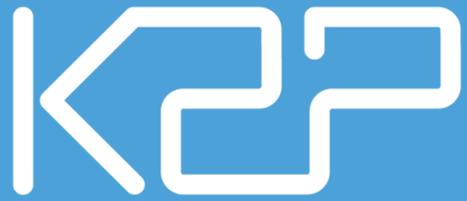


# Briefing Note

Reducing Rates of  
Unnecessary Cesarean  
Sections in Lebanon

K2P Briefing Notes quickly and effectively advise policymakers and stakeholders about a pressing public issue by bringing together global research evidence and local evidence. K2P Briefing Notes are prepared to aid policymakers and other stakeholders in managing urgent public health issues. K2P Briefing Notes describe priority issues, synthesize context-specific evidence, and offer recommendations for action.



# Briefing Note

## + Included



Description of a priority issue



Synthesis of contextualized evidence



Recommendations for addressing the issue

## × Not Included



Does not conduct a comprehensive review of the literature but relies on a quick assessment of databases



**Faculty of Health Sciences**  
Knowledge to Policy | K2P | Center

## **K2P Briefing Note**

# Reducing Rates of Unnecessary Cesarean Sections in Lebanon

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**Funding**

IDRC provided initial funding to initiate the K2P Center.

**Merit Review**

The K2P Policy Brief undergoes a merit review process. Reviewers assess the brief based on merit review guidelines.

**Citation**

This K2P Brief should be cited as

*Moussawi F, Nakkash R, Jamal D, El-Jardali F. K2P Briefing Note: Reducing Rates of Unnecessary Cesarean Sections in Lebanon. Knowledge to Policy (K2P) Center. Beirut, Lebanon; June 2015.*

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# Speaking Notes

# Speaking Notes

- Recent years witnessed a dramatic increase in the rate of Cesarean sections (CSs) which reached approximately 44% of total deliveries in Lebanon. This increase is accompanied by an increase in maternal health issues and shortages in the financial schemes for health services.
- CSs may result in serious health consequences and complications for mothers and newborns, if performed unnecessarily.
- If not targeted adequately, unnecessary CSs lead to a significant increase in accidental surgical cuts of internal organs and emergency hysterectomy for mothers and difficulties with respiration, digestion and admission to neonatal intensive care in newborns.
- The determinants behind this increase in Lebanon are the dominance of private sector, the presence of unregulated practice, the use of CSs as a defensive medicine practice, low involvement of midwives in delivery processes, lack of physician accountability and significant misconceptions about CSs among women.
- Evidence- informed recommendations to reduce CSs include:
  - Promote individual and community-based awareness in primary healthcare centers, hospitals and private clinics of the adverse consequences of unnecessary CSs and the conditions that necessitate them.
  - Provide financial coverage for pain relief during normal birth and increase financial incentives for performing vaginal deliveries.
  - Ensure higher involvement of midwives in delivery processes in hospitals, in addition to improving their skills and increasing their payments.
  - Apply a policy for a mandatory second opinion along with a post-fact revision and strict audit system and feedback.
  - It is recommended to link compliance with these policy and practices with accreditation status of hospitals and primary health care centers.

# Content

## Purpose

The aim of this Briefing Note is to assess and examine the high rate of medically unnecessary Cesarean Sections (CSs) in Lebanon, the underlying factors behind this high rate, their effects on the healthcare system and on the health of mothers and newborns. Additionally, it aims to offer evidence-informed recommendations to reduce the rate of unnecessary CSs and therefore to improve the wellbeing of women and children.

