AMERICAN UNIVERSITY OF BEIRUT

KNOWLEDGE, ATTITUDES, AND PRACTICES OF LEBANESE PEDIATRICIANS IN RELATION TO SUPPORTING BREASTFEEDING

by
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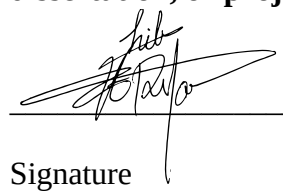

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AN ABSTRACT OF THE THESIS OF

Hiba Mustafa Al Rifai for Master of Science
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Title: Knowledge, Attitudes, and Practices of Lebanese Pediatricians in Relation to Supporting Breastfeeding

Background: Worldwide rates of breastfeeding are still suboptimal despite its confirmed importance and benefits during the first 1000 days of a child's life. Using the Social Cognitive Theory, the determinants of breastfeeding can be divided into personal and environmental factors. Evidence has emphasized the role of pediatricians as an environmental determinant of breastfeeding. In Lebanon, the rates of breastfeeding remain below recommendations, as evidenced by low rates of exclusive and continued breastfeeding.

Objectives: The main objective of this study is to examine the knowledge, attitudes and practices of Lebanese pediatricians in relation to supporting breastfeeding. A secondary objective is to explore the sociodemographic correlates of the breastfeeding knowledge, attitudes, and practices of the Lebanese pediatricians.

Methods: A national cross-sectional survey of Lebanese pediatricians was conducted online through Lime Survey. The list of pediatricians' emails was obtained from the Lebanese Pediatric Society and the Lebanese Order of Physicians. After consenting to participate, pediatricians completed a multicomponent questionnaire covering four main sections: 1) Sociodemographic characteristics; 2) Practices related to supporting breastfeeding (12 questions); 3) Attitudes towards breastfeeding (15 questions), and 4) Knowledge of breastfeeding (22 questions). Data from the lime survey were exported into the Statistical Package for Social Sciences (SPSS version 23). Frequency, proportions, as well as means and standard deviations were used to describe categorical and continuous variables. Summary Scores were computed for each section. The sociodemographic correlates of the knowledge, attitudes, and practices scores were examined through simple and multiple linear regression. Statistical significance was established at a p-value < 0.05.

Results: A total of 117 pediatricians attempted to answer the questionnaire resulting in response rate of 11%. The study sample consisted of 59.6% female pediatricians, 44.9% above 50 years of age, and 76.6% from Beirut and Mount Lebanon. Almost 66% of pediatricians spent the majority of their time in a clinical setting, and 69% did their residency training in Lebanon. Regarding the knowledge section, the results of the study revealed deficiencies in the knowledge related to breastfeeding. For instance, more than

one third of the pediatricians did not recognize the correct age for introducing solid foods and around 36% believed that breastfeeding is contraindicated in mothers with hepatitis C. A significant number of pediatricians (56.6%) chose bottles as the best option for providing pumped or formula milk and 50.6% did not acknowledge that breastmilk retains its core components after 2 years of age. Moreover, 33.8% of pediatricians showed suboptimal knowledge in addressing breastfeeding positioning (33.8%), sore nipples (32%), frequent feedings (44.5%), and latching issues (65%). With regards to the attitudes towards breastfeeding, the study sample reported unfavorable attitudes to more than one theme. More specifically, negative attitudes towards breastfeeding in public (34.1%), breastfeeding while working (25.3%), and breastfeeding while pregnant (40%) were reported. Almost 30% of pediatricians considered that mixed feeding is a more practical feeding method and 33% believed that formula-fed babies are as healthy as breastfed babies. The majority of pediatricians reported to be comfortable in assessing and evaluating breastfeeding problems while 20% disagreed that their residency prepared them well to support breastfeeding. As for the practices section, the pediatricians' answers showed varied practices. For instance, 36.3% of pediatricians asked mothers (frequently enough) to breastfeed in front of them so that they can assess the feeding, 30.8% referred mothers to lactation consultants, and only 24.2% kept brochures about breastfeeding resources to give to mothers. Furthermore, more than 40% of pediatricians kept formula samples in their clinics to distribute to mothers and their babies, and more than 20% had formula-related advertising in their clinics. Around 32% of pediatricians would recommend supplementing with formula if a healthy baby has not regained weight by 2 weeks, and 25.3% would do so if the mother feels her milk is inadequate. Most pediatricians (72.5%) would recommend timed feeding instead of feeding on demand. Despite the aforementioned gaps, a sizeable proportion of the study sample exhibited good knowledge, positive attitudes, and favorable practices towards breastfeeding. After adjustment for covariates using linear multiple regression, being a female remained the sole predictor of a higher knowledge score (B=1.893, 95%CI 0.584 to 3.203). Spending the majority of time at a hospital was the only predictor of the attitude score (B=1.583, 95%CI 0.202 to 2.964). Practice scores were predicted by being between 35 and 40 years old (B=-1.273, 95%CI -2.402 to -0.144) and spending most worktime at a hospital (B=0.925, 95%CI 0.129 to 1.721).

Conclusion: This research study is the first attempt in Lebanon and in the region to explore the knowledge, attitudes, and practices of pediatricians in relation to supporting breastfeeding. The results of this study revealed important gaps in the knowledge of pediatricians and considerable prevalence of negative attitudes and practices related to breastfeeding support. These findings unveiled a critical opportunity which, if addressed, could potentially increase the rates of exclusive breastfeeding. Concentrated and coordinated efforts ought to be exerted to educate and equip pediatricians with the knowledge and skills to support breastfeeding. In addition, a better understanding of the barriers and enablers to supporting breastfeeding among pediatricians is warranted.

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ABBERIVIATIONS

&	And
%	Per Cent
±	Plus or Minus
=	Equal To
AAP	American Academy of Pediatrics
AUB	American University of Beirut
BMS	Breastmilk Substitute
CI	Confidence Interval
CI	Confidence Interval
HICs	High-Income Countries
IQ	Intelligence Quotient
IRB	Institutional Review Board
KAP	Knowledge, Attitudes, and Practices
LMICs	Low-Middle Income Countries
LOP	Lebanese Order of Physicians
LPS	Lebanese Pediatric Society
MCQs	Multiple Choice Questions
MOPH	Ministry of Public Health
NCDs	Non-Communicable Diseases
NGOs	Non-Governmental Organizations
SCT	Social Cognitive Theory
SDGs	Sustainable Development Goals

SETs	Self-Efficacy Theories
SIDS	Sudden Infant Death Syndrome
SPSS	Statistical Package for Social Sciences
T/F	True and False
UNICEF	United Nations International Children's Emergency Fund
WHO	World Health Organization
WIC	Special Supplemental Nutrition Program for Women, Infants, and Children

To Masa the unbreakable

My courageous little warrior

CHAPTER I

LITERATURE REVIEW

A. First 1000 Days

The first 1000 days of life are the foundation of the child's lifelong physical and mental health, where the most critical neurodevelopment occurs (Fox et al., 2010). This vulnerable period encompasses changes on the cellular and the structural levels of the brain. The timing and synergy of these changes are crucial for healthy normal development (Schwarzenberg & Georgieff, 2018). Ensuring an optimal environment with minimal challenges is required to safeguard the baby's growth within and outside the uterus. Factors underlying this optimal environment include nutritional status, parenting environment, social and cultural norms, and heredity (Pem, 2015).
Studies focusing on nutrition during the first 1000 days have highlighted the importance of breastfeeding as the optimal nutrition for infants right after birth and beyond two years of age (Fox et al., 2010; Pem, 2015; Robertson et al., 2019; Schwarzenberg & Georgieff, 2018).

B. Breastfeeding

The World Health Organization (WHO), United Nations International Children's Emergency Fund (UNICEF), and The American Academy of Pediatrics (AAP) affirm that breastfeeding is the golden feeding standard for babies within this 1000 days window. Breastfeeding is recommended exclusively for the first six months of life. After six months, nutritious complementary foods should be introduced while breastfeeding is continued for two years and beyond (WHO, 2020a). Breastmilk is made

of the ideal combination of carbohydrates, fats, and proteins that are dynamically changing according to the baby's needs for optimal growth and development (Pem, 2015). Moreover, breastmilk's unique components, such as growth factors, cells, and enzymes, cannot be mimicked in formula synthesis (Schwarzenberg & Georgieff, 2018). Offering formula milk – or any other Breastmilk Substitute (BMS) – instead of breastmilk, could jeopardize the health shield offered by proper breastfeeding in this critical stage. Studies have shown that the lack of breastfeeding is associated with increased risks of specific incidents such as sudden infant syndrome, obesity, certain cancers, diabetes, and asthma (Grummer-Strawn & Rollins, 2015).

C. Benefits of Breastfeeding

The most updated Lancet series on breastfeeding has compiled the evidence pertinent to breastfeeding benefits for the baby and the mother. It was reported that breastfeeding could save 823,000 children deaths – of which 13.8% corresponds to children under the age of 2 years – each year if universal levels were reached. Strong evidence exists, linking exclusive breastfeeding to a reduced risk of death (12%) when compared to not breastfeeding. Additionally, any breastfeeding has a protective effect on death to as much as 50% in 6 to 23 months old children. Other well-documented benefits include: 1) decreasing the episodes of diarrhea and respiratory infections, 2) decreasing the hospital admissions from diarrhea and respiratory infections (by 72% and 57% respectively), 3) decreasing the odds of overweight and obesity by 26%, 4) decreasing the incidence of type 2 diabetes by 35%, 5) decreasing the risk of childhood leukemia by 19%, and 6) increasing Intelligence Quotient (IQ) scores by 3.4 points in children and adolescents.

Currently, breastfeeding saves 19,464 mothers from dying from breast cancer annually. If breastfeeding durations increase where mothers breastfeed for 12 months/ child and 24 months/ child in High-Income Countries (HICs) and Low-Middle Income Countries (LMICs), respectively, then an estimated additional 22,216 lives can be saved each year (Victora et al., 2016). Robust evidence underlies these statistics where every additional year of breastfeeding is associated with a 4.3% decrease in invasive breast cancer incidence (Collaborative Group on Hormonal Factors in Breast Cancer, 2002). Another mother-related benefit that was highlighted in the Lancet series and echoed in a Cochrane review on breastfeeding duration, is the extended amenorrhea as a result of exclusive or predominant breastfeeding (Kramer & Kakuma, 2012; Victora et al., 2016).

The importance of breastfeeding extends beyond its effect on health outcomes, where it is a cornerstone of sustainability and one of the main contributors to the achievement of the 2030 Sustainable Development Goals (SDGs). Goal number 2 is about improving nutrition and aiming for zero hunger; this cannot happen without securing the best nutrition for babies: breastfeeding. Similarly, breastfeeding is relevant to Goal number 3; it can help achieve better maternal and child health outcomes, including the prevention of Non-Communicable Diseases (NCDs). The impact of breastfeeding on IQ and improving productivity makes it relevant to the achievement of Goals number 1(no poverty), 4(quality education), and 8(economic growth). It also plays an indirect role in achieving gender (Goal number 5) and social equality (Goal number 10). Finally, breastfeeding is an environmentally friendly practice making it relevant to all environment-related goals (Goals number 12, 13, 14, and 15) (UNICEF, 2016; Victora et al., 2016).

D. Breastfeeding Rates

Despite these well-established benefits of breastfeeding, worldwide rates are still suboptimal. Only 43% of newborns initiate breastfeeding during the first hour of birth, and only 41% of infants (0-6 months) breastfeed exclusively. Even though most mothers (70%) provide some kind of breastmilk up until one year of age, only 45% continue to do so by the age of two years (UNICEF & WHO, 2019). These trends are a warning that global goals will not be met by 2030. According to the 2019 Global Breastfeeding Score Card, in 2030 the rates of breastfeeding should be amplified to at least 70% initiation within the first hour, 70% exclusive breastfeeding in the first 6-months, 80% of breastfeeding at one year, and 60% at two years of age (UNICEF & WHO, 2019).

E. Breastfeeding Determinants

Investigating the reasons behind the low rates of breastfeeding has been progressing over the decades. The latest Lancet series on the subject demonstrated a conceptual framework that illustrated the multiple players affecting the mother's breastfeeding decision. These multiple players were categorized into three main layers: the individual, the setting, and the structure. Individual factors included the mother-infant relationship and attributes; the setting included factors related to health systems, the family and community, and the workplace, and the structural layer referred to sociocultural and market factors (Rollins et al., 2016). Other publications have studied the determinants under the lenses of the different social behavior theories such as the Self-Efficacy Theories (SETs) (Cangöl & Şahin, 2017; Chan & Choi, 2016; Nilsson et

al., 2017), the theory of planned behavior (TPB) (Giles et al., 2014; Giles et al., 2015; Joshi et al., 2016), and the Social Cognitive Theory (SCT) (Ahmed, 2008; Hildebrand et al., 2014; Pollard, 2011). The common aspect between these approaches is their focus on individual-targeted interventions. A recent critical review on the use of these theories regarding breastfeeding interventions highlighted the gap in addressing other factors and the need for a more comprehensive approach addressing other environmental aspects such as the cultural and healthcare providers' support (Bai et al., 2019).

F. The Social Cognitive Theory and Breastfeeding

The Social Cognitive Theory can assist in understanding the dimensions of breastfeeding challenges. It mainly postulates that a certain behavior is produced through the dynamic reciprocal interaction of the behavior itself in light of personal and environmental influences (Bandura, 2001). This latter notion can be best translated into the dual role the person plays in this theory; an actor of change and a receptor of change. The latter role can be a window of opportunity for new interventions that address broader challenges at the environmental level (GLANZ, 2001). Other SCT constructs include behavioral capability, observational learning, reinforcement, expectations, and self-efficacy. While these are different concepts, they all have the reciprocal determinism entrenched within (Bandura, 2005; LaMorte, 2019).

Considering that the ultimate behavior is the initiation and continuation of breastfeeding, then through the SCT lens, the mother's character and the environment surrounding her interact continuously to affect the behavior (Figure 1). Accordingly, the environment has a direct effect on the behavior, and proper changes at this level can influence the mother's decision to breastfeed. For example, changing the social norms

surrounding the mother can influence the expectations a woman has when she decides to breastfeed. Another example is related to changing the knowledge and skills of the support environment of the mother, which includes healthcare providers, among others. Such a change can influence the mother's self-efficacy and act as a reinforcement factor shaping the behavior of breastfeeding initiation and continuation (Bandura, 2005).

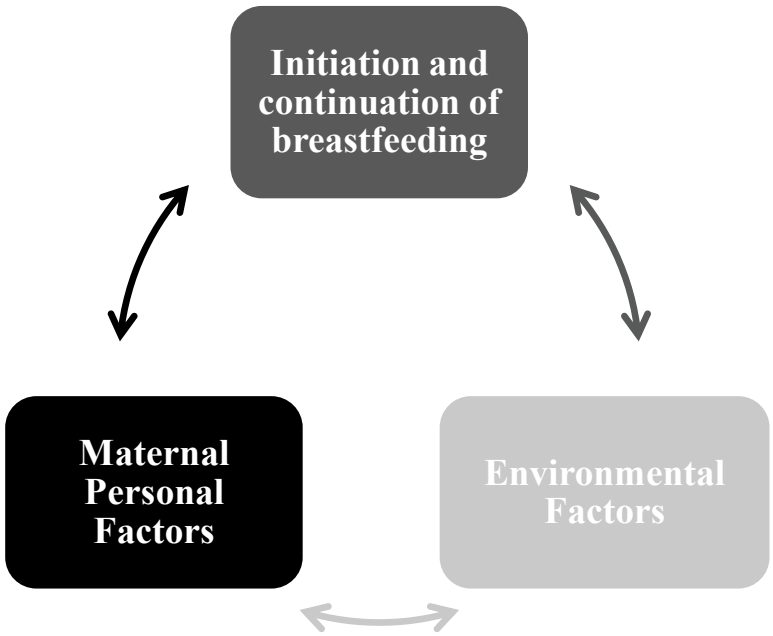


Figure 1: Breastfeeding under the Social Cognitive Theory

Schindler-Ruwisch et al. (2019), used the SCT to explore the determinants of the initiation and duration of breastfeeding among African American women in Washington DC who are receiving the Special Supplemental Nutrition Program for Women, Infants, and Children (WIC). Their results revealed that the breastfeeding experience of the mother was influenced by 1) the community which shaped the breastfeeding norms i.e. the mother's expectations, 2) the interpersonal factors such as the availability of support from health providers that shaped the enforcement of

breastfeeding and the observational learning of the mother, and 3) the individual challenges related to pain and latching success that reflect the mother's behavioral capability (Schindler-Ruwisch et al., 2019). Another study done in Scotland investigated the perceptions of women and midwives in relation to breastfeeding initiation under the SCT perspective (Edwards et al., 2018). The authors reported that the unfamiliar demanding hospital environment had a negative influence on the mother's self-efficacy and motivation to initiate breastfeeding. Similarly, midwives reported that their surrounding environment and their busy schedules prevented them from adequately supporting the mothers in breastfeeding initiation, highlighting a gap in the midwives' self-efficacy (Edwards et al., 2018). These findings were paralleled in another mixed-method cross-sectional study, which reported a strong association between low-maternal breastfeeding self-efficacy and having early problems with breastfeeding. When put under the SCT, the authors explained that low-efficacy can be a result of previous experiences or can be shaped by current experiences. The study also highlighted the role of the surrounding environment, including healthcare professionals, in motivating mothers, addressing their concerns, and increasing their self-efficacy (Feenstra et al., 2018).

