

The Prevalence and Associated Factors of Group B *Streptococcus* Colonization in Pregnant Women at Da Nang Hospital for Women and Children

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Abstract:

Objective: This study aimed to determine the prevalence of Group B *Streptococcus* (GBS) colonization and investigate its associated factors among pregnant women at Da Nang Hospital for Women and Children.

Material and Methods: A retrospective cross-sectional study was conducted on 807 pregnant women at 35–37 weeks of gestation who underwent rectovaginal GBS culture screening from March 1, 2024, to February 28, 2025. Demographic and clinical characteristics were collected from medical records. Associations were analyzed using Chi-square/Fisher's exact tests and logistic regression.

Results: The prevalence of GBS colonization was 12.1%. The statistically significant associated factors included: vaginitis (adjusted odds ratio [aOR]=4.90; p-value=0.014), gestational diabetes (aOR=2.53; p-value=0.045), and maternal age >35 years (aOR=1.95; p-value=0.043). No significant difference was recorded regarding residence (rural/urban), occupation, or amniotic membrane status.

Conclusion: Group B *Streptococcus* colonization was observed among pregnant women at Da Nang Hospital for Women and Children, with a prevalence comparable to that reported in previous studies. These findings highlight the importance of targeted screening strategies for pregnant women, particularly those of advanced maternal age, to reduce the risk of adverse maternal and neonatal outcomes.

Keywords: colonization, GBS, Group B *Streptococcus*, pregnant women, risk factors, Vietnam

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Introduction

Group B *Streptococcus* (GBS, *Streptococcus agalactiae*) is a Gram-positive coccus commensal in the gastrointestinal, urinary, and genital tracts of women. Importantly, it is associated with complications during pregnancy and severe illness in newborns. Vaginal colonization with GBS in pregnant women increases the risk of chorioamnionitis, preterm premature rupture of membranes, urinary tract infections, sepsis, preterm birth, and postpartum endometritis¹. Maternal GBS colonization of the gastrointestinal and genital tracts is the primary risk factor for early-onset disease in newborns, as transmission occurs almost exclusively during labor or after rupture of membranes². Severe clinical manifestations of GBS infection in newborns include sepsis and meningitis, with early-onset infection (occurring within the first week of life) being associated with significant mortality risk³.

Since 1996, the Centers for Disease Control and Prevention (CDC) in the United States has issued recommendations for intrapartum antibiotic prophylaxis against GBS based on maternal risk factors¹. This was revised in 2002 to a universal screening strategy based on culture screening at 35–37 weeks of gestation². In 2019, the American College of Obstetricians and Gynecologists (ACOG) recommended GBS screening at 36–37 weeks of gestation and intrapartum prophylactic antibiotics for all screen-positive individuals, except for planned cesarean deliveries with intact membranes⁴. Therefore, universal GBS screening in pregnant women is a standard prenatal care practice. To contribute to the understanding of GBS colonization in pregnant women, we conducted a study titled "The Prevalence and Associated Factors of Group B *Streptococcus* Colonization in Pregnant Women at Da Nang Hospital for Women and Children" with the following objectives:

1. To determine the prevalence of Group B *Streptococcus* colonization in pregnant women at Da Nang Hospital for Women and Children.

2. To investigate the factors associated with Group B *Streptococcus* colonization.

Material and Methods

Research Ethics

The study was conducted after receiving approval from the Biomedical Research Ethics Committee of Da Nang University of Medical Technology and Pharmacy (Approval code: 51/CT-HĐĐĐ, Date: October 10, 2024) and administrative consent of Da Nang Hospital for Women and Children (Date: October 22, 2024). All personal information was kept confidential and used solely for research purposes. This was a retrospective, cross-sectional study involving only data collection, with no intervention affecting patient treatment.

Study design and subjects

We conducted a retrospective, cross-sectional study. The study population comprised pregnant women at 35–37 weeks of gestation who underwent Group B *Streptococcus* screening cultures at Da Nang Hospital for Women and Children.

