

Breastfeeding, What About in Morocco ?: A Systematic Review and Meta-Analysis

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Abstract:-

Introduction. —Breastfeeding is the ideal food for the good development of the new-born's height and weight, as well as at the psychological level during skin-to-skin contact with the mother.

Objective. — The objectives of this work were to focus on the prevalence of breastfeeding with all its parameters in Morocco, on the one hand, and to assess the knowledge of Moroccan mothers in terms of breastfeeding and weigh the effectiveness of national breastfeeding promotion programs, on the other hand.

Material and method. — First, we carried out a bibliographic search on purely Moroccan data by consulting the PubMed, ScienceDirect, Scopus, and Google Scholar databases on all the work done in Morocco by specifying the search between the period 2010 and 2020. Then we performed our meta-analysis on well-chosen parameters.

Results. — The practice of breastfeeding in Morocco is a question of public health and this pandemonium exists, on the good development of Moroccan new-borns and which threatens maternal and infant health.

Keywords:- Breastfeeding, Exclusive Breastfeeding, Meta-Analysis, Prevalence, Morocco.

I. INTRODUCTION

Breastfeeding is undoubtedly the best food for newborns and infants, there is talk of exclusive breastfeeding until the age of 6 months, and adequate food diversification meeting the specific nutritional needs of infants and continuing to breastfeed for up to 2 years according to the recommendations of the World Health Organization [1]. The constitutional composition of maternal milk is unique, it varies according to the physiological age of the newborn, its term, and the time of feeding [2,3]. Indeed, breast milk contains all the necessary nutrients for the ideal development of newborns and infants.

Indeed, growth factors such as somatomedin C (IGF-1), transforming growth factor (TGF), the EGF receptor which is a leukocyte growth factor, cytokines, immunocompetent cells, and many vital biological properties [4]. For the breastfeeding mother countless benefits are offered by breastfeeding; a decreased risk of hypertension and type 2 diabetes, as well as a protective effect against obesity, and a decreased risk of hyperlipidemia[5].

Specialists in neonatology and infant nutrition recommend not to promote the separation of the mother-newborn couple, because it completely disrupts the practice of breastfeeding[6]. As for the Moroccan context, there are worrying figures on the practice of breastfeeding according

to the latest National Population and Family Health survey [7].

The main objective of this work is to analyze, through the available national data, the evolution over the last ten years in the prevalence of breastfeeding at birth, early breastfeeding and exclusive breastfeeding at six months [8–11].

The secondary objectives aim to compare the results obtained with data from national surveys carried out on the subject over the past 20 years.

II. MATERIALS AND METHODS

In order to answer our problem, we carried out a review of the literature, on the studied population and which concerns Moroccan breastfeeding women, newborns, at the level of maternities and children's hospitals in Morocco, as well as within intensive care units and neonatal resuscitation.

We carried out our research of articles on the PubMed and National Science databases for Scientific and Technical Research which belongs to the University of Mohammed V of Rabat. We also consulted all the PhD theses dealing with this subject since 2010 on the accessible sites of all the faculties of Medicine and Pharmacy of Morocco.

We have chosen the following keywords, and we associate them with the Boolean logical operator "AND":

"Breastfeeding & Prevalence Morocco", "Breastfeeding & Morocco", "Breastfeeding in Morocco", "Promotion of Breastfeeding & Maroc ". We customized the search from 2010 to 2020.

First, we made an initial selection by reading the titles and then the summaries in order to reassure us that the overriding objective met our problem. Once the inclusion and exclusion criteria were applied to the articles found, we did a deeper reading. We analyzed the results of each study while exercising a critical eye on the study methodology.

2.1 The inclusion criteria

Our articles were elected by the following conditions and criteria:

Studies follow and respect the ethical rules in clinical research recognized in Morocco and which the ethics committee for biomedical research CERB approves.

- Studies published since 2010: As the articles on breastfeeding are relatively recent, we chose the studies published since 2010 to have a relatively recent sample of articles.
- Surveys dealing with the practice of breastfeeding, in line with our problem and research theme.
- Articles written in French or / and English for practical operating reasons.

- Studies that follow the IMRAD structure: Introduction, Materials and Methods, Results, Analysis and Discussion.
- Studies citing credible scientific references.

2.2 The exclusion criteria

- We excluded all the articles that dealt with breastfeeding in a non-Moroccan infant population even if the authors are Moroccan.
- Articles and surveys not accessible have been excluded.

The criteria studied centered on the objectives of the study, the type of study, the Moroccan population, the number of samples, the results and the authors' conclusion. Indeed, we have studied the references cited in the elected articles.

2.3 Statistical analysis

Two authors selected the articles, extracted the data and assessed the methodological quality of the included articles. Zotero software was downloaded and installed from the official site, for storage use and creation of our bibliography under Vancouver standards [12]. Microsoft

Excel 2016 software was used for numerical data entry. Statistical analysis was performed using SPSS software version 20.0 [13]. Prevalence's were reported with a 95% confidence interval (95% CI). A p value <0.05 was considered significant for all statistical analyzes.

III. RESULTS

The total number of articles selected is 352. 40 theses were excluded because they did not meet the criteria for the publication date which was set from 2010.

In fact we removed 2 blog posts, knowing that these articles dealing with breastfeeding. However, the criterion of scientific results does not meet our criterion. And finally, we could not access 3 articles due to inaccessibility to certain medical search engines.

The final number of included studies of the selected sample is of the order of 5617, divided between 7 articles which make 4290 candidates and 6 theses made 1327 mother-newborn couple since 2010. The flow chart showing in

details the strategy for recruiting studies, as well as the surveys ultimately admitted for statistical analysis.

