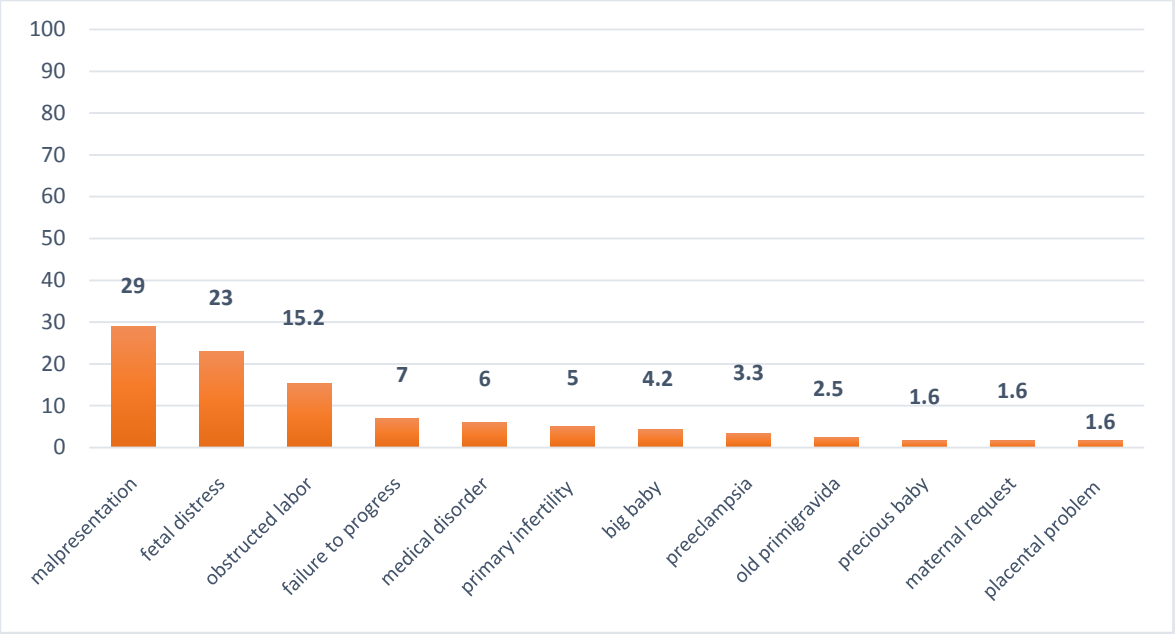

Figure (4.7): Distributions of data related to the cause of first CS

4.2.3 Distribution of data in relation to the current CS

Table (4.13): Distribution of current CS related data as derived from medical records

Item	Category	N	%
Cause of current CS N= 390	Previous two or more CS	130	33.3
	Malpresentation	60	16
	Previous one CS	55	14
	Fetal distress	37	9.5
	Obstructed labor	19	4.9
	IVF	19	4.9
	Big baby	13	3.9
	Medical disorder	12	3.1
	Fetal abnormality	10	3.1
	Antepartum Hemorrhage	10	2.6
	Preeclampsia	6	1.5
	Failure to progress	4	1
	Precious baby	3	0.8
	infertility	3	0.8
	Maternal request	1	0.6
Type of current CS (N= 390)	Elective	187	47.9
	urgent	203	52.1
Title of obstetrician(N=379)	Resident in Board program	164	42.1
	Specialist	93	23.8
	Master	55	14.1
	Consultant	44	11.3
	General practioner	23	5.9
Place of operation (N=390)	Shifa	149	38.2
	Nasser	85	21.8
	Al Alqsa	56	14.4
	Al Emarati	51	13
	Al Awda	49	12.6
Time of operation(N=390)	Morning	233	59.7
	Night	65	16.7
	Evening	60	15.4
	Not documented	32	8.2
Complications post operation(N=390)	No	243	62.3
	Yes	55	14.1
	Not documented	92	23.6

The current CS was urgent in 52.1% of cases while it was elective in 47.9% of them. This is on line with Mussarat et al., (2013) study which showed that 58% of cases had emergency CS and 42% had elective CS (Mussarat, Qurashi and Roohi, 2013). Regarding the cause of current CS as illustrated in the below graph, it was mostly due to previous delivery by CS, followed by breech presentation, fetal distress and obstructed labor. According to study done by zaidan (2016), 29.3% of CSs were because of the risk on the fetus, 27.3% due to obstructed labor, 10.7% due to fetal distress, 9.3% due to preclampsia, while 4% and 1.3% for diabetes and hypertension respectively. Moreover, the major indications of Cesarean sections done in Bangladish in 2013, included repeat CS, fetal distress, prolonged labour, oligohydramnios and post date (Begum and et al., 2017).

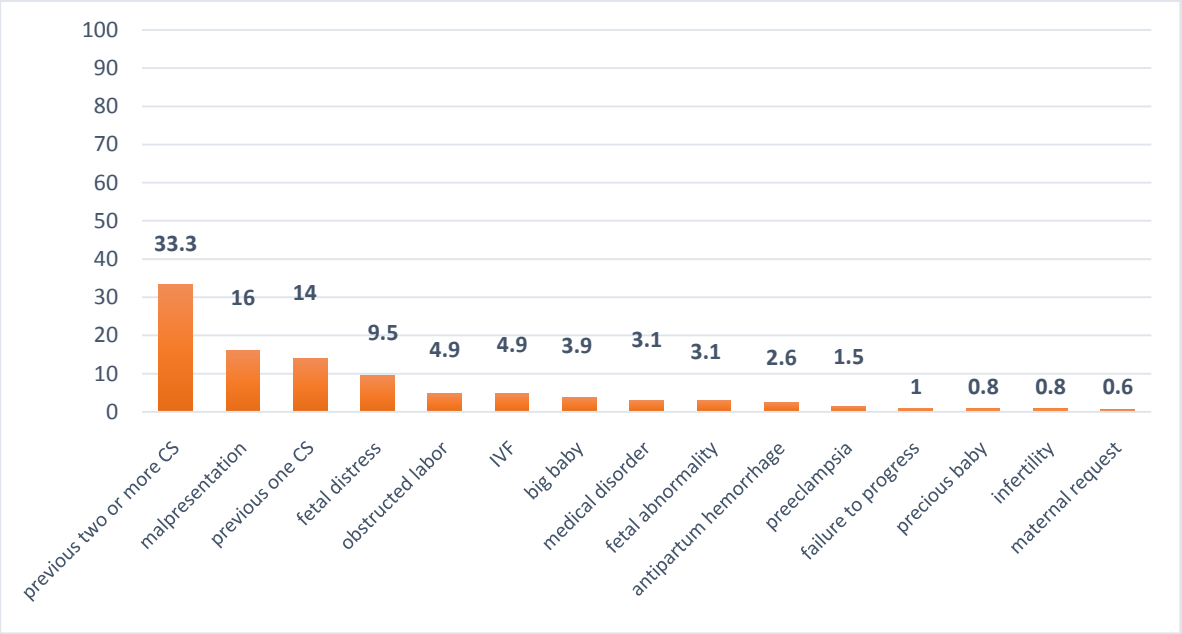

Figure (4.8): Distribution of data in relation to the cause of current CS

Regarding the operation itself, 42.1% of operations were done by residents in board program, while 23.8% of them by specialists, 14.1% by obstetricians with master degree and only 5.9% of operations done by general Practioners. These findings go with the fact that we have three teaching hospitals which have an educational program for health personnel; such as medical doctors, midwives and nurses. In addition, we have referral hospitals which receive patients from other private or Governmental hospitals in the neighboring areas (senior obstetrician reported). However, according to the study conducted in Nablus in 2016, 92.7% of CSs were decided by doctors, while 5.3% due to MW pressure and 2% due to maternal request (Zaidan, 2016).

