

KNOWLEDGE, ATTITUDES, AND PRACTICES REGARDING REPRODUCTIVE HEALTH AMONG FEMALE NURSING STUDENTS AT TRA VINH UNIVERSITY, VIETNAM

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Abstract – *This study examined reproductive health knowledge, attitudes, and practices among female nursing students at Tra Vinh University in 2024 and determined the factors associated with these variables. A cross-sectional descriptive study was conducted among 354 female nursing students from May to July 2024 using a structured questionnaire. Results showed that 76.6% of the participants had good knowledge, 69.8% demonstrated positive attitudes, and only 36.7% reported good reproductive health behaviors. Knowledge was significantly associated with age and academic year ($p < 0.05$). Attitudes were associated with academic year, with first-year students having more positive attitudes compared to those in later years ($p < 0.001$). Reproductive health behaviors were associated with both age and academic year; fourth-year students were more likely to have good behaviors compared to first-year students ($OR = 2.33$; $p = 0.008$). Although knowledge and attitudes were generally adequate, behaviors remained limited, suggesting the need to strengthen reproductive health education, integrate targeted interventions, and enhance counseling programs to promote safe practices among nursing students.*

Keywords: *nursing students, public health, reproductive health, Tra Vinh University.*

I. INTRODUCTION

Reproductive health constitutes a fundamental component of overall human well-being, encom-

passing areas such as family planning, women's health, and the prevention of sexually transmitted infections. Safe contraceptive methods and access to safe abortion services are also integral aspects of reproductive health [1]. In recent years, the prevalence of unsafe sexual practices among young people, particularly university students, has increased, contributing to an alarming rise in abortion rates within this population [2].

Students in health sciences, especially those majoring in Nursing, play a critical role in the healthcare system. Beyond providing direct patient care, they are expected to deliver education and counseling on reproductive health. However, evidence from Sanz-Martos et al. [3] indicated that knowledge of safe contraceptive methods among nursing students remains limited, with approximately 40% lacking adequate understanding of effective practices. Their attitudes also vary widely, with many expressing reluctance or discomfort when discussing reproductive health topics. Similarly, a study conducted at Nam Dinh University of Nursing reported that only about 30% of students demonstrated sufficient reproductive health knowledge [4]. These findings suggest that future healthcare providers may not be adequately prepared to guide safe sexual and reproductive behaviors.

In this context, a comprehensive assessment of students' knowledge, attitudes, and behaviors regarding reproductive health, along with the identification of relevant influencing factors, is critical. Such evidence is essential for informing the development of contextually appropriate and effective educational interventions and reproductive health programs within university settings. Enhancing students' knowledge and fos-

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tering positive attitudes are expected to play key roles in reducing risky sexual behaviors, thereby improving health outcomes, quality of life, and overall well-being. Accordingly, this study was conducted to assess the current status of reproductive health knowledge, attitudes, and practices among female nursing students at Tra Vinh University and to identify factors associated with these outcomes.

II. LITERATURE REVIEW

Previous literature has broadly investigated the knowledge, attitudes, and practices (KAP) regarding reproductive health among student populations, revealing systemic educational shortfalls [3–11]. At the international level, studies such as those by Sanz-Martos et al. [3] and Alkhalili et al. [5] highlighted that university students predominantly lack specific foundational knowledge regarding safe contraceptive methods and the prevention of sexually transmitted infections. Narrowing the context to Vietnam, similar educational deficits are observed among future healthcare providers. Specifically, Cao Van Anh [4] identified that first-year nursing students struggled significantly with comprehensive contraceptive knowledge, while Lam Van Minh et al. [6] emphasized that current pedagogical approaches have failed to cultivate adequate understanding and positive attitudes toward reproductive and maternal healthcare among health science majors.

Within the Vietnamese educational context, a prominent research theme is the critical disconnect between theoretical knowledge and actual reproductive health behaviors. Comprehensive KAP assessments by Mai Thuy Mai et al. [7] and Vo Thi Kieu Mi et al. [9] demonstrated that while health science and military medical students could achieve moderate levels of reproductive health knowledge, this awareness did not consistently translate into appropriate clinical or personal practices. Further investigations by Nguyen Thi Nhu Quy et al. [8], Le Bich Quyen et al. [10], and Nguyen Van Toi et al. [11] corroborated this inconsistency across various student demographics, from high school to medical college levels. These studies collectively underscore

that positive attitudes and theoretical understanding are inherently insufficient to guarantee safe reproductive behaviors without targeted, practice-oriented interventions.