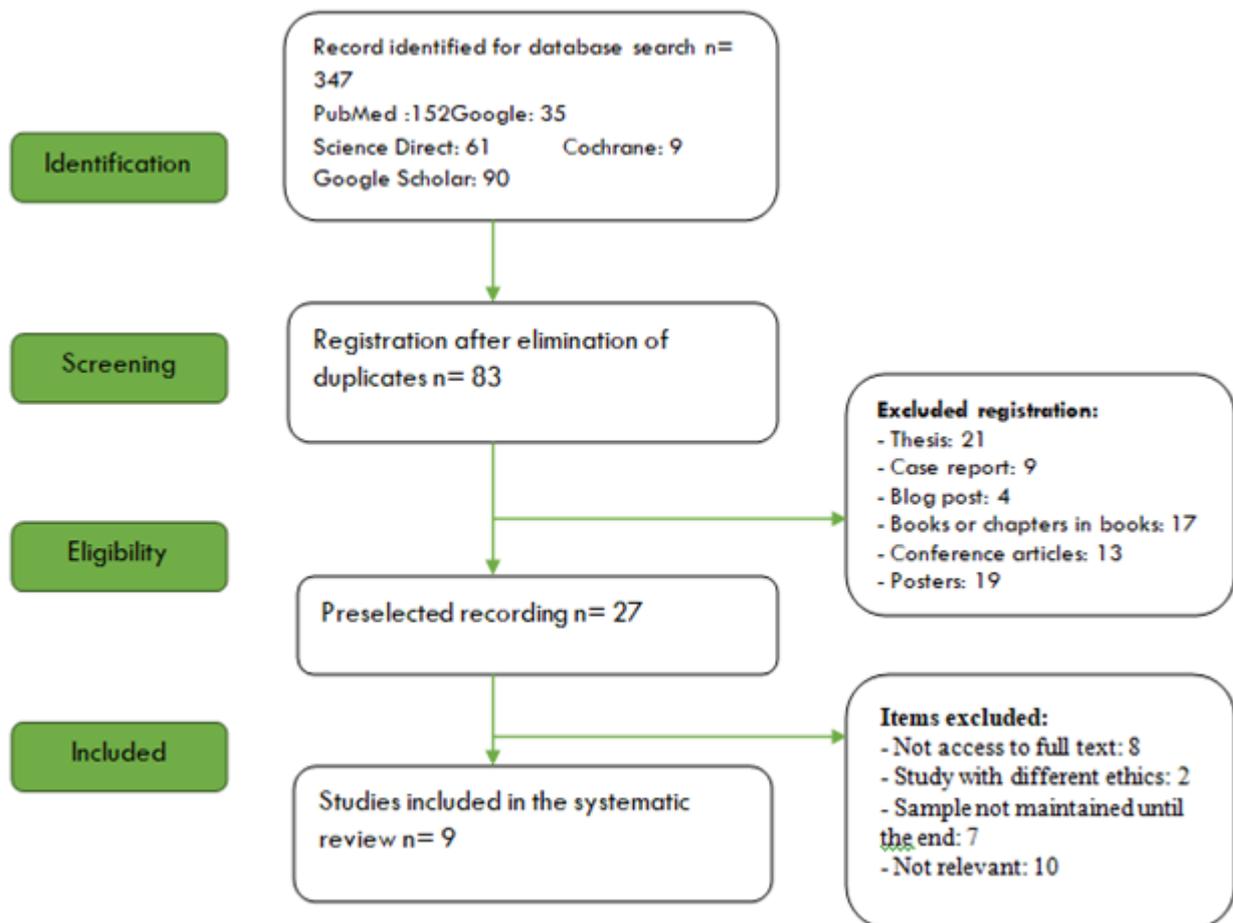


Figure 1: Flow charter of the studies elected for the meta-analysis

All selected articles are articles published in international scientific journals. We finally selected 9 articles:

«**Breastfeeding practices at the Marrakech's university maternity ward**» by S. Roida et al., Published in 2010 in the Journal “Pédiatrie et de Puériculture”. The aim here is to study and assess the knowledge and practices of mothers in breastfeeding [14].

«**Factors influencing the initiation of breastfeeding: Moroccan data**» by A. Barkat et al., Published in 2012 in “the Journal Archives de Pédiatrie”. The aim was to study the factors that hinder the initiation of breastfeeding [15].

«**Evaluation of the effect of work on the practice of breastfeeding**» by H. Hamadaa et al., Published in 2017 in “the Journal Archives de Pédiatrie”. The objective assessed the effect of women's labor on breastfeeding (AM) and its prolongation beyond six months in a Moroccan population[16].

«**Current Situation And Factors Influencing Breastfeeding In The City Of Rabat, Morocco Regarding A Survey In 275 Mothers**» by Zineb SqalliHoussaini et al., Published in 2017 in “the European Scientific Journal”. The aim was to assess the current situation of breastfeeding in the city of Rabat [17].

«**The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices: An experience from Casablanca, Morocco**» by Mouna Habib et al., Published in 2018 in “the International Journal of Pediatrics and Adolescent Medicine”. The objective examined the association between knowledge of breastfeeding and maternal socioeconomic status and demographic characteristics, to determine any impact on the nutritional status of Moroccan children [18].

«**Knowledge and practices of mothers in breastfeeding**» by F.Z. Laamiria, et al., Published in 2019 in “the Journal of Pediatrics and Childcare”. The objective of this study was to study the knowledge and practices of mothers and to assess the impact of postnatal education on the duration of exclusive breastfeeding[19].

«**Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco**» by E. Jasnyal et al., Published in 2019 in “the Journal Archives de Pédiatrie”. The purpose of this perspective was to examine the intentions and prenatal knowledge of nursing mothers[20].

All these selected and chosen articles with the results found are presented in an explanatory table. (**Table 1, Table 2**)

We then consulted and downloaded all the Moroccan PhD theses which meet our criteria and which are the same selected for the articles; these theses are available on the official websites of the Faculties of Medicine and Pharmacy. These theses have been represented and detailed with the characteristics and results on an illustrative table. (**Table 3**)

The variables studied in this meta-analysis are: prevalence of breastfeeding at birth, early breastfeeding, exclusive breastfeeding.

Once the selected articles are analyzed in response to the chosen judgment criteria, a comparison of the results is made with data from national surveys carried out on the topic.

2.4 Analysis of data from selected articles

In order to facilitate understanding of the results, we first presented a summary of the various articles selected, specifying for each survey the type and objective of the study, the population studied and we extracted all the results that meet our criteria. Goals.

Table 1: Description of selected articles

Articles	Year	type of study	Study level	Region	The aim of the study	Period and population studied
Breastfeeding practices at the Marrakech's university maternity ward.[14]	2010	Prospective study	Grade C	Marrakech-Safi. Geography code:7	Evaluate mothers' knowledge and practices in breastfeeding.	October 1 to November 30, 2006. at the Ibn Tofail maternity hospital in Marrakech. 200 mother-newborn pairs.
Factors influencing the initiation of breastfeeding: Moroccan data.[15]	2012	Longitudinal prospective study	Grade C	Rabat-Salé-Kenitra. Geographycode: 4	Study the impact of prenatal knowledge on breastfeeding and the different factors that can influence its behavior.	The Souissi maternity in Rabat in 2010, with mother-newborn couples.

Evaluation of the effect of work on the practice of breastfeeding.[16]	2017	A cross-sectional study	Grade C	Rabat-Salé-Kénitra Geographycode: 4	To assess the effect of women's work on breastfeeding (AM) and its prolongation beyond six months in a Moroccan population.	Carried out between November 2015 and April 2016 in four hospitals in the Rabat-Sale region in Morocco.
Current Situation And Factors Influencing Breastfeeding In The City Of Rabat In Morocco About a Survey Among 275 Mothers.[17]	2017	Prospective study	Grade C	Rabat-Salé-Kenitra Geographycode: 4	Evaluate the current situation of breastfeeding in the city of Rabat.	275 women with children aged 0 to 3 years and therefore having recent experience in gynecological and pediatric medical practices, the two maternities as well than in various health centers in the city of Rabat.
The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices : An experience from Casablanca, Morocco.[18]	2018	A cross-sectional study	Grade C	Casablanca-Settat. Geography code : 6	Examine the association between knowledge about breastfeeding and maternal socioeconomic knowledge and demographic characteristics, to determine any impact on the nutritional status of children.	From January to December 2016, on healthy children in urban areas seen for routine primary health care in the twelve public health centers of the district of Ain Chock, Casablanca.
Knowledge and practices of mothers in breastfeeding.[19]	2019	Prospective multicenter Interventional study	Grade C	Rabat-Salé-Kénitra. Geography code : 4 Béni Mellal-Khénifra Geography code : 5	To study the knowledge and practices of mothers and to assess the impact of postnatal education on the duration of exclusive breastfeeding.	The period: October 2015 and November 2016 in three geographical locations in Morocco (Rabat, Midelt and Khenifra).
Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco.[20]	2019	Prospective study	Grade C	Marrakech-Safi. Geography code : 7	Examine the intentions and prenatal knowledge of nursing mothers.	From September 2013 to June 2015, 768 women were interviewed in different maternity units in Marrakech and its surroundings.