More than half of CSs done during morning shifts, represented by 59.7% of them, while 16.7% and 15.4% were done during night and evening shifts, respectively, however, 8.2% of records the time of operations was not documented. These findings go with results obtained from questionnaire that the mean number of CS cases during morning (4 cases), is more than during duty hours (3 cases) and maybe explained by the fact that mean number of doctors during morning shifts (8 doctors) is more than mean number of doctors during duty hours (4 doctors), also most of elective operations are done during morning hours. Which is recommended in our national protocol (MOH, 2016b). Regarding complications post operation as shown in figure 4.9, 62.3% passed without complications according to what registered by the doctors in the progress notes of mother file, while 14.1% suffered from some sort of complications mostly bleeding and wound infection. according to a large population –based study from Canada which showed that the risk of sever maternal morbidities- defined as hemorrhage that requires hysterectomy or transfusion, uterine rupture, anesthetic complication, shock, cardiac arrest, acute renal failure, assisted ventilation, venous thromboembolism, major infection or in-hospital wound disruption or hematoma- was increased threefold for CS as compared with vaginal delivery (2.7% versus 0.9%, respectively) (Liu, et al., 2007).

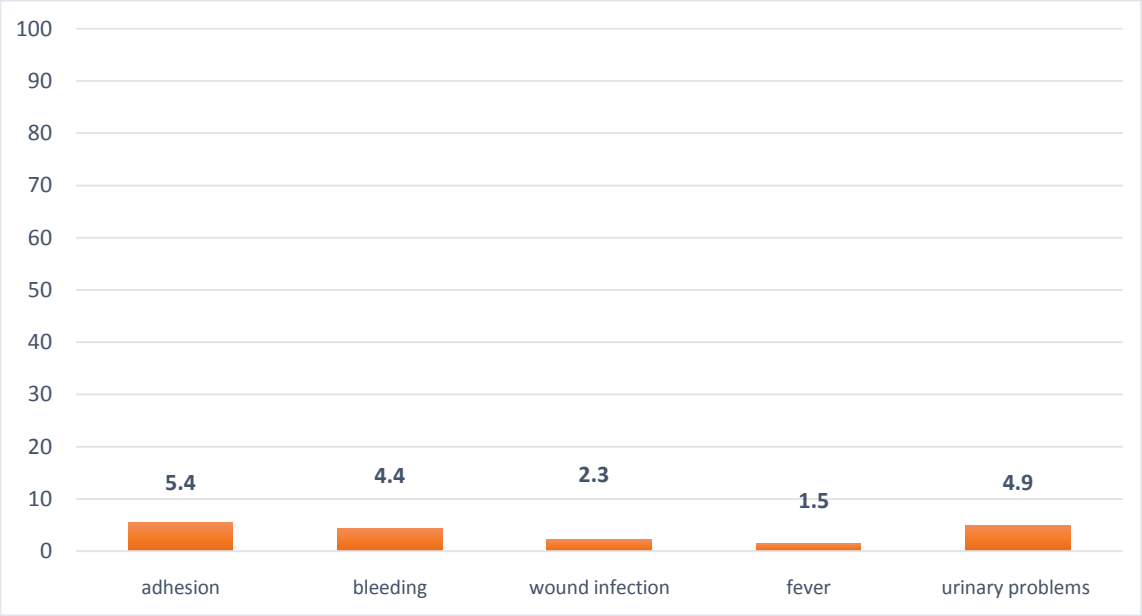

Figure (4.9): Distribution of data in relation to complications post operation

4.2.4 Birth outcome related data

Table (4.14): Distribution of Birth outcome related data obtained from medical records

Item	Category	N	%
Gender (N=390)	Male	228	58.5
	Female	162	41.5
Birth weight (N=383)	NBW	320	83.6
	LBW	52	13.6
	VLBW	8	2.1
	ELBW	3	0.8
Product of pregnancy	single	347	89.9
	Twines	32	8.3
	Triple	7	1.8
Gestational age (N=381)	Full term	313	82.2
	Preterm	68	17.8
Fetal abnormalities (N=378)	No	369	97.6
	Yes	9	2.4
SCBU admission (N=390)	No	256	65.6
	Yes	101	25.9
	Not documented	33	8.5

Concerning the birth outcome, 58.5% of them were males while 41.5% were females. 83.6% of them were normal birth weight, while 16.5% were low birth weight. Regarding gestational age of babies, 82.2% were full term while 17.8% were preterm. These findings go with the study conducted in Nablus in 2016, on 150 women delivered by CS compared with 150 women delivered vaginally to explorer obstetric and non obstetric risk factors associated with CS; it showed that 58.7% of cases delivered by CS gave birth to male baby while 41.3% were females. The majority were with normal birth weight (3,100-4000) and 4% above 4000 gm, also, 18% of women delivered by CS gave their births in 35-37 gestational week (Zaidan, 2016). According to study conducted in 2014 in Haifa to compare the neonatal outcomes between early neonatal gestational age elective CS and the neonatal outcomes that are delivered in their schedules; they found that neonatal morbidity including admission to intensive care and respiratory problems, are directly associated with early neonatal gestational age, so it is recommended to postpone elective cesarean

singleton deliveries beyond 38–39 weeks of gestation whenever possible(Riskin, et al. 2014) . This was also highlighted in the national protocol regarding the elective CS and it should not be before 39 weeks of gestation (MOH and UNFPA, 2016). But we are still not doing our best to delay elective CS beyond 39 weeks with consequences of transient tachypnea of newborn and respiratory problems (Riskin, et al., 2014). Moreover, 2.4% of babies had abnormalities and the majority were normal. Concerning SCBU admission, 65.6% of babies didn't need admission while 25.9% need for variety of reasons and 8.5% of records without documentation related to this issue. Preterm labor increases the likelihood of CS delivery as revealed by Zimmo, et al., (2018), in which those with preterm Labor had CS rate of 34%.

4.3 Inferential analysis of the findings of the surveyed questionnaire

To determine that variations in responses of different factors related to CSs among groups of respondents do exists or not, and whether it is related to participants' characteristics such as gender, level of education, profession, place of working, etc. chi square test has been applied to compare categorical variables.

4.3.1 Differences in indications of CSs in relation to workplace characteristics

As shown in table 4.15, there are some differences between obstetricians from different work places regarding indications of CS in their departments; obstetricians from Al-Hilal Al-Emarati hospital found malpresentation as the most common indications of CS in their departments (p=0.000), but no significant differences between them related to other indications such as previous CS, fetal distress and obstructed labor. Regarding maternal indications of CS, previous one CS was the most common indication with significant differences related to work place variable, obstetricians from Al-Shifa hospital found it as the most common maternal indication of CS, otherwise, no significant differences regarding other indications, also there were no significant differences regarding the common fetal causes of CS related to the same variable. However, there were statistically significant differences between different places of work regarding the women age as influencing factor of CS rate, obstetricians from Al-Hilal Al-Emarati and Al-Shifa hospitals found women age as one of the most common influencing factors of CS rate (p=0.018). Meanwhile, no significant differences related to other factors.

Table (4.15): Differences in indications of CS in reference to working hospitals

Variable	Shifa		Naser		Al Aqsa		Al Emarati		Chi-square	P value
Malpresentation	N	%	N	%	N	%	N	%		
Yes	17	30.4	16	47.1	-	-	13	61.9	19.510	0.000
No	39	69.6	18	52.9	-	-	8	38.1		
Previous one CS										
Yes	33	58.9	16	47.1	9	47.4	3	14.3	12.224	0.007
No	23	41.1	18	52.9	10	52.6	18	85.7		
Increased woman age										
Yes	11	52.4	13	38.2	9	47.4	11	52.4	10.112	0.018
No	45	47.6	21	61.8	10	52.6	10	47.6		

4.3.2 Differences in Policy implementation in relation to working hospital

Minimal variations among obstetricians related to their work places go with study finding that the majority of them found CS process is standardized in the indications rather than the procedure itself, as the procedure depends mainly on the surgeon and there are variety of techniques by which CS can be done and all are true, this was obviously demonstrated from interview of key informants; for example, one of them said: we have different ways to open the uterus and to close it, also the bladder can be dissected by many ways and it all depend on the situation of surgery and the clinical condition of mother, the instruments used also differs; it maybe by knife, steppers, cautery, hand etc…to close visceral peritoneum or not also vary from surgeon to another and everyone has his justification. Even the skin has different ways to be closed.