## Issue

Globally, the rate of CSs increased dramatically during the last two decades. CSs that are indicated in different medical situations to save the lives of the newborn and the mother, were shown to be increasingly used for undefined medical indications in addition to non-medical reasons based on maternal request or/and fear from labor pain in many middle- and high- income based health services according to different systematic reviews (Penna & Arulkumaran, 2003; Mazzoni et al., 2010; Torloni et al., 2011; Khunpradit et al., 2011). Similarly, the rate of CSs in Lebanon is considered one of the highest in the Arab region (Jurdi & Khawaja, 2004; Kabakian et al., 2007; WHO, 2010). The Lebanese literature demonstrated that this rate increased alarmingly since the beginnings of the 1990s, as it reached 33% of total deliveries in 1996, 35% in 2004 then more than 40.8% in 2008 according to data collected from nationally representative samples of hospitals (Abdallah et al., 2004; DeJong et al., 2010; Mroue, 2011). Latest figures reported from the Ministry of Public Health MoPH in 2013 bulletin showed that the rate of CSs reached 44-45 % of total deliveries covered by MoPH. In parallel, along with the Syrian crisis, among Syrian refugee women who were admitted to Lebanese hospitals for delivery, UNHCR data (collected from Lebanese hospitals where Syrian women were admitted) in 2013 indicated a 35% as overall rate of CSs, which is higher than the rate reported in Syria (23% of total births) (Huster, 2013). This indicates that the rate of CSs is still increasing in comparison to the acceptable rate stated previously by WHO (15% of total deliveries). According to latest studies reviewed by WHO, as countries increase their CSs rate up to 10%, maternal and neonatal mortality decrease. Conversely, CSs

## Background to Briefing Note

*A K2P Briefing Note quickly and effectively advises policymakers and stakeholders about a pressing public issue by bringing together global research evidence and local evidence.*

*A K2P Briefing Note is prepared to aid policymakers and other stakeholders in managing urgent public health issues.*

*A K2P Briefing Note describes priority issues, synthesizes context-specific evidence, and offers recommendations for action.*

### **The preparation of the briefing note involved six steps:**

- 1) Identifying and selecting a relevant topic according to K2P criteria*
- 2) Appraising and synthesizing relevant research evidence*
- 3) Drafting the Briefing Note in such a way as to present concisely and in accessible language the global and local research evidence;*
- 4) Undergoing merit review*
- 5) Finalizing the Briefing Note based on the input of merit reviewers.*
- 6) Submitting finalized Briefing Note for translation into Arabic, validating translation and disseminating through policy dialogues and other mechanisms.*

rate higher than 10% are not associated with reductions in maternal and newborn mortality rates. However, the same report stated that WHO does not recommend achieving a specific rate at population level anymore, but urges focusing on the medical needs of women and the indications that necessitate the procedure (WHO, 2015).

In parallel, Vaginal Birth after CSs (VBAC) that is rising in developing countries and contributing to the reduction of repeated CSs rate constitutes only 7% of deliveries in Lebanon. This low rate indicates that women who undergo primary CSs are more likely to go through repeated CSs in Lebanon due to the refusal of most of physicians to perform a VBAC (WHO, 2010).

Unnecessary CSs result in major health risks and various complications for mothers and newborns and lead to a significant burden on health care systems (Porreco & Thorp, 1996; Leone et al., 2008; Jabir, 2010). Multiple systematic reviews indicated that unnecessary CSs increase adverse health consequences such as the need for antibiotic treatment (Smaill & Gyte, 2010), neonatal intensive care unit admission (Hannah et al., 2000; Stutchfield et al., 2005), blood transfusion (Rouse et al., 2006), hysterectomy (Rooney et al., 2005; Whiteman et al., 2006), and sometimes death (Kacmar et al., 2003; Rooney et al., 2005). In addition, blood loss during surgery, urinary tract infections, bladder damage, uteral pain, uro-genital tract injury, hemorrhage, backache, thromboembolism and cardiac arrests were among the resultant complications (Carayol et al., 2008; Mazzoni et al., 2010; Khunpradit et al. 2011; Lavender et al., 2012; Main et al., 2012; Huster, 2013; Teixeira et al., 2013).

Other systematic reviews clarified the effect of unnecessary CSs on the health of newborns during birth and later in the early and middle life stages as they are highly associated with childhood overweight and obesity (Li et al, 2013; Huh et al., 2012; Barros et al., 2012) respiratory complications like pulmonary hypertension and asthma besides brain damage in some occasions (Main et al., 2012; Zanardo et al., 2004; MacDorman, 2008). CSs were also, evidently, associated with a decrease of breastfeeding rates, preventing the baby from benefiting of the nutrients of the maternal breast milk (Rowe-Murray & Fisher, 2002; Zanardo et al., 2010; Merten et al., 2007; Lobbok & Taylor, 2008).

# Background and Current Situation

Different factors at the governance, financial and delivery levels of the Lebanese healthcare system contribute to this increase in unnecessary CSs.