Accordingly, using the SCT to understand the breastfeeding determinants highlights the importance of focusing on environmental changes that can make the mother's experience more breastfeeding conducive. Among the most prominent environmental factors are those related to the healthcare providers; it has been widely reported that the breastfeeding behavior is challenged by the healthcare providers' lack of knowledge, support, and malpractices related to breastfeeding (Rollins et al., 2016).

G. Healthcare Providers and Breastfeeding

Healthcare providers play a critical role in influencing breastfeeding practices of families. They are often identified as a trustworthy source of information (Gebremariam et al., 2020) who are best equipped to support and address mothers' breastfeeding concerns (Taveras et al., 2004). The positive attitude of healthcare professionals can influence mothers to initiate and continue breastfeeding (Clifford, & McIntyre, 2008), while the lack of knowledge and mal-recommendations can make mothers stop breastfeeding and use formula (Radzyminski & Callister, 2015; Taveras et al., 2004). The importance of the healthcare providers' role in supporting breastfeeding has been emphasized in the literature over the decades (Labbok, & Taylor, 2008; McFadden et al., 2017; Rollins et al., 2016). Studies ranged from those exploring the gaps in the healthcare providers' knowledge and practices to those estimating the effect of interventions aimed at the healthcare professionals in improving breastfeeding outcomes.

Levinienė et al. (2009) documented gaps in the general practitioners' and nurses' breastfeeding knowledge. The healthcare providers studied had: 1) insufficient information on exclusive and continued breastfeeding durations, 2) recommended pacifiers and early initiation of solid foods, and 3) did not know about hypogalactia prevention and management (Levinienė et al., 2009). Another study by Shaw and Devgan (2018), reported that more than half of the general practitioners and quarter of the nurses working at a tertiary healthcare center believed that cow milk or formula should be provided at six months of age for better growth. Moreover, the study found gaps in recommending breastfeeding on demand and a lack of knowledge regarding optimal breastfeeding durations (Shaw & Devgan, 2018). These results were echoed in

a qualitative approach that highlighted the mixed information provided to mothers by the different healthcare providers feeding into the mother's confusion and doubt (Feenstra et al., 2018).

A systematic review of 18 studies done on the role of health professionals in supporting breastfeeding revealed a consistent trend with negative influence. Professionals conveyed contradictory messages to mothers, lacked the required skills to motivate breastfeeding mothers, and did not have time or resources to support them. Additionally, they had theoretical knowledge rather than practical experience with documented mismanagement of complicated breastfeeding issues and improper training in breastfeeding to empower them to promote and support breastfeeding effectively (de Almeida, 2015).

Another systematic review by Yang et al. (2018) on the breastfeeding knowledge and attitudes of health professional students and their determinants, highlighted similar gaps. Breastfeeding knowledge (related to breastfeeding initiation and duration, supporting mothers and babies, clinical management, and intervening if necessary) among the different practitioner students was lacking even after finishing their clinical rounds on maternal and child health. The same review looked at interventions done to address this lack of knowledge and reported a significant improvement in knowledge scores, including those related to the management of breastfeeding complications. Furthermore, unfavorable attitudes towards breastfeeding were reported among the health professional students. Despite that some studies highlighted a positive attitude among nurses, which manifested as confidence about breastfeeding support abilities, the majority reported mid-scores. Other studies documented a negative attitude towards public breastfeeding in particular. Intervention

studies found that educational approaches did not change attitudes towards breastfeeding but affected the attitudes regarding formula feeding as a less favorable practice (Yang et al., 2018).

The most updated Cochrane review on support interventions found that combined support (peer and professional) significantly increased the rates of any breastfeeding as well as exclusive breastfeeding (McFadden et al., 2017). A previous systematic review of professional support reported the significance of this intervention in improving breastfeeding rates (Hannula et al., 2008). The study highlighted that 1) professionals play a crucial role, 2) interactive support is better than lecturing, 3) extended support is more effective than one-period intervention, and 4) multiple approaches are better than one single method (Hannula et al., 2008). Another Cochrane review similarly reported a significant increase in breastfeeding initiation among women receiving education and support from healthcare professionals compared to standard care delivery (Balogun et al., 2016). Additionally, the 2016 Lancet meta-analysis on breastfeeding interventions reported an almost 50% increase in exclusive breastfeeding and 66% in any breastfeeding when healthcare providers support was delivered (education and counseling, support at delivery, and lactation management) (Rollins et al., 2016).

H. Pediatricians and Breastfeeding

Pediatricians are the "right people, in the right place, at the right time" to shape breastfeeding success (Ware & Piovanetti, 2020). Pediatricians are considered one of the most influential healthcare providers regarding the feeding method of babies (Clifford & McIntyre, 2008; Santiago et al., 2003). Usually, they are the first to contact

physicians after the mother leaves the hospital and are frequently reported as the most trustworthy source of information (Sayres & Visentin, 2018). Pediatricians – being frequently visited throughout the first year of the baby's life – have more than one opportunity to redirect the feeding method and support breastfeeding (Dillaway & Douma, 2004). Their role extends from providing quality-evidence based information to investigating possible barriers and work with the patients accordingly to direct, modify, and manage these issues (Sayres & Visentin, 2018). Several studies have highlighted how mothers chose to breastfeed, continued breastfeeding, or even switched from formula to breastfeeding because their pediatricians have recommended that (Clifford & McIntyre, 2008; Schneidrova et al., 2003). However, the available literature features a noticeable lack of breastfeeding-friendly education and practice among many pediatricians (Reyes-Vázquez, 2019; Rollins et al., 2016).

Early studies have highlighted several gaps in the breastfeeding knowledge and practices of pediatricians. Freed et al. (1995) found that some pediatricians were not aware of: 1) the protective effect of breastfeeding against otitis, 2) the superiority of breastmilk on all other infant feedings, and 3) the effect of early supplementation with a formula on breastfeeding success (Freed et al., 1995). Michelman et al. (1990) have also reported that more than half of the pediatricians in their research did not recommend breastfeeding for their patients. The authors also found that most pediatricians did not offer any breastfeeding-related education or assistance to new mothers (Michelman et al., 1990). These findings were echoed later by Taveras et al. (2004), where pediatricians recommended supplementing with formula if a healthy baby did not gain enough weight and accordingly, mothers were found to discontinue exclusive breastfeeding (Taveras et al., 2004). These results were further confirmed qualitatively

by Dillaway and Douma (2004), who voiced the mothers' experiences at pediatric clinics. Mothers in the study highlighted the negative influence the pediatricians had on their breastfeeding journey, emphasizing the lack of support at the clinics. They reported to consider pediatricians a reliable important source of information and expressed their disappointment when the pediatricians assumed that they were using formula and did not encourage or motivate them to breastfeed; the mothers described the pediatricians' attitude towards breastfeeding as neutral and indifferent. Interestingly, the role of pediatricians in breastfeeding promotion was portrayed as a potential motivator if adequate support was provided; it can increase the duration of breastfeeding and the satisfaction of the mothers (Dillaway & Douma, 2004).

In their qualitative approach to understanding the breastfeeding attitudes and beliefs of health professionals, Radzyminski and Callister (2015), showed that while obstetricians thought that pediatricians were responsible for supporting mothers in breastfeeding, nurses referred to pediatricians as "not putting enough efforts to support mothers." On the other hand, the pediatrician residents reported not to discuss infant feeding with the mothers indicating that it is not their responsibility. Similarly, practicing pediatricians did not address breastfeeding with mothers because they did not want to make mothers who would formula feed their babies, feel guilty. They also referred the mothers to nurses who, according to the pediatricians, are more expert in dealing with breastfeeding issues. Moreover, pediatricians in the study (residents and practitioners) did not refer to breastfeeding as the golden standard. Rather they thought that what matters is feeding the baby regardless of the method (Radzyminski & Callister, 2015).

One of the earliest AAP studies on breastfeeding knowledge, attitudes, and practices of U.S pediatricians identified several gaps (Schanler et al., 1999). Many pediatricians did not recommend breastfeeding according to the guidelines, with only 44% recommending early (within the first half-hour after delivery) initiation of breastfeeding and only 63% addressing the duration of breastfeeding with the mothers. Additionally, a noticeable gap was identified regarding pacifier use, where the majority (70%) did not provide any specific recommendation and only 23% advised mothers to avoid the early use of pacifiers. Pediatricians were fairly confident about their ability to manage common breastfeeding problems with a significant difference between those who received a breastfeeding management session (more confident) and those who did not (less confident). The opinions of pediatricians regarding breastfeeding support varied, and the majority believed that breastfeeding is not superior to formula feeding (both are equally acceptable). Moreover, pediatricians were reported to recommend against breastfeeding for irrelevant reasons such as mastitis, low weight gain, jaundice, or low milk supply. Finally, gaps were also identified at the level of early solid foods introduction; pediatricians were more likely to recommend iron, vitamins, solid foods, and supplementary feedings before five months of age (Schanler et al., 1999).

Later, Feldman-Winter et al. (2017) conducted a review on the different AAP studies on pediatricians' practices and attitudes about breastfeeding to investigate the trends from 1995 until 2014. They found that, despite some improvements, gaps in pediatricians' attitudes and practices persisted, and some were on a negative trend. Most pediatricians in 2014 did not refer mothers to community support groups, and only 47% recommended against the use of pacifiers in early breastfeeding initiation period. A noticeable number of pediatricians did not recommend a specific infant feeding method

in the first month of life. Compared to pediatricians in 1995, pediatricians in 2014 were: 1) less likely to discuss breastfeeding with mothers, 2) less likely to report that any mother can breastfeed if she continues on trying, and 3) less likely to report that the benefits of breastfeeding are worth the difficulties encountered by the mothers. This study has also identified that older pediatricians were more confident in their ability to address mothers' concerns and manage common breastfeeding problems than younger pediatricians (Feldman-Winter et al., 2017).

Recently, in another study by Quinn and Tanis (2020), pediatricians were reported to have a low emphasis on breastfeeding as the best nutrition. When compared with other healthcare providers, pediatricians were less likely to believe that 1) infants who breastfeed are healthier than formula-fed infants and 2) breastmilk is the best nutrition for babies. The authors of this study highlighted the impact of such beliefs on woman's decision to breastfeed and the importance of providing breastfeeding-related additional regular training to all physicians, especially pediatricians (Quinn & Tanis, 2020). These results were also recorded by Pound et al. (2014). When compared with family doctors, pediatricians in their study were more likely to believe that formula is equivalent to breastmilk and more likely to keep formula samples in their offices. Additionally, pediatricians were less likely to directly observe breastfeeding in their office, with very few (5.1%) ever doing so. Other identified gaps were related to 1) incorrect feeding recommendations (timed not on demand), 2) believing that milk intake of the mother can increase breastmilk production, 3) identifying and managing common breastfeeding problems, and 4) not linking formula introduction with breastfeeding failure (Pound et al., 2014).

The evidence behind the efficacy of breastfeeding interventions targeting health professionals in general is well established (McFadden et al., 2017; Rollins et al., 2016). Nevertheless, only a few studies have investigated interventions targeting pediatricians in specific. The AAP has incorporated many resources and interventions to better equip physicians – and pediatricians in particular – to support breastfeeding mothers. These efforts include updating curricula to include breastfeeding-focused chapters and training and providing easy access to updated resources with useful links and evidence based-information related to breastfeeding (Meek, 2017). Feldman-Winter et al. (2010) conducted a controlled trial to test the effectiveness of updating the residency curriculum on pediatric residents' breastfeeding knowledge, confidence, and practices as well as on breastfeeding rates in patients. Their results came confirming that a breastfeeding updated curriculum can improve the knowledge, confidence, and practices of pediatricians. As for the breastfeeding rates, the study documented an increase in breastfeeding rates among infants visiting the intervention group compared with those visiting the control group (Feldman-Winter et al., 2010). These results were also paralleled in another study on interactive education intervention. In addition to a significant increase in pediatric residents' knowledge and confidence, sustainable, appropriate breastfeeding counseling practices were reported even after the intervention (Hillenbrand & Larsen, 2002). Santiago et al. (2003), tested the effect of a trained pediatrician on mothers' exclusive breastfeeding rates and found that a well-trained pediatrician can be as effective as a multi-professional breastfeeding team and more influential than a pediatrician with no training in increasing the exclusive breastfeeding rates among their patients (Santiago et al., 2003).

I. Breastfeeding in Lebanon

Lebanon, a middle-income Middle-Eastern country, has a very low breastfeeding rate of 14.8%, where exclusive breastfeeding of 1-month-old infants is 40%, and of 4-5 months old infants is only 2%. Moreover, mixed feeding during the first month of age is very prevalent (more than 40%). As for continued breastfeeding, 41.8% of babies continue breastfeeding - with the complimentary food - up to 9 months, 37.5% up to 15 months, and only 14.6% up to 23 months (CAS and UNICEF, 2009). The above statistics are the latest available national representative data, yet later cross-sectional studies have reported similar rates. Batal et al. (2005), found that even though 95.4% of Lebanese mothers initiated breastfeeding (18.3% within half an hour, 55.9% within a few hours, and 21.3% within few days), exclusive breastfeeding dropped down to 52.4% at one month, 23.4% at four months, and 10.1% at six months. As for the introduction of other fluids before six months of age, the authors reported that 41.8%, 37.6%, and 36.3% of infants were given herbal teas, sweetened water, and water, respectively (Batal et al., 2005). In 2008, Al-Sahab et al. used data from a prospective cohort of mothers living in Beirut and found that while 56.3% of mothers were exclusively breastfeeding at one month, this percentage decreased to 24.7% at four months and then to 18.8% at six months (Al-Sahab et al., 2008). Similarly, in their cross-sectional study in Beirut, Hamade et al. (2013) have documented that only 27.4% of women were exclusively breastfeeding at 8–12 weeks postpartum compared to 33% who were exclusively formula feeding. Mixed feeding was recorded at 33% (Hamade et al., 2013).

J. Determinants of Breastfeeding in Lebanon

The determinants of breastfeeding in Lebanon can be identified across the SCT's reciprocal determinism construct. In a recent publication, personal and environmental determinants of breastfeeding among Lebanese women were identified qualitatively (BouDiab & Werle, 2018). Personal factors were related to the mother's experiences, whether positive (motherly instinct, mother's awareness of breastfeeding benefits…) or negative (postpartum depression, lack of patience…). The environmental determinants were divided into two major components. The first component reflected the surrounding community, which involved the knowledge, attitudes, and behaviors of the mother's friends, family members, and close unions. This aspect was determined by the mother's early observations and guidance provided by these community groups. Additionally, it encompassed the effect of wider organizations such as Non-Governmental Organizations (NGOs) or workplaces and the dominant social norms or expectations surrounding the mother. The second environmental component was pertinent to the medical environment, which included the hospital policies and the knowledge, attitudes, and practices of healthcare providers who interacted continuously with the mother. Also, this aspect comprised the national policies and governmental efforts and laws – that exist or do not exist – to address breastfeeding rates in Lebanon (BouDiab & Werle, 2018).

K. Healthcare Providers and Breastfeeding in Lebanon

The role and practices of healthcare providers in breastfeeding promotion and support in Lebanon were recognized in numerous studies. Batal et al. (2005) found that more than half of the mothers in their study did not receive any encouragement from healthcare professionals to initiate breastfeeding early after delivery. The same

population has reported that physicians were among the highest influencers when it comes to breastfeeding decisions where mothers who were advised to initiate early breastfeeding (within half an hour) were more likely to do so compared to mothers who did not receive any encouragement from healthcare staff. An interesting finding related to the pediatrician gender was reported by Al-Sahab et al. (2013); mothers were 1.5 times more likely to continue breastfeeding until four months of age if their pediatrician was a female (Al-Sahab et al., 2013). A qualitative study among Lebanese mothers concluded that the absence of professional advice exacerbated the influence of all other barriers to breastfeeding (Nabulsi, 2011). In other studies, the lack of support was manifested in the distribution of free formula samples to mothers by hospitals and pediatricians (Akik, 2014, LACTICA, 2015). Studies investigating these malpractices indicated that they happen in light of some incentives from the BMS industry, such as free conferences, clinic equipment, or access to scientific journals (Akik et al., 2015). It was also highlighted that these malpractices happened before and after Lebanon endorsed the WHO International Code of Marketing Breast-Milk Substitutes through the law 47/2008 (Akik et al., 2015).

Recently, Moukarzel et al. (2020) highlighted the barriers to supporting and promoting breastfeeding according to medical interns' perceptions and experiences. Their results confirmed previous records where the influence of formula companies was identified as a tempting financial incentive leading physicians to promote formula feeding instead of breastfeeding. Furthermore, the interns reflected on their own experiences where they have attended training sponsored by formula companies and received indirect advertising about the improved quality of formula products mimicking breastmilk. The social pressure on physicians to promote formula rather than

breastfeeding was also identified as a barrier. The study participants explained that physicians might lose their patients if they insisted on breastfeeding, where it is much easier and socially acceptable just to recommend formula. Other barriers were identified at the healthcare system level, where guidance on integrating breastfeeding-related support within the practice was not emphasized during their women or child health rounds at the hospital. This was mainly related to the lack of baby-friendly protocols within these learning institutions (Moukarzel et al., 2020).