Obstetricians who work at Al-Hilal Al-Emarati were the most to admit that there is written policy for controlling the implementation of obstetric protocols followed by those work at Nasser hospital (table 4.16). also from the interviews, they all admit that there are national Palestinian protocols, meanwhile, adherence to the protocol differ from hospital to another, so there is big need to establish regular monitoring system to review decision making process for every CS, and the follow up process should not be limited to those with complications. One of the key informant people whom the researcher met reported that

every time we do investigation in cases with complications, we found the reason behind complications was not adherence to the protocol.

Table (4.16): Differences among obstetricians responses about the availabilityof policy across hospitals

Variable	Shifa		Nasser		Al-Aqsa		Al-Emarati		Chi square	P value
	N	%	N	%	N	%	N	%		
Availability of policy to control implementation of obstetric protocol										
Yes	30	53.6	29	85.3	7	36.8	19	90.5	22.088	0.000
No	26	46.4	5	14.7	12	63.2	2	9.5		

4.3.3 Differences in obstetricians' attitude toward CS practices in relation to training variable

Results showed that respondents who participated in training courses related to obstetrics find their colleagues sometimes do unnecessarily CSs more than who didn't participated in any training courses (p= 0.059), this may be explained by the fact that training is important to increase awareness about indication and good practices for CS (table 4.17). Another explanation to this finding was explored during qualitative method as one of the senior obstetricians and policy maker said; we don't respect each other, and no system of regular monitoring is implemented. Other interviewee who is responsible for training obstetricians in the Board program, explained this finding due to difference in experience of obstetricians; as those with long experience periods mostly work on morning shifts and they usually let the mother to have her chance for vaginal delivery, while those during nights are less experience and less patient so they take the decision for CS easily.

Table (4.17): Differences in obstetricians' attitude toward CS practicesin relation to training variable

Variable	Receiving training courses				Chi-square	P value
	Yes		No			
Unnecessary CSs sometimes done	N	%	N	%	3.570	0.059
Yes	50	65.8	32	50		
No	26	34.2	32	50.0		
Obstetrician skills influence CS rate						
Yes	75	97.4	56	86.2	6.241	0.014
No	2	2.6	9	13.8		
Obstetrician sometimes make CS decision to solve conflict						
Yes	37	48.1	22	33.8	2.929	0.06
No	40	51.9	43	66.2		
Midwifery led model influences CS by						
Yes	15	39.5	11	52.4	0.914	0.247
No	23	60.5	10	47.6		
CS process is standardized						
Yes	54	70.1	52	80	2.929	0.124
No	23	29.9	13	20		

Senior obstetrician reported during the interview; they sometimes they do CS to solve conflicts between them regarding decision making or if the prognosis of normal delivery was not clear, other admitted that they are afraid of having complications with recommended cases so they decide to do CS for them, however, no statistically significant differences between obstetricians in this practice related to training status (p=0.061). Moreover, no significant difference in their perception toward midwifery led model effect on CS in relation to their training status (p=0.247), as no doubt that midwifery led model decreases CS rate, one of policy makers reported during the interview, but it seems to be like justification from some doctors regarding the increasing trend of CS in their departments. Midwifery led model deals only with low risk mothers, in whom the risk for CS is very rare.

Regarding respondents view toward standardization of the CS process, there were no significant differences between them in related to training process (p=0.124), these findings go with what said by the interviewee that there is no specific training done for CS

process and how to standardize it, and one of the recommendations they suggested was to focus more in training for CS whole process.

4.3.4 Effect of private work of obstetricians on their perspectives toward CS trend

Private sector is one of the major influencing factors of rising trend of CS according to results from interviews done, there is no system of monitoring in private sector, (one interviewee said). Having private clinic significantly affects respondents' perception toward the trend of CS, those who don't have private clinic found it increasing while those who have said it is the same (p= 0.025).

Table (4.18): Distribution of respondents' perspectives toward the trend of CS in relation to private clinic ownership

Variable	**Having private clinic**				**Chi-square**	**P value**
	Yes		**No**		4.537 (<0.05)	0.033
The trend of CS in respondents department						
	N	%	N	%		
Increasing	37	54.4	51	71.8		
The same	31	45.6	20	28.2		

4.3.5 Difference in obstetricians needs for training in relation to their specialty grades

There were statistically significant (p=0.002) variations among different cadre of obstetricians, 80% of general practioners in obstetric ward need more training of the protocols related to CS to refresh their knowledge and to gain skills on standard case management, while 68.9% of specialist, 72% of residents in board and 39.5% of consultant admitted that they need; this may be explained by the fact the CSs are usually done by specialists and residents in the third or fourth year of the Board, they are trained by on job training and gain skills needed. This go with what been said by interviewee, that on job training is most effective in CS practice rather than special training courses.

Table (4.19): Distribution of respondents' needs of training courses in relation to their cadre/grades

Variable	Need more training		Don't need more training		Chi-square	P value
Cadre/grade	N	%	N	%		
General Practitioner	16	80.0	4	20.0	14.525	0.002
Specialist	31	68.9	14	31.1		
Consultant	17	39.5	26	60.5		
Resident in Palestinian Board	26	72.2	10	27.8		

4.4 Inferential analysis of the findings of record review

As aforementioned, the researcher reviewed a sample of 390 file of women who underwent CS during the period from 1st Sep. 2018 to 31th Dec. 2018, the researcher used abstraction sheet to fill in the data required from the records without the need to call the women.

4.4.1 Differences among hospitals in relation to the type of CS, urgency and complications

As reported from interviews with key informant persons, all of them admitted that type of hospital either Governmental or non-Governmental in addition to its level affect the CS rate in that hospital; for tertiary hospitals (referral) such as Al-Shifa, the CS rate may reach 27% due to the pool of complicated CS cases and those delivered by CS before at private or even NGOs, (senior obstetrician reported). Also they said that the majority of primary CSs being done at private hospitals then for repeated CSs and any other complicated cases they refer the case to deliver at Governmental hospital. The table 4.20 illustrates that there is statistically significant variation in relation to the type of hospital; as shown, the majority of cases delivered by CS at Al Awda hospital were primary CS while those delivered by CS at Governmental hospitals were repeated CSs (p= 0.001). However, there were no statistically significant differences between place of CS and the urgency of the operation (p= 0.379). Regarding complications post CS, 92 files were without any documentations related to this issue either in the operative notes or in the progress sheets which written during the round done post-operative, the researcher excluded these files from analysis which showed that the majority of cases delivered by CS at Al-Shifa hospital (91.8%) passed without complications while 34.8% of cases delivered by CS at Al Emarati

hospital suffered from some sort of complications (p= 0.001). this may reflect variations in documentation process between hospitals, in addition to the variation in the estimation of these complications especially bleeding which is the most common complication post CS, according to a large population –based study from Canada which showed that the risk of sever maternal morbidities- defined as hemorrhage that requires hysterectomy or transfusion, uterine rupture, anesthetic complication, shock, cardiac arrest, acute renal failure, assisted ventilation, venous thromboembolism, major infection or in-hospital wound disruption or hematoma- was increased threefold for CS as compared with vaginal delivery (2.7% versus 0.9%, respectively), (Liu, et al., 2007).this raises the importance of standardization and monitoring of documentation practices among obstetricians.