Table 2 : The results of the selected articles

Articles	Year	Nb of cases	The early breastfeeding rate	Prevalence of BF at birth	The exclusive breastfeeding rate at 6 months
Breastfeeding practices at the Marrakech's university maternity ward.[14]	2010	200	38%	97,5%	38%
Factors influencing the initiation of breastfeeding: Moroccan data.[15]	2012	1300	49%	---	---
Evaluation of the effect of work on the practice of breastfeeding.[16]	2017	505	26%	97%	38%

Current Situation And Factors Influencing Breastfeeding In The City Of Rabat In Morocco About a Survey Among 275 Mothers.[17]	2017	275	34%	89%	40%
The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices : An experience from Casablanca, Morocco.[18]	2018	297	90,23	76,4%	57,23%
Knowledge and practices of mothers in breastfeeding.[19]	2019	945	93,3%	100%	49,22%
Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco.[20]	2019	768	---	---	6%
Total		4290			

Table 3 : The theses selected with the results found

Thesis	Year	Description	Number of sample	The early breastfeeding rate	Prevalence of BF at birth	The exclusive breastfeeding rate at 6 months
The practice of breastfeeding in 3 maternities: current situation and influencing factors survey of 227 mothers and 61 health professionals.[21]	2011	Describe the situation and promotion of breastfeeding at 3 maternity hospitals and identify the factors associated with its continuation until the age of 6 months.	227	3,1%	96%	22%
Determinants of the Choice of Breastfeeding Mode Prospective study of 120 women who gave birth at the Souissi Maternity in Rabat.[22]	2012	This is a prospective study, including 120 women who gave birth at Souissi maternity hospital in Rabat and 20 women seen at the Masdjid health center in Akkari.	140	55%	86%	63%
Breastfeeding practices in the maternity ward of the Mohammed VI Hospital Center in Marrakech.[23]	2016	This is a prospective descriptive and analytical survey spanning 21/04/2014 to 31/07/2014.	210	46%	96,6%	69%
Knowledge and attitudes of mothers and physicians regarding breastfeeding.[24]	2018	This is a CAP-type cross-sectional study on knowledge, attitudes and practices of breastfeeding, carried out during the period extended from 01-09-2017 to 01-01-2018 in the city of Fez.	300	43,6%	97,6%	14,7%
Breastfeeding practice and factors associated with early breastfeeding.[25]	2018	This is a descriptive and analytical survey of a prevalence study that took place over a 4-month period, spanning June 15, 2017 to October 15, 2017. The study was carried out at the Souissi maternity unit of	300	10%	53%	66,7%

		the Ibn Sina university hospital in Rabat.				
Exclusive breastfeeding in new term infants in the maternity ward.[26]	2018	This work consists of an observational, prospective, descriptive and analytical, which took place over a period of three months, ranging from October 1, 2017 to December 31, 2017.	150	25%	57%	40%
Total			1327			

EB: Exclusive breastfeeding, BF: Breastfeeding, BM: Breast milk, UHC: University Hospital Center, Nb : Number.

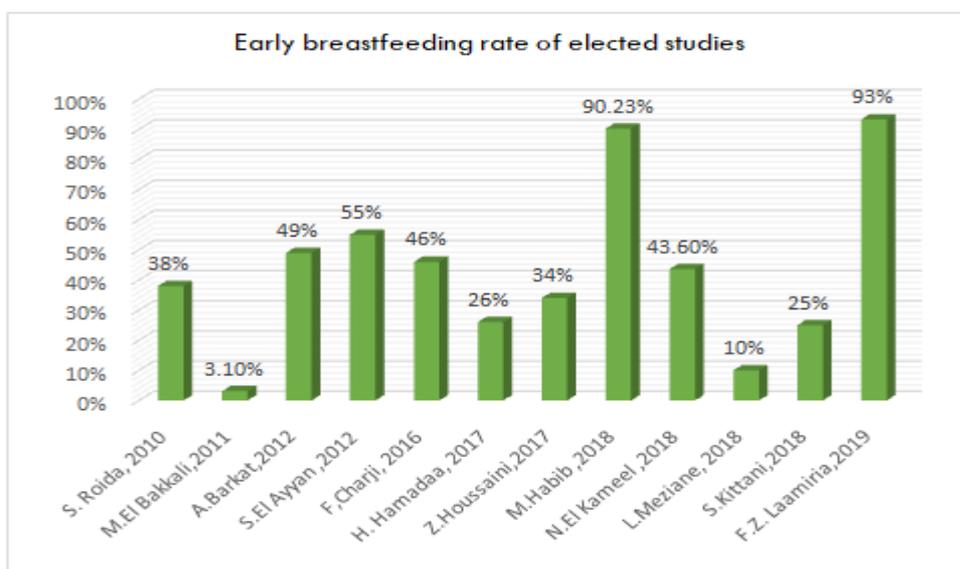


Figure 1 : The early breastfeeding rate plot for elected studies

The diagram of early breastfeeding rate of elected studies that are the subject of our meta-analysis shows a significant increase of early breastfeeding over the past 10 years.(Figure 1)

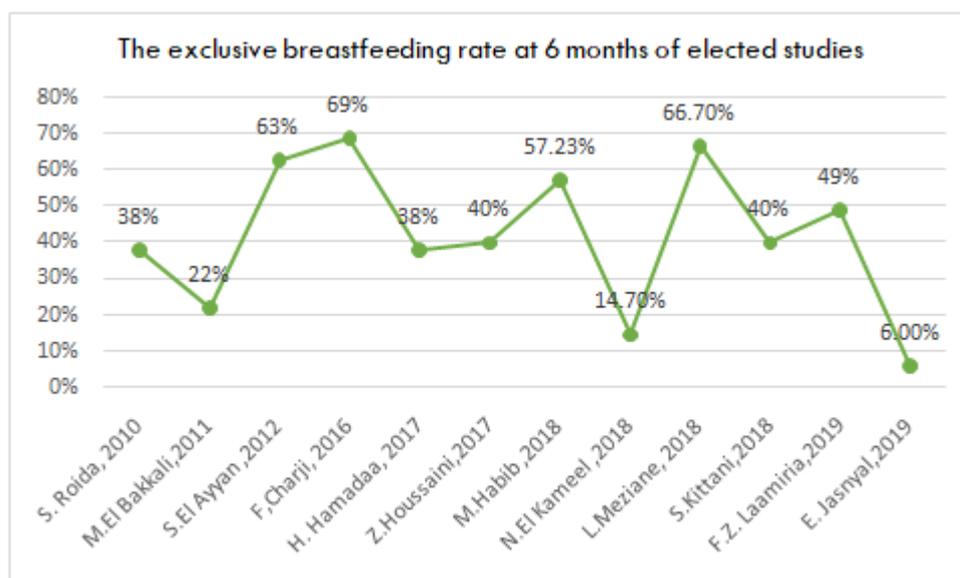


Figure 2 : The 6-month exclusive breastfeeding rate curve of elected studies

Exclusive breastfeeding at 6 months has seen remarkable progress since 2010. Figure 2 shows an increase and sustainability of exclusive breastfeeding at 6 months. This figure is 42% of the average of the studies elected in our meta-analysis. This rate was 37% in the 2018 National Population and Family Health Survey.