In a previous publication, Moukarzel et al. (2018) have used a mixed-method approach to investigate breastfeeding knowledge, attitudes, and self-efficacy of interns and residents in the Lebanese Public School of Medicine. Quantitatively, both groups had sub-optimal scores regarding knowledge and self-efficacy. Knowledge gaps were identified regarding the anatomy, physiology, and management of lactation as well as WHO recommendations. Self-efficacy was measured through the ability to provide breastfeeding counseling and psycho-social support for the mothers. On the other hand, a positive attitude towards breastfeeding was manifested; they viewed breastmilk as important and beneficial (immune-protective) to the infants and (breast cancer-preventive) to the mothers. The qualitative data supported these results where the study population expressed their lack of knowledge and the need to learn more about breastfeeding to be able to promote and support it. The authors have also investigated the source of breastfeeding information using social network analysis. Their results identified a lack of communication regarding the breastfeeding topic between the participants. Also, it was noted that many participants used informal foundations to base their breastfeeding knowledge like friends and family members. This was emphasized

as a risk of circulating and exacerbating misinformation and myths related to breastfeeding (Moukarzel et al., 2018).

Despite the postulated lag behind of the breastfeeding support from healthcare providers in Lebanon and in accordance with the robust evidence highlighting the critical role that healthcare professionals – pediatricians in particular – play in influencing the mother's decision to breastfeed, an up to date, evidence regarding the role of Lebanese pediatricians is still lacking. Investigating the knowledge, attitudes, and practices of Lebanese pediatricians in relation to supporting breastfeeding is essential. This approach will help in identifying gaps that shall allow the development of evidence-based interventions to promote the role of pediatricians in supporting breastfeeding. As such this research study has the below objectives :

- The primary objective is to examine the knowledge, attitudes, and practices of Lebanese pediatricians in relation to supporting breastfeeding.
- A secondary objective is to explore the sociodemographic correlates of these knowledge, attitudes, and practices.

CHAPTER II

METHODOLOGY

A. The Study Design and Purpose:

This study follows a national cross-sectional survey design. The practicing Lebanese Pediatricians constitute the target population. The study population includes the pediatricians registered at the Lebanese Order of Physicians (LOP) in Beirut and Tripoli and at the Lebanese Pediatric Society (LPS). All physicians in Lebanon have to be registered at LOP before they can practice their profession. Pediatricians from all governorates except North are registered at LOP-Beirut while pediatricians from the North area are registered at LOP-Tripoli. Registration at LPS, on the other hand, is optional and voluntary. LPS was founded since 1959 as a forum where pediatricians can exchange experiences and establish a well-grounded reputation for Lebanese pediatricians in the region. Lebanese nationality is a mandatory requirement for the registration at both LOP and LPS.

1. The Sample:

The records of LOP-Beirut and LOP-Tripoli show that there are 1383 registered pediatrician. Using the Raosoft sample size calculator (at a probability of 0.5 with a 95% confidence interval (CI) and a margin of error of 5%), it was determined that 301 pediatricians should complete the questionnaire to have a nationally representative sample.

B. The Data Collection Process

Data collection was conducted using an online survey sent via email. The hosting server is the Lime Survey under the American University of Beirut's (AUB) porter. LOP-Beirut, LOP-Tripoli, and LPS provided different lists of all the emails available in their registries. A list of 370 emails was obtained from LOP-Beirut and another 95 emails were received from LOP-Tripoli. LPS provided a list of 592 emails. Additionally, pediatricians' phone numbers were obtained from LOP-Beirut and LOP-Tripoli. Pediatricians were phone-called and invited to provide their email addresses in order to participate in the research study. Names with available emails within the lists were not phone-contacted. All pediatricians with no email addresses were approached. The cumulative number of emails obtained from the three registry bodies and after calling the pediatricians was 1211. The multiple lists of emails were compiled and duplicates were removed. After sending the invitations, 154 emails were bounced as wrong/unavailable emails. Thus, the final number of correctly sent emails was 1057. A unique Token was generated for each email through the Lime Survey. Email invitations were followed with periodic reminders for pediatricians to complete the questionnaire.

C. Incentive:

Invited pediatricians were informed that they can participate in an iPad draw after completing the questionnaire. As the Lime Survey doesn't allow for identification of pediatricians' emails who completed the questionnaire, the pediatricians were asked to send their emails after completing the questionnaire in order to enter the draw.

D. Ethics:

The study was approved by the university Institutional Review Board (IRB) at the American University of Beirut. The voluntary nature of the study was highlighted in the invitation. Pediatricians had to read a consent form and agree on it before filling in the questionnaire. The email and phone invitations as well as the consent form were written in line with the IRB guidelines and received the IRB approval. Completed questionnaires were received anonymously through the lime survey system where a random identification number was generated to each participant. Data files were securely saved in a password-protected laptop.

E. The Questionnaire:

The questionnaire's set of questions were mainly adopted from a previous published study on Canadian physicians (Pound et al., 2014). The adaptation of the questionnaire was guided by an extensive research of the available literature on physicians Knowledge, Attitudes, and Practices regarding breastfeeding. The questionnaire was amended (layout and content) based on cultural adequacy and research objectives. The questionnaire was further reviewed by a panel of experts in the fields of 1) clinical pediatrics, 2) nutrition epidemiology, 3) human nutrition, 4) public health, and 5) breastfeeding and lactation. The panel checked the content validity and clarity of the questionnaire as well as its adequacy addressing the research objectives. The questionnaire was formulated in English, then it was translated to Arabic. To ensure parallel form reliability, the questionnaire was retranslated from Arabic to English. Both the Arabic and the English forms of the questionnaire were pilot tested on a convenient sample of 10 pediatricians. The participants in the pilot phase reviewed the understandability and the cultural relevancy of the questions. Examples of adopted

amendments/changes included: removing questions related to the pediatricians' private experience (if they breastfed their babies) and those related to HIV, replacing the word "office" with the word "clinic", and adding questions on extended breastfeeding. Given the changes, data collected from the pilot sample were not included in this study.

The final version of the questionnaire (Appendix I) constitutes of four main sections. The first section relates to the demographic and work-related characteristics of the participants. It encompasses 8 questions about the pediatricians' age, gender, whether their residency training was in Lebanon or not, practicing district, main practicing setting, years of experience, where they learned about breastfeeding (Own experience, medical school, residency, self-directed learning), and if they hold a breastfeeding support certificate.

The second section addresses pediatricians' practices regarding breastfeeding counseling and support. In this section, there are 12 total questions. The first 5 questions address the frequency of: counseling mothers on breastfeeding, encouraging breastfeeding after mothers return to work, referring mothers to lactation consultants, and recommending formula feeding. These questions are rated on a 5-point Likert scale from (5): always or almost always to (1): never or almost never. In the second 7 questions, pediatricians are asked to indicate (Yes) or (No) on several statements reflecting their practices on topics related to formula advertising, formula supplementation, breastfeeding promotion and recommendation.

The third section pertains to the attitudes/ beliefs of pediatricians. It constitutes of 15 questions in total. Pediatricians are asked to record their level of agreement on 9 issues related to breastfeeding and formula feeding such as the role of pediatricians in assessing breastfeeding, their influence on the mothers' decision to breastfeed, and their

perception on mixed feeding and formula fed babies. A 5-point Likert scale from (5) strongly agree to (1) strongly disagree is used. The attitudes section also highlights 6 questions on the confidence/comfort of pediatricians in teaching and counseling mothers on breastfeeding issues and assessing and addressing breastfeeding problems. The pediatricians indicate their confidence/comfort on these topics using a 5-point Likert scale from (5) being very confident/ comfortable to (1) being very unconfident/ uncomfortable.

The final section explores the pediatricians knowledge through a set of 15 True and False questions (T/F) and 7 Multiple Choice Questions (MCQs) of scenarios and fact testing (a total of 22 questions). The T/F questions address several topics: breastfeeding duration, solid foods introduction, water supplementation during the night, the nutrition value of infant formulas and how they compare to breastmilk, the use of bottles for pumped milk, the effect of supplementing with formula on the success of breastfeeding, the effect of exercise on breastmilk, the effect of fluids on milk supply, the importance of breastfeeding on SIDS and ovarian and breast cancer prevention in babies and mothers respectively, the contraindications of breastfeeding, and the effectiveness of breastmilk after the age of two. As for the MCQs, they cover topics such as the proper tongue position during breastfeeding, the signs of correct latching, the management of sore nipples, the best way to address frequent feedings in young infants, the proper advice for a jaundiced newborn, exclusive breastfeeding, and the adequate timing for breastfeeding initiation.

F. Data Analysis:

Data from the Lime Survey was exported into excel sheets and then compiled into the Statistical Package for Social Sciences (SPSS, version 23). Data cleaning was done through outliers identification and removal. Descriptive Statistics (frequencies and percentages) were used to summarize the pediatricians' characteristics, as well as their practices, attitudes and knowledge. Then, scores were computed for each section. The total score (within each section) of each participant was calculated from the summation of points on each question.

Correct answers within the Knowledge section were given 1 point, whereas wrong answers as well as "I don't know" answers were given 0 points. As there are 22 questions pertaining to the knowledge section, the scores ranged between 0 (minimum score) and 22 (maximum score); higher scores reflected better knowledge.

In the Attitude section, favorable attitudes were given 1 point whereas negative attitudes were given 0 points (see Appendix III). The first set of questions within the attitude section was measured on an agreement "5 Likert Scale". Accordingly, when the pediatricians were supposed to agree, those who chose 5 (strongly agree) or 4 (agree) were given 1 point, whereas those who chose 3, 2, or 1, were given 0 points. Conversely, on questions where pediatricians were supposed to disagree those who chose 1 (strongly disagree) or 2 (disagree) were given 1 point, whereas those who chose 3, 4, or 5, were given 0 points. Likewise, the second set of questions within the attitude section was scored. One point was given to those who recorded confidence/ comfort (5 or 4) and 0 points were given to those who chose 3, 2, or 1. Then the points were summed in all questions. As there are 15 questions in the attitude section, the scores ranged between 0 and 15.

Finally, a score was computed for the Practices section. Good practices were given 1 point whereas bad practices were given 0 points (see Appendix III). The first set of questions in the practices section was measured on a frequency "5 Likert Scale". Consequently, when the pediatricians were supposed to record high frequency, those who chose 5 (always) or 4 (often) were given 1 point, whereas those who chose 3, 2, or 1, were given 0 points. Conversely, on questions where pediatricians were supposed to record low/null frequency, those who chose 1 (never) or 2 (rarely) were given 1 point, whereas those who chose 3, 4, or 5, were given 0 points. The second set of questions was measured by "Yes" or "No". Accordingly when pediatricians chose the correct practice (whether yes or no) they were given 1 point, whereas when they chose the wrong practice they were given 0 points. The total score for each participant ranged between 0 and 12 (the total number of questions in the practices section).

Simple linear regression was used to explore the sociodemographic correlates of the pediatricians' knowledge, attitudes, and practices. The scores were considered the continuous variables and were entered as the dependent variable whereas the sociodemographic factors were considered as the independent variable. All sociodemographic factors that showed significance in the simple linear regression were entered into the multiple linear regression. Statistical significance was established at a p-value < 0.05.

CHAPTER III

RESULTS

A. Responders

From the 1,056 pediatricians reached through emails, 117 attempted the questionnaire (11% response rate). Out of the 117 responses, 26 had none of the three main sections (knowledge, attitudes, practices) completed , accordingly they were not included in the analysis. The remaining 91 responders constituted the study sample. Table 1 represents the sociodemographic characteristics of the study participants. Compared with the national distribution, the study sample showed similar distribution of pediatricians across the different governorates. Differences were found in Bekaa (3.3% vs 8% national) and South (10% vs 16% national). The majority of pediatricians were above 41 years old (71.9%) and had more than 15 years of experience (64.4%). The study sample consisted of slightly more females (59.6%) than males (40.4%). Sixty-nine percent of pediatricians in this study did their residency in Lebanon and 65.6% reported to spend the majority of their work in a clinical setting. Pediatricians reported to learn about breastfeeding from own experience and self-directed learning (66.7%) and medical school and residency (78.9%). Only 7.9% of the participants had any certification in breastfeeding support.

Table 1: The Sociodemographic Characteristics of Study Participants

Pediatrician's Characteristics	**n**	**(%)**

"table 1 continued"

Pediatricians Age (years) n=89			
30 to 34 years old	15	(16.9)	
35 to 40 years old	10	(11.2)	
41 to 50 years old	24	(27)	
> 50 years old	40	(44.9)	
Gender n=89			
Male	36	40.4	
Female	53	59.6	
Residency place n=87			
Lebanon	60	69	
Other*	27	31	
Major Working Area n=90			**National Distribution (%)**
North (Akkar and North)	9	10	11
Bekaa (Baalbeck-Hermel and Bekaa)	3	3.3	8
Beirut	30	33.3	22
Mount Lebanon	39	43.3	43
South (Nabatieh and South)	9	10	16
Major workplace n=90			
Clinic	59	65.6	
Hospital	28	31.1	
Other**	3	3.3	
Years of Practice n=90			
0 to 5	16	17.8	
6 to15	16	17.8	
>15 years	58	64.4	
Breastfeeding Background n=90			
Own experience and Self-directed learning			
No	30	33.3	
Yes	60	66.7	
Medical school and Residency			
No	19	21.1	
Yes	71	78.9	
Certification in breastfeeding support n=91			
No	82	92.1	
Yes	7	7.9	

*: France, Belarus, Syria, Jordan, Lithuania, Poland, Russia, US, UK
**: NSSF, hospital and clinic

B. Pediatricians' Knowledge

Table 2 displays the percentage of pediatricians who answered correctly vs. those who answered incorrectly or "I don't know". See Appendix IV for tables illustrating the knowledge answers of the pediatricians on the T/F questions and the MCQs. Most pediatricians answered correctly the questions related to the recommendations of breastfeeding initiation (91.6%), exclusivity (94%) and duration (84.3%). However, almost 35% of pediatricians did not know the WHO's recommendation on solid foods introduction. Ninety-four percent of the pediatricians knew that it is not correct to offer babies water during the night. Nevertheless, 66.3% of the participants believed that increasing mother's fluid or milk intake will increase her milk production.

Most pediatricians answered correctly the questions on formula and breastfeeding benefits where they knew that: 1) the infant formula is not superior to breastmilk even if fortified (81.7%), 2) supplementing with formula in the first weeks of life will affect breastfeeding success (90.4%), 3) moderate exercise will not decrease the quality and quantity of breastmilk (89.2%), 4)breastfeeding decreases the risk of SIDS (86.7%), and 5) breastfeeding decreases the risk of ovarian and breast cancer in mothers (96.4%). Even though, 78.3% of pediatricians knew that it is safe to continue breastfeeding if only one breast is affected by herpes simplex, more than one third believed that breastfeeding is contraindicated in mothers with Hepatitis C. Furthermore, almost 23% of pediatricians believed that the current infant formulas are nutritionally equivalent to breastmilk. A noteworthy gap was also identified in the question related to the use of bottles where 56.6% answered incorrectly that bottles are the best option to use when milk is pumped or formula is provided. More than half of pediatricians lacked

the knowledge regarding the quality of breastmilk at 2 years of age; 34.9% believed that breastmilk loses its core components and 15.7% did not know.

Additional suboptimal knowledge related to the assessment and management of breastfeeding problems was identified: 1) 33.8% did not know or incorrectly identified signs of proper breastfeeding, 2) 32% chose the wrong first thing to do with sore nipples, and 3) 44.5% chose an incorrect action if a mother complains of frequent feedings. Even though 86.7% of pediatricians knew how to deal with a 5 days old jaundiced baby, more than 65% did not recognize the incorrect latching sign.