Table (4.20): Differences among hospitals in relation to the type of CS, category andcomplications

Variable	**Al-Shifa**		**Nasser**		**Al Aqsa**		**Al Emarati**		**Al Awda**		**Chi-square**	**P value**
Type of CS	N	%	N	%	N	%	N	%	N	%	17.671	0.001
Repeated CS	83	55.7	59	69.4	34	60.7	30	58.8	16	32.7		
Primary CS	66	44.3	26	30.6	22	39.3	21	41.2	33	67.3		
Category of CS												
Elective	66	44.3	44	51.8	23	41.1	26	51	28	57.1	4.201	0.379
Emergency	83	55.7	41	48.2	33	58.9	25	49	21	42		
Complications post CS												
Yes	7	8.2	19	25	8	18.2	16	34.8	5	10.6	18.121	0.001
No	78	91.8	57	75	36	81.8	30	65.2	42	89.4		

As reported from interviews most of elective CSs are standardized in their indications and time (morning shifts), but the variation in indications occur in urgent CS as there are variability in interpretation of CTG and fetal distress, so standardization of CTG interpretation by use of electronic fetal monitoring should be considered to decrease the rate of urgent CSs. This goes with what was reported from the American College of Obstetricians and Gynecologists (ACOG) in 2014, the second most common indication for primary CS is an abnormal or indeterminate fetal heart tracing. Given the known variation in interpretation and management of fetal heart rate tracings, a standardized approach is a logical potential goal for interventions to safely reduce the CS rate (ACOG 2014).

Moreover, the majority of high expert obstetricians are available during morning shifts so they favored to give the women chance to deliver vaginally, in contrast with their colleagues during night shifts, they favored CS to prevent any complications in addition to fear of litigation.

4.4.2 Differences among two categories of CS in relation to time, complications and gestational age at delivery related data

Table 4.21 illustrates that the majority of elective CSs done during morning hours while urgent CSs occur mostly during evening and night shifts with statistically significant differences (p=0.000). 86.2% of urgent CSs passed without complications while 76.7% of elective CSs done were without complications (p= 0.025).Which contradicts with the fact thatcomplications are mostly encountered post emergency CS rather than elective ones (Mussarat, Qurashi and Roohi 2013). It is acknowledged that the traditional classification of caesarean section into ‘elective’ and ‘emergency’ is of limited value for data collection and audit of obstetric and anesthetic outcomes. This is because the spectrum of urgency that occurs in obstetrics is lost within a single ‘emergency’ category. Lucas et al. (2000), proposed a new classification based on clinical definitions. They demonstrated that this performed better than classifications which relied upon visual analogue scales, assessment of maximum time to delivery, a five-point verbal rating scale or consideration of suitable anesthetic technique. Importantly, the clinical definitions-based classification proved useful and reliable in clinical practice.

Categorization of risk should be reviewed by the multidisciplinary team when the mother arrives in the operating theatre. Therefore, delivery should be carried out with an urgency appropriate to the risk to the baby and the safety of the mother (RCOG, 2010).

Table (4.21): Differences among two categories of CS in relation to time, complications and gestational age at delivery related data

Variable	Type of CS				Chi square	P value
Time of operation	**Elective**		**Emergency**		97.721	P= 0.000
	N	%	N	%		
Morning	157	67.4	76	32.6		
Evening	6	10	54	90		
Night	10	15.4	55	54.6		
Experiencing Complications						
Yes	32	23.7	20	14.5	3.755	P=0.037
No	103	76.7	118	85.5		
Birth outcome						
Preterm	18	9.6	52	25.6	16.899	P= 0.000
Full term	169	90.4	151	74.4		

4.4.3 Differences among women different age groups in relation to the type and category of CS related data

The chance for repeated CS increases with maternal age, as reported from records; 70% of women age above 40 have previous history of CS with statistically significant variations (p=0.005). This goes with the finding that majority of women aged below 20 (70%) their operation was of emergency type (p= 0.04).

Table (4.22): Differences among women different age groups in relation to the type and category of CS related data

Variable	Type of CS				Chi square	P value
	Primary CS		**Repeated CS**		12.779	P= 0.005
Age groups	N	%	N	%		
<20	9	90	1	10		
20-34	127	44.6	158	55.4		
35-40	22	35.5	40	64.5		
>40	9	30	21	70		
	Category of CS					
	Elective		**Emergency**		**Chi square**	**P value**
Age groups	N	%	N	%	7.935	P=0.047
<20	3	30	7	70		
20-34	127	44.6	158	55.4		
35-40	38	61.3	24	38.7		
>40	17	56.7	13	43.3		

4.4.4 Differences in the indication of CS in relation to the type of hospital

As aforementioned, there were differences between obstetricians regarding indications for CS; obstetricians from Al Emarati hospital found malpresentation as the most common fetal cause, while obstetricians from Shifa hospital found previous one CS is the most common maternal indication of CS in their hospital. Moreover, obstetricians from both hospitals reported that maternal age is major influencing factor in their hospitals. These findings were not consistent with what showed in record review; as malpresentation was the most common indication of CS in Al Aqsa hospital (p= 0.057). However, repeated CS was mostly encountered as indication of CS in Governmental hospitals more than Al-Awda hospital (p=0.018). This go with aforementioned finding that Al Awda hospital has the highest rate of primary CS among other hospitals in the study.

Table (4.23): Differences in the indication of CS in relation to the type of hospital

Variable	**Al-Shifa**		**Nasser**		**Al Aqsa**		**Al Emarati**		**Al Awda**		**Chi-Square**	
Malpresentation	N	%	N	%	N	%	N	%	N	%	9.162	P=0.057
Yes	27	18.1	10	11.8	13	23.2	8	15.7	2	4.1		
No	122	81.9	75	88.2	43	76.8	43	84.3	47	95.9		
Previous two or more												
Yes	55	36.9	33	38.8	18	32.1	18	35.3	6	12.2	11.942	P=0.018
No	94	63.1	52	61.2	38	67.9	33	64.7	43	87.8		

ChapterFive

Conclusion and Recommendations

5.1 Conclusion

This study is carried out for exploring factors and implications of CS in the Gaza Strip. The study focused on exploring five domains that have an effect on CS rate, the domains are: healthcare system related factors, healthcare providers related factors, clinical factors, women characteristics related factors and system of monitoring and evaluation related factors. In addition, the study probed to find the gaps in the healthcare system and practices of CSs from obstetricians' point of views. Furthermore, the study tried to find the relation between these domains and factors from one side and demographic, work related, training related variables of the healthcare providers on the other side. These quantitative results were obtained through a questionnaire that has been constructed by the researcher and then have been validated and explained by key informants at MOH. The objective of clinical indications and women characteristics were assessed through review of medical records of the mother during study period. Also, the relation between women related variables from one side and type of institution and operation related variables from another side were studied.

Main results indicate that the trend of CS as perceived by the study participants is risingin spite of increase in maternal and neonatal morbidities associated with CSs. The increasing mainly in primary CS from perspectives of nearly quarter of respondents, and about half of them admitted it is increased in both (repeated and primary). Many factors have an effect on this rate. Domains which related to medical and non-medical causes of CS from health care providers' perspectives showed that the most common indication for CS is repeated CS which highlights the importance of the decision for primary CS, and according to the healthcare providers the primary CS are mostly done due to fetal causes like abnormal CTG or CPD (obstructed labor, malpresentation), but also they mentioned the importance of increasing rate of IVF pregnancies as it considered a taboo for normal delivery, IVF pregnancies and babies may be considered more vulnerable and therefore at higher risk for CS.