Table 4 : The averages of the indicators of the elected studies

	The early breastfeeding rate	Prevalence of BF at birth	The exclusive breastfeeding rate at 6 months.
Average of elected studies	43%	86%	42%

The average of the indicator of the prevalence of breastfeeding at birth is 86%.(Table 4)

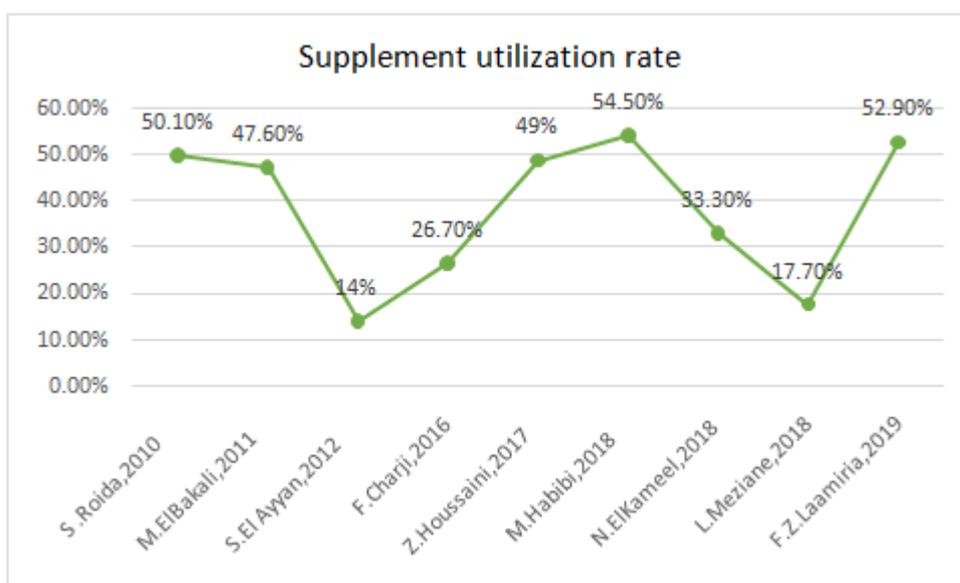


Figure 3 : Curve of the prevalence of supplement use from our elected studies

The curve for the prevalence of supplement use (Table 4) indicates that supplement use is on average 38.42%.

Indeed, and after a thorough reading of the articles selected from our meta-analysis, we found that the causes of use of supplements by Moroccan mothers are:

- Lack of milk in more than half of the cases.
- The fact that the bottle is more practical.
- Artificial milk ensures better satiety and better growth of the baby.

2.5 Comparison of data with indicators from national survey data

Table 5 : Epidemiology of breastfeeding in Morocco according to ENPSF-2018. (7)

	The early breast feeding rate	The exclusive breastfeeding rate at 6 months
ENPS 1992	48,5%	62%
Papshild 1997	40%	46%
ENPS 2003-2004	52%	32%
ENPS 2011	26,8%	27,8%
ENPS 2018	42,6	35%

ENPSF : Morocco National Survey on Population and Family Health.

The table on the epidemiology of breastfeeding (

Table 5) shows that the practice of exclusive breastfeeding at 6 months has increased from 62% in 1992, to 27.8% in 2011 and to 35% in 2018 according to the latest data.

In the first survey which took place in 1992, the rate of early breastfeeding was 48.5% (7) rose to 42.6 in 2018. Given the current situation of breastfeeding and according to the latest national survey on the health of the population and the family in 2018 (7), a strategy has been launched and an action plan is in place to reach the objectives set [27].

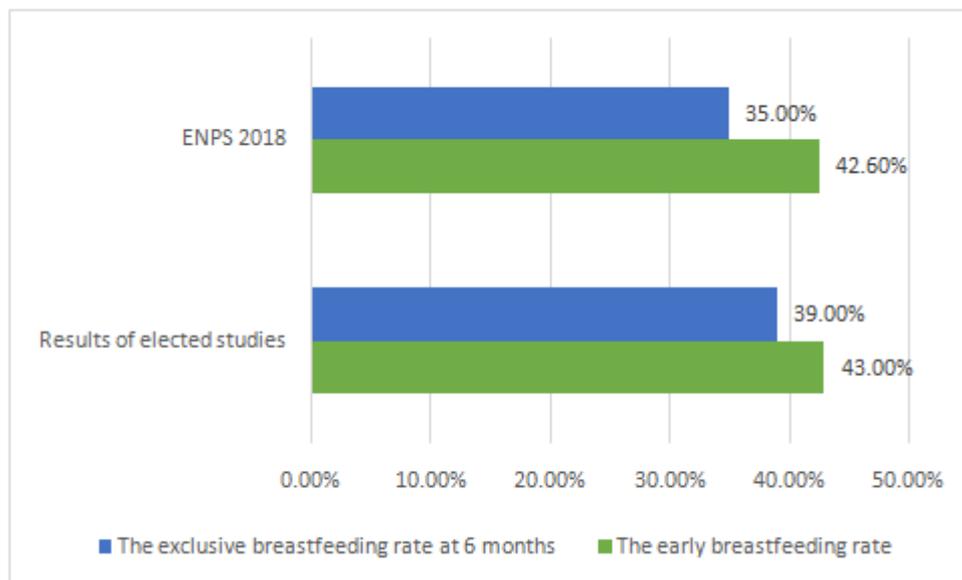


Figure 4 : Grouped Bar Chart between our results and ENPS 2018

The grouped bar graph shows that the results found in our meta-analysis are consistent with the objectives previously set by the Ministry of Health and which are revealed in the 2011-2018 health plan and which proves that our meta analysis marks a higher exclusive breastfeeding rate (42%) than that already set (35%). Thus a percentage of the early breastfeeding rate indicator which is around 43%, more than 0.4% compared to the 2011-2018 plan objectives.

Table 6 : Bivariate analysis between the prevalence of BF at birth and the rate of early breastfeeding.

		Prevalence of BF at birth	The early breastfeeding rate
Prevalence of BF at birth	Pearson correlation	1	,921**
	Sig. (bilateral)		,000
	N	12	11
The early breastfeeding rate	Pearson correlation	,921**	1
	Sig. (bilateral)	,000	
	N	11	11
**. The correlation is significant at the 0.01 level (bilateral).			

It can be said that it has a relationship between the prevalence of AM at birth and the rate of early breastfeeding $p = 0.000$ (95% CI).