Table 2: Knowledge Answers of Study Participants

Pediatricians Knowledge n=83							
	Correct Answer	Answered correctly		Answered incorrectly		Answered I don't know	
		n	%	n	%	n	%
Exclusive breastfeeding is recommended for the first six months of life by the World Health Organization (WHO)	True	78	94	5	6	0	0
It is recommended to completely wean breastfed babies from the breast at the age of 1 year	False	70	84.3	9	10.8	4	4.4
Solid foods introduction should start when the baby is 4 months according to WHO	False	53	63.9	29	34.9	1	1.2
offering the baby water during the night will help the baby hydrate and sleep better	False	78	94	4	4.8	1	1.2
The current infant Formulas are nutritionally equivalent to breastmilk	False	63	75.9	19	22.9	1	1.2

"table 2 continued"

Formula is sometimes superior to breastmilk if it was fortified with iron and vitamin D that are both lacking in human milk	False	67	81.7	15	18.3	0	0
Bottles are the best option to use when breastmilk is pumped or when formula is provided	False	32	38.6	47	56.6	4	4.8
Supplementing with formula in the first weeks of life will not affect breastfeeding success	False	75	90.4	8	9.6	0	0
Moderate exercise in the mother can decrease quality and quantity of breastmilk	False	74	89.2	5	6	4	4.8
Increasing mother's fluid or milk intake will increase her milk production	False	28	33.7	55	66.3	0	0
Breastfeeding has been shown to decrease the risk of SIDS	True	72	86.7	4	4.8	7	8.4
Breastfeeding is contraindicated in mothers with Hepatitis C	False	47	56.6	30	36.1	6	7.2
Breastfeeding decreases the risk of ovarian and breast cancer in mothers	True	80	96.4	2	2.4	1	1.2
Breastfeeding is safe to continue in mothers who have herpes simplex on a breast as long as the child only feeds from the unaffected breast	True	65	78.3	15	18.1	3	3.6
Breastmilk loses its core components after the baby is two years old	False	41	49.4	29	34.9	13	15.7

"table 2 continued"

To your knowledge, exclusive breastfeeding consists of:	Only breast milk, no other liquids or solids, not even water, with the exception of vitamins, minerals supplement, medicines or Oral Rehydration Solutions.	70	84.3	12	14.4	1	1.2
In a baby who is breastfeeding effectively, the tongue is :	Down and over the gum line	55	66.3	17	20.5	11	13.3
When a breastfeeding mother complains that her nipples are sore, the first thing to do is :	Assess baby's position and latch	51	61.4	32	38.5	0	0
All of the following are signs that a baby is latched on properly except:	No part of the areola can be seen	25	30.1	54	65.1	4	4.8
A mother complains that her 6 week old infant has been breastfeeding almost every hour for a day or two:	Explain that the baby requires more milk because he/she is growing and frequent breastfeeding is his/her way to increase milk supply	45	54.2	37	44.5	1	1.2
An otherwise healthy 5-day old breastfeeding infant is admitted to the hospital with jaundice. In addition to treating the child with phototherapy, the first thing to do is:	Recommend more frequent breastfeeding sessions, and teach mother how and when to use a breast pump	72	86.7	11	13.2	0	0
Breastfeeding initiation should be:	Directly after birth	76	91.6	7	8.4	NA	NA

C. Pediatricians' Attitudes:

Tables 3 and 4 summarize the pediatricians responses on the attitudes section. Herein, agreed and disagreed will reflect both scales (strongly agree and agree) and (strongly disagree and disagree) respectively. The majority of pediatricians had positive attitudes towards their responsibility to evaluate and follow up on breastfeeding. Most participants (68.2%) agreed that it is their responsibility as the child's primary physician to evaluate breastfeeding position, latch and milk transfer in the first 3 to 5 days after birth. Most pediatricians (87.9%) disagreed that it's not the pediatrician's responsibility to follow up on breastfeeding progress and success. Similarly, most pediatricians (85.7%) agreed that they have an influence on the mother's decision to breastfeed.

On the other hand, negative attitudes towards breastfeeding were identified. More than one quarter of the participants had neutral attitudes or disagreed that it is practical for working mothers to continue to breastfeed their infants. More than one third had negative attitudes about breastfeeding in public. Additionally, more than 40% of the pediatricians reported to have neutral attitude or agreed that mothers should stop breastfeeding once they know they are pregnant. Likewise, around 30% of the participants had neutral attitudes or agreed that: 1) mixed feeding is a more practical and acceptable feeding method and 2) formula fed babies are as healthy as breastfed babies. Even though most pediatricians agreed (69%) that their residency prepared them well to support breastfeeding mothers, almost 20% disagreed.

Most pediatricians were very confident/ comfortable supporting mothers in breastfeeding assessment and counselling. Almost 90% of participants reported to be very confident/ comfortable or confident/ comfortable in: 1) teaching mothers about good breastfeeding positioning, 2) addressing breastfeeding related problems, and 3)

counselling mothers on cracked and sore nipples. Some pediatricians reported neutral comfort/ confidence in: 1) evaluating whether a baby's latch is successful (16.7%), 2) assessing whether there is good milk transfer from mother to baby during breastfeeding (15.4%), and 3) teaching mothers how to express milk (14.3%).

Table 3: Study Participants' Attitudes Answers to the Agree/Disagree Questions Set

Pediatricians Attitudes 1 n = 91										
n=91	5 (Strongly Agree)		4 (Agree)		3 (Neutral)		2 (Disagree)		1 (Strongly Disagree)	
	n	%	n	%	n	%	n	%	n	%
The child's primary physician is responsible for performing an evaluation of breastfeeding, including position, latch and milk transfer in the first 3 to 5 days after birth	45	49.5	17	18.7	14	15.4	11	12.1	4	4.4
As a Pediatrician, I have an influence on a mother's decision to breastfeed her infant	61	67.0	17	18.7	9	9.9	3	3.3	1	1.1
I think it is practical for working mothers to continue to breastfeed their infants	41	45.1	27	29.7	18	19.8	2	2.2	3	3.3

"table 3 continued"

I think it is acceptable for women to breastfeed in public	42	46.2	18	19.8	18	19.8	6	6.6	7	7.7
My residency training prepared me to support breastfeeding mothers	47	51.6	13	14.3	13	14.3	11	12.1	7	7.7
It's not the pediatrician's responsibility to follow up on breastfeeding progress and success	2	2.2	2	2.2	7	7.7	14	15.4	66	72.5
Mixed feeding (breastmilk and formula) is a more practical acceptable feeding method	3	3.3	6	6.6	18	19.8	18	19.8	46	50.5
Formula-fed babies are just as healthy as breastfed babies	5	5.5	6	6.6	19	20.9	20	22.0	41	45.1
I believe a mother should stop breastfeeding once she knows she is pregnant	19	20.9	7	7.7	12	13.2	13	14.3	40	44.0

Table 4: Study Participants' Comfort Towards Breastfeeding Related Topics

Pediatricians Attitudes 2										
How confident/ comfortable are you in:	5 (Very Confident)		4 (Confident)		3 (Neutral)		2 (Un-confident)		1 (Very Un-confident)	
	n	%	n	%	n	%	n	%	n	%
Teaching mothers about good breastfeeding positioning **n=90**	60	66.7	20	22.2	5	5.6	2	2.2	3	3.3
Addressing breastfeeding related problems (engorgement, mastitis, etc..) **n=91**	60	65.9	20	22.0	6	6.6	3	3.3	2	2.2
Evaluating whether a baby's latch is successful **n=90**	49	54.4	19	21.1	15	16.7	2	2.2	5	5.6
Assessing whether there is good milk transfer from mother to baby during breastfeeding **n=91**	53	58.2	14	15.4	14	15.4	6	6.6	4	4.4
Counselling mothers on cracked and sore nipples **n=91**	55	60.4	24	26.4	7	7.7	3	3.3	2	2.2
Teaching mothers how to express milk **n=91**	52	57.1	19	20.9	13	14.3	4	4.4	3	3.3

D. Pediatricians' Practices:

Table 5 shows the pediatricians' self-reported frequency of breastfeeding-related practices. The majority of pediatricians (85.7%) always ask breastfeeding mothers how breastfeeding is going in the first year of their infants' life. Almost 88%

always recommend women to continue breastfeeding after returning to work. Meanwhile, around 26.4% of pediatricians sometimes ask breastfeeding mothers to breastfeed their infants in front of them so that they can assess the feeding, and 37.4% rarely or never do so. Almost half of the participants reported to never or rarely refer mothers to lactation consultants to address breastfeeding problems. Even though, 62.6% of pediatricians never recommend formula feeding (excluding special needs), around 15% do so often or sometimes.

Table 6 summarizes the second set of the pediatricians' practices results. While 40.7% of pediatricians kept formula samples in their clinics to distribute to mothers and their babies, only 24.2% had brochures/ pamphlets in their clinics to give to mothers about breastfeeding resources in the city. Additionally, more than 20% of pediatricians reported to have formula-related advertising in their clinics. A noticeable number of pediatricians would recommend formula supplementation: 1) if a healthy term baby who is exclusively breastfed has not regained birth weight by 2 weeks (31.9%), and 2) if a mother feels that her milk supply is inadequate (25.3%). On the other hand, only 13.2% of pediatricians would typically recommend feeding glucose water or formula to the otherwise healthy newborn while waiting for the mother's milk to come in. The majority of pediatricians (72.5%) did not advise breastfeeding on demand, instead they would recommend that babies breastfeed on each side for 15-20 minutes every 3 hours.

Table 5: Study Participants' Frequency of Performing Breastfeeding Related Practices

Pediatricians Practices 1 n=91										
How often do you?	5 (Always)		4 (Often)		3 (Some-times)		2 (Rarely)		1 (Never)	
	n	%	n	%	n	%	n	%	n	%
Ask breastfeeding mothers how breastfeeding is going in the first year of their infants' life	78	85.7	9	9.9	2	2.2	0	0	2	2.2
Ask breastfeeding mothers to breastfeed their infants in front of you so that you can assess the feeding	16	17.6	17	18.7	24	26.4	17	18.7	17	18.7
Recommend women to continue breastfeeding after returning to work	80	87.9	7	7.7	2	2.2	0	0	2	2.2
Refer mothers to lactation consultants to address breastfeeding problems	11	12.1	17	18.7	19	20.9	21	23.1	23	25.3
Recommend formula feeding (excluding special needs)	0	0	6	6.6	8	8.8	20	22.0	57	62.6

Table 6: Study Participants' Clinical Practices

Pediatricians Practices 2 n=91				
	Yes		No	
	n	%	n	%
Do you keep samples of formula in your clinic to distribute to mothers and their babies	37	40.7	54	59.3
Do you have advertisement in your clinic on formula products, or well-baby care documents that have formula companies' logo on them?	19	20.9	72	79.1
Do you have brochures / pamphlets in your clinic that you give to mothers about breastfeeding resources in the city	22	24.2	69	75.8
I recommend to start supplementing with formula, if a healthy term baby who is exclusively breastfed has not regained birth weight by 2 weeks	29	31.9	62	68.1
I routinely recommend to supplement with formula if a mother feels that her milk supply is inadequate	23	25.3	68	74.7
I typically recommend feeding glucose water or formula to the otherwise healthy newborn while waiting for the mother's milk to come in	12	13.2	79	86.8
I routinely recommend that babies breastfeed on each side for 15-20 minutes every 3 hours	66	72.5	25	27.5

E. KAP Computed Scores and Regression

1. Knowledge

A knowledge score was calculated for each pediatrician (table 7). Pediatricians scored all over the scale from a minimum of 6, to a maximum of 22. Almost 17% of the pediatricians scored 14, another 17% scored 17 and 14.5% scored 19. Only one pediatrician scored 6 and only one scored 22. The average score of all pediatricians was 15.87 ± 3.09. The sociodemographic correlates of the knowledge score (table 8) that showed significance using linear regression were: Being a female (B=2.175, 95%CI 0.884 to 3.465), having done the residency training in Lebanon (B=1.6, 95%CI 0.166 to 3.034), and spending the majority of work in Mount Lebanon (B= 3.0, 95%CI 0.719 to

5.281). After adjustment for covariates using linear multiple regression, being a female remained the sole predictor of a higher knowledge score (B=1.893, 95%CI 0.584 to 3.203).

Table 7: Study Participants' Knowledge Score

Knowledge Score n=83		
Score / 22	n	%
0	0	0
1	0	0
2	0	0
3	0	0
4	0	0
5	0	0
6	1	1.2
7	0	0
8	1	1.2
9	1	1.2
10	3	3.6
11	2	2.4
12	1	1.2
13	4	4.8
14	14	16.9
15	9	10.8
16	7	8.4
17	14	16.9
18	8	9.6
19	12	14.5
20	2	2.4
21	3	3.6
22	1	1.2
Average score	15.87 = 72.1%	
Standard Deviation	3.091	

Table 8: Study Participants' Knowledge Predictors

Pediatrician's Knowledge Predictors		
	B, (95% CI)	**Adjusted B, (95% CI)**
Pediatricians Age (years)		
30 to 34 years old	Ref	-
35 to 40 years old	-1.524 (-4.199, 1.152)	-
41 to 50 years old	-0.903 (-3.044, 1.238)	-
> 50 years old	-1.329 (-3.302, 0.643)	-
Gender		
Male	Ref	-
Female	**2.175 (0.884, 3.465)**	**2.022 (0.702, 3.342)**
Residency place		
Other	Ref	-
Lebanon	**1.600 (0.166, 3.034)**	1.284 (-0.111, 2.679)
Major Working Area		
North (Akkar and North)	Ref	-
Bekaa (Baalbeck-Hermel and Bekaa)	2.667 (-1.376, 6.710)	2.809 (0.923, 6.542)
Beirut	2.119 (-2.05, 4.443)	1.002 (-1.229, 3.233)
Mount Lebanon	**3.000 (0.719, 5.281)**	2.008 (-0.170, 4.187)
South (Nabatieh and South)	1.556 (-1.303, 4.415)	1.732 (-1.020, 4.483)
Major workplace		
Clinic	Ref	-
Hospital	- 0.259 (-1.763, 1.246)	-
Other	-2.019 (-5.708,1.671)	-
Years of Practice		
0 to 5	Ref	-
6 to15	0.400 (-1.920, 2.720)	-
>15 years	-0.321 (-2.197, 1.555)	-

"table 8 continued"

Breastfeeding Background		
Own experience and Self-directed learning		
No	Ref	-
Yes	0.230 (-1.219, 1.680)	-
Medical school and Residency		
No	Ref	-
Yes	-0.243 (-1.904, 1.418)	-
Certification in breastfeeding support		
No	Ref	-
Yes	0.604 (-1.870, 3.078)	-

2. Attitudes

Table 9 shows the attitude scores of the pediatricians. The average attitude score was 11.37± 3.066. The minimum reported score was 0 (1.1%) indicating an absolute negative attitude towards breastfeeding and the maximum attained score was 15 (10%) reflecting a high positive attitude towards breastfeeding. Even though, the scores were distributed all over the scale, clusters were identified at scores: 12 (15.6%) and 13 (20%). Using Simple Linear Regression (table 10), the workplace was the only predictor of the attitude score. Pediatricians who spent the majority of their time at a hospital had higher attitude scores (B=1.583, 95%CI 0.202 to 2.964) compared to those who spent the majority of their time in clinics.

Table 9: Study Participants' Attitudes Score

Attitudes Score n=90		
Score / 15	n	%
0	1	1.1
1	1	1.1
2	1	1.1
3	0	0
4	1	1.1
5	1	1.1
6	0	0
7	4	4.4
8	3	3.3
9	6	6.7
10	9	10
11	10	11.1
12	14	15.6
13	18	20
14	12	13.3
15	9	10
Average score	11.37 = 75.8%	
Standard Deviation	3.066	

Table 10: Study Participants' Attitudes Predictors

Pediatrician's Attitudes Predictors		
	B, (95% CI)	**Adjusted B, (95% CI)**
Pediatricians Age (years)		
30 to 34 years old	Ref	
35 to 40 years old	-0.633 (-3.150, 1.883)	
41 to 50 years old	-0.458 (-2.487, 1.570)	
> 50 years old	0.436 (-1.437, 2.309)	

"table 10 continued"

Gender		
Male	Ref	
Female	0.357 (-0.990, 1.704)	
Residency place		
Other	Ref	
Lebanon	-0.267 (-1.721, 1.186)	
Major Working Area		
North (Akkar and North)	Ref	
Bekaa (Baalbeck-Hermel and Bekaa)	0.222 (-3.750, 4.195)	
Beirut	-1.978 (-4.242, 0.287)	
Mount Lebanon	0.099 (-2.110, 2.308)	
South (Nabatieh and South)	-1.222 (-4.031, 1.587)	
Major workplace		
Clinic	Ref	
Hospital	**1.583 (0.202, 2.964)**	
Other	-0.381 (-4.707, 3.944)	
Years of Practice		
0 to 5	Ref	
6 to15	0.125 (-2.067, 2.317)	
>15 years	-0.042 (-1.796, 1.712)	
Breastfeeding Background		
Own experience and Self-directed learning		
No	Ref	
Yes	0.610 (-0.767, 1.986)	
Medical school and Residency		
No	Ref	
Yes	-0.883 (-0.733, 2.498)	
Certification in breastfeeding support		
No	Ref	
Yes	1.268-0.116, 4.652)	

3. Practices

Pediatricians' average practice score (63.6%) was lower than that of the attitudes (75.8%) and that of the knowledge (72.1%). None of the pediatrician scored 12/12 (table 11). The maximum recorded score was 11 (3.3%) and the minimum was 3 (1.1%). Scores were aggregated at 6 (18.7%), 8 (17.6%), and 9 (27.5%). When the practice score variable was run under simple linear regression (table12), pediatricians who were between the age of 41 and 50 had significantly lower scores (B=-1.250, 95%CI -2.411 to -0.089) compared to those between 30 and 34 years old. Similar to the attitude score, a higher practice score was predicted by spending the majority of work time at a hospital (B=0.967, 95%CI 0.171 to 1.764). Both predictors retained their significance after using linear multiple regression; being between 35 and 40 years old (B=-1.273, 95%CI -2.402 to -0.144) and spending most worktime at a hospital (B=0.925, 95%CI 0.129 to 1.721).