A consecutive sampling method was used, enrolling 807 medical records that met the inclusion criteria and were collected from March 1, 2024, to February 28, 2025.

Variables

Data collected included: maternal age, place of residence (urban/rural), occupation, status of amniotic membranes (intact/ruptured), presence of vaginitis, presence of gestational diabetes mellitus (GDM), and Group B *Streptococcus* colonization status.

Vaginitis was identified based on clinical diagnoses documented in medical records rather than standardized microbiological criteria. The diagnosis therefore may have encompassed heterogeneous conditions, including bacterial

vaginosis, vulvovaginal candidiasis, trichomoniasis, or nonspecific clinical vaginitis.

Gestational diabetes mellitus was diagnosed according to the American Diabetes Association (ADA) criteria using an oral glucose tolerance test (OGTT).

Bacterial culture and identification

Vaginal-rectal swab specimens were inoculated onto blood agar plates and incubated at 37 °C in a 5–10% CO₂ atmosphere for 18–24 hours. Presumptive identification was based on colony morphology and hemolysis. Colonies suggestive of GBS were confirmed using the automated Vitek 2 Compact system for identification to the species level (*Streptococcus agalactiae*).

Data analysis

All data were cleaned and entered into Microsoft Excel 2010. Statistical analysis was performed using SPSS version 22.0. Categorical variables are presented as frequency (n) and percentage (%). Bivariate analyses to assess associations were performed using the Chi-square test or Fisher's exact test, as appropriate. Logistic regression was used to calculate odds ratios (OR) with 95% confidence intervals (CI). A p-value of <0.05 was considered statistically significant. All clinically relevant variables were included

in the multivariate logistic regression model to adjust for potential confounding factors.

Results

General characteristics of study subjects

Maternal demographic and occupational characteristics of the study population are summarized in Table 1. The majority of pregnant women were aged ≤35 years, lived in urban areas, and worked as civil servants or public employees.

Clinical and laboratory characteristics of pregnant women at admission

The clinical and laboratory characteristics of the enrolled pregnant women are shown in Table 2. Most pregnant women had normal amniotic membrane status, no vaginitis, and no gestational diabetes at admission.

Prevalence of GBS colonization in pregnant women at Da Nang hospital for women and children

Among the 807 pregnant women enrolled in the study, 12.1% were positive for GBS colonization, while 87.9% were negative (Figure 1).

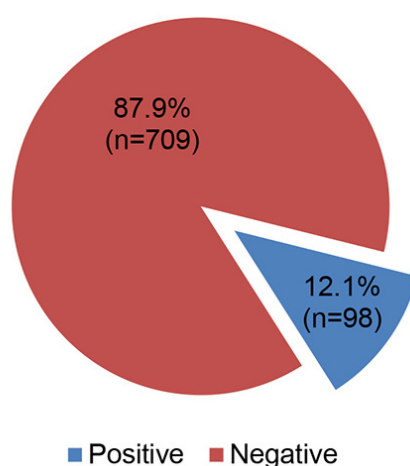
A total of 98 pregnant women were colonized with Group B *Streptococcus*, yielding a prevalence of 12.1%.

Table 1 General characteristics of study subjects (N=807)

Characteristics	Category	Quantity (n)	Percentage (%)
Maternal age (years)	≤35	735	91.1
	>35	72	8.9
	Mean standard deviation	29.08±4.58	
	Minimum–maximum	18–44	
	Median	29	
Geographic area	Rural	386	47.8
	Urban	421	52.2
Occupation	Civil servants, public employees	487	60.3
	Workers	70	8.7
	Trading, business	90	11.2
	Others	160	19.8

Table 2 Clinical and laboratory characteristics of pregnant women at admission (N=807)

	Characteristics	Quantity (n)	Percentage (%)
Amniotic membrane status	Normal	800	99.1
	Amniotic fluid leakage	7	0.9
Vaginitis status	No	796	98.6
	Yes	11	1.4
Gestational diabetes status	No	780	96.7
	Yes	27	3.3

**Figure 1** Prevalence of group B *Streptococcus* (GBS) colonization (12.1%) and non-colonization (87.9%)

Factors related to GBS colonization

1. Prevalence of GBS colonization by maternal characteristics

The prevalence of GBS colonization according to maternal characteristics is presented in Table 3.