Table 1 **Governance factors affecting Cesarean sections rate in**

## Lebanon

| <b>Factors</b>                      | <b>The current situation in Lebanon</b>                                                                                                                                                                                                                                                                                               |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Privatized system                   | Significant dominance of the private health sector over the management of services, healthcare resources and guidelines setting, reducing the power of public authorities like the Ministry of Public Health to effectively regulate different standards of health services (Sfeir, 2007; Osman et al., 2009; Kabakian et al., 2013). |
| Absence of national guidelines      | Absence of unified national standards and guidelines for obstetric and maternal care in major health institutions (Kabakian et al., 2007; Ammar, 2009; Arawi & Nassar, 2011).                                                                                                                                                         |
| Diversity in medical schools        | The diversity of medical schools in Lebanon and the difference in academic backgrounds among Lebanese physicians contributed in justifying the diversified practices and in the absence of unified medical standards in the field of maternal healthcare (Carayol et al., 2008; Mroue, 2011).                                         |
| Opposition of powerful stakeholders | Most of the obstetricians and the Order of Physicians that are among the most powerful authorities in the Lebanese maternal medical field oppose to standardized regulations that aim to reduce the rate of CSs in the country (Kabakian et al., 2007).                                                                               |
| Absence of law                      | There is no existing policy, policy draft, legislative or governmental regulation concerning a strategy to decrease the rate of CSs in Lebanon (Kabakian et al., 2007; Mroue, 2011, Abdallah et al., 2004).                                                                                                                           |

| <b>Factors</b>                            | <b>The current situation in Lebanon</b>                                                                                                                                                                                                                                                                                 |
|-------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Need for strengthened primary health care | Despite the significant progress in the functioning of primary healthcare in Lebanon (MoPH, 2009; El Jardali et al., 2013), the need for an effective, equitable and accessible maternal prenatal care and birth preparedness programs among primary healthcare centers in Lebanon is still permanent (WHO EMRO, 2014). |
| Unregulated medical practice              | According to different studies, there is a witnessed unregulated increase in the number of medical doctors and medical practice (DeJong et al., 2010; Osman, 2009).                                                                                                                                                     |
| Absence of law to protect obstetricians   | There is no legal framework in Lebanon to defend obstetricians and gynecologists in case of the development of maternal health problems during obstetric procedures (Khayat & Campbell, 2000).                                                                                                                          |

Table 2 **Financial factors affecting Cesarean sections rate in Lebanon**

| <b>Factors</b>                                     | <b>The current situation in Lebanon</b>                                                                                                                                                                                                                                                                                                           |
|----------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Presence of medical insurance                      | Women with medical insurance are more likely to have a CS delivery than women who do not (Tamim et al., 2007; Carayol et al., 2008).                                                                                                                                                                                                              |
| Higher hospitalization costs and benefits          | CSs ensure excessive profits for hospitals as they result in higher bed occupancy and longer hospital stays that subsequently result from programming births. This increases the benefits of the hospital and leads to an increase in CSs rate (Hsu et al., 2008; Hou et al., 2014; Mroue, 2011).                                                 |
| Higher procedural cost and revenues                | In Lebanon, the coverage of CSs by the Ministry of Public Health (MOPH), NSSF (80K), insurance schemes and physician reimbursement is higher than that of vaginal or normal deliveries (60K), which is associated with the preferences of health providers to do more CSs (Mroue, 2011; Kabakian et al., 2007; Huster, 2013, Tamim et al., 2007). |
| Other financial priorities for insurance companies | Major insurance companies have shown their interest in reducing CSs rate. However, they consider other major                                                                                                                                                                                                                                      |

| <b>Factors</b>                          | <b>The current situation in Lebanon</b>                                                                                                                                                                                                                           |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                         | surgical interventions such as open-heart surgeries as providing higher cost benefits if reduced; therefore, they do not push for the reduction of CSs rate nor consider it as a priority (Kabakian et al., 2007; Mroue, 2011).                                   |
| Competition between insurance companies | The competitive aspect of insurance companies in Lebanon imposes accepting the patient/healthcare receiver request, noting that a high rate of Lebanese women tend to demand CSs (Kabakian et al., 2007; Mroue, 2011; Tamim et al., 2007).                        |
| Lack of coverage for epidurals          | Pain relief tools in vaginal delivery such as epidurals are not covered or reimbursed by MoPH nor by public social security systems NSSF, resulting in higher “demand” for CSs among women who avoid vaginal delivery due to fear of pain (Kabakian et al. 2007). |
| Voucher system for refugees             | The “voucher system for deliveries” adopted by UNHCR, is resulting in higher requests among pregnant Syrian refugee women for CSs in Lebanon, even though the majority of them used to undergo vaginal deliveries in Syria (Huster, 2013).                        |

