

# Factors predicting six-month exclusive breastfeeding among mothers in Ho Chi Minh City, Vietnam

Exclusive  
breastfeeding  
in Vietnam

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## Abstract

**Purpose** – Exclusive breastfeeding (EBF) rates continue to be low in Vietnam. This study aimed to determine the factors predicting 6-month EBF among mothers in Ho Chi Minh City, Vietnam.

**Design/methodology/approach** – A cross-sectional study was conducted with 259 mothers of infants aged between six to nine months at well-baby clinics in Ho Chi Minh City. The questionnaires used for data collection included personal background questionnaire, perceived benefits of breastfeeding scale, breastfeeding self-efficacy scale-short form, perceived barriers to breastfeeding scale and the family support of breastfeeding scale. Descriptive statistics, bivariate and multiple logistic regression were used for data analysis.

**Findings** – About 32% of the Vietnamese mothers practiced 6-month EBF. By increasing one unit of perceived benefits of breastfeeding, perceived self-efficacy in breastfeeding and family support, the mothers' likelihood to give 6-month EBF would increase 19% (AOR = 1.19, 95% CI = 1.08, 1.31), 12% (AOR = 1.12, 95% CI = 1.04, 1.19) and 10% (AOR = 1.10, 95% CI = 1.04, 1.16), while previous breastfeeding experience, maternal age and maternal education could not significantly contribute to the 6-month EBF.

**Originality/value** – This is the first study in Vietnam using a nursing model, the health promotion model, as a framework to identify factors predicting 6-month EBF. An effective program for promoting EBF could be developed by manipulating and tailoring the predicting factors to fit the Vietnamese mothers' needs through a mother class, lactation clinic or individual approach.

**Keywords** Exclusive breastfeeding, Perceived benefits, Perceived self-efficacy, Family support, Vietnam

**Paper type** Research paper

## Introduction

Exclusive breastfeeding (EBF), infant feeding comprising only breast milk in the first six months without other liquids or solids, is the most efficacious form of feeding for an infant's early months of life. Breastfeeding benefits have been proved in terms of health and economic gains. For infants, breast milk contains comprehensive nutrients, in particular the antibodies which protect against inflammation and infection [1]. Research has proved that babies who were exclusively breastfed for the first six months experienced less and a higher rate of infant survival, compared to non-breastfed infants [2]. Breastfed babies show a higher intelligence quotient than non-breastfed babies [3]. Evidence also suggested that EBF provides the mothers with short-term and long-term protection

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against postpartum depression, ovarian cancer, breast cancer and type 2 diabetes [4, 5]. Breastfeeding is not only baby-friendly but also planet-friendly because it keeps the environment unharmed. Breast milk is not industrially manufactured; thus it does not produce waste that cannot be absorbed back into nature as found in the production of formula milk [6]. In terms of economic gains, breastfeeding has also saved expenditures for both family and nation [7].

Due to the significant advantages of EBF, mothers have long been recommended to exclusively breastfeed their infants for the first six months to achieve the optimal health, growth and development of the infants [8]. However, only about 40% of infants worldwide aged from 0–6 months are exclusively breastfed [9]. Particularly, Vietnam, a developing country in Southeast Asia, has a slow improvement rate of EBF in recent years; that is, from 11% in 2012 to 24% in 2016 [10, 11]. The government of Vietnam has launched several strategies to promote breastfeeding by implementing the Baby-Friendly Hospital Initiative (BFHI) [12], banning the advertisement of infant formula [13] and extending paid maternity leave from four months to six months [14]. However, 6-month EBF among Vietnamese mothers remains problematic; this is partly due to their wrong beliefs about the baby's needs of water and more food [15] and not realizing the importance of colostrum [16]; the influence of infant formula advertisements [17]; the non-compliance with BFHI regulation [18]; and the influence of grandparents or significant others [15, 19].