– Maternal age: The prevalence of GBS colonization was significantly higher in pregnant women aged >35 years compared to those aged ≤35 years (19.4% vs. 11.4%, p -value<0.05).

– Geographic area: The GBS colonization rate was higher in rural residents than in urban residents (13.7% vs. 10.7%), but this difference was not statistically significant (p -value>0.05).

– Occupation: The GBS colonization rate was highest

among civil servants/public employees (13.1%) and lowest among workers (8.6%). No statistically significant association was found between occupation and GBS colonization (p -value>0.05).

2. Prevalence of GBS colonization by clinical and laboratory characteristics of pregnant women at admission

The prevalence of GBS colonization according to clinical and laboratory characteristics of pregnant women at admission is presented in Table 4.

– Amniotic membrane status: Although the colonization rate appeared higher in women with ruptured membranes (28.6% vs. 12.0%), the difference was not statistically significant (p -value > 0.05), likely due to the small sample size in the rupture group (n=7).

Table 3 Prevalence of GBS colonization by maternal characteristics

N	Category	GBS (+)		GBS (-)		p-value
		N	%	N	%	
Maternal age	≤35	84	11.4	651	88.6	<0.05
	>35	14	19.4	58	80.6	
Geographic area	Rural	53	13.7	333	86.3	>0.05
	Urban	45	10.7	376	89.3	
Occupation	Civil servants, public employees	64	13.1	423	86.9	>0.05
	Workers	6	8.6	64	91.4	
	Trading, business	9	10.0	81	90.0	
	Others	19	11.9	141	88.1	

GBS=group B *Streptococcus***Table 4** Prevalence of GBS colonization by clinical and laboratory characteristics of pregnant women at admission

N	Category	GBS (+)		GBS (-)		p-value
		N	%	N	%	
Amniotic membrane status	Normal	96	12.0	704	88.0	>0.05*
	Amniotic fluid leakage	2	28.6	5	71.4	
Vaginitis status	No	94	11.8	702	88.2	<0.05*
	Yes	4	36.4	7	63.6	
Gestational diabetes	No	91	11.7	689	88.3	<0.05*
	Yes	7	25.9	20	74.1	

*Fisher's exact test, GBS=group B *Streptococcus*

– Vaginitis Status: Pregnant women with vaginitis had a significantly higher GBS colonization rate than those without vaginitis (36.4% vs. 11.8%, p-value<0.05).

– Gestational Diabetes: The GBS colonization rate was significantly higher in pregnant women with GDM compared to those without GDM (25.9% vs. 11.7%, p-value<0.05).

Factors associated with GBS colonization in pregnant women

Table 5 presents the univariate analysis of factors associated with GBS colonization in pregnant women.

The results of the univariate logistic regression analysis showed three factors related to GBS colonization

in pregnant women with statistically significant differences between the variables:

– Maternal Age: The group of pregnant women over 35 years old had a 1.87 times higher risk of GBS colonization compared to the group under 35 years old, with OR=1.871, CI 95% (1.000 – 3.499), p-value=0.049.

– Vaginitis Status: Pregnant women with vaginitis had a 4.267 times higher risk of GBS colonization compared to the group without vaginitis, with OR=4.267, CI 95% (1.226–14.853), p-value=0.023.

–Gestational Diabetes: Pregnant women with GDM had a 2.65 times higher risk of GBS colonization compared to the group without GDM, with OR=2.65, CI 95% (1.090 – 6.441), p-value=0.031.