Table 3 **Delivery factors affecting Cesarean sections rate in Lebanon**

| <b>Factors</b>                                         | <b>The current situation in Lebanon</b>                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Poor maternal health care services                     | There is still some application of different labor and delivery practices that were classified by WHO as unnecessary and sometimes harmful in addition to a persistent insufficient healthcare provision (Khayat & Campbell, 2000; Tamim et al., 2007; Kabakian et al., 2013; WHO, 2010; Mroue, 2011).                        |
| Shortage in midwives and the limitation of their roles | There is a great shortage in the number of midwives in Lebanon and lack of seeking their assistance in deliveries in the Lebanese culture (Kabakian, 2007; Ammar, 2009; DeJong, 2010; Huster, 2013). Additionally, midwives are not highly involved in delivery processes in hospitals neither well paid (Abou Malham, 2015). |

| Factors                        | The current situation in Lebanon                                                                                                                                                                                                                                                                                                                                              |
|--------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Convenience                    | Time as a component of convenience: the possibility of performing a CS for babies born during weekdays was higher compared to babies born during weekends, to avoid schedule interruption (Carayol et al., 2008).                                                                                                                                                             |
| Convenience for refugees       | The same reason lies behind the increase in the rate of CSs among Syrian refugee women, as convenience in time was a major stimulus to ask for a CS (Huster, 2013).                                                                                                                                                                                                           |
| Excessive physicians supply    | High numbers of obstetricians operating in hospitals and in private clinics with limited number of mothers seeking neonatal and delivery care from each. This led to a competitive environment, among physicians, to ensure having the highest possible number of patients and led consequently to perform convenient practices like CSs (Carayol et al., 2008; Mroue, 2011). |
| Women demand                   | Women’s demand for CSs explains the rise in CSs rate and is mainly related to general misconceptions regarding CS procedures, circumstances and consequences, in addition to the poor prenatal education and preparation (Kabakian et al., 2013; Mroue, 2011).                                                                                                                |
| Practice in medical schools    | Most medical schools do not train medical residents in operative vaginal deliveries; rather, they prefer to train them on CSs procedures, which reduces the ability and expertise of obstetricians to perform a vaginal delivery (Tamim et al., 2007; Kabakian et al., 2007).                                                                                                 |
| The environment of practice    | The tendency of some obstetricians to perform CSs and the increase of demand among women, encourage other obstetricians to not refuse the performance of CSs on demand (Carayol et al., 2008; Tamim et al., 2007).                                                                                                                                                            |
| Practice of defensive medicine | In obstetric care, physicians practice “defensive medicine” to avoid complications that might result of the vaginal deliveries even in the absence of indications. CSs are often performed as a precaution against mismanagement. (Cavalieri et al., 2014)                                                                                                                    |

Despite the high rates, Lebanese studies published in this domain only addressed the determinants of elective CSs with few suggesting solutions and none exploring the complications in Lebanon. Despite this shortage, the international findings of complications still have public health implications in the Lebanese health system (Carayol et al., 2008). This implies through the significant rate of maternal complications, the neonatal respiratory problems and the admission to neonatal care unit, also through the significant rate of obesity and overweight issues among children that might persist for the lifetime. In parallel, there are elevated percentages of people suffering from hypertension, cardiovascular problems and respiratory complications such as asthma and pulmonary hypertension in Lebanon (WHO, 2011). All these health consequences result in significant financial expenditures and preventable costs (WHO, 2010).

In addition to the listed health complications and their costs, unnecessary CSs themselves are medical measures that cost health care systems significant bills for needless measures. CSs have a negative impact on health care system in terms of resource allocations in comparison to normal vaginal deliveries (Belizan et al., 1999; WHO, 2010; Huster, 2013). There are no recent data available in Lebanon regarding the total costs of CSs or elective CSs. However, in 2013, \$1.4 million were spent by UNHCR on 2,244 CSs, in comparison to same amount of money spent on 4,131 natural vaginal deliveries, extracting financial portions from other essential medical procedures among refugee women in Lebanon (Huster, 2013). This high cost is mirrored globally as WHO reported that 18.5 million CSs are performed annually worldwide costing US\$ 2.32 billion (WHO, 2010).