On the other hand, the fear of complications, litigation and absence of strong supportive system were among the most causes for performing CS. Moreover, by reviewing records, the view of importance of primary CS was clear as it constituted almost half of the records,

this goes with aforementioned results that it is due to fetal causes and CPD, despite lack of documentation in almost half of records, and this raised the red flag toward standardizations of the fetal indication for primary CS either by clear scientific practical guidelines or on job couching of healthcare providers mainly on making decision. This was clear from what reported during interviews with senior obstetricians who explained the diversity and absence of standardization either for the indications or even the techniques as most of them mentioned, also they elaborated the issue of fetal monitoring and assessment of CPD, as it widely affected by personal variations and not general standards. Moreover, results showed significant variations between obstetricians' perspectives regarding the most common indications of CS in their departments. Those from Al-Shifa hospital found previous one CS is the most common indication. which may be explained by the fact that Al-Shifa is referral hospital. Whereas, those from Al Emarati find malpresentation as the most common indication in their hospital. Which was consistent with findings from record review, that malpresentation, especially Breech presentation, accounted for about one third of reasons behind the first CS in cases of repeated CS, but this can't reflect the correct picture as more than quarter of records. Regarding the current CS, malpresentation was the second most common indication after previous two or more CS. Previous one CS was significantly not considered as indication for CS in one of the studied hospitals, which reflects that the concept of VBAC was widely accepted in this hospital, in contrast to nearly half of obstetricians in the other hospitals who considered it as one CS is indication for a repeated CS. This contradicts with the opinion of one of senior obstetrician, who considered VBAC as a right for every woman. On the other hand, more than one third of respondents showed their agreement that CS is safer for the woman than VBAC.

Despite the common thought among obstetricians that women almost asking for CS during labor and maternal request increased the CS rate in their departments, but by reviewing files it was constitute minority of cases and this could be clearly obtained from senior obstetricians' views that according to MOH system, primary CS is not indicated according to maternal request only without clinical indication as One of the objectives of obstetrical work policies to decrease rate of CS.

The population of primigravida women was slightly below the quarter, with the majority of them had single tone, cephalic, full term pregnancies, which means that focusing on the management of nulliparous women with single cephalic full term pregnancies is very important, as they will affect the future of contribution of multiparous women to CS rate.

As aforementioned, nearly half of the cases wereprimary CS. Moreover, primary CS was the most common type of CS in hospitals related to NGOs with statistically significant variations between them and Governmental hospitals.

Having poor skills, poor equipment, and lack of training, may force the obstetricians toward CS as they considered it as safe mode of delivery in complicated cases, this was obvious from study result that more than two thirds of obstetricians found themselves in need for training on protocols related to CS, as they didn't receive any training course related to CS. On the other hand, the fear of complications, litigations and stigma of malpractice enforce nearly half of healthcare providers toward decision of CS, this was in line with what reported from senior obstetricians that fear of litigation in the absence of clear protective medical laws.

Adherence to the protocol differs from hospital to another, with those from Al-Emarati hospital were the most to apply the protocol. Moreover, nearly quarter of obstetricians admitted that they don't have separate written protocol for CS, and less than one third of them don't follow the obstetric protocol in general. Work overload, too much duties, and lack of supervision were among the most common reasons behind not applying the protocols. Despite the good step that Palestinian MOH has done by launching national obstetrical protocol which aimed to improved obstetrical healthcare, it still limited regarding the whole process in CS from monitoring the laboring women toward decision for CS if needed and in which circumstance and ended by operational aspect of the surgery, so it is recommended that part related to CS to be added to the national protocol.

Receiving training made significant differences in obstetricians' perspectives toward practices of CS. About two third of obstetricians who received training in obstetrics declared that there is un-necessary CS done and almost all of them considered receiving training influence CS rate, and this training is not just related to CS only but it could include general obstetrical practices. Moreover, almost half of them considered that sometimes CS is done to solve conflict rather than a medical indication and obstetricians' skills influence CS rate. All these findings reinforce the importance of standardized training and guidelines to be followed by practioner mostly general practioner as the majority of them reported that they need more training. Moreover, using midwifery led model lead to decrease CS rate according to two thirds of healthcare provider perspectives. Senior obstetricians as reported from interviews were so encouraging to midwifery led

model as it considered the best available model for safe delivery to decrease maternal and fetal complications. According to the official system of MOH hospital and NGOs hospitals there is direct clinical supervision for all clinical practices and procedures, this was clear from healthcare providers' statement that there is a supervisor in the majority of time and that supervisor always involved in the decision of CS and even notified about any emergency CS in more than half of situations and attend personally in the majority of complicated emergency CS. But despite these findings as mentioned before, minority of consultants were involved in the operation itself which explore the contradictory between the role of supervisor in the whole process. Furthermore, the majority of respondents need training on how to manage cases mainly by decision making and not only the technical part.

more than third of obstetricians performed CS were residents in Palestinian Board program, despite that it was reported by healthcare provider that the decision to perform CS is taken in the majority of cases by specialists, consultants or both. Meanwhile, this will trigger the question toward decision maker and the operator, and if it is really the situation that specialist and consultant who make the decision but not involved in the operation as procedure. This will raise another question regarding the residency training program as it should involve the decision making and technical aspect of training to run all the time hand by hand.

The chance of repeated CS increases with maternal age as concluded from records review. More than two thirds of women aged above than 40 underwent repeated CS. However, of cases either primary or repeated CS, were age group 20-34 which is the reproductive age range, in the Gaza strip, but the mean age was higher than expected age for normal deliveries, which could be a clue that CS increasing with maternal age. despite that social factors are outside the walls of health facilities where CS are done, they are considered one of the most important determinants of CS rate, as they affect women and the obstetricians. The women social background which is full of anxiety regarding normal labor and affect her trust in her bodily function or even her lifestyle enforces her to request for CS from perspectives of about third of healthcare providers. Educated women usually ask for CS more than non-educated from participants' perspectives, where those with advanced age, who delivered by CS before, pregnant with a boy, nulliparous, and primi gravida also ask for CS more than their opponents.

In spite of all the above mentioned findings from this study, still the increasing CS rate in the Gaza Strip need more studies looking for the community, the institutional and the outcome aspect every part in details to highlight the main defect that leads to increasing the rates in front of our eyes but outside our hands

5.2 Recommendations

Based on the study analysis, findings and conclusions, the researcher proposes the following recommendations:

- The study highlights the status of CS in reference to number of domains and factors. The study findings could constitute a baseline for future improvement interventions, monitoring and evaluation.
- Lack of supervision, lack of monitoring system and lack of training were among the most common causes behind not using obstetric protocols, therefore, thinking about system of training with baseline assessment and annual needs assessment, to be objective not subjective, especially at the level of decision making is recommended. This will be through implementation of system of monitoring, evaluation, accountability and learning (MEAL), in all health facilities.
- General practioners were the most to as? for training, therefore, courses related to surgical skills, how to deal with complications of CS are recommended.
- Work overload and too much duties were among the barriers to apply the protocols, therefore, it requires urgent measures to solve it and to mitigate its negative impact on obstetrical practices.
- Fetal distress was one of the most common indications of CS, therefore to decrease CS rate especially in nulliparous, standardization of CTG is recommended, by establish a mechanismto force all obstetricians to implement national Obstetric Guidelines and Labor Ward Protocols for management of intrapartum CTG changes. Continuous EFM should be implement only in high risk cases and overall assessment must be consider before taking decision for any interventions. As more than quarter of records were without documentation regarding the first CS history the mother underwent, therefore, it is recommended to implement system of monitoring on documentation practices in the labor and operation wards, to ensure complete history and thus clear the image for any interventions could be done to the woman in her current CS including VBAC.

- Primary CS constituted nearly half of cases of reviewed records, therefore, a number of approaches are needed to reduce the primary CS rate, which in turn would lower the repeat CS rate. National policies need to be prioritized at the level of practices, hospitals, health care system, and, of course, patients. In addition to continuous training and educating the obstetricians the art of obstetrics including assisted breech delivery and instrumental delivery with reduction of the variations in delivered maternity care among Palestinian hospitals. Moreover, restriction of induction due to social reasons and increase evidence-based practice among Palestinian obstetricians and midwives.
- There were no separate data regarding primary CS, therefore, it is highly recommended to establish separate registration for primary CSs to enable further assessment and evaluation.

5.3 Recommendations for further research

The researcher would recommend conducting further research studies covering the following areas:

- In depth study for short and long term complications of CSs.
- A large scale qualitative study about the implications of CS.
- Assessment of primary CS in the Gaza Strip with studying of all related factors and thus develop effective interventions to reduce primary CS rate.
- Deep analysis of the trend of CS to explore reasons behind increase of the rate, therefore, put clear mechanisms to control and decrease the rising overall CS rate.
- Assessment of documentation in CS records for completeness and availability.