Table 5 Univariate analysis of factors associated with GBS colonization in pregnant women

Characteristics	Category	p-value	OR	95% CI
Maternal age	≤35	0.049	1.871	1.000 – 3.499
	>35			
Geographic area	Rural	0.187	0.752	0.492 – 1.149
	Urban			
Occupation	Civil servants, public employees	0.643	–	–
	Workers	0.285	0.620	0.258 – 1.490
	Trading, business	0.412	0.734	0.361 – 1.535
	Others	0.678	0.891	0.516 – 1.538
Amniotic membrane status	Normal	0.202	2.933	0.561 – 15.329
	Amniotic fluid leakage			
Vaginitis status	No	0.023	4.267	1.226 – 14.853
	Yes			
Gestational diabetes	No	0.031	2.650	1.090 – 6.441
	Yes			

GBS=group B *Streptococcus*, 95% CI=95% confidence interval

Table 6 presents the multivariate analysis of factors associated with GBS colonization in pregnant women.

Multivariate logistic regression analysis identified three factors that were significantly associated with GBS colonization in pregnant women. Statistically significant differences were observed between groups:

–Pregnant women aged >35 years had a 1.95-fold higher risk of GBS colonization compared with those aged ≤35 years (aOR=1.95; 95% CI: 1.022–3.720; p-value<0.05).

–Pregnant women with vaginal infection had a 4.901-fold higher risk of GBS colonization compared with those without vaginal infection (aOR=4.901; 95% CI: 1.380–17.403; p-value<0.05).

– Pregnant women with gestational diabetes mellitus had a 2.53-fold higher risk of GBS colonization compared with those without gestational diabetes mellitus (aOR= 2.53; 95% CI: 1.019–6.279; p-value<0.05).

Discussion

General characteristics of study subjects

Maternal Age

Table 1 shows that the mean age of the pregnant

women was 29.08±4.58 years (range: 18–44 years). The majority were ≤35 years old (91.1%), while 8.9% were older than 35 years. This age distribution is consistent with the typical reproductive age range. Our findings are comparable to those of Luong Phong Nha, who reported a mean maternal age of 29.6±5.02 years, with 88.4% aged 18–35 and 11.6% over 35⁵. Similarly, Pham Thi Hanh (2022) reported a mean maternal age of 29.2±5.3 years (range: 18 – 41), with the highest proportion in the 26–35 year group (61.4%) and the lowest in the >35 year group (13.1%)⁶.

Geographic area

In our study, 52.2% of participants resided in urban areas, while the remaining lived in rural areas. This finding is similar to that of Luong Phong Nha, who reported 56% urban and 44% rural residents⁵. In contrast, Nguyen Thi Hong at Hanoi Obstetrics and Gynecology Hospital reported a higher proportion of urban residents (78.7% vs. 21.3% rural)⁷, while Pham Thi Hanh reported nearly equal proportions (49.5% urban vs. 50.5% suburban)⁶. These differences likely reflect the varied catchment populations of the respective hospitals.

Table 6 multivariate analysis of the factors associated with GBS colonization in pregnant women

Characteristics	Category	p-value	aOR	95% CI
Maternal age	≤35	–	1.00	–
	>35	0.043	1.950	1.022 – 3.720
Geographic area	Rural	–	1.00	–
	Urban	0.112	0.703	0.455 – 1.086
Occupation	Civil servants, public employees	0.577	–	–
	Workers	0.295	0.624	0.257 – 1.510
	Trading, business	0.346	0.698	0.330 – 1.474
	Others	0.481	0.817	0.466 – 1.432
Amniotic membrane status	Normal	–	1.00	–
	Amniotic fluid leakage	0.175	3.173	0.598 – 16.837
Vaginitis status	No	–	1.00	–
	Yes	0.014	4.901	1.380 – 17.403
Gestational diabetes	No	–	1.00	–
	Yes	0.045	2.530	1.019 – 6.279

aOR=adjusted odds ratio, GBS=group B *Streptococcus*, 95% CI=95% confidence interval

Occupation

Participants' occupations were categorized as: civil servants/public employees (60.3%), factory workers (8.7%), trading/business (11.2%), and others (19.8%). The high proportion of civil servants/public employees may reflect the hospital's location and patient demographics. This distribution differs from other studies. For instance, Nguyen Thi Hong reported that the highest proportion was civil servants/public employees (38.7%), followed by business (13.3%), workers (9.3%), farmers (4.0%), and others (34.7%)⁷. At Military Hospital 87, Pham Thi Hanh noted a distribution of: general laborers (27.7%), business/housewives (38.6%), government employees (12.7%), fishermen (15.1%), and other freelance jobs (5.9%)⁶.