The strength of this relationship is estimated at $r = 92.10\%$ by Pearson's correlation. (Table 6)

Table 7 : Bivariate analysis between early breastfeeding rate and EB rate at 6 months.

		The early breastfeeding rate	The exclusive breastfeeding rate at 6 months
The early breastfeeding rate	Pearson correlation	1	,959**
	Sig. (bilateral)		,000
	N	12	11
The exclusive breastfeeding rate at 6 months	Pearson correlation	,959**	1
	Sig. (bilateral)	,000	
	N	11	12
**. The correlation is significant at the 0.01 level (bilateral).			

The **Table 7** shows a clear and strong correlation between the rate of early breastfeeding and the rate of EB at 6 months, the degree of significance; $p = 0.000$, ($p < 0.05$; 95% CI). The strength of this relationship is evaluated at $r = 95.9\%$. This attests to a very strong relationship between the early latching rate and the EB rate at 6 months. **Figure 5** which represents the scatter plot between the early breastfeeding rate and the EB rate at 6 months and which reinforces the results of the bivariate analysis, detects a proportional and significant correlation.

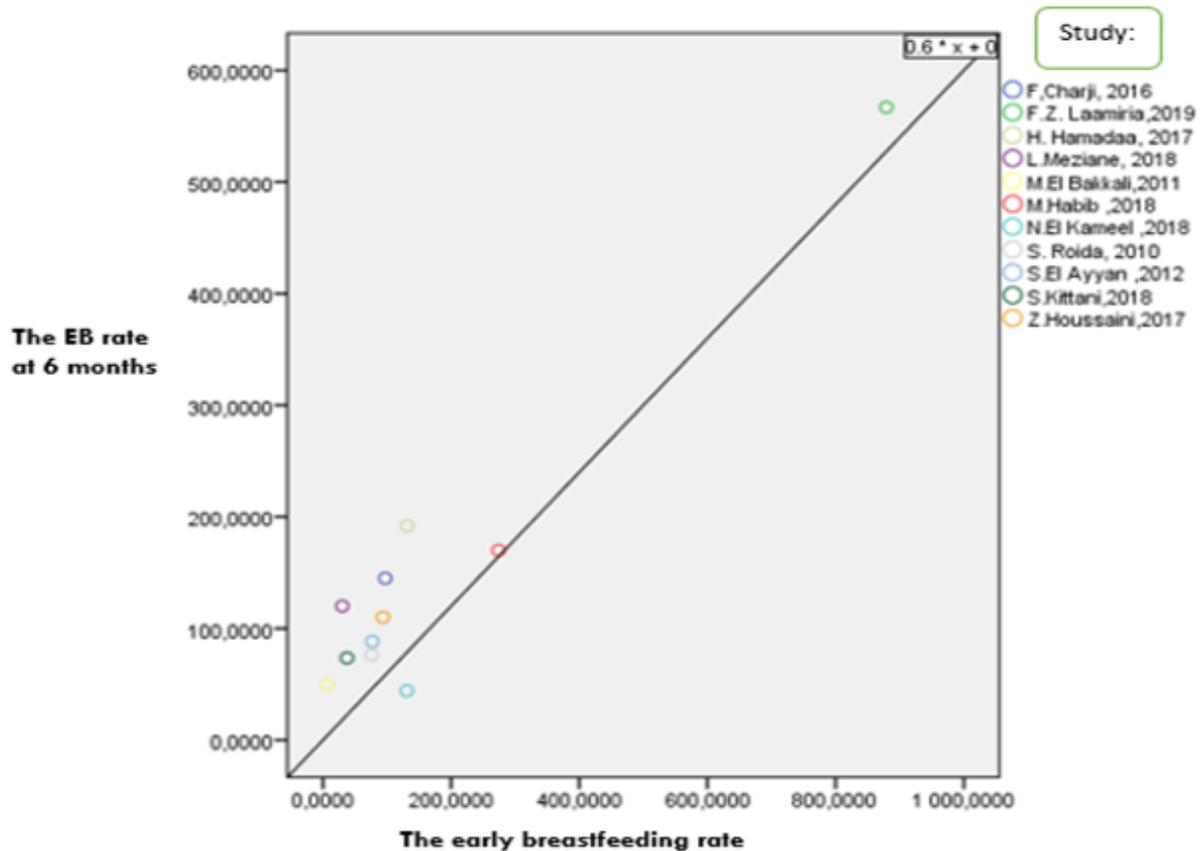


Figure 5 : Scatter plot for the bivariate analysis of the rate of early breastfeeding and the rate of EB at 6 months

IV. DISCUSSION

It is first of all a review of the literature on purely Moroccan data, then a meta-analysis was carried out on well-chosen parameters.

The results found agree perfectly with the latest 2018 national population and family health survey. The average early breastfeeding is calculated at 43% with a significant increase over the past 10 years. This average exceeds that of the last national family health survey 2018 which was of the order of 42.6%; an increase of 0.4%.

Exclusive breastfeeding at 6 months has seen remarkable progress since 2010, our meta-analysis shows an average of around 42%, which exceeds the average presented by the Ministry of Health during the national population survey and family health in 2018, which was around 35%. The latter figure is better than that observed in 2011, which was around 27.8% [7]. Indeed, this can be explained by the positive impact of the national strategy to promote breastfeeding and in particular the encouragement of mothers to breastfeed exclusively until 6 months. However, we are still far from the rate recorded in 1992, which was 62%. In fact, this high rate in the 1990s can be

explained by the fact that Moroccan women civil servants or employed at that time were only a minority within the Moroccan population. Our analysis agrees with the study by H. Hamada et al., Which confirms the negative impact of professional activity on the duration of breastfeeding at 6 months, the study showed that 26% of women practiced the conservation of breast milk and that working conditions were perceived as demotivating to continue breastfeeding. In fact, 61% of cases were explained by the total lack of suitable structures in the workplace, citing here the rooms dedicated to the expression and storage of breast milk. According to H. Hamada's team in the four hospitals in which the survey was carried out, none of them offered a room reserved for breastfeeding women (16). The same remark by the work Zineb Sqalli Houssaini and al., [17], who confirmed that the profession of Moroccan women is a determining factor in the choice of breastfeeding mode and the reduction of exclusive bed rest at 6 months ., and that exclusive breastfeeding is very prevalent among stay-at-home mothers (78%). Regarding the prevalence of breastfeeding at birth, our meta-analysis recorded an average of 80%, 100% presented in the work of F.Z. Laamiri and all, [19], and 53% cited in the study by L. Meziane.[25].

Note that our meta-analysis shows that 38.42% of Moroccan mothers have chosen to use supplements. Lactation insufficiency is the main cause that pushed mothers to this effect, but also because of certain traditional practices of unconventional behaviors such as the abusive introduction of herbal tea, and this in all the studies elected in our meta-analysis[14,17,18][21–25]

Bivariate analysis showed a correlation between the prevalence of breastfeeding at birth and the rate of early breastfeeding, $P = 0.000$. The strength of this relationship is estimated at 92.10%. Likewise, there is a relationship between the rate of early breastfeeding and the rate of exclusive breastfeeding (MEA) at 6 months, the degree of significance is $p = 0.000$, ($p < 0.05$; CI at 95%). The strength of this relationship is estimated to be 95.90. F.Z. Laamiria and al.[19] proved in their survey that even if all mothers breastfed their babies after birth, there are gaps. These gaps are in the knowledge of Moroccan mothers about breastfeeding, which was insufficient and even non-existent. 74.5% of mothers ignore the delay to early latching and almost 90% did not breastfeed in the delivery room, and almost a quarter of mothers breastfed within half an hour after breastfeeding. delivery. Lack of information led 38% of mothers to introduce food before the age of 6 months and to stop exclusive breastfeeding. S.Roida and his team found the same result [14].