Because of the low rate of 6-month EBF worldwide, including in Vietnam, factors affecting EBF need to be studied and manipulated to promote EBF programs. Previous studies report the affecting factors that may be categorized as socio-cultural and demographic (including age, education, occupation, religion, marital status, ethnicity, household income and place of residence) [20, 21], biomedical (including parity, previous breastfeeding experience, gestational age, delivery method, smoking status and birth weight of infant) [21–23], health-service related (including initiation of breastfeeding, female pediatrician and bed-sharing practice) [22, 24], belief and perception (including colostrum feeding, breastfeeding attitudes and breastfeeding knowledge) [18, 23] and behavior-specific cognitions and affect (including perceived benefits of breastfeeding, breastfeeding self-efficacy, perceived potential barriers of breastfeeding and social support) [25–27].

While there are several published studies on the factors related to EBF, few studies were found in the context of Vietnam. Previous studies addressing the factors influencing EBF were mostly conducted in northern Vietnam [10, 18, 28]. The differences between northern and southern Vietnam in terms of historical, political, social and economic contexts may affect the way of people's thoughts, beliefs and practices in various aspects [29], in particular the work and family roles of women [30]. In addition, the lack of a conceptual or theoretical framework to guide the study seems to be a limitation of the current studies based in Vietnam [10, 18, 28]. A theoretical framework helps specify the key factors that influence a phenomenon of interest; thus, the health promotion model [31] was applied to the current study because of its wide use in the field of health promotion, particularly in breastfeeding research [32–34]. Thus, partly based on this model, the current study was conducted to examine the predictability of the factors of individual characteristics and experiences and behavior-specific cognitions and effects on 6-month EBF of mothers in Ho Chi Minh City, Vietnam.

## Methods

### *Study design*

A cross-sectional study was used to achieve the research purpose.

### *Research settings*

In Ho Chi Minh City, three tertiary hospitals offer child health supervision at the hospitals' well-baby clinics, the other hospitals do not have well-baby clinics. The three well-baby clinics were the research settings for data collection.

### *Participants*

A convenience sampling was employed with mothers who brought their infants to receive immunization at the well-baby clinics. Mothers with the following criteria were included in the study: being 18 years of age or older; being able to communicate, read and write in the Vietnamese language; living with husband and/or family members. Mothers experiencing any health problems and/or taking medicine and prohibited from breastfeeding by a doctor were excluded. Eligible infants included a singleton baby with gestational age at least 37 weeks, while those with birth defects (e.g. cleft lip, cleft palate) and/or any health problems where the doctor prohibited breastfeeding were excluded.

The sample size was calculated using the G\* Power Software [35] based on the effect size of 2.15 from a previous study [36] with the power of 0.8, a significance level of 0.05. According to the calculation, the sample size was equal to 247. A 5% of attrition rate was estimated; therefore 259 participants were finally recruited into the study.

### *Ethical considerations*

The study was approved by the Institutional Review Board (IRB) Committee from the Faculty of Nursing, Mahidol University, Thailand (COA No.IRB-NS2019/487.06.03). Ethical approval was also obtained from two tertiary hospitals in Ho Chi Minh City (No.548/QĐ-BVTD and No.322/QĐ-BVHV).

### *Research instruments*

Five self-administered questionnaires used for collecting data in the current study were described as follows:

- (1) The personal background questionnaire was developed by the researchers consisting of the items relating to the age of the mother, education level, parity, breastfeeding experience, delivery method, age of the infant and EBF practice.
- (2) The perceived benefits of breastfeeding scale were developed by Wangsawat *et al.* [37] to measure the perception of mothers about the benefits of breastfeeding. The scale consisted of 19 items with a 4-point rating scale ranging from 1 (strongly disagree) to 4 (strongly agree). The higher scores indicated greater perceived benefits of breastfeeding.
- (3) The perceived barriers to breastfeeding scale was developed by the researchers, which is used for measuring a mother's perceptions of barriers to her breastfeeding. This 20-item scale consisted of three sources of barriers including barriers from mother, infant and the socio-environment. The response scale varied from 1 (strongly disagree) to 4 (strongly agree). The higher scores indicated the higher perceptions of the barriers faced. Content validity was checked by three breastfeeding experts and the item-level content validity index of this scale was 0.91.
- (4) The breastfeeding self-efficacy scale-short form was developed by Dennis [38] consisting of 14 items and used for assessing a mother's confidence in her ability to breastfeed her baby. Responses to each item were scored on a 5-point rating scale ranging from 1 (not at all confident) to 5 (always confident). The higher scores indicated higher confidence in breastfeeding.