Clinical and subclinical characteristics of pregnant women

Amniotic membrane status

According to Table 2, 7 women presented with amniotic fluid leakage (0.9%). This rate was considerably lower than that reported by Phung Thi Ly and Pham Thu

Trang, where 20.2% and 28.7% had premature rupture of membranes (PROM), respectively^{8,9}. The discrepancy may be due to differences in study populations: the aforementioned studies focused on women admitted for delivery, whereas ours included women at 35–37 weeks undergoing routine GBS screening, prior to the appearance of clear leakage signs.

Vaginitis

Among 807 medical records, 11 (1.4%) were diagnosed with vaginitis. This rate is lower than those reported by Luong Phong Nha (49.2%)⁵, Tran Quang Hanh (36.3%)¹⁰, and Pham Thu Trang (36.7% with a history of genital infection)⁹. It is also lower than the 4.8% prevalence reported by Roksana Darabi in Iran¹¹. The low rate in our study may be due to differences in diagnostic criteria, study population, or the fact that it was based on clinical records documented by attending obstetricians, without standardized microbiological confirmation. Misclassification bias regarding vaginitis diagnosis cannot be excluded due to the retrospective nature of the study.

Gestational Diabetes

We recorded 27 cases of gestational diabetes (3.3%). This is consistent with Nguyen Chung Vien (2023), who reported that 4.1% of documented underlying conditions were gestational diabetes mellitus (4.1%)¹².

However, our rate is lower than those reported in other settings, such as Huynh Hoang Tuan (33.0%)¹³ and Luong Hoang Thanh (27.73%)¹⁴. These variations may be attributed to differences in screening protocols, diagnostic criteria, and the underlying risk profiles of the respective populations.

Prevalence of colonization

As illustrated in Figure 1, the prevalence of GBS colonization among pregnant women at 35–37 weeks of gestation at our hospital was 12.1%. This finding is similar to rates reported in other Vietnamese studies, such as Pham Thi Hanh (11.8%)⁶ and Tran Quang Hanh (9.2%)¹⁰.

Our prevalence is higher than the 7.6% reported by Nguyen Vu Quoc Huy¹⁵ and the 6.1% reported by Jichang Chen in China¹⁶. Conversely, it is lower than the 16.0% reported by Nguyen Thi Hong⁷ and the 17.6% reported by Luong Phong Nha using real-time PCR⁵. International studies show even wider ranges, from 14.3% by culture in Brazil¹⁸ to 25.5% in Ethiopia¹⁷.

In summary, GBS prevalence varies considerably across regions and studies, influenced by factors such as geography, ethnicity, sample collection techniques, laboratory methods (culture vs. PCR), and maternal risk factors.

Factors associated with GBS colonization

Maternal age

As indicated in Table 3, women >35 years had a significantly higher GBS colonization rate (19.4%) compared to those ≤35 years (11.4%), with 1.95 times higher odds. This aligns with findings by Nguyen Thi Hong, who reported the highest colonization rate in women ≥ 35 years (19.0%)⁷,

and Xiaoli Chen in China, who found a significant association between increasing maternal age and GBS colonization (p -value<0.05)¹⁹.

These findings suggest that current international studies remain inconsistent regarding the association between maternal age and GBS colonization. However, it is widely recognized that pregnant women over 35 years of age are generally at a higher risk of experiencing pregnancy-related complications compared with those under 35 years²⁰.