Table 11: Study Participants' Practices Score

Practices Score n=91		
Score / 12	n	%
0	0	0
1	0	0
2	0	0
3	1	1.1
4	6	6.6
5	3	3.3
6	17	18.7
7	12	13.2
8	16	17.6
9	25	27.5
10	8	8.8
11	3	3.3
12	0	0

"table 11 continued"

Average score	7.63 = 63.6%
Standard Deviation	1.823

Table 12: Study Participants' Practices Predictors

Pediatrician's Practice Predictors		
	B, (95% CI)	**Adjusted B, (95% CI)**
Pediatricians Age (years)		
30 to 34 years old	Ref	-
35 to 40 years old	-0.433 (-1.873, 1.007)	-0.362 (-1.836, 1.113)
41 to 50 years old	**-1.250 (-2.411, -0.089)**	**-1.273 (-2.402, -0.144)**
> 50 years old	-0.583 (-1.651, 0.485)	-0.613 (-1.654, 0.428)
Gender		
Male	Ref	-
Female	0.675 (-0.088, 1.437)	-
Residency place		
Other	Ref	-
Lebanon	-0.430 (-1.266, 0.406)	-
Major Working Area		
North (Akkar and North)	Ref	-
Bekaa (Baalbeck-Hermel and Bekaa)	-0.778 (-3.180, 1.624)	-
Beirut	0.256 (-1.114, 1.625)	-
Mount Lebanon	0.427 (-0.905, 1.760)	-
South (Nabatieh and South)	-0.222 (-1.921, 1.476)	-
Major workplace		
Clinic	Ref	-
Hospital	**0.967 (0.171, 1.764)**	**0.925 (0.129, 1.721)**
Other	-0.723 (-2.777, 1.330)	-0.975 (-3.140, 1.191)

"table 12 continued"

Years of Practice		
0 to 5	Ref	-
6 to15	-0.375 (-1.642, 0.892)	-
>15 years	-0.511 (-1.523, 0.501)	-
Breastfeeding Background		
Own experience and Self-directed learning		
No	Ref	-
Yes	0.650 (-0.139, 1.439)	-
Medical school and Residency		
No	Ref	-
Yes	0.245 (-0.679, 1.169)	-
Certification in breastfeeding support		
No	Ref	-
Yes	1.153 (-0.240, 2.546)	-

CHAPTER IV

DISCUSSION

To the best of our knowledge, this is the first study, in Lebanon and in the MENA region, to investigate the knowledge, attitudes, and practices of practicing pediatricians in relation to supporting breastfeeding. The results of this study revealed several gaps along the breastfeeding knowledge, attitudes, and practices of Lebanese pediatricians. Additionally, a few sociodemographic predictors of the pediatricians' knowledge, attitudes, and practices were found.

A. Pediatricians' Knowledge

The study findings uncovered disconcerting knowledge misconceptions among the pediatricians. These include: 1) increasing mother's fluid or milk intake will increase her milk production, 2) WHO recommends solid foods introduction at 4 months of age, 3) breastfeeding is contraindicated in mothers with Hepatitis C, 4) current infant formulas are nutritionally equivalent to breastmilk, and 5) it is not safe to continue breastfeeding if only one breast is affected by herpes simplex. These findings are similar to those reported by Pound et al. (2014) and Schanler et al. (1999) among Canadian and American pediatricians respectively. Such myths/misinformation can lead to recommending early cessation of exclusive breastfeeding or to unnecessary supplementation of formula. Furthermore, despite the well-established evidence against the use of bottles to provide pumped or supplemented milk (WHO, 2020c), most pediatricians in this study answered incorrectly to this question. In addition, the majority of pediatricians in this study either thought that breastmilk loses its core

components after the baby is two years or did not know. This indicates that pediatricians are not aware of the updated evidence regarding the continuation of breastfeeding" as long as the mother and the baby want beyond two years of age" (WHO, 2020a). Neither do they know about the ever-lasting value of breastmilk on reduced obesity and enhanced immunity (WHO, 2020b). Suboptimal knowledge related to the assessment and management of breastfeeding problems was also identified among the study participants. Likewise, Moukarzel et al. (2018) documented a knowledge gap in breastfeeding management among medical students in the Lebanese Public School of Medicine. Concordantly, the available literature has consistently reported these knowledge gaps among pediatricians (Dillaway & Douma, 2004; Feldman-Winter et al., 2017; Michelman et al., 1990; Radzyminski & Callister, 2015; Schanler et al., 1999; Taveras et al., 2004). These deficiencies could stem from the failure of the medical curriculum to address breastfeeding related topics while incorporating a clinical training. Additionally, this can indicate that both LOP and LPS are not actively pursuing updating the pediatricians on the recent breastfeeding recommendations. Accordingly, interventions to address these knowledge gaps are warranted throughout the pediatricians' education and practice.

Despite the aforementioned suboptimal knowledge, a noticeable number of participants in this study were knowledgeable about several breastfeeding topics. In agreement with the available literature, the participants in this study were able to identify the protective effects of breastfeeding on SIDS among babies and on ovarian and breast cancer among mothers (Moukarzel et al., 2018; Pound et al., 2014). Most pediatricians in this study were aware of the recommendations of breastfeeding initiation, exclusivity and duration. Similarly, Feldman-Winter et al. (2017) documented

an improved knowledge regarding the AAP recommendations among pediatricians in 2014 compared to those in 1995. These findings can be attributed to the recent national breastfeeding campaigns in Lebanon which might have made Lebanese pediatricians more interested in seeking updated breastfeeding information.

B. Pediatricians' Attitudes

Unfavorable attitudes towards breastfeeding among the study pediatricians were identified at several levels. The study participants had negative attitudes towards breastfeeding in public, and towards the practicality of breastfeeding for working mothers. Breastfeeding in public is an international issue as documented by Yang et al., (2018), and it can be fairly related to the conservative culture in Lebanon where breastfeeding is still considered a private act. The impracticality of breastfeeding among working mothers was previously reported by Pound et al. (2014) and can be related to the absence of maternal policies in Lebanon that support working mothers to continue breastfeeding. In fact, these negative attitudes towards breastfeeding in public and among working mothers, were reported among Lebanese females (Hamade et al., (2014). Accordingly, efforts to change these attitudes should take into consideration the mother's broader environment in terms of societal norms and workplace policies. Consistent with the available literature, the findings of this study highlighted acceptance of mixed feeding among Lebanese pediatricians where they have agreed to its practicality. Schanler et al. (1999) and Radzyminski and Callister (2015) reported that pediatricians believed that breastfeeding and formula feeding are both equally acceptable. Additioonally, Feldman-Winter et al. (2017) documented that pediatricians were less likely to report that the benefits of breastfeeding are worth the difficulties

encountered by the mothers. Similarly, in another study by Quinn and Tanis (2020), pediatricians were reported to have a low emphasis on breastfeeding as the best nutrition. In this latter study, pediatricians were less likely to believe that infants who breastfeed are healthier than formula-fed infants. This was also echoed in this study where around one third of the participants had either neutral attitudes or agreed that formula fed babies are as healthy as breastfed babies. These findings do not only highlight a negative attitude towards breastfeeding but also suggest a positive attitude towards formula feeding. Moukarzel et al., (2020) found that the BMS industry efforts to influence pediatricians' attitudes start early during their residency training where they get exposed to advertising about the improved quality of formula products. Therefore, interventions aimed at changing these negative attitudes should not only focus on the pediatricians, but should also address their environment.

Even though breastfeeding during pregnancy has been documented as safe with no effects on delivery or birthweight (López-Fernández et al., 2017), many pediatricians in this study believed that mothers should stop breastfeeding once they know they are pregnant. This belief can make pediatricians recommend against breastfeeding once a mother becomes pregnant and hence babies lose their right of optimal nutrition. This is worrying especially among mothers in the region who choose to deliver their first two babies with short inter pregnancy intervals (Casterline & Odden, 2016).

In agreement with previous reports, the findings of this study revealed that some pediatricians did not think their residency training has prepared them well to support breastfeeding (Pound et al., 2014; Schanler et al., 1999). As discussed by Freed et al. (1995), this can be attributed to the lecturing-nature of training where residents are not exposed to an actual clinical setting to develop the required breastfeeding support

skills. This was further confirmed by Feldman-Winter et al. (2010) and Hillenbrand and Larsen (2002) who have documented that incorporating interactive sessions in the residency curricula can lead to improvements in the pediatricians' knowledge, confidence, and practices as well as breastfeeding rates among mothers visiting the intervention groups. Indicatively, simple solutions exist and policy makers in Lebanon need to be aware of these evidence based approaches in order to optimize the pediatrician-mother relationship.

A general positivity towards breastfeeding was noticeable among many pediatricians in this study. The majority of the study participants believed that they are responsible for the evaluation and follow up of early and continued breastfeeding. Additionally, they acknowledged their influence on the mother's decision to breastfeed. This comes in line with maternal studies in Lebanon where physicians were considered among the highest influencers on breastfeeding decisions (Batal et al., 2005; Nabulsi, 2011). Moukarzel et al. (2018) have also confirmed a general positive attitude towards breastfeeding among residents in the Lebanese Public School of Medicine. This favorable attitude towards breastfeeding promotion was equally recorded in early international studies among pediatricians (Freed et al., 1995; Michelman et al., 1990). Furthermore, the study participants reported confidence/ comfort in breastfeeding assessment, counselling, and management. This echoes the international literature highlighting confidence in breastfeeding management among Canadian and American pediatricians (Feldman-Winter et al., 2017; Pound et al., 2014; Schanler et al., 1999). The sense of accountability among pediatricians is a promising starting point to collaboratively work with the pediatricians in order to address any gaps in knowledge, attitudes, or practices related to breastfeeding support.

C. Pediatricians Practices

The findings of this study highlighted several malpractices among the pediatricians. Concordant with the findings by Pound et al. (2014), pediatricians in this study did not routinely ask breastfeeding mothers to breastfeed their babies in front of them to assess the feeding. This can be explained by the mother-pediatrician relationship where the mother is not the pediatrician's patient (the baby is) and hence asking her to breastfeed might not be culturally conventional especially if the pediatrician is a male. Despite this, more than half of the participants rarely or never referred mothers to lactation consultants to address breastfeeding problems. These results suggest that mothers might be missing the opportunity to be observed – by either the pediatrician or the lactation consultant – while breastfeeding in order to assess and evaluate the feeding.

Furthermore, a significant number of pediatricians in this study kept formula samples in their clinics. This is consistent with previous records highlighting the distribution of free formula samples by Lebanese pediatricians (Akik, 2014, LACTICA, 2015). Such practices were claimed to be incentivized by the BMS industry, through free conferences, clinic equipment, or access to scientific journals (Akik et al., 2015). Moukarzel et al. (2020), confirmed these claims where pediatric residents in their study have identified incentives from the BMS industry as a driver for formula promotion. Social pressure and the mother's demand to formula feed her baby were reported as additional reasons for promoting formula by pediatricians (Moukarzel et al., 2020). Formula advertising in the clinic and the use of documents with formula logo on them were also documented in this study. This is congruent with the findings of Akik et al.

(2015) highlighting that the breaches of the Law 47/2008 happened before and after its ratification. These results echo the findings of Pound et al. (2014) who reported that Canadian physicians kept formula samples and formula advertisements in their clinics. These practices are worrying as mothers become exposed to a formula-friendly environment instead of a breastfeeding-friendly one endangering the exclusivity and continuation of breastfeeding (Howard et al., 2000).

These formula conducive practices can be exacerbated by the overwhelming majority of pediatricians who reported to not have brochures or pamphlets to give to mothers about breastfeeding resources in the city. This indicates that the chances of a mother leaving the clinic with a formula sample are much higher than those of a mother leaving the clinic with breastfeeding support materials. Pediatricians may be unaware of the available breastfeeding resources, however, it is very important to equip all pediatric clinics with these information to disseminate to mothers. In Lebanon there are multiple support groups (online and face to face), NGOs, many breastfeeding consultants, in addition to the hotline of the Ministry of Public Health (MOPH) all of which can support mothers and address their breastfeeding concerns. These resources if utilized by mothers were shown to be effective in increasing the exclusivity and continuation of breastfeeding (McFadden et al., 2017). This issue was observed among American and Canadian pediatricians where the majority did not refer mothers to community support groups and did not provide them with written resources, respectively (Feldman-Winter et al., 2017; Pound et al., 2014).

Even though, only 15% of the study participants indicated that they would recommend formula feeding (excluding special needs) often or sometimes, a noticeable number of pediatricians reported to recommend formula supplementation if a mother

feels her milk is inadequate or if the healthy baby does not regain birthweight by 2 weeks. These two conditions are not considered "special needs" and hence supplementing with formula is unnecessary and might impede successful breastfeeding (Taveras et al., 2004). These results match those of previous studies, showing that pediatricians recommended formula supplementation or stopping breastfeeding for irrelevant reasons (Feldman-Winter et al., 2017; Pound et al, 2014; Taveras et al., 2004; Schanler et al., 1999). Such recommendations can jeopardize the success of breastfeeding even if the mother wants to breastfeed (Dillaway & Douma, 2004).

Similar to Canadian physicians (Pound et al., 2014), the vast majority of Lebanese pediatricians in this study recommended timed feeding. The problem with these recommendations is that they are often unrealistic where a baby demands breastfeeding on a much smaller interval (Kent et al., 2012). Thus, when a mother is advised to breastfeed every three hours and faces a demanding baby she might feel her milk supply is inadequate or the baby might not gain enough weight. As discussed previously, a significant number of pediatricians would recommend supplementing with formula for these particular reasons. It is, therefore, imperative to update pediatricians on the importance of breastfeeding on demand (as much as the child wants day and night) in light of the latest international recommendations (WHO, 2020a).

Despite these unfavorable practices, the study pediatricians reported several good practices related to breastfeeding. The vast majority of pediatricians: 1) discussed breastfeeding with mothers during the first year, 2) recommended breastfeeding for working mothers, and 3) did not recommend feeding glucose water or formula to the otherwise healthy newborn while waiting for the mother's milk to come in. These findings match those of Canadian physicians as reported by Pound et al. (2014). On the

other hand, Radzyminski and Callister (2015) reported that pediatricians in their study did not discuss infant feeding so that they don't make formula feeding mothers feel guilty. Moreover, Feldman-Winter et al. (2017) reported that pediatricians in 2014 were less likely to discuss breastfeeding with mothers compared to those in 1995.

The results of the practices section, when considered together, highlight a critical opportunity to increase breastfeeding rates among Lebanese mothers through capitalizing on the good practices in order to address the gaps. The will of pediatricians to discuss breastfeeding paves the way for introducing breastfeeding-friendly policies. The AAP has reviewed the best outpatient practices that have shown potential for increasing exclusive and continued breastfeeding among mothers (Meek & Hatcher, 2017). This initiative is known as the Breastfeeding-Friendly Pediatric Office Practice and encompasses a series of evidence-based recommendations that are meant to help pediatricians create a breastfeeding conducive environment at their clinics (see Appendix IX). Accordingly, policy makers and breastfeeding advocates can put these recommendation to advantage when considering interventions targeting health professionals.

C. Knowledge, Attitudes, and Practices

The comparative analysis of the knowledge, attitudes, and practices of pediatricians in relation to supporting breastfeeding uncovered several consistencies and disparities. There was a noticeable gap between the reported confidence and the knowledge in this sample. For example, the participants reported to be confident/comfortable in teaching mothers about good breastfeeding positioning and counselling mothers on cracked and sore nipples, however, they chose the wrong

answers regarding the signs of proper breastfeeding and the management of sore nipples. This difference might indicate a misunderstanding among pediatricians of what breastfeeding management entails. Moreover, it highlights a risk of mismanagement and mis-advising on breastfeeding problems and thus threatens breastfeeding success. This risk can be further exacerbated when considering the low frequency of observing breastfeeding reported by the pediatricians in the practices section.

Another disparity was found regarding the practicality of breastfeeding among working mothers. Even though the majority of pediatricians recommended women to continue breastfeeding after returning to work, a noticeable number thought it was impractical to do so. This can have a positive connotation attached to it in case this difference is related to a belief among the pediatricians that the importance and benefits of breastfeeding are worth the efforts to overcome its impracticality after returning to work.

Several concordant inter-findings were identified. For example, both the pediatricians' attitudes and practices highlighted the endorsed responsibility of the study participants to follow up on breastfeeding. A significant number of pediatricians did not identify the right answer to addressing a breastmilk-demanding child and this was also apparent in their practices where they recommended timed-feeding rather than breastfeeding on demand. Another consistency was found between the knowledge and attitudes towards formula. A noticeable proportion of pediatricians believed that the current infant formulas are nutritionally equivalent to breastmilk, similarly they had a positive attitude towards formula-fed babies believing that they are as healthy as breastfed babies.

In brief, the dynamic relationship between the knowledge, attitudes, and practices of pediatricians in relation to supporting breastfeeding, suggests that more work is needed to harmonize and linearize these KAP components in order to have good knowledge, positive attitudes, and good practices. Hence, it is advised to design multi-component interventions that increase the knowledge related to breastfeeding, highlight the importance of acquiring positive attitudes towards breastfeeding, and equip the pediatricians with the necessary skills to exhibit breastfeeding-friendly practices.

D. Sociodemographic Correlates and KAP Scores

The regression analyses identified few significant predictors of the knowledge, attitudes, and practices scores. The knowledge score was significantly higher among female pediatricians. This has been consistently reported in studies worldwide (Brodribb et al., 2008; Freed et al., 1995; Pound et al., 2014). Moreover, Al-Sahab et al. (2013) found that Lebanese mothers were 1.5 times more likely to continue breastfeeding until four months of age if their sought pediatrician was a female. This can be related to the fact that females are more interested in breastfeeding and more comfortable discussing breastfeeding issues due to their personal experience (Freed et al., 1995; Pound et al, 2014). Spending the majority of worktime in Mount Lebanon was a potential predictor of higher knowledge scores among the study participants. While Pound et al. (2014) have documented significance in specific provinces in Canada, they have not suggested any explanation for this finding. One argument can be related to the fact that pediatricians in urban areas (like Mount Lebanon) see more patients and are exposed to more seminars, scientific events, and workshops where breastfeeding might be discussed. Similarly, Noueiri et al. (2017) have reported a higher knowledge scores

of children's oral health among Lebanese pediatricians living in cities Another potential predictor of higher Knowledge scores was having done the residency in Lebanon. This might indicate that breastfeeding information is part of the residency curricula in Lebanon. However, the presented gaps in the attitudes an practices highlight a potential failure of the residency to translate the knowledge into practice (lectures vs. clinical experience).