Although MoPH initiated in 2011 a maternal health campaign in primary health centers to address diverse maternal health issues (MoPH, 2011), the interventions made on both private and public levels are still minimal, uncontrolled and not targeting the root causes of the problem (Huster et al., 2013).

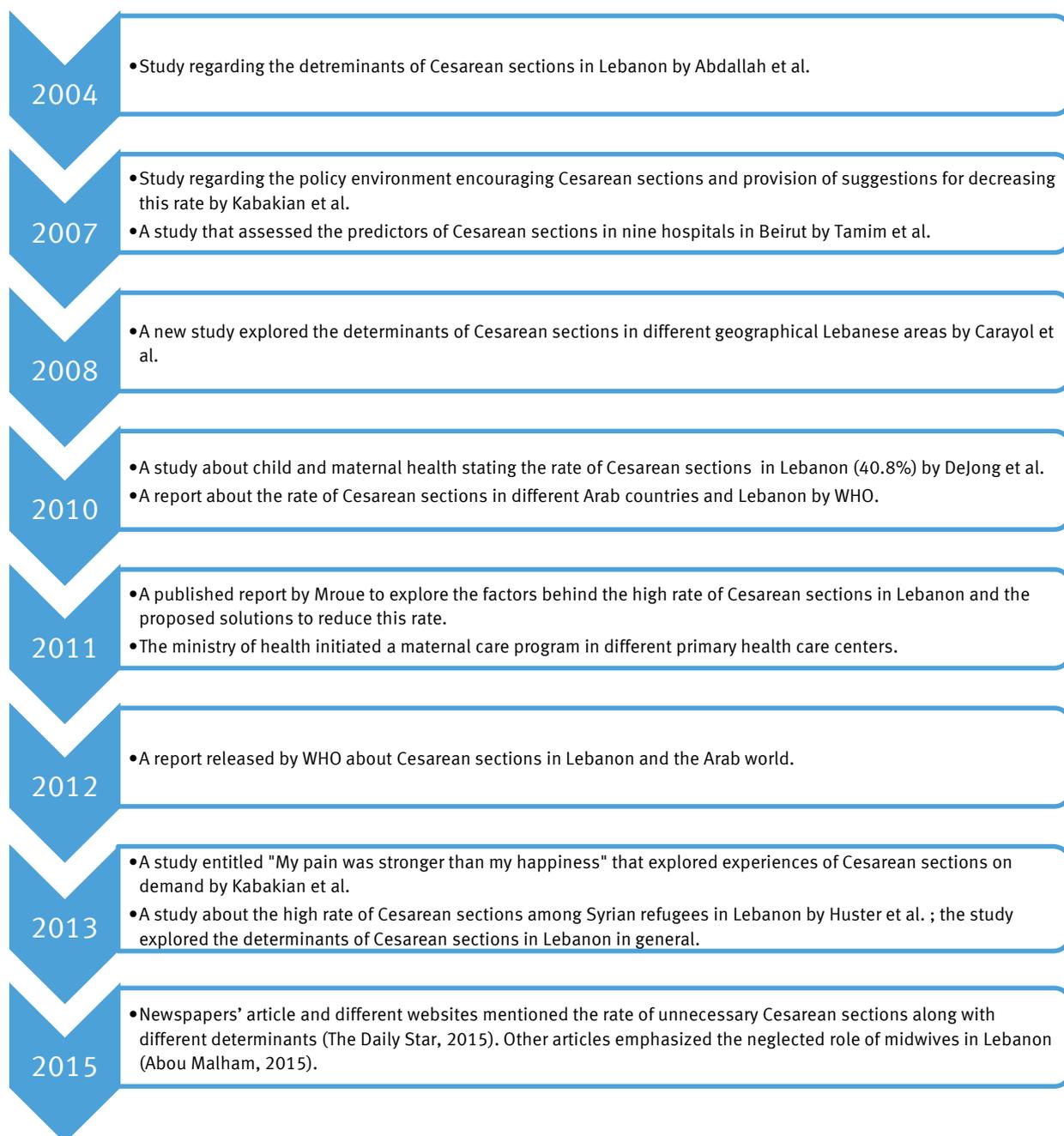


Figure 1 A timeline of studies and activities conducted to tackle the issue of high rate of Cesarean sections in Lebanon

# What we know from Evidence

→ Several policy-related or organization-related interventions were adopted in different countries to reduce high rates of CSs.