Geographic area

GBS colonization was higher among the rural residents (13.7%) than the urban residents (10.7%), but this difference was not statistically significant (p -value>0.05).

This finding is similar to that of Nguyen Chung Vien, where rural women had higher colonization rates (31.9%) than urban women (18.5%)¹², and to the results from Ethiopia showing higher rates in rural areas, but without statistical significance¹⁷.

Conversely, Nguyen Van Chuc found higher GBS prevalence in urban areas (9.8%) than rural areas (8.0%)²¹. In the study by Tran Quang Hanh, the prevalence of GBS colonization was higher among pregnant women residing in Vinh City (12.3%) and those from mountainous districts (12.1%), and lower among women from lowland districts (6.7%), with a statistically significant difference (p -value<0.05)¹⁰.

Variations in GBS colonization rates across different regions may stem from multiple factors, including living environments, water quality, and region-specific hygiene and lifestyle practices. Additionally, disparities in access to healthcare services may also contribute to the differences in GBS prevalence among geographic areas.

Occupation

Civil servants/public employees had the highest GBS colonization rate (13.1%), while factory workers had the

lowest (8.6%). However, no significant association was found between occupation and GBS colonization (p -value>0.05).

These results differ from the findings of Nguyen Van Chuc, who reported the highest rate of (GBS) colonization among pregnant women working as factory workers (6.5%), followed by office staff and traders (4.8%), with farmers having the lowest rate (1.8%)²¹. According to Nguyen Thi Hong's study, pregnant women who were civil servants had a lower GBS colonization rate (10.3%) compared to those in other occupations (19.6%)⁷.

Overall, the aforementioned studies did not find a significant association between occupational factors and GBS colonization in pregnant women (p -value>0.05). This suggests that occupational category, as a broad variable, may not directly influence GBS colonization risk independently of other socio-economic and behavioral factors.

Amniotic membrane status

The GBS colonization rate was higher in women with amniotic fluid leakage (28.6% vs. 12.0%), but this was not statistically significant (p -value>0.05), likely due to the very small number of cases with leakage ($n=7$).

In Phung Thi Ly's study, the rate of GBS colonization among pregnant women with amniotic fluid leakage or preterm rupture of membranes was 21.7%, whereas the rate among those with intact membranes was 16.4%⁸. In Pham Thu Trang's study, the GBS colonization rate in pregnant women with preterm rupture of membranes was 31.2%, higher than in those with intact membranes (12.8%). Furthermore, the author concluded that pregnant women with GBS colonization had a 3.09-fold higher risk of preterm rupture of membranes compared to those with intact membranes⁹.

GBS produces membrane-bound vesicles containing virulence factors, including proteases that degrade the extracellular matrix and pore-forming toxins. These factors

cause severe collagen degradation, leading to reduced tissue stiffness and disruption of the amniotic membrane structure. In addition, these vesicles trigger inflammatory responses, increasing cytokine production and resulting in chorioamnionitis. In summary, GBS membrane vesicles induce tissue damage and inflammatory cytokine secretion, leading to mechanical weakening of the amniotic membrane, which may render it more susceptible to rupture under the pressure of the growing fetus, thereby contributing to preterm premature rupture of membranes in pregnant women²².

Vaginitis status

GBS colonization was significantly higher among women with vaginitis (36.4%) than those without (11.8%). Logistic regression showed that vaginitis increased the odds of GBS colonization by 4.9 times.

These results are consistent with the findings of Luong Phong Nha, who reported that pregnant women with vaginitis had a higher rate of GBS colonization compared to those without vaginitis (26.8% vs. 8.6%). The author also concluded that vaginitis during pregnancy increased the risk of GBS colonization by 3.3-fold⁵. In Pham Thi Hanh's study, the risk of GBS colonization was 12.2 times higher in pregnant women exhibiting symptoms of vaginitis⁶.