Taken together, these investigations have mapped the landscape of reproductive health education and identified critical associated factors, such as academic progression and the educational environment [3–11]. Nevertheless, significant gaps persist. Methodologically, the existing literature frequently isolates one or two aspects of KAP rather than executing a cohesive assessment of all three components simultaneously [3, 5, 7, 8], leaving reproductive health behaviors underexplored relative to knowledge and attitudes. Furthermore, variances in study designs and measurement tools hinder cross-setting comparability. Crucially, there remains a scarcity of comprehensive evidence focusing exclusively on female nursing students – a pivotal demographic that will transition into frontline healthcare providers responsible for future reproductive health education, patient counseling, and direct care.

Overall, the available evidence indicates that although awareness of reproductive health has improved, important gaps still exist in students' KAP, particularly in translating knowledge into practice. Based on these gaps, the present study provides a comprehensive assessment of knowledge, attitudes, and practices regarding reproductive health among female nursing students at Tra Vinh University. By simultaneously analyzing all three components and examining their associated factors, this study contributes to clarifying the relationship between knowledge, attitudes, and behaviors in a specific academic context. The findings are expected to provide additional scientific evidence for developing appropriate educational interventions and improving reproductive health programs, thereby contributing to both the existing literature and practical applications in public health.

III. RESEARCH METHODS

A. Location, participants, and time of research

The study was conducted from May 13 to July 19, 2024, at Tra Vinh University, Vietnam. The participants included all female students enrolled in the Nursing program in 2024 who agreed to participate in the study. Students who were suspended, on academic leave, or who did not complete the full questionnaire were excluded.

B. Methods

The study employed a cross-sectional descriptive design. A total sampling approach was applied, including all eligible female nursing students enrolled at Tra Vinh University in 2024, for a sample size of 354 participants.

Data collection tools

Data were collected using a structured self-administered questionnaire adapted from the instrument developed by Vo Thi Kieu Mi et al. [9], originally designed to assess KAP regarding reproductive health among female students. The questionnaire primarily comprised closed-ended items, supplemented by open-ended questions and Likert-scale items to capture attitudinal responses. Prior to the main data collection, a pilot study was conducted with 30 students to evaluate the instrument's reliability. Cronbach's alpha coefficients of 0.745, 0.779, and 0.691 were obtained for the knowledge, attitudes, and practices domains, respectively, indicating acceptable internal consistency. The finalized questionnaire consisted of 41 items organized into four sections: Section I captured demographic characteristics (10 items), including age, ethnicity, academic year, place of residence, family economic status, marital status, academic performance, community involvement, and perceived academic pressure; Sections II through IV assessed reproductive health knowledge (11 items), attitudes (10 items), and practices (10 items), covering key domains such as menstrual hygiene, contraception, abortion risks, premarital sexual behavior, sexually transmitted infections (STIs), and HIV/AIDS transmission and prevention.

Data collection techniques

Data were collected using a total population sampling approach, in which all eligible participants were invited to take part. Before data collection, all participants were briefed on the study objectives and provided written informed consent. Questionnaires were distributed in paper form during scheduled class sessions with the assistance of class representatives. Participants completed the questionnaires independently and anonymously in a quiet classroom setting, with the research team present to clarify any unclear items. Completed questionnaires were collected immediately after the session to ensure a high response rate and minimize missing data.

Data analysis methods

The collected data were entered using EpiData 3.1 and subsequently analyzed with SPSS version 20. Descriptive statistics, including frequencies and percentages, were used to summarize demographic characteristics and key study variables. Inferential analysis was performed using univariate logistic regression to examine associations between demographic and academic factors and students' knowledge, attitudes, and practices. Odds ratios (ORs) with 95% confidence intervals (CIs) were calculated, and a p-value of less than 0.05 was considered statistically significant.

C. Ethics in research

Participation in the study was entirely voluntary, and participants had the right to withdraw at any stage without any consequences. Ethical approval was obtained from the Ethics Committee in Biomedical Research of Tra Vinh University (Decision No. 4022/QĐ-ĐHTV, dated May 06, 2024). Before data collection, all participants were informed about the study objectives and procedures. All information collected was treated with strict confidentiality and used solely for research purposes.

Table 1: General characteristics of the study population (n = 354)

Characteristics	Frequency (n = 354)	Percentage (%)
Age		
< 21	198	55.9
21–22	147	41.5
> 22	9	2.5
Ethnicity		
Kinh	276	78.0
Hoa	6	1.7
Khmer	72	20.3
Place of residence		
Urban	66	18.6
Rural	288	81.4
Current living arrangement		
With family	100	28.2
Dormitory	73	20.6
Renting/boarding	181	51.1
Household socioeconomic status		
Poor/near-poor	13	3.7
Not poor/near-poor	341	96.3
Marital status		
Single	232	65.5
Married	4	1.1
In a relationship	118	33.4