These alarming figures show the paramount importance of the information and education system as an effective strategy for sustaining breastfeeding. In this sense, A.Barkat detailed in his manuscript that the advice given ($p < 0.001$) is a strong factor influencing the initiation of breastfeeding[15]. This reveals the need to strengthen the Moroccan national strategy for the promotion of breastfeeding focused on information and education of mothers vis-à-vis this practice in order to enrich their knowledge and improve their attitudes and practical[19]. Mouna Habibi and her team have shown that these communication gaps seriously contribute to the discrepancy between the perceptions of mothers and the approaches of nutritionists. Another barrier of the same magnitude is that of public breastfeeding anxiety that has been reported by Moroccan mothers.

Several national surveys have been carried out during these 20 years. By the early 1990s, we began to see a real decline in breastfeeding. The practice of exclusive breastfeeding during the first six months increased from 62% in 1992, to 27.8% in 2011 and to 35% in 2018 according to the latest data. The average duration of breastfeeding improved between 2004 and 2018, from 13.9 months to 17.4 months. At present, the abandonment of breastfeeding is a real public health problem in Morocco. In fact, despite the information and education efforts, and the national breastfeeding promotion strategy, the situation is worrying, as evidenced by data from national surveys on population and family health.

The results of our meta-analysis and the comparison between the latest Moroccan national family health surveys have shown that there is a great effort to be made with the establishment of a multisectoral national strategy in favor of breastfeeding and who must take regionalization into account to achieve an effective action plan.

V. CONCLUSION

This meta-analysis shows a lack of communication between health professionals and mothers, which would undoubtedly influence the practice of breastfeeding in Morocco and its exclusivity as well as the way of weaning and the age of dietary diversification.

Nutritionists, doctors, nurses should be trained to promote breastfeeding. It would be appropriate for the Moroccan health authorities to extend the duration of maternity leave to six months and then to adapt working hours, to allow working mothers to extend the duration of breastfeeding as recommended by the WHO.

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TABLES:**Table 8:** Description of selected articles

Articles	Year	type of study	Study level	Region	The aim of the study	Period and population studied
Breastfeeding practices at the Marrakech's university maternity ward.[14]	2010	Prospective study	Grade C	Marrakech-Safi. Geography code : 7	Evaluate mothers' knowledge and practices in breastfeeding.	October 1 to November 30, 2006. at the Ibn Tofail maternity hospital in Marrakech. 200 mother-newborn pairs.
Factors influencing the initiation of breastfeeding: Moroccan data.[15]	2012	Longitudinal prospective study	Grade C	Rabat-Salé-Kenitra. Geography code : 4	Study the impact of prenatal knowledge on breastfeeding and the different factors that can influence its behavior.	The Souissi maternity in Rabat in 2010, with mother-newborn couples.
Evaluation of the effect of work on the practice of breastfeeding.[16]	2017	A cross-sectional study	Grade C	Rabat-Salé-Kénitra Geographycode: 4	To assess the effect of women's work on breastfeeding (AM) and its prolongation beyond six months in a Moroccan population.	Carried out between November 2015 and April 2016 in four hospitals in the Rabat-Sale region in Morocco.
Current Situation And Factors Influencing Breastfeeding In The City Of Rabat In Morocco About a Survey Among 275 Mothers.[17]	2017	Prospective study	Grade C	Rabat-Salé-Kenitra Geographycode: 4	Evaluate the current situation of breastfeeding in the city of Rabat.	275 women with children aged 0 to 3 years and therefore having recent experience in gynecological and pediatric medical practices, the two maternities as well than in various health centers in the city of Rabat.
The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices : An experience from Casablanca, Morocco.[18]	2018	A cross-sectional study	Grade C	Casablanca-Settat. Geography code : 6	Examine the association between knowledge about breastfeeding and maternal socioeconomic knowledge and demographic characteristics, to determine any impact on the nutritional status of children.	From January to December 2016, on healthy children in urban areas seen for routine primary health care in the twelve public health centers of the district of Ain Chock, Casablanca.
Knowledge and practices of mothers in breastfeeding.[19]	2019	Prospective multicenter Interventional study	Grade C	Rabat-Salé-Kénitra. Geography code : 4 Béni Mellal-Khénifra Geography code : 5	To study the knowledge and practices of mothers and to assess the impact of postnatal education on the duration of exclusive breastfeeding.	The period: October 2015 and November 2016 in three geographical locations in Morocco (Rabat, Midelt and Khenifra).

Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco.[20]	2019	Prospective study	Grade C	Marrakech-Safi. Geography code : 7	Examine the intentions and prenatal knowledge of nursing mothers.	From September 2013 to June 2015, 768 women were interviewed in different maternity units in Marrakech and its surroundings.
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Table 9 : The results of the selected articles

Articles	Year	Nb of cases	The early breastfeeding rate	Prevalence of BF at birth	The exclusive breastfeeding rate at 6 months
Breastfeeding practices at the Marrakech's university maternity ward. [14]	2010	200	38%	97,5%	38%
Factors influencing the initiation of breastfeeding: Moroccan data.[15]	2012	1300	49%	---	---
Evaluation of the effect of work on the practice of breastfeeding.[16]	2017	505	26%	97%	38%
Current Situation And Factors Influencing Breastfeeding In The City Of Rabat In Morocco About a Survey Among 275 Mothers.[17]	2017	275	34%	89%	40%
The impact of maternal socio-demographic characteristics on breastfeeding knowledge and practices : An experience from Casablanca, Morocco.[18]	2018	297	90,23	76,4%	57,23%
Knowledge and practices of mothers in breastfeeding.[19]	2019	945	93,3%	100%	49,22%
Mothers' knowledge and intentions of breastfeeding in Marrakech, Morocco.[20]	2019	768	---	---	6%
Total		4290			

Table 10 : The theses selected with the results found.