GBS commonly resides in the gastrointestinal tract and can translocate to the urinary and genital tracts⁴. During pregnancy, the vagina is more susceptible to inflammatory and infectious conditions due to substantial hormonal, immunological, and biochemical changes. Alterations in hormonal levels in pregnant women, particularly increased estrogen concentrations, lead to glycogen accumulation within vaginal epithelial cells. The subsequent breakdown of glycogen by *Lactobacillus spp.* produces lactic acid, lowering vaginal pH and disrupting the vaginal microbiota balance. These changes create a favorable environment for the proliferation of anaerobic bacteria and facilitate bacterial

adhesion and infection²³. These factors may promote the colonization and proliferation of GBS.

Gestational diabetes

GBS colonization was higher among women with gestational diabetes (25.9%) compared to those without (11.7%). Logistic regression indicated that gestational diabetes increased the odds of GBS colonization by 2.53 times.

These results are consistent with Pham Thu Trang's study, which reported a higher rate of GBS colonization in pregnant women with diabetes (31.2%) compared to those without diabetes (16.8%). The author also concluded that the risk of GBS colonization was 2.3 times higher in pregnant women with diabetes⁹. Similarly, Phung Thi Ly's study found a 5.3-fold increased risk of GBS colonization in pregnant women with gestational diabetes⁸. According to James M. Edwards, pregnant women with gestational diabetes had a 1.21-fold higher risk of GBS colonization compared to those without²⁴.

Hyperglycemia can impair host immune defenses by promoting inflammatory responses and inhibiting the synthesis of antimicrobial surface molecules, such as beta-defensins, thereby increasing susceptibility to infection. With respect to GBS, elevated glucose levels may additionally influence bacterial physiology by altering gene expression related to carbohydrate metabolism, replication, adhesion, toxin production, and biofilm formation, which together facilitate persistent colonization and enhanced virulence^{25, 26}.

In summary, the results of the multivariate analysis in our study indicate that maternal age, vaginal infection, and gestational diabetes mellitus are independent factors strongly associated with GBS colonization in pregnant women. These factors demonstrated high odds ratios, suggesting that they are strongly associated with an increased likelihood of GBS colonization. This focused approach supports the potential application of risk-based

GBS screening strategies, particularly in settings where universal screening is not yet feasible.

These findings support the development of effective preventive strategies, such as routine screening for early detection of vaginal infection and gestational diabetes mellitus during pregnancy, thereby enabling appropriate preventive measures to reduce the risk of infection in pregnant women and neonates. Therefore, education, counseling, and the implementation of Group B *Streptococcus* screening programs for pregnant women are essential and warrant greater attention.

Conclusion

From 807 medical records of pregnant women who underwent rectovaginal GBS culture at Da Nang Hospital for Women and Children from March 1, 2024, to February 28, 2025, the prevalence of GBS colonization at 35–37 weeks of gestation was 12.1%.

Multivariate logistic regression analysis identified significant associations between GBS colonization and the following factors:

Vaginitis: aOR=4.90, 95% CI (1.380–17.403), p-value=0.014

Gestational diabetes mellitus: aOR=2.53, 95% CI (1.019–6.279), p-value=0.045

Maternal age >35 years: aOR = 1.95, 95% CI (1.022 – 3.72), p-value=0.043

These results indicate that these factors are significantly associated with increased risk of GBS colonization. In contrast, place of residence, occupation, and amniotic membrane status were not significantly associated (p-value>0.05).

These findings underscore the importance of the early identification and management of vaginitis and GDM during pregnancy to pregnancy to mitigate the risk of maternal and neonatal colonization. Consequently, targeted education, counseling, and adherence to routine GBS screening guidelines should be prioritized.

Acknowledgement

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Ethics approval

The study was conducted after receiving approval from the Biomedical Research Ethics Committee of Da Nang University of Medical Technology and Pharmacy. Approval code: 51/CT-HĐĐĐ, approval date: October 10, 2024.

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Clinical Trial Consideration

This study is not a clinical trial.

Conflict of interest

The authors have no conflict of interest.

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