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Annexes

Annex 1: Study activities time table

Activity	duration	July-oct	Nov-Dec.	Jan.	Feb-June	July-Aug.	Sep-oct	Nov-March	April
Proposal writing	4 months								
Tool development	2 months								
Piloting	2 weeks								
Data collection	6 months								
Data entry	2 months								
Data analysis	2 months								
Research writing	5 months								
Draft submission									

Annex 2: List of Arbitrators

Dr. Waleed Abu Hatab

Dr. Hani Mahdi

Mrs. Itimad Abu ward

Dr. Raghda Abu Laban

Mr. Abd Raheem Shaqoura

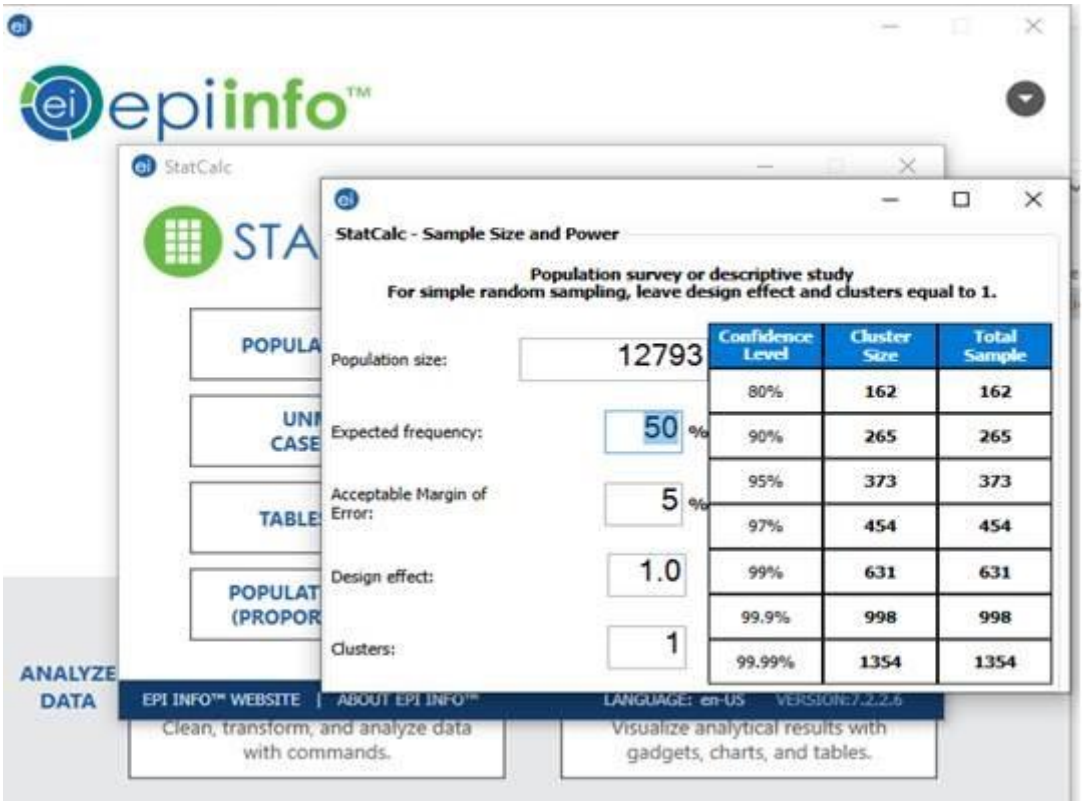
Dr. Yehia Abed

Dr. Sawsan Hamad

Dr. Sireen Al Attar

Dr. Jadallah Ukasha

Annex 3: Medical records sample size calculation



Annex 4: List of key informants

Dr. Waleed Abu Hatab

Dr. abdul-Razeq Al Kurd

Dr. Mohamed Belbaisi

Dr. Hani Mahdi

Dr. Sireen Al-Attar

Annex 5: Official letter approval from the Helsinki committee in the Gaza Strip

المجلس الفلسطيني للبحث الصحي

Palestinian Health Research Council

تعزيز النظام الصحي الفلسطيني من خلال مأسسة استخدام المعلومات البحثية في صنع القرار

Developing the Palestinian health system through institutionalizing the use of information in decision making

Helsinki Committee

For Ethical Approval

Date: 3/12/2018 **Number:** PHRC/HC/448/18

Name: Samah Ahmad El Attar الاسم:

We would like to inform you that the committee had discussed the proposal of your study about:

نفيدكم علماً بأن اللجنة قد ناقشت مقترح دراستكم حول:

Cesarean Section in the Gaza Strip: Factors and Implications

The committee has decided to approve the above mentioned research. Approval number PHRC/HC/448/18 in its meeting on 3/12/2018

و قد قررت الموافقة على البحث المذكور عاليه بالرقم والتاريخ المذكوران عاليه

Signature

Member Dr. Tchia Abed.

Chairman 2018.

Member

Genral Conditions:-

1. Valid for 2 years from the date of approval.
2. It is necessary to notify the committee of any change in the approved study protocol.
3. The committee appreciates receiving a copy of your final research when completed.

Specific Conditions:-

31/12/2018

E-Mail:pal.phrc@gmail.com

Gaza - Palestine غزة - فلسطين

شارع النصر - مفترق العيون

Annex 6: Healthcare Provider questionnaire

Cesarean Section in the Gaza Strip: Factors and Implications

Dear Participant : This study is about “Cesarean Section in the Gaza Strip: Factors and Implications”. Which is part of the requirements for the master degree of public health at Al-Quds University, School of Public Health–Palestine. The aim of this study is to identify factors behind the increased rates of CS in the Gaza Strip in order to set cognizant recommendations to rationalize the use of CS and thus reduce child and women health hazards associated with CS and costs as well. You are chosen to be a participant for this research because you have met the selection criteria for participation whichinclude all health care providers who perform CS with their different degrees of specialties in obstetrics and gynecology, residents at Board

program, master degree, and boarded doctors.

I am very thankful if you particpate in this interview taking into consideration that the interview does nottake more than 15 minutes.

Confidentiality of the data will be provided and maintained. Even through I welcome your participation, participation is optional.

Researcher: Samah Ahmad Al Attar

Serial Number:

	Service provider related Data ***Personal Data***
1	**Age……**
2	**Gender**: ☐ Male ☐ Female
3	**Governorate of residency** ☐ North Gaza ☐ Gaza ☐ Der El-Balah ☐ Khan Younis ☐ Rafah
4	**Professional title** ☐ General Practitioner ☐ Specialist ☐ Consultant ☐ Supervisor ☐ Resident in Palestinian Board ☐ Manager
5	**Last Academic qualification** ☐ M.B., B.Ch. ☐ Post graduate diploma ☐ Master ☐ PhD ☐ Board ☐ Others, specify ……
6	**Country of graduation of the last qualifications** ☐ Palestine ☐ Arab countries ☐ Eastern countries ☐ Western countries ☐ Others, specify ……
7	**Total years of experience in medicine since you are graduated ……. years**
8	**Total years of experience in obstetrics before your lastqualification……..... years**
9	**Total year of experience in obstetric after your last qualification…….....years**
10	**Total years of experience in the current department ……...years**
11	**Where do you work as a full time job, (name of the hospital)? …….**