- (5) The family support of breastfeeding scale was developed by Srisawat *et al.* [39] to measure the family support on breastfeeding practice of mothers. This 20-item scale consisted of four subscales including emotional, appraisal, informational and instrumental support with 5 items each. Respondents were asked to rate their agreement ranging from 1 (strongly disagree) to 4 (strongly agree). The higher scores indicated higher levels of family support.

Each questionnaire, except for the personal background questionnaire, was back translated from its original language into the Vietnamese language by the researchers and nursing scholars. A pilot study with 25 mothers who met the same criteria as the study sample was implemented to check for the reliability of the study questionnaires. Cronbach's alpha coefficient was valued at 0.88, 0.92, 0.92 and 0.92 for the perceived benefits of breastfeeding, perceived barriers to breastfeeding, breastfeeding self-efficacy and family support scales, respectively.

*Data collection*

Eligible mothers were identified from the medical chart by staff nurses at the well-baby clinics. If eligible mothers were willing to participate in the study, then staff nurses introduced the researcher (NTN) to them. The researcher explained the purpose of the study and their rights. The mothers who agreed to participate were asked to sign a consent form. After their babies received the vaccination, an entire package of the questionnaires was hand-delivered to the mothers and an explanation of how to answer the questionnaires was also given. The questionnaires were self-administered by the mothers in a specially prepared room and took about 30–40 min to complete.

*Data analysis*

Data were analyzed using the statistical package of social sciences version 18.0. The significance level of the statistical test was set at 0.05. Descriptive statistics were used to describe the variables of interest and determine the rate and the duration of EBF practice among Vietnamese mothers. The univariate analyses using Pearson product-moment correlation and point-biserial were employed to examine the relationship between the study factors and 6-month EBF practice. Both binary and multiple logistic regressions were used to determine the strength of association between the significant factors and 6-month EBF practice.

**Results**

*Demographic characteristics*

Overall, 259 eligible mothers with an average age of 30.63 (SD = 5.77) years participated in the study. About 65% of the mothers were educated to high school level or lower. While 48% of participants were multiparous mothers, only 35.9% had previous experience of breastfeeding. Nearly 55% of the mothers had normal delivery while the remainder received the cesarean section delivery method (Table 1).

*Exclusive breastfeeding features*

Table 2, among 259 mothers in Ho Chi Minh City, Vietnam, about 32% of mothers could breastfeed exclusively during the first six months while the remainder could not. An average EBF duration was 112.44 days (SD = 64.18).

Characteristics	<i>N</i>	%	Exclusive breastfeeding in Vietnam  
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Exclusive breastfeeding practice	<i>n</i>	%
No	31	12.0
Yes	228	88.0
<One month (30 days)	11	4.2
<Two months (60 days)	17	6.6
<Three months (90 days)	11	4.2
<Four months (120 days)	42	16.2
<Five months (150 days)	43	16.6
<Six months (180 days)	22	8.5
Six months (180 days)	82	31.7
<b>Note(s):</b> Mean (SD) = 112.44 (64.18), Range = 0–180 (days)		

Table 2.  
Frequency and  
percentage of the  
mothers who were  
exclusively  
breastfeeding  
(*N* = 259)

### *Behavior-specific cognitions and affect variables*

The average total scores of the behavior-specific cognitions and affect variables in the current study are displayed in Table 3. The percentages of average total scores were also computed to ease the comparison. Note that perceived barriers to breastfeeding arose from each source fairly evenly. For family support, the instrumental support was the most noticeable high, followed by emotional, appraisal and informational support respectively.

### *Analysis of factors predicting 6-month EBF*

The preliminary analysis was done by examining the relationships between previous breastfeeding experience, maternal age, maternal education, perceived benefits, perceived