→ These interventions operated at three levels:

**Individual level** (Pregnant women and their families): through providing prenatal education and support, in order to make better decisions regarding the type of delivery and to change their attitudes and overcome misconceptions about Cesarean sections (Chaillet et al., 2007; Rauk, 2010; Althabe et al. 2006; Gambel & Creedy, 2001; Bastani et al., 2006). Raising awareness of pregnant mothers through improving their knowledge about the importance of reducing unnecessary CSs helped in reducing the rates of primary elective CSs in different countries according to relevant systematic reviews (Chaillet & Dumont, 2007; Bastani et al., 2006; Baradaran, 2006).

**Institutional level:** through applying a policy of mandatory second opinion (Althabe et al., 2004); however, this intervention was found to be more effective in reducing elective CSs when coupled with monitored audit systems and feedback (Villar et al., 2006; Catling-Paull et al., 2011).

Also, involving midwives in the processes of delivery in the hospitals in addition to enable them to lead the process when it is safe contributed in significant decrease in primary CSs (Beigi et al., 2009; McLachlan et al., 2012).

**Financial level:** that constitutes promoting incentives for vaginal birth and vaginal births after CSs (VBAC) in order to encourage physicians to perform such procedures instead of CSs (Gruber et al., 1999; Lo, 2008).

→ These interventions were adopted and applied in countries of different socio-economic status and of different health systems like the United States, China, Taiwan, Chile, Mexico, Brazil and Iran. Noting that Upper middle income (UMI) countries similar to Lebanon referred to mandatory second opinion, internal peer review, feedback and audit systems at department meetings in hospitals. These interventions were shown to not require high financial expenditures; however, they need high commitment of healthcare organization (WHO, 2012; Hartmann et al., 2012; Main et al., 2012; Yazdizadeh et al., 2011).

→ Brazil that witnessed high rates of unnecessary CSs in the past two decades successfully applied a policy of mandatory second opinion coupled with a feedback and audit system (Main, 1999;

Landon et al., 2004; Cecatti et al., 2005). Brazil also used the strategy for group practices to ease time pressures that obstetricians face; these interventions contributed in significant decrease in CSs rate. Likewise, another strategy that targeted health insurance companies to provide disincentives for obstetricians who perform unnecessary CSs showed effective outcomes in reducing the rate of primary CSs in Brazil (Hopkins & Amaral, 2005).

Table 4 **Evidence-informed interventions**

| Area of Action                              | Intervention                                                                                           | Rationale                                                                                                                                                                                                                                                | Countries                                                        | References                                                                                                                                                                   |
|---------------------------------------------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Institutional / organizational level</b> | → Establish a policy for mandatory second medical opinion when there is a possibility to perform a CS. | → Ensure there is a medical indication for CSs.<br><br>→ Prevent the overuse of this procedure and decrease the rate of over medicalization in deliveries<br><br>* Was effective when coupled with a strict audit system in private and public hospitals | Brazil (UMI), Iran (UMI), Chile (UMI), South Korea, Portugal, US | (Belizan et al., 1999; AlThabe et al., 2004; Khunpradit et al. 2011; WHO, 2012; Main et al., 2012; Porter & Bhattacharya, 2006; Mawson, 2002; Ayres De Campos et al., 2015). |
|                                             | → Establish a policy statement for group practice among physicians.                                    | → Ease time pressures obstetricians face, therefore allow less scheduling of births.<br><br>→ Reduce the convenience factor interplaying in asking for a CS.<br><br>* Showed to be significantly effective in public hospitals                           | Brazil (UMI), Holland, US                                        | (Hopkins & Amaral, 2005; WHO, 2011; Liang et al., 2004).                                                                                                                     |
|                                             | → Establish peer/ external peer review, feedback                                                       | → Review delivery cases and the indications of each of the deliveries to                                                                                                                                                                                 | Brazil (UMI), Iran (UMI), Portugal (UMI),                        | (Liu & Sia, 2004; Lasnet et al., 2014; Chaillet et al., 2007; Naidoo & Moodley,                                                                                              |