12	**Ownership of the hospital** ☐ Governmental ☐ Private ☐ NGO ☐ Others, specify ……
13	**Do you work in other places other than the above mentioned hospital?** ☐ Yes ☐ No **If yes, specify ----------**
14	**Total (at all sites) Number of :** ➢ Duties per month---------- ➢ Evening shifts per month---------- ➢ Morning shifts per month---------- ➢ Night shifts per month----------
15	**Number of weekly working hours in all sites ----------**
16	**Average daily number of cases delivered (vaginal and CS) in the shifts in your department** Morning / Evening / Night Full time work / Part-time work / Full time work / Part-time work / Full time work / Part-time work Vaginal CS
17	**Number of doctors in each shift in your department (full time job)** ➢ Morning ---------- ➢ Evening ---------- ➢ Night ----------
18	**Do you have a private clinic?** ☐ Yes ☐ No
19	**Did you participate in any courses in obstetrics in the last 3 years?** ☐ Yes ☐ No **If yes, specify** **Training theme** **Organizer** **Number of days** ➢ …… …… …… ➢ …… …… …… ➢ …… …… ……

20	**Did you receive any training related to CS in the last three years?** ☐ Yes ☐ No **If yes, specify** **Training theme** **Organizer** **Number of days** ➢ …… …… ……..…… ➢ …… …… ……..…… ➢ …… …… ……..……
21	**Did you read updated articles related to CS?** ☐ Yes ☐ No **If yes, when was the last one?** ☐ During last week ☐ last three month ☐ more than three month
	Healthcare provider attitude
22	**Which is true concerning the trends of CS in your department?** □ there is an increase □ same □ decrease □ DK **If there is an increase, the increase mainly in primary or repeated CS?** ☐ Primary ☐ Repeated CS ☐ Both of them
23	**In your opinion, do you think that to go on repeated CS is much easier than VBAC?** ☐ Yes , always ☐ yes, sometimes ☐ No ☐ DK
24	**Which is more convenient for the woman?** ☐ vaginal birth □ CS □ No difference □ DK
25	**Which is more organized birth process?** □ vaginal □ CS □ No difference □ DK
26	**Which is safer/more appropriate with regard to mother, fetus, family and HCS?** Maternal Fetal health system family Vaginal CS

27	**How you describe the cesarean delivery process in your department?** ☐ standardized ☐ Not standardized ☐ DK **If yes, in which aspect** ☐ Indication ☐ Procedure ☐ Care
28	**Which of the following is true in your department? You can tick more than choice.** ☐ Sometimes we do unnecessarily CSs ☐ We don't do CS for some cases although they need ☐ Some cases develop complications because we do unnecessarily CSs ☐ Some cases develop complications because we don't do CSs although indicated
29	**According to your judgment, at other departments, other than the one you work at, which is true**? **You can tick more than choice.** ☐ Sometimes they do unnecessarily CSs ☐ They don't do CS for some cases although they need ☐ Some cases develop complications because they do unnecessarily CSs ☐ Some cases develop complications because they don't do CSs although indicated
30	**Do you think that the obstetrician's skills and experience influence the rate of CS?** ☐ Yes ☐ No ☐ DK
31	**Do you think that obstetrician's personal judgment is a major factor influence the rate of CS?** ☐ Yes ☐ No ☐ DK
32	**Have you ever decided to perform CS to solve conflict between obstetricians regarding the mode of delivery**? ☐ Yes ☐No
33	**In your hospital is there midwifery led model, (low risk mothers delivered by competent midwives)?** ☐ Yes ☐ No
34	**Do you think the midwifery led model influences CS rate?** ☐ Yes ☐ No ☐ DK If Yes, it ☐ Increases ☐ Decreases ☐ DK

Health care system related data ***Guidelines and management***	
35	**Do you have a clinical supervisor?** ☐Yes ☐ No **If yes, does your clinical supervisor discuss CS related issues with you?** ☐ Yes, always ☐ Sometimes ☐ Rarely
36	**Who takes the decision for CS?** ☐ GP☐ Specialist ☐ Consultant ☐ Both specialist or consultant
37	**For emergency CS, Do you notify your consultant on call in each CS you perform?** ☐ Yes , always ☐ yes, sometimes ☐ No
38	**Are there written protocol or guidelines for the management of labor in your department?** ☐ Yes ☐ No
39	**Are there written protocol or guidelines for the management of VBAC in your department?** ☐ Yes ☐ No
40	**Are there written protocol or guidelines (as a separate document or integrated into the larger protocol) for the management of CS in your department?** ☐ Yes ☐ No **If yes, is it unified across all institutions?** ☐ Yes ☐ No ☐ DK
41	**Did you receive any training courses on the protocol for CS?** ☐ Yes ☐ No **If yes, how many days**…….
42	**When you last time received training on the CS protocol?** **☐ Few months ago ☐ before one year ☐ more than year ☐ never received**

43	**If you didn't receive any training course on the protocols, have you gained any knowledge about these protocols?** ☐ Yes ☐ No
44	**Do you need more training on the protocols related to CS to refresh your knowledge and to gain skills of standard case management to empower your practice?** ☐ Yes ☐ No **If yes, in which stage you need to gain training?** ☐ Decision making ☐ preparation ☐ operation ☐ post operation
45	**Did you follow those protocols in your practice?** ☐ Yes ☐ No **If yes, are you still using them currently in your practice?** ☐Yes, always ☐ yes sometimes ☐ No in use ☐ not applicable **If not in use give reasons? (You can choose more than one)** ☐ Lack of supervision ☐ Lack of system of monitoring ☐ Work overload ☐ Too much duties ☐ Not applicable protocol ☐ No training has been provided ☐ Health care providers are not interested ☐ No motivation ☐ Others please specify……..
46	**In your hospital, is there any written policy for controlling the implementation of obstetric protocols?** ☐ Yes ☐ No **If yes, in which way?** ☐Checklist ☐Audit ☐ Committee
47	**Do you have a formal list of performance indicators in your department?** ☐ Yes ☐No ☐DK **If yes, does it include indicators about CS?** ☐ Yes ☐No ☐DK

48	**Are there any statistical reports/ published about CS operations done in your hospital?** ☐ Yes ☐ No **If yes, in which frequency?** ☐Weekly ☐ Monthly ☐ Quarterly ☐Annually
49	**At administrative level, do you have regular meetings to discuss the CS rate in your department?** ☐ Yes ☐ No **If yes, frequency** ☐Weekly ☐ Monthly ☐ Quarterly ☐DK **If yes, does it a special meeting for CS?** ☐ Yes ☐ No
50	**Does the management disseminate regulations about CS?** ☐ Yes ☐ No
51	**When you have seen regulations about CS?** ☐ Last month ☐ Last year ☐ More than year ☐ Never seen
52	**Have you been involved in the preparation of protocol related to CS?** ☐ Yes ☐ No
Organizational related Data	
53	**In complicated cases, usually there are available personnel for emergency CS?** ☐ Yes ☐ No
54	**Do you think that hospitals related to different owners (MOH, NGOs, Private) have different rates of CSs?** ☐ Yes ☐ No **If yes, which has the highest CSs from your point of view?** ☐ Governmental ☐ private ☐ NGOs

55	**Do you think that financial benefits to the institution influences the decision to perform CS?** ☐ Yes ☐ No ☐ DK
56	**Is there unified written policy and guidelines to manage women request for CS?** ☐ Yes ☐ No ☐ DK **If present, does it support women request for CS?** ☐ Yes ☐ No ☐ DK
57	**At your department Do you or your colleagues conduct audit for selected cases of CS to evaluate the decisions for CS in your institution?** ☐ Yes ☐ No ☐ DK
58	**Which of these organizational related factors are mostly affect the CS rates, from your own perspective? You can tick more than choice** ☐ Lack of protocols ☐ Lack of polices ☐ Inadequate supervision ☐ Weak monitoring system ☐ Absence of specialists on duty ☐ Adherence to partogram ☐ Presence of second opinion ☐ Immediate availability of personnel for emergency CS ☐ Continuous electronic fetal monitoring ☐ Inadequate medical personnel ☐ Fear of litigation
Women related factors Data	
59	**Do you think women request for CS is affecting the rate of CS?** ☐ It increases CS rate ☐ It decreases CS rate ☐ It has no effect
60	**In your hospital, do you perform CS based on maternal request?** ☐ Usually ☐ Sometimes ☐ Rarely ☐ Never
61	**Do you think that the women have the right to choose CS?** ☐ Yes ☐ No
62	**How often women ask for CS delivery at your department?** ☐ Sometimes ☐ Always ☐ Never