**Table 3.**  
Descriptive statistics of  
the behavior-specific  
cognitions and affect  
variables (*N* = 259)

Variables (items)	Possible Range	Total scores Actual Range	Mean	SD	%
Perceived benefits of BF (19)	19–76	27–76	58.80	10.10	77.4
Perceived barriers to BF (20)	20–80	22–76	49.68	14.50	62.1
Maternal (10)	10–40	10–38	24.47	7.66	61.2
Infant (4)	4–16	4–16	10.13	3.40	63.3
Socio-environment (6)	6–24	6–24	15.07	4.23	62.8
Perceived self-efficacy in BF (14)	14–70	18–70	48.61	14.66	69.4
Family support (20)	20–80	31–78	56.19	13.73	70.2
Emotional support (5)	5–20	6–20	14.32	3.53	71.6
Appraisal support (5)	5–20	6–20	13.82	4.10	69.1
Informational support (5)	5–20	5–20	13.05	4.46	65.3
Instrumental support (5)	5–20	6–20	15.01	3.28	75.1
<b>Note(s):</b> BF, Breastfeeding					

barriers, perceived self-efficacy, family support and 6-month EBF using a chi-square test and independent *t*-test. The results (Table 4), indicated that both groups of mothers showed significant differences in all study variables, except their education.

According to the assumptions for statistical use, the multicollinearity between the study variables was found. That is, the perceived barriers to breastfeeding showed high correlations with perceived benefits of breastfeeding ( $r = -0.81, p < 0.001$ ), perceived self-efficacy in breastfeeding ( $r = -0.84, p < 0.001$ ) and family support ( $r = -0.80, p < 0.001$ ). The tolerance value of perceived barriers to breastfeeding was less than 0.2, and the variance inflation factor (VIF) value was greater than 5. Such finding forced the deletion of perceived barriers to breastfeeding from the main analysis.

The findings from the bivariate logistic regression revealed that previous breastfeeding experience, maternal age, perceived benefits, perceived self-efficacy and family support had a significant association with 6-month EBF. The multivariate logistic regression indicated that perceived benefits of breastfeeding, perceived self-efficacy in breastfeeding and family support made significant contributions to the EBF practice while previous breastfeeding experience, maternal age, maternal education did not. That is, the mothers who did practice 6-month EBF had significantly higher odds of perceived benefits of breastfeeding (AOR = 1.19, 95% CI = 1.08, 1.31), perceived self-efficacy in breastfeeding (AOR = 1.12, 95% CI = 1.04, 1.19) and family support (AOR = 1.10, 95% CI = 1.04, 1.16) compared to those who did not practice 6-month EBF, Table 5.

**Table 4.**  
The study variables in  
relation to 6-month  
exclusive  
breastfeeding  
(*N* = 259)

Variables	N	6-month EBF		Yes Mean (SD)	$X^2/t$	$p$ -value
		No Mean (SD)	$n$			
<i>Previous BF experience</i>						
No	122		44		5.68 <sup>a</sup>	0.02
Yes	55		38			
Maternal age	177	29.9 (5.26)	82	32.21 (6.51)	−3.04 <sup>b</sup>	<0.01
Maternal education	177	12.59 (2.56)	82	12.83 (2.68)	−0.70 <sup>b</sup>	0.49
Perceived benefits of BF	177	54.50 (8.65)	82	68.09 (5.85)	−12.91 <sup>b</sup>	<0.001
Perceived barriers to BF	177	56.36 (12.18)	82	35.26 (6.28)	14.79 <sup>b</sup>	<0.001
Perceived self-efficacy in BF	177	42.25 (13.00)	82	62.34 (6.19)	−13.31 <sup>b</sup>	<0.001
Family support	177	50.47 (12.30)	82	68.52 (6.83)	−12.43 <sup>b</sup>	<0.001
<b>Note(s):</b> EBF, Exclusive Breastfeeding; <sup>a</sup> Chi-square Test; <sup>b</sup> Independent $t$ -test						

## Discussion

Among 259 Vietnamese mothers in Ho Chi Minh City, the rate of 6-month EBF was about 32% which was higher than the national rate of 24% reported by UNICEF in 2016 [11]. The increase of 6-month EBF in Viet Nam could be a result of the government's policy of breastfeeding promotion and people's awareness of the tremendous advantages of EBF. Recently, the government introduced a law banning the advertisement of breast milk substitutes and prolonged paid maternity leave from four to six months [14] which might result in high awareness of EBF.