| Area of Action         | Intervention                                                                                     | Rationale                                                                                                                                            | Countries                                                               | References                                                                                                                                                    |
|------------------------|--------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                        | and audit system.                                                                                | determine necessary and unnecessary CSs and monitor high rates.<br><br>*Was effective in reducing CSs in private and public hospitals                | Pakistan, Thailand (UMI), Mexico (UMI), US                              | 2009; Scarella et al., 2011; Venditelli et al., 2014; Mohammadi, Essen & Kallestal, 2012; Catling-Paull et al., 2011; Hanvoravongchai et al., 2000).          |
|                        | → Involvement of midwives in the delivery processes in the hospitals.                            | → Ensure the humanization of delivery and increase the rate of Primary normal deliveries<br><br>* Showed to be effective in reducing CSs             | UK, Portugal, Turkey (UMI), Brazil (UMI), Mexico (UMI), US, Iran (UMI)  | (Turan & Kultay, 1995; Belizan et al., 1999; Sakala, 1993; Bastani et al., 2006; Ayres De Campos et al., 2015).                                               |
| <b>Financial level</b> | → State an increase in the cost of vaginal birth procedure to become equal to the cost of CSs.   | → Alleviate the factor of financial incentive, by providing equal cost for both procedures.<br><br>*Showed a slight effective decrease in CSs rates  | Brazil (UMI), Chile (UMI), Mexico (UMI), China (UMI), South Korea (UMI) | (WHO, 2012; Main et al., 2012; CIVHC, 2014; Kozhimannil, Law & Virnig, 2013; Cavalieri et al., 2014; Mawson, 2002; ACOG, 2014; Allin et al., 2005; Lo, 2008). |
|                        | → State an increase the cost of VBAC along with ensuring a safe preparedness for this procedure. | → Increase the financial incentive for physicians to perform a vaginal delivery after a CS.<br><br>* Showed a slight effective decrease in CSs rate. | Brazil (UMI), Portugal, US                                              | (Cavalieri et al., 2014; Mawson, 2002; Lo, 2008; Huang et al., 2012).                                                                                         |
|                        | → Provide pain relief methods including epidurals.                                               | → Though a woman using epidurals might end up with CS, Epidurals alleviate fear from pain during delivery,                                           | Portugal, Mexico (UMI), Brazil (UMI), US, Holland                       | (AlThabe et al., 2004; Eltzschig et al., 2003; Liu & Sia, 2004; CIVHC, 2014; McCourt et al., 2007; Keogh et al.,                                              |

| Area of Action          | Intervention                                                                                                                                     | Rationale                                                                                                                                                                                                                                    | Countries                                                                                      | References                                                                                                                                                                                                                                                                                                                                  |
|-------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                         |                                                                                                                                                  | <p>which was shown as a major factor for demanding a Cesarean section.</p> <p>→ Ensure high rates of vaginal or normal deliveries among women fearing labour pain.</p> <p>*Ensured moderate reduction of CSs demand.</p>                     |                                                                                                | 2006; Benhamou et al., 2002; Somuah, Smyth & Jones, 2011).                                                                                                                                                                                                                                                                                  |
| <b>Individual level</b> | → Establish a system that provides prenatal awareness/relaxation, birth preparation classes/sessions and tools (such as pamphlets and booklets). | <p>→ Increase the awareness of women of the benefits of normal delivery, the consequences of CS and the conditions that necessitate its occurrence.</p> <p>* Contributed in a significant reduction of CSs rate in low-risk pregnancies.</p> | Brazil (UMI), Iran (UMI), Portugal, US, Chile (UMI), Holland, UK, Thailand (UMI), Mexico (UMI) | (Khunpradit et al. 2011; Hartmann et al., 2012; WHO, 2010; WHO; 2012; Rossignol et al., 2013; Simpson, Newman & Chirino, 2010; Kottwitz, 2014; Marshall, Spiby & McCormick, 2015; Campero et al., 2004; ACOG; 2014; Mawson, 2002; Baradran et al., 2006; Ayres De Campos et al., 2015; Bastani et al., 2006; Hanvoravongchai et al., 2000). |
|                         | → Establish a prenatal support program.                                                                                                          | <p>→ Help women make informed decisions regarding the type of delivery.</p> <p>*Showed a moderate decrease in CSs rate.</p>                                                                                                                  | Iran (UMI), Brazil (UMI), Mexico (UMI)                                                         | (Mehdizadeh, 2005; ElFerink, 2002, WHO, 2012; Bastani, 2006).                                                                                                                                                                                                                                                                               |