63	**In the past three years, the trend of women who ask for CS is generally** ☐ Increasing ☐ Decreasing ☐ The same
64	**In absence of medical indications what are the reasons behind maternal request for CS can be: you can tick more than choice** ☐ Anxiety and fear of vaginal Labor ☐ Complications from previous birth ☐ Precious baby ☐ Sociocultural pressure ☐ Lack of trust in their body functions that enable them to get birth ☐ Vaginal birth is painful ☐ Vaginal birth may damage genital organ ☐ Women lifestyle, social class ☐ Media ☐ Don't know
65	**Who usually asks more for CS regardless of the medical indication? Tick all that apply** ☐ Educated ☐ Non educated ☐ Older age ☐ Younger age ☐ Primigravida ☐ Multigravida ☐ Those delivered CS before ☐ Those delivered vaginally ☐ Wealthy ☐ Poor ☐ Employed ☐ Non employed ☐ IVF ☐ nulliparous ☐ multiparousrural areas ☐ urban areas ☐ pregnant with a boy ☐ pregnant with a girl ☐ Others specify ……
Clinical indication related Data	
66	**From your opinion most common three indications of CS in your department:** ☐ Previous one CS ☐ Repeated CS ☐ Fetal distress ☐ Obstructed Labor ☐ Big baby ☐ Malpresentation of the fetus ☐ Medical disorder ☐ Placenta previa ☐ Others specify ----------

67	**Most common three maternal causes that lead to perform CS at your department?** ☐ Previous one CS ☐ Repeated CS ☐ Maternal request ☐ Prior classical hysterotomy ☐ Unknown uterine scar type ☐ Medical disorder ☐ previous myomectomy ☐ Permanent cerclage ☐ Prior pelvic reconstructive surgery ☐ Pelvic deformity ☐ Cardiac or pulmonary disease
68	**Most common three fetal causes that lead to perform CS at your department?** ☐ Non reassuring fetal status ☐ Malpresentation ☐ Abnormal placentation ☐ Cord prolapse ☐ Macrosomia ☐ Congenital anomaly ☐ Abnormal umbilical cord Doppler study ☐ Thrombocytopenia ☐ Prior neonatal birth trauma
69	**From your perspectives, the increase in the CS is mainly attributed to: You can tick more than choice** ☐ Staff are not adequately qualified ☐ Lack of training ☐ Staff are not senior enough ☐ Staff are not confident enough ☐ Lack of standards ☐ Too much IVF ☐ Staff overload ☐ Work is not organized ☐ Midwives are not utilized well ☐ Lack of protocols ☐ Inadequate supervision ☐ Weak monitoring system ☐ Absence of specialists ☐ Lack of access to basic infrastructure (labor rooms, labor environment) ☐ Readiness of operating rooms, blood ban ☐ women request for CS ☐ fear of complication ☐ shorter period of delivery ☐ increased in women age ☐ lower fertility rate ☐ what else
70	**To rationalize the use of CS, what would you recommend?** …… …… …… …… ……

Annex 7: Abstraction sheet

Serial no.	File no.	Name:	
Residency	□ Gaza □ Khan-Younis □ Rafah □ Middle □ North		
Mothers age:		ID NO	Mob.:
Obstsetric information			
Gravida	…….	☐ Not documented	
Parity	…….	☐ Not documented	
Past medical condition			
Past surgical condition			
Previous delivery by CS	□ Yes □ No if yes, Specify number----------		
In cases of repeated CS; Causes of first CS delivery	☐ old primigravida ☐ precious baby ☐ primary infertility ☐ IVF ☐ Maternal request ☐ Fetal distress ☐ dystocia ☐ failure to progress ☐ obstructed labor ☐ Big baby ☐ Fetal distress ☐ Malpresentation of the fetus(breech) ☐ Medical disorder ☐ Preeclampsia ☐ Placenta previa ☐ Not documented others specify ----------		

Type of first CS		☐ urgent ☐ elective ☐ not documented	
last pregnancy			
Last pregnancy is	□ Normal □ Assisted reproductive technology □ not documented		
Diseases with last pregnancy	□Uneventful □ H/o infertility □threatened Abortion □APH □PIH □ others, specify…….		
Placental problems	□ Yes □ No if yes, Specify number----------		
Current delivery			
Name of Doctor			□Not documented
Title	□ GP □ Specialist □ Master □ Resident in board □ Consultant		
Place	☐ Nasser Hospital ☐ Al Aqsa Hospital ☐ Shifa Hospital ☐ AL Emarati Hospital ☐ Al-Awda Hospital ☐ AL kwiti Hospital		
Time of operation		Duration of operation	
Hb level at admission		FHS at admission	
Trial of vaginal labor before CS	□Yes □ No		
Type of Current CS	☐ Elective ☐ Urgent ☐ Not documented		

Main reason of current caesarean section?	☐ No medical indication ☐ Previous one CS ☐ Previous two or more CS ☐ Malpresentation of the fetus(breech) ☐ Pre-eclampsia ☐ Antepartum hemorrhage ☐ Maternal request ☐ Intra uterine fetal death ☐ Intra uterine growth restriction ☐ Fetal abnormality ☐ Fetal distress ☐ Cord presentation/prolapse ☐ Failure to progress ☐ Big baby ☐ Placenta Previa ☐ Medical disorder ☐ Obstructed labor ☐ Precious baby ☐ IVF ☐ Infertlity ☐ Old primigravida Other specify.....
Complications after last CS	☐ No ☐ yes, if yes specify ☐ bleeding ☐ wound infection ☐ fever ☐ post-partum sepsis ☐ adhesions ☐ urinary problems ☐ thrombotic events ☐ Not documented

Birth outcome	
Gender	☐ Male Female
Birth weight in grams	
Product of this pregnancy	☐ Single □Twins □ Triple □Quadriple □Others,….
Newborn status	☐ Alive □ Stillbirth(□Fresh □Macerated) □Neonatal deaths □Cogenital malformation
Gestational age at delivery	
Fetal abnormalities	☐ No □ yes If yes, specify,……..
SCIBU admission	☐ No □ Yes □ Not documented ☐ If yes, why…….

Annex 8: Key informants interview schedule

Interview questions:

1. Introduction, orientation, experience in obstetrics.
2. How you perceive obstetric services in general in Gaza, what are the gaps (probe for quality and standardization of services)
3. How do you perceive the trends of cesarean sections in Gaza Strip, in which direction, how you compare it with other places?
4. What are the reasons behind the change in trends increasing/decreasing CS rates from your own perspective?
5. To which extent there are protocols related to CS, how you describe adherence to these protocols, to what extent these help in standardizing CS? 45.8% of participants didn't participate in any training courses related to obstetric in general and 87.2% of them didn't participate in training courses related to CS during the last three years, how could you explain these findings? What measures could be implemented to support adherence to protocols?
6. Our quantitative findings show that 2 thirds of the respondents reported that the cesarean process is standardized in their departments, and 78.5% of them said that standardization mainly in the indications rather than in the procedure itself. To which extend do you agree with that? How standardization can be enhanced.
7. Also, our findings indicate that we do unnecessarily CS and also some clients who need CS are not receiving it, can you reflect on that (57.7% of respondents said that their colleagues in other departments sometimes do unnecessary CSs and 36% of them agreed that some cases develop complications because they and their colleagues don't7 do CSs though it is indicated? What is your opinion?
8. 43.3% of respondents said that midwifery led model increases CS rate, to which extent do you agree with that? How midwifery model contributes to the reduction in CS? Give us stories from your work.
9. What are the key indications for CS in your department (maternal, fetal)? 28.5% of respondents find CS is safer for the fetus than vaginal delivery? What do you think?
10. To rationalize the use of CS, what would you recommend at department, hospital and macro levels?