The result revealed that by increasing one unit of perceived benefits of breastfeeding, perceived self-efficacy in breastfeeding and family support, the mothers' likelihood of practicing 6-month EBF would increase by 19, 12 and 10%. The influence of perceived benefits of breastfeeding on 6-month EBF was found in the current study. According to their response to the measurement of this perception, the Vietnamese mothers were well aware of the benefits of breastfeeding in terms of being a source of antibodies; helping increase affective bonding between father, mother and baby; being the best food for babies due to its comprehensive nutrients; helping the babies have good emotional development; and saving money. Through cognitive processes, or the procedures used to incorporate new knowledge and make decisions based on said knowledge [40], a behavioral response specific to such cognition would be performed. It is logical to explain that once the mother learns about the benefits of breastfeeding for her infant and herself, such information is stored in her memory and would be retrieved to help her choose to practice 6-month EBF. Moreover, both intrinsic (such as feeling positive about being a mother and close bonding with the baby) and extrinsic (such as saving money and the health status of the baby) rewards that were obtained would motivate the sustainability of EBF for six months.

The finding that perceived self-efficacy was also a significant predictor of 6-month EBF did confirm the important role of self-efficacy in EBF as found in Australia [41] and China [42], for example. A six-month duration is quite long and a mother whose breastfeeding self-efficacy is not established may feel discouraged and doubt her ability to maintain 6-month EBF as intended. In contrast, a mother who develops high breastfeeding self-efficacy, despite any challenges, would exert every effort to overcome the constraints and obstacles and attain the desired outcomes by providing EBF [43]. Furthermore, according to the HPM, perceived self-efficacy is influenced by activity-related effects; thus, positive effects happening to the mother during breastfeeding would make her feel greater efficacy.

Family support in the current study is considered as an interpersonal influence. Beliefs, attitudes and supportive behaviors that family members provide to one another is very

Variables	Bivariate		Multivariate	
	Unadjusted OR [95% CI]	<i>p</i> -value	Adjusted OR [95% CI]	<i>p</i> -value
<i>Previous breastfeeding experience</i>				
No <sub>ref</sub>				
Yes	1.92 [1.12, 3.28]	0.02	0.64 [0.23, 1.80]	0.40
Maternal age (years)	1.07 [1.02, 1.12]	<0.01	1.06 [0.96, 1.16]	0.26
Maternal education (years)	1.04 [0.94, 1.15]	0.49	0.87 [0.73, 1.04]	0.13
Perceived benefits of BF	1.34 [1.25, 1.44]	<0.001	1.19 [1.08, 1.31]	<0.01
Perceived self-efficacy in BF	1.25 [1.18, 1.33]	<0.001	1.12 [1.04, 1.19]	<0.01
Family support	1.18 [1.13, 1.23]	<0.001	1.10 [1.04, 1.16]	<0.001
<b>Note(s):</b> BF = Breastfeeding; For bivariate analysis - $X^2 = 149.775$ , $df = 1$ , $p < 0.001$ ; Nagelkerke $R^2 = 61.6\%$ ; For multivariate analysis - $X^2 = 192.118$ , $df = 6$ , $p < 0.001$ ; Nagelkerke $R^2 = 73.4\%$				

**Table 5.**  
Bivariate and  
multivariate logistic  
regression of factors  
predicting 6-month  
EBF among  
Vietnamese  
mothers ( $N = 259$ )

influential to Vietnamese mothers regarding their EBF practice. Previous studies conducted in both northern and southern Vietnam reported similar results indicating that Vietnamese mothers' decision on EBF practice depended on the instruction and preferences of their grandmothers, mothers, mothers-in-law [15, 44] and husbands [28]. Despite regional and historical differences, people from both northern and southern Vietnam highly valued family connections and viewed elders as the leaders in families who were very influential in decision making [45]. Thus, in the context of breastfeeding, when significant family members agreed with EBF practice, they would act as helpful breastfeeding resources and promote good breastfeeding practice resulting in an increase in duration and exclusivity of breastfeeding [46]. That is why mothers in the current study with high family support of breastfeeding were more likely to give 6-month EBF compared to those with less support.