Both the attitude score and the practice score were predicted by the practice setting. Spending most work time in a hospital predicted higher scores when compared to a clinic. Schanler et al. (1999), have reported similar findings; pediatricians practicing in a clinical setting were less likely to report positive breastfeeding attitudes and practices. This, as highlighted by Schanler et al. (1999), implicates that, when considering interventions, the clinics should be a primary focus. This is relevant to this study sample were the majority of pediatricians were practicing in a clinical setting. Furthermore, the practice score was significantly predicted by the age of the pediatricians. Pediatricians who were between the age of 41 and 50 scored lower than their younger counterparts (30 to 34 years old). Possibly, younger pediatricians are more aware of the updated international recommendations regarding breastfeeding-best practices and hence scored higher. Another potential explanation might be that younger pediatricians reflect a group of new parents who might be dealing with breastfeeding themselves (Pound et al., 2014).

E. Strengths and Limitations

This discussion ought to be considered in light of the study limitations and strengths. First, the sample size was small and lower than the planned target sample

size. This was mainly due to a very low response rate. Despite the maximized efforts to reach the largest possible number of pediatricians, only 11% responded. It is well documented that physicians are a hard to recruit group (Asch et al., 2000) possibly because of their busy schedules (Taveras et al., 2004). In fact, this low response rate can be attributed to the major instabilities (economic, political, and pandemic-COVID-19) in the country which might have prevented pediatricians from actively participating in the study. These events were concurrent with the data collection phase. Another explanation can be related to the online nature of the questionnaire where the literature has highlighted lower response rates in web-based surveys (Fan & Yan, 2010; Pit et al., 2010). However, the utilization of an online server (Lime Survey) eliminated the chances of having measurement errors or biases related to interviewer bias or data entry. Moreover, the anonymous nature of the responses reduced the social desirability bias. Usually participants change their responses to please the interviewer and thus, when the answers cannot be linked to the responder, the chances of favorably changing the responses decrease. Furthermore, despite small differences, the study sample included participants from all over Lebanon in proportions similar to those of the national distribution.

This study depended on self-selection and hence those who responded (the 11%) might be those most interested in the topic of breastfeeding suggesting a possible selection-bias. Accordingly, responders might be more knowledgeable of the topic compared to other pediatricians (non-participants). Therefore, the study findings might constitute a "best case scenario" of the pediatricians' knowledge, attitudes and practices when compared to the national trends. In light of the available evidence on the high influence that pediatricians have on the mothers' decisions to breastfeed (Clifford &

McIntyre, 2008; Santiago et al., 2003), the study findings highlight the importance of addressing the discovered gaps in an attempt to increase national breastfeeding rates.

Despite the lack of a validated KAP questionnaire on this topic, the design of the study questionnaire was conducted by an extensive review of the available literature. Moreover, a committee of experts vetted the validity and reliability of the questionnaire. To ensure further acceptability and understandability, the questionnaire was pilot tested. Nonetheless, future studies are advised to validate a Breastfeeding KAP questionnaire among health professionals. This is essential in light of the available evidence highlighting the critical role the healthcare professionals play in the promotion and support of breastfeeding (Rollins et al., 2016).

This is the first national-level study to investigate the breastfeeding KAP among any group of health professionals in Lebanon. It is an essential starting point to contextualize the role of healthcare providers in breastfeeding support and promotion. However, more qualitative research is required to complement these findings to capture an in depth understanding of the reasons behind the reported attitudes and practices. Furthermore, studies that investigate the pediatricians' practices and recommendations regarding breastfeeding from mother-participants are advised to have a complete evaluation of the matter.

CHAPTER V

CONCLUSION AND RECOMMENDATIONS

A. Major Findings

This research study is the first attempt in Lebanon and in the region to explore the knowledge, attitudes, and practices of pediatricians in relation to supporting breastfeeding. The pediatricians in this study demonstrated good breastfeeding knowledge regarding the recommendations of breastfeeding initiation, exclusivity and duration. They have endorsed the responsibility of assessing, evaluating and promoting breastfeeding as part of their attitudes and practices. Nonetheless, the study results revealed concerning gaps along their knowledge, attitudes, and practices. For example, the participants might supplement with formula or even recommend mothers to stop breastfeeding for irrelevant reasons like: 1) the mother has Hepatitis C, 2) only one breast is affected by herpes simplex, 3) the mother gets pregnant, 4) the mother feels her milk is inadequate, and 5) the healthy baby does not regain birthweight by 2 weeks. Even though pediatricians reported to be confident/ comfortable in managing and dealing with breastfeeding problems, their knowledge in these areas were significantly lacking. Finally, the pediatricians' answers revealed a formula-friendly environment manifested in their acceptance of mixed feeding, their distribution of formula samples, the presence of formula advertising in their clinics, and the lack of breastfeeding resources to provide to breastfeeding mothers.

B. Public Health Implications

In an era of economic and health instability, efforts to mitigate the effects of preventable diseases are crucial for population health. Breastfeeding is one of the few scientifically proven approaches that can prevent a multitude of diseases and can contribute to the sustainable development of nations. According to the SCT, the pediatricians' influence is considered at the level of the environment and hence has a direct effect on the behavior (the initiation and maintenance of breastfeeding). Therefore, breastfeeding misconceptions, negative attitudes and malpractices among pediatricians will feed into lower breastfeeding rates. This can jeopardize the optimal health and growth of babies during the first 1000 days of life. Additionally, it imposes serious risks of chronic diseases in childhood and adulthood at a population level. This can increase the burden on the country's health system and economy. Policy makers need to acknowledge the role that pediatricians play in promoting and supporting breastfeeding. The findings of this study highlight that pediatricians need support to be able to exhibit their roles more properly and to fill in the gaps in the mother's environment. Interventions aimed at strengthening and equipping pediatricians with breastfeeding knowledge and skills (addressing the environment dimension of the SCT) complement any efforts willing to increase the rates of breastfeeding (the behavior in the SCT).

C. Recommendations

Improving the knowledge, attitudes, and practices of pediatricians in relation to supporting breastfeeding and expanding the research on this topic, require a multi-sectoral involvement. Health promoters, nutritionists, physicians, policy experts, NGO workers, academicians, hospital administrations, LOP, LPS, MOPH and policy makers

(authorities) all need to coordinate in order to move forward and advocate for a breastfeeding-friendly environment where mothers feel safe and supported to initiate and continue breastfeeding. Below is a list of recommendations based on the findings of this study.

- Capitalizing on the pediatricians' endorsed responsibility and sense of accountability towards breastfeeding evaluation and follow up is recommended.
- Designing multi-component interventions is advised: 1) focusing on addressing misconceptions and updating pediatricians on the recent recommendations regarding solid foods introduction and extended breastfeeding and 2) integrating an interactive clinical component to equip the pediatricians with the skills required for breastfeeding assessment, evaluation and management.
- Emphasizing a breastfeeding-friendly clinic through the adoption of the AAP "Breastfeeding-Friendly Pediatric Clinic Practice" steps is highly recommended.
- Activating the communication between pediatricians and lactation consultants where mothers can be referred to diverse breastfeeding community resources is advised.
- Targeting male pediatricians, older pediatricians, and those working at a clinical setting is suggested.
- Incorporating interactive, hands-on content rather than lecturing and addressing the pediatricians' needs and expectations is highly recommended.
- Updating and improving the residency curriculum on breastfeeding is one way to start the change early on. Additionally, incorporating breastfeeding modules within the physicians' continuous learning programs is another potential intervention.

- Mitigating the influence of the BMS industry on pediatricians and activating a monitoring system to ensure the proper implementation of law 47/ 2008 is necessary.
- Addressing the mother's broader environment in terms of societal norms and workplace policies is highly recommended.

D. Future Studies:

Given the critical role that pediatricians play in influencing breastfeeding decisions among mothers and in light with the presented findings of this study, more studies in this field are required in Lebanon and in the MENA region. While the local literature highlights several maternal studies on breastfeeding, a noticeable gap appears when it comes to health professionals. It is the time to lend our focus to the healthcare providers to explore the gaps preventing them from fulfilling their roles as breastfeeding advocates. These efforts demand both quantitative and qualitative research to adequately situate the evidence. A potential necessary starting point can be validating a breastfeeding KAP questionnaire for health professionals. It is also advised to examine the maternal reports on the practices and recommendations provided to them by healthcare professionals and pediatricians in particular. Furthermore, interventions designed with their evaluation studies will help in weighing their efficacy in order to better tailor future interventions.

APPENDIX I

THE QUESTIONNAIRE (ENGLISH)

Demographics:

1. **How old are you?**

   a) Less than 30 years old
   b) 30 to 34 years old
   c) 35 to 40 years old
   d) 41 to 50 years old
   e) > 50 years old

2. **What is your gender?**

   a) Male
   b) Female

3. **Did you do your residency training in Lebanon?**

   a) Yes
   b) No; please specify: _____

4. **Which governorate do you spend most of your time working in? (please select only one answer)**

   a) Akkar
   b) North
   c) Baalbeck-Hermel
   d) Bekaa
   e) Beirut
   f) Mount Lebanon
   g) Nabatieh
   h) South

5. **Is the majority of your work spent in: (please select only one answer)**

   a) Private Clinic
   b) Public Clinic
   c) Private hospital
   d) Public hospital
   e) Private Teaching hospital

f) Public Teaching hospital
g) Other; please specify: _____

6. How many years have you been in practice?

a) 0 to 5
b) 6 to10
c) 11 to 15
d) > 15 years

7. Where did you learn about breastfeeding? (please circle all that apply)

a) Own experience
b) Medical school
c) Residency
d) Self-directed learning
e) Other, please specify: _____

8. Do you hold a certification in breastfeeding support? (e.g. the International Board of Lactation Consultants, online training, hospital based training)

a) Yes , please specify: _____
b) No

Practices:

9. How often do you practice each of the below: please rate from (5) Always or almost always to (1) Never or almost never

In the Last 12 months, how often did you:	(5)	(4)	(3)	(2)	(1)
Ask breastfeeding mothers how breastfeeding is going in the first year of their infants' life					
Ask breastfeeding mothers to breastfeed their infants in front of you so that you can assess the feeding					
Recommend women to continue breastfeeding after returning to work					
Refer mothers to lactation consultants to address breastfeeding problems					
Recommend formula feeding (excluding special needs)					

10. Please indicate Yes or No to each of the below:

	Yes	No
Do you keep samples of formula in your clinic to distribute to mothers and their babies		
Do you have advertisement in your clinic on formula products, or well-baby care documents that have formula companies' logo on them?		
Do you have brochures / pamphlets in your clinic that you give to mothers about breastfeeding resources in the city		
I recommend to start supplementing with formula, if a healthy term baby who is exclusively breastfed has not regained birth weight by 2 weeks		
I routinely recommend to supplement with formula if a mother feels that her milk supply is inadequate		
I typically recommend feeding glucose water or formula to the otherwise healthy newborn while waiting for the mother's milk to come in		
I routinely recommend that babies breastfeed on each side for 15-20 minutes every 3 hours		

Attitudes/beliefs

11. Please indicate to what extent do you agree on a scale from (5) Strongly Agree to (1) Strongly Disagree on each of the below statements:

	(5)	(4)	(3)	(2)	(1)
The child's primary physician is responsible for performing an evaluation of breastfeeding, including position, latch and milk transfer in the first 3 to 5 days after birth					
As a Pediatrician, I have an influence on a mother's decision to breastfeed her infant					
I think it is practical for working mothers to continue to breastfeed their infants					
I think it is acceptable for women to breastfeed in public					
My residency training prepared me to support breastfeeding mothers					
It's not the pediatrician's responsibility to follow up on breastfeeding progress and success					
Mixed feeding (breastmilk and formula) is a more practical acceptable feeding method					
Formula-fed babies are just as healthy as breastfed babies					
I believe a mother should stop breastfeeding once she knows she is pregnant					

12. Please rate how confident / comfortable you are doing each of the below on a scale from (5) being very confident / comfortable to (1) being very unconfident/ uncomfortable

How confident/ comfortable are you in:	(5)	(4)	(3)	(2)	(1)
Teaching mothers about good breastfeeding positioning					
Addressing breastfeeding related problems (engorgement, mastitis, etc..)					
Evaluating whether a baby's latch is successful					
Assessing whether there is good milk transfer from mother to baby during breastfeeding					
Counselling mothers on cracked and sore nipples					
Teaching mothers how to express milk					

Knowledge:

13. Please answer by TRUE or FALSE

	TRUE	FALSE	I don't know
Exclusive breastfeeding is recommended for the first six months of life by the World Health Organization (WHO)			
It is recommended to completely wean breastfed babies from the breast at the age of 1 year			
Solid foods introduction should start when the baby is 4 months			
offering the baby water during the night will help the baby hydrate and sleep better			
The current infant Formulas are nutritionally equivalent to breastmilk			
Formula is sometimes superior to breastmilk if it was fortified with iron and vitamin D that are both lacking in human milk			
Bottles are the best option to use when breastmilk is pumped or when formula is provided			
Supplementing with formula in the first weeks of life will not affect breastfeeding success			
Moderate exercise in the mother can decrease quality and quantity of breastmilk			

Increasing mother's fluid or milk intake will increase her milk production			
Breastfeeding has been shown to decrease the risk of SIDS			
Breastfeeding is contraindicated in mothers with Hepatitis C			
Breastfeeding decreases the risk of ovarian and breast cancer in mothers			
Breastfeeding is safe to continue in mothers who have herpes simplex on a breast as long as the child only feeds from the unaffected breast			
Breastmilk loses its core components after the baby is two years old			

14. To your knowledge, exclusive breastfeeding consists of:

a) Breast milk and occasional water or water-based fluids in hot weather.
b) Breast milk as the main food for the infant, with other liquids or solids allowed if in very small quantities.
c) Only breast milk, no other liquids or solids, not even water, with the exception of vitamins, minerals supplement, medicines or Oral Rehydration Solutions.
d) I don't know.

15. In a baby who is breastfeeding effectively, the tongue is:

a) Down and over the gum line
b) Positioned above the nipple
c) Against the hard palate
d) I don't know

16. When a breastfeeding mother complains that her nipples are sore, the first thing to do is:

a) Assess baby's position and latch
b) Encourage mother to continue breastfeeding as she will get used to it soon
c) Give mother a prescription for a topical anti-fungal medication
d) Recommend that mom holds off breastfeeding for a few days so that her nipples heal
e) I don't know

17. All of the following are signs that a baby is latched on properly except:

a) The baby's lips are visible and flanged outward
b) There is no clicking sound as the baby sucks
c) No part of the areola can be seen

d) Mother has no persistent nipple pain
e) I don't know

18. A mother complains that her 6 week old infant has been breastfeeding almost every hour for a day or two. What do you tell her?

a) Explain that the baby requires more milk because he/she is growing and frequent breastfeeding is his/her way to increase milk supply
b) Recommend giving the infant formula to help with the frequent feedings
c) Explain that this is a sign of insufficient breast milk and should start supplementing
d) Recommend that she comes in to weigh the baby before and after a feed to see if he/she is taking enough in
e) I don't know

19. An otherwise healthy 5-day old breastfeeding infant is admitted to the hospital with jaundice. In addition to treating the child with phototherapy, you first do which of the following?

a) Recommend offering the infant formula after every breastfeeding session
b) Recommend offering glucose water to the infant
c) Recommend more frequent breastfeeding sessions, and teach mother how and when to use a breast pump
d) Explain to the mother that she likely does not have enough milk and that she should have her partner give a few formula feeds to the baby while she gets some rest
e) I don't know

20. Breastfeeding initiation should be:

a) Directly after birth
b) After the routine blood/general tests are done on the baby
c) After the mother recovers from the delivery
d) When the mother's milk come
e) Other, please specify: _____

Thank you for your time and participation!

APPENDIX II

THE QUESTIONNAIRE (ARABIC)

التركيبة السكانية:

1- كم هو عمرك؟

أ) أقل من 30 سنة
ب) من 30 الى 34 سنة
ت) من 35 الى 40 سنة
ث) من 41 الى 50 سنة
ج) > 50 سنة

2- ما هو جنسك؟

أ) أنثى
ب) ذكر

3- هل قمت بتدريب إقامتك في لبنان؟

أ) نعم
ب) كلا, حدد: _____

4- في أي محافظة تقضي/ن معظم وقتك في العمل؟ (الرجاء إختيار إجابة واحدة).