Thesis	Year	Description	Number of sample	The early breastfeeding rate	Prevalence of BF at birth	The exclusive breastfeeding rate at 6 months
The practice of breastfeeding in 3 maternities: current situation and influencing factors survey of 227 mothers and 61 health professionals.[21]	2011	Describe the situation and promotion of breastfeeding at 3 maternity hospitals and identify the factors associated with its continuation until the age of 6 months.	227	3,1%	96%	22%

Determinants of the Choice of Breastfeeding Mode Prospective study of 120 women who gave birth at the Souissi Maternity in Rabat.[22]	2012	This is a prospective study, including 120 women who gave birth at Souissi maternity hospital in Rabat and 20 women seen at the Masdjid health center in Akkari.	140	55%	86%	63%
Breastfeeding practices in the maternity ward of the Mohammed VI Hospital Center in Marrakech.[23]	2016	This is a prospective descriptive and analytical survey spanning 21/04/2014 to 31/07/2014.	210	46%	96,6%	69%
Knowledge and attitudes of mothers and physicians regarding breastfeeding.[24]	2018	This is a CAP-type cross-sectional study on knowledge, attitudes and practices of breastfeeding, carried out during the period extended from 01-09-2017 to 01-01-2018 in the city of Fez.	300	43,6%	97,6%	14,7%
Breastfeeding practice and factors associated with early breastfeeding.[25]	2018	This is a descriptive and analytical survey of a prevalence study that took place over a 4-month period, spanning June 15, 2017 to October 15, 2017. The study was carried out at the Souissi maternity unit of the Ibn Sina university hospital in Rabat.	300	10%	53%	66,7%
Exclusive breastfeeding in new term infants in the maternity ward.[26]	2018	This work consists of an observational, prospective, descriptive and analytical, which took place over a period of three months, ranging from October 1, 2017 to December 31, 2017.	150	25%	57%	40%
Total			1327			

Table 11 : The averages of the indicators of the elected studies

	The early breastfeeding rate	Prevalence of BF at birth	The exclusive breastfeeding rate at 6 months
Average of elected studies	43%	86%	42%

Table 12 : Epidemiology of breastfeeding in Morocco according to ENPSF-2018. (7)

	The early breast feeding rate	The exclusive breastfeeding rate at 6 months
ENPS 1992	48,5%	62%
Papshild 1997	40%	46%
ENPS 2003-2004	52%	32%
ENPS 2011	26,8%	27,8%
ENPS 2018	42,6	35%

Table 13 : Bivariate analysis between the prevalence of BF at birth and the rate of early breastfeeding.

		Prevalence of BF at birth	The early breastfeeding rate
Prevalence of BF at birth	Pearson correlation	1	,921**
	Sig. (bilateral)		,000
	N	12	11
The early breastfeeding rate	Pearson correlation	,921**	1
	Sig. (bilateral)	,000	
	N	11	11

** . The correlation is significant at the 0.01 level (bilateral).

Table 14 : Bivariate analysis between early breastfeeding rate and EB rate at 6 months.

		The early breastfeeding rate	The exclusive breastfeeding rate at 6 months
The early breastfeeding rate	Pearson correlation	1	,959**
	Sig. (bilateral)		,000
	N	12	11
The exclusive breastfeeding rate at 6 months	Pearson correlation	,959**	1
	Sig. (bilateral)	,000	
	N	11	12

** . The correlation is significant at the 0.01 level (bilateral).

Figures:

Figure 6: Flow charter of the studies elected for the meta-analysis

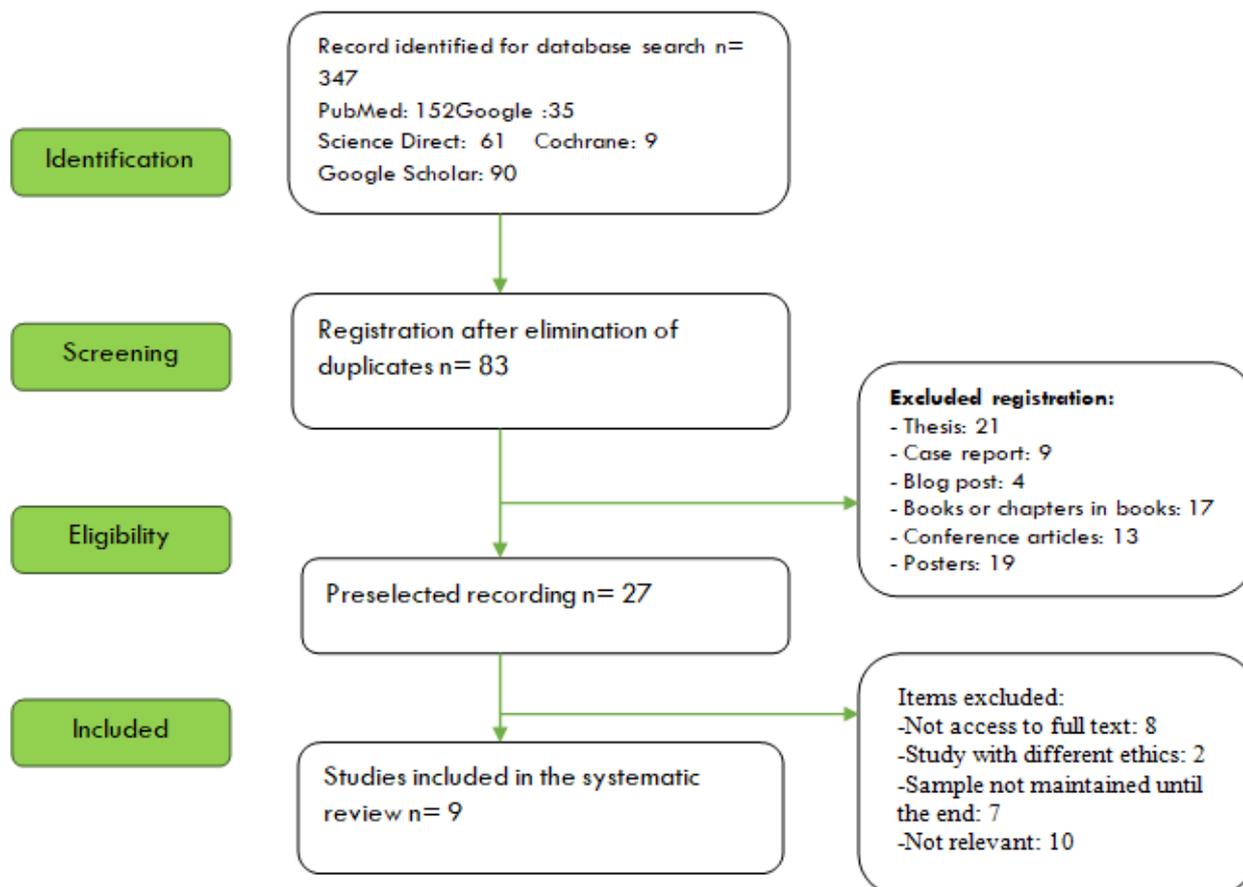


Figure 7 : The early breastfeeding rate plot for elected studies

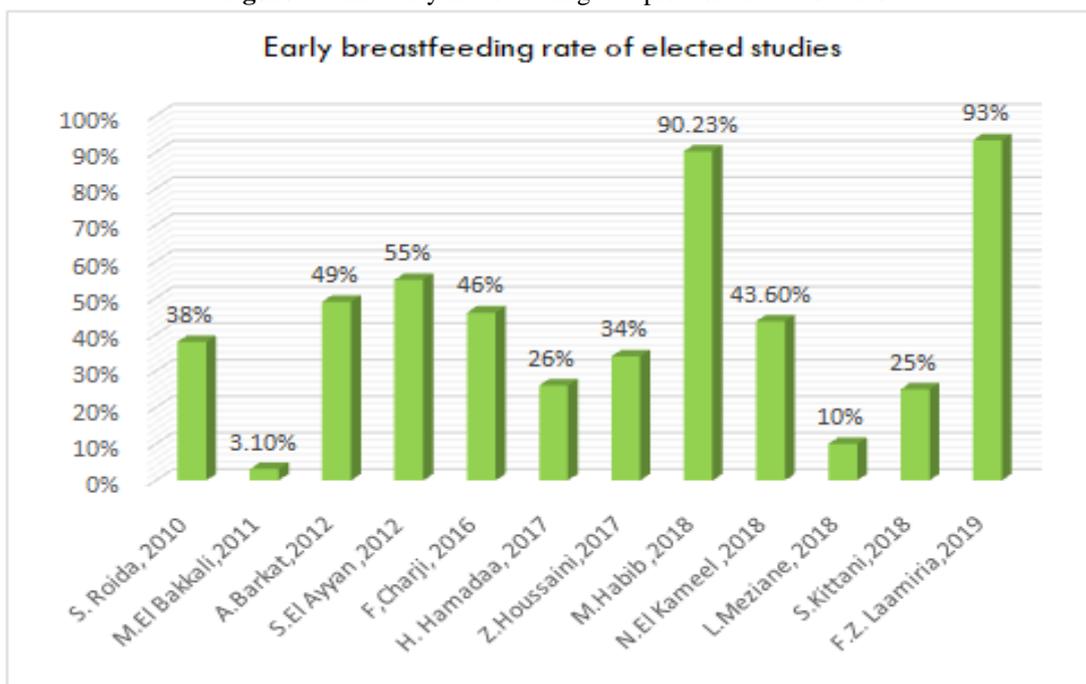


Figure 8 : The 6-month exclusive breastfeeding rate curve of elected studies

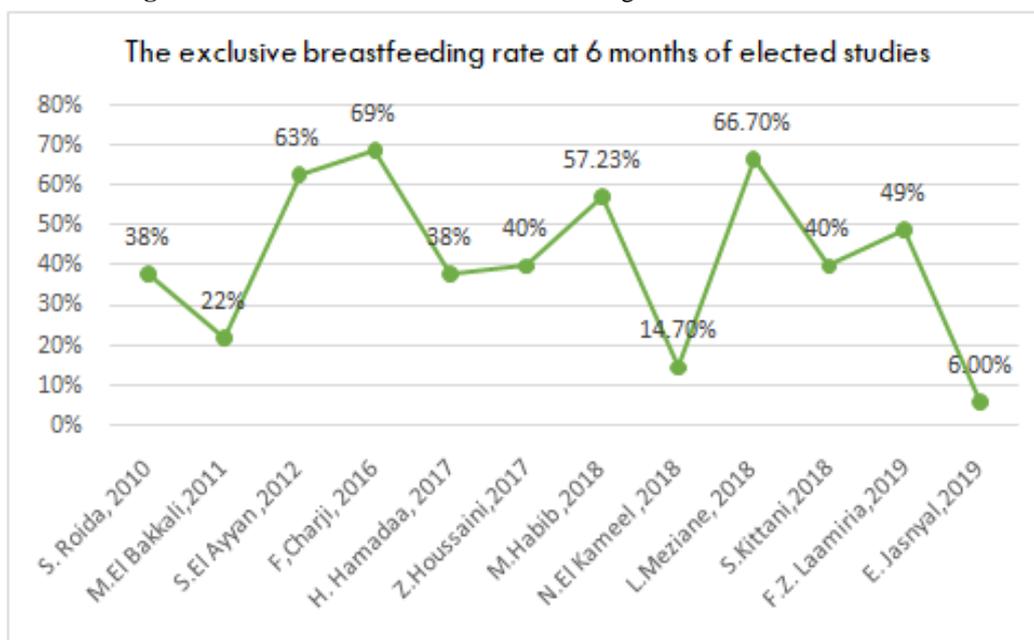


Figure 9 : Curve of the prevalence of supplement use from our elected studies

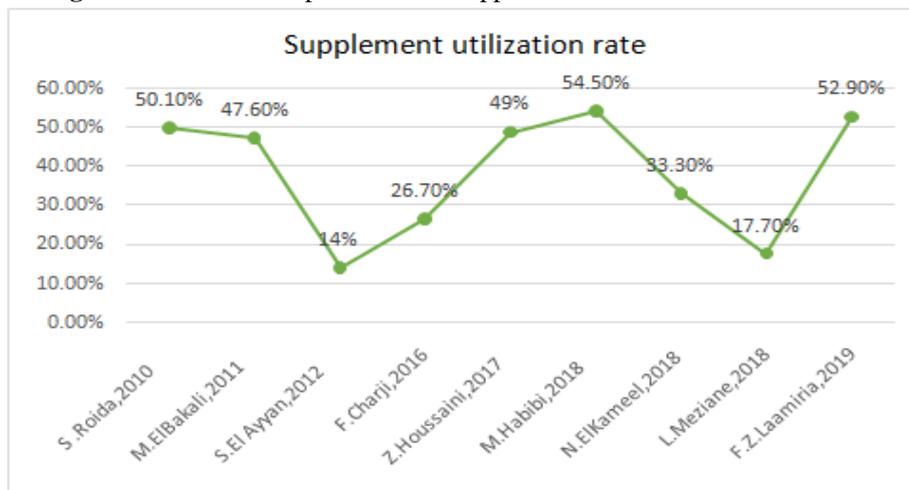


Figure 10 : Grouped Bar Chart between our results and ENPS 2018

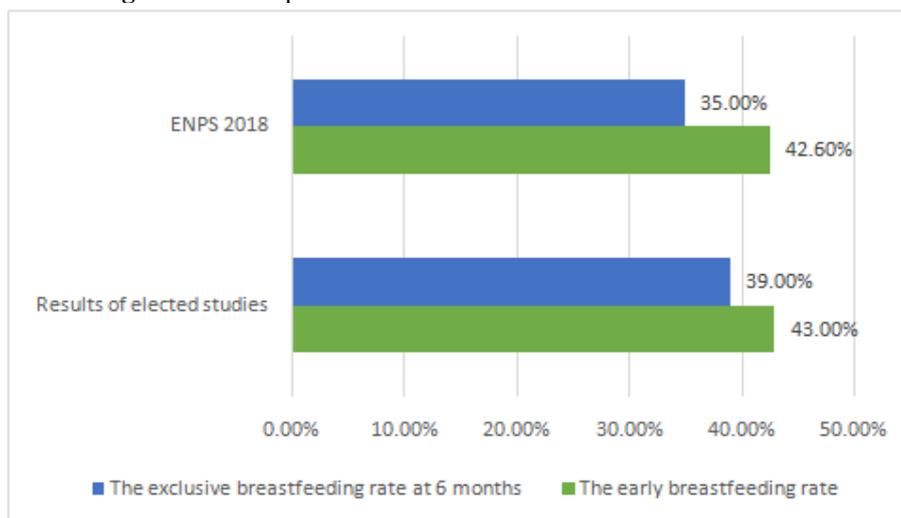


Figure 11 : Scatter plot for the bivariate analysis of the rate of early breastfeeding and the rate of EB at 6 months