# Recommendations

# Recommendations

## Individual level

### → Recommendation 1

It is recommended that MoPH initiate in collaboration with Obstetrics and Gynecology (OB/GYN) departments in public and private hospitals, clinics and primary health care centres (especially those who have adopted the maternal health campaign initiated in 2011), prenatal preparatory/ educational sessions for pregnant mothers. This strategy is advised to be constituted of the provision of educational tools to build awareness of vaginal delivery benefits, the indications for a CS and the consequences of performing an elective or an unnecessary CS. These sessions are recommended to be free of charge to ensure that women from different social classes can attain them. This is in response to WHO concerns that were raised in 2012 regarding the cost of educational sessions and their availability for women who have low financial means and emphasized on their provision as a free service (WHO, 2012). In parallel, it is recommended that these sessions be linked to the accreditation system of both hospitals and primary health care centres. According to El Jardali et al. (2014), the acquirement of accreditation by primary healthcare centres in Lebanon is key for addressing population health needs. The main challenge for this educational strategy is its need for adequate staffing to show effectiveness on the long-term, however it is facilitated by the intention of MoPH to provide maternal education through the educational campaign initiated in primary health centres since 2011.

## Financial level

### → Recommendation 2

On the financial level, establishing a regulation that ensures the provision of financial coverage for epidurals (being the main adopted birth analgesics in Lebanon) on the behalf MoPH and NSSF (being the insurers of majority of Lebanese) is important. Additionally, it is recommended to have a cost adjustment for vaginal delivery that costs 60K compared to 80K for CSs. Such a procedure would ensure a financial incentive that is equivalent to the financial incentive presented by CSs and that is driving many physicians to perform them. In parallel to these reforms, NSSF, MoPH and private insurance companies are advised to set unified guidelines for the reimbursement of CSs under the supervision of MoPH. MoPH, NSSF and insurance companies are recommended to critically revise the indicators of CS cases performed in hospitals before proceeding with reimbursing them. This would require a firm coordination between the three entities and strict supervision on the reimbursement process.

## **Institutional level**

### **→ Recommendation 3**

Ensure larger involvement of midwives in birth practices occurring in Lebanese hospitals. The process necessitates confirming higher payments for midwives, improving and updating their skills and tools, enabling them to perform safe non-indicated deliveries and empowering their positions and their interaction with women in the hospitals. A larger involvement of midwives in deliveries in both public and private hospitals is essential to increase the rate of normal deliveries, therefore improve maternal health and birth conditions. The main challenge is the shortage of midwives and the lack of trust in the role of midwives in the Lebanese society and their capabilities to perform a birth process. However incentives like higher payments and better employment status can increase the number of midwives in Lebanon on the long run. Additionally, the proper maternal education provision is capable of the alteration of the view of women to midwives role before and during the birth process.

### **→ Recommendation 4**

Apply a policy that necessitates a physician to obtain mandatory second medical opinion before proceeding with a CS, along with a post fact revision and assessment for the performed cases of CSs in the hospital. It is recommended that the physician providing the second opinion is operating in the same hospital, has equal or superior qualifications to the attending physician, selected by the obstetrics department and had already agreed to follow clinical guidelines. Afterwards, there should be monthly feedback by four physicians and nurse reviewers who review the labour and delivery records and assess the indications for the performed CSs and the quality of maternal care. The feedback team should provide the hospital with a report of findings and recommendations.

It is highly advised that the compliance of hospitals to these policies be compulsory for attaining accreditation status by MoPH. Noting that WHO declared that accreditation system could touch upon the high rate of unnecessary CSs, as it would set standards and guidelines for maternal healthcare in healthcare settings (WHO, 2014). Proper evaluation and follow up of these procedures upon their setting can be done under the supervision of MoPH, insurer parties and the syndicate of hospitals.

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