أ) عكار
ب) الشمال
ت) بعلبك الهرمل
ث) البقاع
ج) جبل لبنان
ح) النبطية
خ) الجنوب

5- أين تمضي/ن غالبية عملك؟ (يرجى اختيار اجابة واحدة)

أ) عيادة خاصة
ب) عيادة عامة
ت) مستشفى خاص
ث) مستفى عام
ج) مستشفى تعليمي خاص
ح) مستشفى تعليمي عام
خ) أخرى, يرجى التحديد: _____

6- كم سنة لك في ممارسة طب الاطفال؟

أ) 0 الى 5
ب) 6 الى 10
ت) 11 الى 15
ث) 15 <

7- أين تعلمت عن الرضاعة الطبيعية؟
أ) تجربة خاصة
ب) كلية الطب
ت) الإقامة
ث) التعلم الموجه ذاتيا
ج) غير ذلك , يرجى التحديد: _____

8- هل لديك شهادة في دعم الرضاعة الطبيعية؟ (على سبيل المثال المجلس الدولي لمستشاري الرضاعة والتدريب عبر الإنترنت والتدريب القائم على المستشفيات)
أ) نعم , الرجاح التوضيح: _____
ب) كلا

الممارسات:

9- كم عدد المرات التي تمارس/ين فيها ما يلي: يرجى التقييم من (5) دائماً او تقريبا دائما الى (1) أبدا او تقريبا ابدا

خلال ال12 شهر الماضي, كم مرة كنت:	(5)	(4)	(3)	(2)	(1)
أسأل الأمهات المرضعات كيف تسير الرضاعة الطبيعية في السنة الأولى من حياة أطفالهن الرضع					
اطلب من الأمهات المرضعات إرضاع أطفالهن الرضع أمامي حتى أتمكن من تقييم الرضاعة					
أنصح النساء بمواصلة الرضاعة الطبيعية بعد العودة الى العمل					
أقوم بإحالة الامهات الى مستشارات/ي الرضاعة لمعالجة مشاكل الرضاعة الطبيعية					
انصح باستخدام حليب الرضع الصناعي (باستثناء الاحتياجات الخاصة)					

10- يرجى الإشارة ب "نعم" او "لا" لكل مما يلي:

	نعم	كلا
أحتفظ بعينات من حليب الرضع الصناعي في مكتبي لتوزيعها على الأمهات وأطفالهن		
لدي إعلان في مكتبي عن منتجات حليب او مستندات رعاية اطفال عليها شعار(العلامة التجارية) لشركات تصنيع حليب الأطفال		
احتفظ بكتيبات/منشورات في مكتبي لتقديمها للأمهات حول موارد الرضاعة الطبيعية في المدينة		
أوصي عادة بالبدء في اضافة الحليب الصناعي, اذا لم يستعيد الطفل، الذي يتمتع بصحة جيدة والذي يرضع حصريا، وزنه عند الولادة خلال اسبوعين		
أوصي بشكل روتيني باضافة الحليب الصناعي اذا شعرت الام ان حليبها غير كاف		
اوصي عادة بتقديم ماء السكر او الحليب الصناعي لحديثي الولادة المتمتعين بصحة جيدة اثناء انتظار حليب الأم		

أوصي بشكل روتيني بأن يرضع الطفل من الثدي من كل جانب لمدة 15 – 20 دقيقة كل 3 ساعات		

المواقف / المعتقدات

11- يرجى الإشارة الى اي مدى موافقتك على مقياس من (5) أوافق بشدة الى (1) لا اوافق بشدة على كل عبارة من العبارات التالية:

	(5)	(4)	(3)	(2)	(1)
الطبيب الرئيسي للطفل هوالمسؤول عن إجراء تقييم للرضاعة الطبيعية, بما في ذلك الموضع والتقاط الحلمة وانتقال الحليب في اول 3 الى 5 ايام بعد الولادة					
كطبيب أطفال, لدي تأثير على قرار الأم بارضاع طفلها رضاعة طبيعية ام لا					
أعتقد انه من العملي ان تواصل الأمهات العاملات ارضاع اطفالهن رضاعة طبيعية					
اعتقد انه من المقبول للمرأة ان ترضع في الاماكن العامة					
قام التدريب خلال الإقامة بتحضيري جيدا لدعم الأمهات المرضعات					
لا تقع مسؤولية طبيب الأطفال على متابعة تقدم الرضاعة الطبيعية ونجاحها					
التغذية المختلطة (حليب الأم والحليب الصناعي) هي الطريقة الاكثرعملية ومقبولة					
إن الأطفال الذين يتناولون الحليب الصناعي هم بصحة جيدة تماما مثل الأطفال الذين يخضعون للرضاعة الطبيعية					
أعتقد ان الام يجب ان تتوقف عن الرضاعة الطبيعية بمجرد ان تعرف انها حامل					

12- يرجى تقييم مدى ثقتك / راحتك في كل من الأمور التالية على قياس من (5) واثق/ة او مرتاح/ة للغاية الى (1) غير واثق/ة او غير مرتاح/ة للغاية.

ما مدى ثقتك / راحتك في:	(5)	(4)	(3)	(2)	(1)
تعليم الأمهات عن الوضع الأمثل للطفل اثناء الرضاعة الطبيعية					
معالجة المشاكل المتعلقة بالرضاعة الطبيعية (احتقان , التهاب الضرع , الخ.)					
تقييم نجاح التقاط الطفل للحلمة					
تقييم ما اذا كان هناك انتقال جيد للحليب من الأم الى الطفل اثناء الرضاعة الطبيعية					
استشارة الأمهات على تصدع والتهاب الحلمات					
تعليم الأمهات كيفية سحب الحليب بواسطة مضخة الثدي					

المعرفة:

13- الرجاء الإجابة بخطأ او صح او لا اعرف

	صح	خطأ	لا اعرف
توصي منظمة الصحة العالمية بالرضاعة الطبيعية الحصرية خلال الأشهر الستة الأولى من الحياة			
يوصى بفطام الأطفال الذين يرضعون رضاعة طبيعية عن حليب الام في عمر السنة			
يجب البدء بإدخال الأطعمة الصلبة عندما يصبح عمر الطفل اربعة اشهر			

تقديم ماء للطفل أثناء الليل سيساعد الطفل على الترطيب والنوم بشكل افضل			
الحليب الصناعي الحالي يوازي الحليب الطبيعي			
تكون قيمة الحليب الصناعي اعلى من حليب الام في بعض الاحيان اذا كان مدعم بالحديد وفيتامين د الذين يفتقر اليهما حليب الام			
تعتبرقنينة الحليب أفضل خيار للإستخدام عند سحب حليب الأم أو عند تقديم الحليب الصناعي للاطفال			
استخدام الحليب الصناعي في الأسابيع الأولى لن يؤثر على نجاح الرضاعة الطبيعية			
التمارين الرياضية المعتدلة للأم يمكن ان تقلل من جودة وكمية حليبها			
زيادة تناول السوائل او الحليب من قبل الام سيزيد من إنتاجها للحليب الطبيعي			
تبين ان الرضاعة الطبيعية تقلل من خطر الإصابة بمتلازمة موت الرضع المفاجئ			
الأمهات المصابة بمرض التهاب الكبد C لا يمكنها ممراسة الرضاعة الطبيعية			
الرضاعة الطبيعية تقلل من خطر الإصابة بسرطان المبيض وسرطان الثدي لدى الأمهات			
الرضاعة الطبيعية آمنة ويمكن الاستمرار بها عند الأمهات المصابة بهربس البسيط على الثدي طالما أن الطفل يتغذى من الثدي غير المتأثر			
حليب الأم يفقد مكوناته الأساسية عند بلوغ الرضيع عامين			

14- بحسب معرفتك، تتكون الرضاعة الطبيعية الحصرية من:

أ) حليب الأم والماء الاحيانا أو السوائل المائية في الطقس الحار.
ب) حليب الأم كالغذاء الرئيسي للرضيع, مع وجود سوائل أو مواد صلبة أخرى مسموح بها اذا كانت بكميات صغيرة جدا
ت) حليب الأم فقط, بدون سوائل او مواد صلبة أخرى, ولا حتى الماء, باستثناء الفيتامينات او مكلمات المعادن او الأدوية أو محاليل الإماهة الفموية
ث) لا أعرف

15- عند الطفل الذي يرضع بشكل فعال, يكون اللسان:

أ) أسفل وفوق خط اللثة
ب) وضعه فوق الحلمة
ت) مقابل الحنك الثابت
ث) لا أعرف

16- عندما تشتكي الأم المرضعة من وجع في الحلمة, أول ما تفعله كطبيب/ة هو:

أ) تقييم لموضع الطفل خلال الرضاعة و موضع الحلمة في فمه
ب) تشجيع الأم على مواصلة الرضاعة الطبيعية لأنها سوف تعتاد عليها قريبا
ت) إعطاء الأم مضاد للفطريات كوصفة طبية لعلاج موضعي
ث) أوصي أن تتوقف الأم عن الرضاعة الطبيعية لبضعة أيام حتى تصح حلمتها
ج) لا أعرف

17- كل ما يلي هوعلامات على ان موضع الحلمة في فم الطفل خلال الرضاعة صحيح باستثناء:

أ) شفاه الطفل مرئية وحوافها متجهة للخارج
ب) لا يوجد صوت نقر عندما يمتص الطفل الحلمة
ت) لا يمكن رؤية اي جزء من الهالة حول الحلمة

ث) ليس لدى الأم ألم مستمر في الحلمة
ج) لا أعرف

18- تشكو الأم من ان رضيعها البالغ من العمر ستة أسابيع يرضع كل ساعة تقريبا منذ يوم او يومين. ماذا تقول/ي لها؟

أ) أشرح ان الطفل يحتاج الى المزيد من الحليب لأنه هو/هي في مرحلة نمو وكثرة الرضاعة الطبيعية هي طريقة لزيادة إمداد الحليب
ب) أوصي بإعطاء الحليب الصناعي للمساعدة في تلبية حاجة الطفل بالإطعام المتكرر
ت) أوضح أن ما يحصل هو علامة على عدم اكتفاء الطفل ويجب ان تبدأ باستخدام المكملات
ث) أوصي بأن تقوم الأم بقياس وزن الطفل قبل وبعد الرضاعة لمعرفة ما اذا كان الطفل يأخذ ما يكفي
ج) لا أعرف

19- يتم إدخال رضيع صحته جيدة ويرضع رضاعة طبيعية عمره 5 أيام الى المستشفى مصحوبا بداء اليرقان. بالإضافة الى علاج الطفل بالعلاج الضوئي, بماذا تقوم/ين أولا مما يلي؟

أ) أوصي بتقديم الحليب الصناعي بعد كل جلسة رضاعة طبيعية
ب) أوصي بتقديم ماء وسكر للرضيع
ت) التوصية بزيادة جلسات الرضاعة الطبيعية وتعليم الأم كيفية ومتى تستخدم مضخة الثدي
ث) أشرح للأم انه من المحتمل ان يكون حليبها غير كافي وان على شريكها مساعدتها بإعطاء الطفل الحليب الصناعي للطفل لإفساح المجال لها بأخذ قسط من الراحة
ج) لا أعرف

20- يجب البدء بالرضاعة:

أ) مباشرة بعد الولادة
ب) بعد القيام بفحوصات الدم والفحوصات العامة للطفل
ت) بعد تعافي الأم من عملية الخلفة
ث) غير ذلك , يرجى التحديد: _____

شكرا جزيلا على المشاركة!

APENDIX III

ATTITUDES AND PRACTICES SCORING GUIDE

Attitudes Scoring Guide

Highlighted in green were given 1 point

Highlighted in yellow were given 0 points

Please indicate to what extent do you agree on a scale from (5) Strongly Agree to (1) Strongly Disagree on each of the below statements	(5)	(4)	(3)	(2)	(1)
The child's primary physician is responsible for performing an evaluation of breastfeeding, including position, latch and milk transfer in the first 3 to 5 days after birth	1	1			
As a Pediatrician, I have an influence on a mother's decision to breastfeed her infant	1	1			
I think it is practical for working mothers to continue to breastfeed their infants	1	1			
I think it is acceptable for women to breastfeed in public	1	1			
My residency training prepared me to support breastfeeding mothers	1	1			
It's not the pediatrician's responsibility to follow up on breastfeeding progress and success				1	1
Mixed feeding (breastmilk and formula) is a more practical acceptable feeding method				1	1
Formula-fed babies are just as healthy as breastfed babies				1	1
I believe a mother should stop breastfeeding once she knows she is pregnant				1	1

How confident/ comfortable are you in: (5) being very confident / comfortable to (1) being very unconfident/ uncomfortable	(5)	(4)	(3)	(2)	(1)
Teaching mothers about good breastfeeding positioning	1	1			
Addressing breastfeeding related problems (engorgement, mastitis, etc..)	1	1			
Evaluating whether a baby's latch is successful	1	1			
Assessing whether there is good milk transfer from mother to baby during breastfeeding	1	1			
Counselling mothers on cracked and sore nipples	1	1			
Teaching mothers how to express milk	1	1			

Practices Scoring Guide

Highlighted in green were given 1 point

Highlighted in yellow were given 0 points

In the Last 12 months, how often did you:	(5)	(4)	(3)	(2)	(1)
Ask breastfeeding mothers how breastfeeding is going in the first year of their infants' life	1				
Ask breastfeeding mothers to breastfeed their infants in front of you so that you can assess the feeding	1				
Recommend women to continue breastfeeding after returning to work	1				
Refer mothers to lactation consultants to address breastfeeding problems	1				
Recommend formula feeding (excluding special needs)					1

Please indicate Yes or No to each of the below	Yes	No
Do you keep samples of formula in your clinic to distribute to mothers and their babies		1
Do you have advertisement in your clinic on formula products, or well-baby care documents that have formula companies' logo on them?		1
Do you have brochures / pamphlets in your clinic that you give to mothers about breastfeeding resources in the city	1	
I recommend to start supplementing with formula, if a healthy term baby who is exclusively breastfed has not regained birth weight by 2 weeks		1
I routinely recommend to supplement with formula if a mother feels that her milk supply is inadequate		1
I typically recommend feeding glucose water or formula to the otherwise healthy newborn while waiting for the mother's milk to come in		1
I routinely recommend that babies breastfeed on each side for 15-20 minutes every 3 hours		1

APPENDIX IV

PEDIATRICIANS' ANSWERS ON THE KNOWLEDGE SECTION

Pediatricians Knowledge 1						
n=83	True		False		I don't Know	
	n	%	n	%	n	%
Exclusive breastfeeding is recommended for the first six months of life by the World Health Organization (WHO)	78	94	5	6	0	0
It is recommended to completely wean breastfed babies from the breast at the age of 1 year	9	10.8	70	84.3	4	4.4
Solid foods introduction should start when the baby is 4 months according to WHO	29	34.9	53	63.9	1	1.2
offering the baby water during the night will help the baby hydrate and sleep better	4	4.8	78	94	1	1.2
The current infant Formulas are nutritionally equivalent to breastmilk	19	22.9	63	75.9	1	1.2
Formula is sometimes superior to breastmilk if it was fortified with iron and vitamin D that are both lacking in human milk	15	18.3	67	81.7	0	0
Bottles are the best option to use when breastmilk is pumped or when formula is provided	47	56.6	32	38.6	4	4.8
Supplementing with formula in the first weeks of life will not affect breastfeeding success	8	9.6	75	90.4	0	0
Moderate exercise in the mother can decrease quality and quantity of breastmilk	5	6	74	89.2	4	4.8
Increasing mother's fluid or milk intake will increase her milk production	55	66.3	28	33.7	0	0
Breastfeeding has been shown to decrease the risk of SIDS	72	86.7	4	4.8	7	8.4
Breastfeeding is contraindicated in mothers with Hepatitis C	30	36.1	47	56.6	6	7.2
Breastfeeding decreases the risk of ovarian and breast cancer in mothers	80	96.4	2	2.4	1	1.2
Breastfeeding is safe to continue in mothers who have herpes simplex on a breast as long as the child only feeds from the unaffected breast	65	78.3	15	18.1	3	3.6
Breastmilk loses its core components after the baby is two years old	29	34.9	41	49.4	13	15.7

Pediatricians Knowledge 2		
n=83	n	%
To your knowledge, exclusive breastfeeding consists of:		
Breast milk and occasional water or water-based fluids in hot weather.	8	9.6
Breast milk as the main food for the infant, with other liquids or solids allowed if in very small quantities.	4	4.8
Only breast milk, no other liquids or solids, not even water, with the exception of vitamins, minerals supplement, medicines or Oral Rehydration Solutions.	70	84.3
I don't know	1	1.2
In a baby who is breastfeeding effectively, the tongue is:		
Down and over the gum line	55	66.3
Positioned above the nipple	2	2.4
Against the hard palate	15	18.1
I don't know	11	13.3
When a breastfeeding mother complains that her nipples are sore, the first thing to do is:		
Assess baby's position and latch	51	61.4
Encourage mother to continue breastfeeding as she will get used to it soon	22	26.5
Give mother a prescription for a topical anti-fungal medication	6	7.2
Recommend that mom holds off breastfeeding for a few days so that her nipples heal	4	4.8
I don't know	0	0
All of the following are signs that a baby is latched on properly except:		
The baby's lips are visible and flanged outward	15	18.1
There is no clicking sound as the baby sucks	22	26.5
No part of the areola can be seen	25	30.1
Mother has no persistent nipple pain	17	20.5
I don't know	4	4.8
A mother complains that her 6 week old infant has been breastfeeding almost every hour for a day or two. What do you tell her?		
Explain that the baby requires more milk because he/she is growing and frequent breastfeeding is his/her way to increase milk supply	45	54.2
Recommend giving the infant formula to help with the frequent feedings	1	1.2
Explain that this is a sign of insufficient breast milk and should start supplementing	5	6
Recommend that she comes in to weigh the baby before and after a feed to see if he/she is taking enough in	31	37.3
I don't know	1	1.2
An otherwise healthy 5-day old breastfeeding infant is admitted to the hospital with jaundice. In addition to treating the child with phototherapy, you first do which of the following?		
Recommend offering the infant formula after every breastfeeding session	4	4.8
Recommend offering glucose water to the infant	5	6

Recommend more frequent breastfeeding sessions, and teach mother how and when to use a breast pump	72	86.7
Explain to the mother that she likely does not have enough milk and that she should have her partner give a few formula feeds to the baby while she gets some rest	2	2.4
I don't know	0	0
Breastfeeding initiation should be:		
Directly after birth	76	91.6
After the routine blood/general tests are done on the baby	0	0
After the mother recovers from the delivery	3	3.6
When the mother's milk come	1	1.2
Other*	3	3.6

*: Before Birth, Directly after birth if the mother is willing. Make sure she isn't on drugs not compatible with breast feeding.., depends on delivery situation

APPENDIX V

EMAIL INVITATION TEMPLATE (ENGLISH)

AUB Social & Behavioral Sciences
INVITATION SCRIPT

Invitation to Participate in a Research Study

This notice is for an AUB-IRB Approved Research Study

for Dr. Farah Naja at AUB.
Tel: 009611350000, ext; 4504
Email: fn14@aub.edu.lb)

It is not an Official Message from AUB

I am inviting you to participate in a research study which aim is to examine the knowledge, attitudes and practices of Lebanese pediatricians in relation to supporting breastfeeding. Another aim is to explore the sociodemographic correlates of the above knowledge, attitudes and practices.