Maternal education did not affect the 6-month EBF practice in the current study for both bivariate and multivariate analyses. This finding was inconsistent with the previous studies conducted in northern Vietnam reporting maternal education as a significant factor of EBF [18, 28]. This is probably because the current study was conducted in the south where people are more dynamic and look forward to applying new things in their life, while people in the north are more conservative and afraid of change [47]. It is easy for the southerners in Ho Chi Minh City, in particular, to apply modern technology and smart devices to access information and other resources about breastfeeding. Whatever the educational level the mothers in this study had obtained, they could retrieve breastfeeding information easily and equally. Even though previous breastfeeding experience and maternal age were correlated with the 6-month EBF in the current study, they did not show significant effects when they were entered together with the other study factors in multivariate analysis. Note that previous breastfeeding experience and maternal age were correlated with perceived self-efficacy ( $r = 0.28, p < 0.001$ ) and perceived benefits ( $r = 0.23, p < 0.001$ ), respectively; and these two factors could predict the EBF. The possible reason may be because what accounted for the variance explained in the outcome (EBF) was already shared with these two behavior-specific cognition factors.

The multicollinearity occurred and forced the deletion of one variable; that is, perceived barriers to breastfeeding, from the study. According to Dormann *et al.* [48], when collinearity occurs, it is not necessary because redundancy of the collinear variables are found; collinearity is most commonly intrinsic, and it may also happen by chance. Such strong correlations found in the current study were congruent with the theoretical basis explained for this occurrence. In the context of breastfeeding, the barriers to breastfeeding practice would cause discomfort, discouragement and dissatisfaction for the mothers during breastfeeding. However, a mother's belief in her ability to succeed at breastfeeding plays a vital role not only in the initiation of breastfeeding her baby but also in the maintenance of this practice in the face of challenge and difficulty [33,49]. In addition, breastfeeding practice is driven by a mother's cognition in terms of acceptability, motives and attitudes toward the positive consequences that are caused by breastfeeding the baby [50]. Thus, when the mother perceives the advantages to outweigh the perceived disadvantages, her motives would drive the breastfeeding to continue despite difficulties encountered. Furthermore, a mother who is experiencing stress and challenges from her breastfeeding practice would most benefit from direct and buffering effects of support from her significant others. That is, the received support would directly reduce the mother's stress or problems and moderate the negative impact of such stress or problems on her health [51] which, in turn, help her to continue her breastfeeding practice [25].

#### *Limitation of the study*

The current study used convenience sampling; thus, the representativeness of this study is limited. This undermines the ability to generalize from the study sample to the population. In

addition, the accuracy of EBF duration depended on the mothers' recall; thus, recall bias possibly existed even though recall data was less than one year [52]. This study was a cross-sectional study in which the study factors and 6-month EBF were assessed simultaneously. It did not depict events experienced by the mothers before the study regarding EBF success or problems that might affect their 6-month EBF. Therefore, it did not reveal the causes and effects of practicing or not practicing 6-month EBF [53].

### Conclusion and recommendations

The rate of 6-month EBF in this study is slightly higher than the national rate, yet it requires more effort to increase the rate according to the recommendation of the WHO. The findings suggest the need of manipulating the modifiable factors (like perceived benefits and self-efficacy in breastfeeding) by designing a breastfeeding promoting program developed for the mothers to strengthen their awareness toward the advantages of EBF and the beliefs in their ability to continue EBF for a six-month period. Mothering classes at an antenatal care unit is a very common service in many countries. Surprisingly though, the hospitals in Ho Chi Minh City do not pay much attention to the importance of mothering classes and arranged this class once a month. The findings of this study should hopefully encourage the hospital administrative board to establish a mother class at antenatal care as a requirement for all maternity hospitals. Through the mother class, a psycho-educational nursing intervention would be helpful to promote EBF among pregnant women. Nurses can identify younger Vietnamese mothers who lack previous breastfeeding experience and, then, provide breastfeeding support for them promptly. It seems that decision-making on breastfeeding is more of a cooperative effort. Thus, the involvement of significant family members in the intervention of EBF promotion is essential. Both clinical and community nurses should also equip these family members with up-to-date knowledge and positive attitudes toward EBF so that they will become good supporters of the mothers. For further research, a well-designed sampling strategy that represents geographical and environmental areas should be considered to prevent incidental collinearity [48]. In addition, the causal relationships among the factors influencing the EBF duration should be examined so that a more comprehensive picture of EBF and its influencing factors could be illustrated. Further study should also involve infant factors (e.g. illness, birth weight, twin babies) so that the study phenomena would be fully understood.

Conflict of Interest: None

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