You will be asked to complete a short survey/questionnaire with demographic information and, questions related to your practices as well as knowledge, attitudes and beliefs towards breastfeeding.

You are invited because we are targeting pediatricians in Lebanon (you are eligible for this study if you are a practicing Lebanese pediatrician. Participants should have no conditions that impact their cognitive ability (they need to be able to read, understand and answer the questions) and they should be able to independently give consent)

The estimated time to complete this survey is approximately 30 minutes.

The research is conducted online and is hosted on AUB server.

Please read the consent form and consider whether you want to be involved in the study.

If you have any questions about this study, you may contact the investigator/research team (Hiba Al Rifai, Email: hma124@mail.aub.edu for further information regarding the study).

Version Date March 21, 2016
Version Number 1.1 1/1

APPENDIX VI

EMAIL INVITATION TEMPLATE (ARABIC)

العلوم الإجتماعية والسلوكية
الدعوة للمشاركة

دعوة للمشاركة في دراسة بحثية
هذا الإشعار مخصّص لدراسة بحثية معتمدة من الAUB-IRB
للدكتورة فرح نجا في الجامعة الأميركية في بيروت.
هاتف: 009611350000 ، مقسم: 4504
البريد الإلكتروني:**fn14@aub.edu.lb**

* ليست رسالة رسمية من الجامعة الأمريكية في بيروت *

أنا أدعوك للمشاركة في دراسة بحثية تهدف إلى اكتشاف المعرفة والتوجهات و الممارسات المتعلقة بدعم الرضاعة الطبيعية التي يقوم بها أطباء الأطفال في لبنان. كما وتهدف هذه الدراسة إلى تحديد العوامل الديموغرافية المتعلقة بهذه المعرفة والتوجهات و الممارسات.

سوُطلب منك تعبئة إستبيان قصير يحتوي على معلومات ديموغرافية وأسئلة حول المعرفة والتوجهات و الممارسات والمعتقدات تجاه الرضاعة الطبيعية.

تمت دعوتك لأننا نستهدف أطباء الأطفال في لبنان(أنت مؤهل/ة لهذه الدراسة إذا كنت طبيب/ة أطفال لبناني/ة ممارس/ة للمهنة. لا ينبغي أن تكون لدى المشاركين حالات معيّنة قد تؤثر على قدرتهم الإدراكية (يجب أن يكونوا قادرين على قراءة الأسئلة وفهمها والإجابة عليها) ويجب أن يكونوا قادرين على إعطاء الموافقة بشكل مستقل).

الوقت المقدر لإكمال هذا الاستبيان هو حوالي 30 دقيقة.

يتم إجراء البحث عبر الإنترنت وذلك بإستضافة خادم ال AUB .

يرجى قراءة الموافقة والتفكير إذا كنت ترغب/ين في المشاركة في الدراسة.

إذا كان لديك أي أسئلة حول هذه الدراسة، يمكنك الإتصال بفريق البحث / الباحثة (هبة الرفاعي، البريد الإلكتروني: hma124@mail.aub.edu للحصول على المزيد من المعلومات حول الدراسة).

APPENDIX VII

CONSENT FORM (ENGLISH)

American University of Beirut
Faculty of Agricultural and Food Sciences

CONSENT TO PARTICIPATE IN AN ONLINE RESEARCH STUDY

This notice is for an AUB-IRB Approved Research Study

for Dr. Farah Naja at AUB.

It is not an Official Message from AUB

You are invited to participate in a research study entitled *Knowledge, Attitudes and Practices of Lebanese Pediatricians in Relation to Supporting Breastfeeding* conducted by Dr. Farah Naja Faculty of agriculture and food science at the American University of Beirut. The conduct of this study will adhere to the IRB approved protocol.

The IRB approved method for approaching subjects is through email. The purpose of this study to examine the knowledge, attitudes and practices of Lebanese Pediatricians in relation to supporting breastfeeding. Another aim is to explore the sociodemographic correlates of knowledge, attitudes and practices of breastfeeding among Lebanese Pediatricians.

PROCEDURES

This message invites you to:

1. **Read the consent document and consider whether you want to be involved in the study.**

And to note:

- ***Participation is completely voluntary.***
- ***Completing the questionnaire will take around 30 minutes.***
- ***Only the data you provide in the questionnaire will be collected and analyzed. The research team will not have access to your name or contact details.***
- ***The results of the survey will be published in a research journal.***
- ***The inclusion and exclusion criteria: All participants should be practicing Lebanese pediatricians. They should have no conditions that impact their cognitive ability (they need to be able to read, understand and answer the questions) and they should be able to independently give consent***

POTENTIAL BENEFITS TO SUBJECTS AND/OR TO SOCIETY

This research will not directly benefit you. However, the results will help us identify gaps in the knowledge attitudes and practices of breastfeeding among Lebanese pediatricians and accordingly interventions will be tailored to address these gaps.

You will not receive payment for participation in this study.

POTENTIAL RISKS TO SUBJECTS AND/OR SOCIETY

There are no foreseeable risks, side effects or discomforts to being involved in this study.

CONFIDENTIALITY

The collected data will remain confidential *and anonymous.*

Records will be monitored and may be audited by the IRB while assuring confidentiality. Data will be securely stored in the PI's office on a password protected computer only accessible to the research team. All the data will be collected, managed and stored by team members only. Your respond to the online survey will not contain any information that can link your answer to your email. Research data will be saved in an encrypted manner. A backup plan will be set in place to the PIs' files and datasets.

American University of Beirut
Faculty of Agricultural and Food Sciences

CONSENT TO PARTICIPATE IN AN ONLINE RESEARCH STUDY

PARTICIPATION AND WITHDRAWAL

If you voluntarily consent to take part in this study, you can change your mind and withdraw at any time without consequences of any kind.

Refusal to participate or withdrawal from the study will involve no penalty or loss of benefits to which the subject is otherwise entitled, and neither will it affect their relationship with their organization and AUB/AUBMC.

After completing the questionnaire you can participate in a draw to win an IPAD. For this you have to send us your email address. The email list that will be included in the draw cannot be linked back to the participants' response and will be deleted once the draw has been completed.

QUESTIONS ABOUT THE STUDY

If you have any questions about the study, can contact the research team at [Dr.Farah Naja Tel: 009611350000, ext: 4504 Email: fn14@aub.edu.lb].

ACCESS TO THE SURVEY

If after reading the consent document and having you questions answered, you voluntarily agree to take part in the study; you can access the survey by clicking on the following link.

CONCERNS OR QUESTIONS ABOUT YOUR RIGHTS

If you have concerns about the study or questions about your rights as a participant, you can contact the **AUB IRB Office**: [Social & Behavioral Sciences Institutional Review Board American University of Beirut, Lebanon Tel: 00961 1 374374, ext: 5445 Email: irb@aub.edu.lb]

APPENDIX VIII

CONSENT FORM (ARABIC)

American University of Beirut
Faculty of Agricultural and Food Sciences

CONSENT TO PARTICIPATE IN AN ONLINE RESEARCH STUDY

هذا الإشعار مخصص لدراسة بحثية معتمدة من IRB-AUB

للدكتورة فرح نجا في الجامعة الأميركية في بيروت.

*** ليست رسالة رسمية من الجامعة الأمريكية في بيروت ***

تمت دعوتك للمشاركة في دراسة بحثية بعنوان "المعرفة والاتجاهات والممارسات التي يقوم بها أطباء الأطفال في لبنان المتعلقة بدعم الرضاعة الطبيعية" ، أجرتها الدكتورة فرح نجا ، كلية الزراعة وعلوم الغذاء في الجامعة الأمريكية في بيروت. سيرتبط إجراء هذه الدراسة بالبروتوكول المعتمد من IRB.

المعتمدة لمقاربة الموضوعات هي عبر البريد الإلكتروني. الغرض من هذه الدراسة هو اكتشاف المعرفة والتوجهات و **IRBطريقة** الممارسات المتعلقة بالرضاعة الطبيعية لدى أطباء الأطفال في لبنان. كما وتهدف هذه الدراسة إلى تحديد العوامل الديموغرافية المتعلقة بهذه المعرفة والتوجهات و الممارسات.

إجراءات

تدعوك هذه الرسالة إلى:

1. اقرأ وثيقة الموافقة وفكر/ي فيما إذا كنت تريد/ين المشاركة في الدراسة.

ولاحظ/ي التالي:

- **المشاركة طوعية تماما.**
- **سيستغرق ملء الإستبيان حوالي 30 دقيقة.**
- **فقط البيانات التي تقدمها في الإستبيان سيتم جمعها وتحليلها. لن يتمكن فريق البحث من الوصول إلى إسمك أو تفاصيل الاتصال.**
- **سيتم نشر نتائج المسح في مجلة بحثية.**
- **معايير الشمول والإقصاء: يجب ان يكون المشاركين أطباء أطفال لبنانيون ممارسون للمهنة. يجب ألا يكون لديهم أي شروط تؤثر على قدرتهم المعرفية (يجب أن يكونوا قادرين على قراءة الأسئلة وفهمها والإجابة عليها) ويجب أن يكونوا قادرين على إعطاء الموافقة بشكل مستقل.**

الفوائد المحتملة للموضوعات و / أو المجتمع

هذا البحث لن يفيدك مباشرة. ومع ذلك ، فإن النتائج ستساعدنا على تحديد أي نقص في المعرفة او التوجهات او الممارسات المتعلقة بالرضاعة الطبيعية لأطباء الأطفال في لبنان والعمل على تصميم برامج مخصصة حسب نتائج البحث.

لن تتلقى بدل مالي مقابل المشاركة في هذه الدراسة.

المخاطر المحتملة للموضوعات و / أو المجتمع

CONSENT TO PARTICIPATE IN AN ONLINE RESEARCH STUDY

لا توجد مخاطر متوقعة أو آثار جانبية أو إزعاج للمشاركة في هذه الدراسة.

السرية

ستبقى البيانات التي تم جمعها سرية ومجهولة.

ستتم مراقبة السجلات ومراجعتها من قِبل ال IRB. سيتم تخزين المعلومات بشكل آمن على حاسوب الباحثة الرئيسية وذلك مع التأمين عليها بكلمة سرّ. فقط فريق البحث يمكنه الإطّلاع على هذه المعلومات. سيتم جمع جميع البيانات وإدارتها وتخزينها من قبل أعضاء الفريق فقط. لن يحتوي ردّك على الإستبيان عبر الإنترنت على أي معلومات يمكن أن تربط إجابتك بالبريد الإلكتروني. سيتم حفظ بيانات البحث بطريقة مشفرة. سيتم وضع خطة إحتياطية لجميع البيانات والمعلومات.

المشاركة والإنسحاب

إذا وافقت طوعًا على المشاركة في هذه الدراسة، يمكنك تغيير رأيك والانسحاب في أي وقت دون عواقب من أي نوع.

إن رفض المشاركة أو الإنسحاب من الدراسة لن ينطوي على أي عقوبة أو خسارة في المزايا التي يحق للمشارك/ة الحصول عليها بطريقة أو بأخرى، ولن يؤثر ذلك على علاقته/ا بمنظمته/ا و بكل من AUB و AUBMC.

بعد الانتهاء من الاستبيان ، يمكنك المشاركة في السحب للفوز ب IPAD. لهذا عليك أن ترسل/ي لنا عنوان بريدك الإلكتروني. لا يمكن ربط قائمة البريد الإلكتروني التي سيتم تضمينها في السحب برد المشاركين وسيتم حذفها بمجرد اكتمال السحب

أسئلة حول الدراسة

إذا كان لديك أية أسئلة حول الدراسة، يمكنك الاتصال بفريق البحث (د. فرح نجا، تلفون 009611350000، مقسم 4504، بريد إلكتروني: (fn14@aub.edu.lb

الوصول إلى المسح

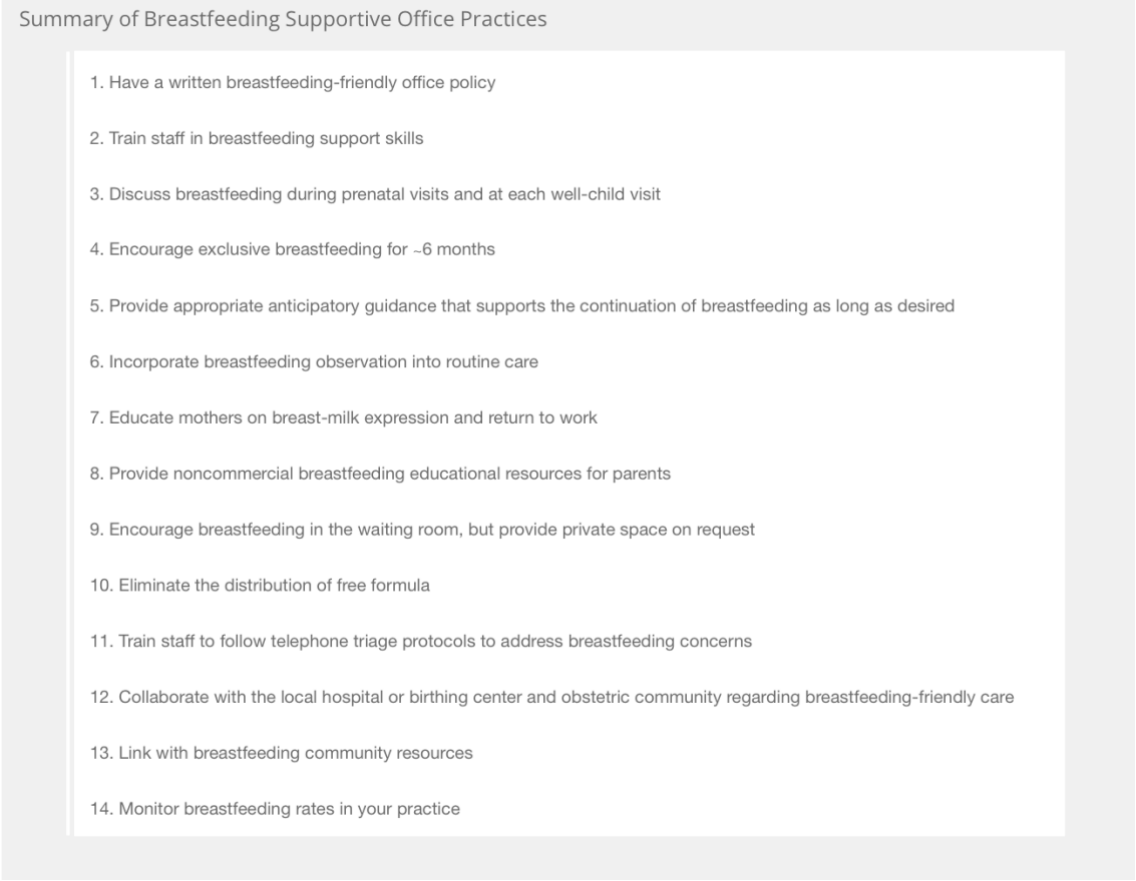
إذا وافقت طوعاً على المشاركة في الدراسة بعد أن قرأت وثيقة الموافقة و بعد أن تمت الإجابة على أسئلتك ؛ يمكنك الوصول إلى الاستطلاع من خلال النقر على الرابط التالي.

مخاوف أو أسئلة حول حقوق

إذا كانت لديك مخاوف بشأن الدراسة أو أسئلة حول حقوقك كمشارك، يمكنك الاتصال بمكتب IRB في الجامعة الأميركية في بيروت (مكتب المراجعة المؤسسية للعلوم الإجتماعية و السلوكية في الجتمعة الأميركية في بيروت، بيروت، لبنان. هاتف: 009611374374 ، مقسم: 5445. البريد الإلكتروني: irb@aub.edu.lb)

APPENDIX IX

AAP BREASTFEEDING-FRIENDLY PEDIATRIC OFFICE PRACTICE



(Meek & Hatcher, 2017)

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