IV. RESULTS AND DISCUSSION

A. General characteristics of the study population

The socio-demographic profile of the study population reveals several characteristics of potential relevance to reproductive health outcomes (Table 1). The majority of participants were under 21 years of age (55.9%), placing them within a developmentally critical window during which reproductive health knowledge, attitudes, and risk behaviors are actively shaped [2]. The predominance of Kinh ethnicity (78.0%) alongside a substantial Khmer minority (20.3%) reflects the multiethnic composition typical of the Mekong Delta region, and ethnicity has been documented as a factor influencing health literacy and health-seeking behavior in the Vietnamese context [8, 11]. Notably, the majority of participants resided in rural areas (81.4%) and lived independently, either in dormitories or rented accommodation (71.7%), conditions associated with reduced parental supervision and potentially heightened exposure to reproductive health

risks [7]. The near-universal absence of poverty (96.3%) and low prevalence of marriage (1.1%) suggest that economic barriers and marital status are unlikely to confound the primary outcomes of interest in this sample. However, the findings should be interpreted with caution given the single-institution design, which limits external validity and generalizability to nursing students in other geographic or institutional settings.

B. Characteristics of the participants

Table 2: Characteristics of the participants

Characteristics	Frequency (n = 354)	Percentage (%)
Current academic year		
First year	114	32.2
Second year	85	24.0
Third year	88	24.9
Fourth year	67	18.9
Academic performance (most recent semester)		
Poor	0	0
Average	55	15.5
Good	264	74.6
Very good	35	9.9
Excellent	0	0
Academic pressure		
Never/rarely	60	16.9
Sometimes/often/very often	294	83.1

Table 2 presents the academic characteristics of the study population, providing important contextual information for interpreting findings on reproductive health KAP. The relatively even distribution across the four academic years (ranging from 18.9% to 32.2%) enables meaningful cross-year comparisons, which is particularly valuable given the established association between academic progression and health-related knowledge accumulation [4, 9].

The predominance of good academic performance (74.6%) suggests a generally engaged student body; however, the high prevalence of perceived academic pressure (83.1%) is noteworthy. Chronic academic stress has been associated with reduced health-seeking behavior and impaired decision-making regarding sexual and reproductive health, particularly among young women in competitive academic environments

[8]. Although the present study does not directly examine the mediating role of academic pressure on reproductive health outcomes, its high prevalence warrants consideration as a potential contextual factor that may attenuate the translation of knowledge into appropriate practice.

These academic characteristics collectively provide an essential backdrop for understanding the variation in reproductive health knowledge, attitudes, and practices observed across the study population. Their specific associations with KAP outcomes are examined further in the subsequent analytical sections.

C. Knowledge, attitudes, and practices on reproductive health

Table 3: Knowledge, attitudes, and practices on reproductive health

Characteristics	Frequency (n = 354)	Percentage (%)
Overall knowledge		
Good	271	76.6
Poor	83	23.4

The present study found that 76.6% of female nursing students demonstrated adequate reproductive health knowledge, a rate markedly higher than those reported in comparable studies among Vietnamese health science students (Table 3). Specifically, this proportion exceeds the rates documented by Vo Thi Kieu Mi et al. [9] (62.1%) and Cao Van Anh [4] (58.3%) by 14.5 and 18.3 percentage points, respectively. This improvement may reflect the progressive integration of reproductive health content into nursing curricula over recent years, as well as the greater availability of health information through digital platforms [6]. Nevertheless, the persistence of inadequate knowledge in nearly one-quarter of participants (23.4%) constitutes a scientifically meaningful gap. Comparable deficits have been documented in international studies, where knowledge gaps were particularly pronounced in domains such as emergency contraception, the pharmacological mechanisms of hormonal methods, and the clinical presentations of sexually transmitted infections [3, 5]. From an

educational standpoint, the coexistence of generally adequate knowledge with persistent subgroup deficits may reflect the limitations of predominantly lecture-based instruction, which tends to produce declarative knowledge without ensuring its depth or clinical applicability. Evidence from health professions education supports the superiority of active learning strategies, including case-based discussions, peer education, and simulation exercises, in promoting comprehensive and durable health knowledge among nursing students [3]. Accordingly, while the current findings indicate meaningful curricular progress, they simultaneously underscore the imperative for instructional reform that prioritizes experiential and competency-based pedagogies in reproductive health education.

Table 4: Overall reproductive health attitudes

Characteristics	Frequency (n = 354)	Percentage (%)
Overall reproductive health attitudes		
Good	247	69.8
Poor	107	30.2

Table 4 shows that the proportion of students with positive reproductive health attitudes (69.8%) in the present study is substantially higher than rates reported across comparable Vietnamese populations: Mai Thuy Mai et al. [7] documented a rate of 51.8% among Military Medical Academy students, Vo Thi Kieu Mi et al. [9] reported only 23.4% among female health science students at Duy Tan University, and Nguyen Thi Nhu Quy et al. [8] found 32.3% at Dai Nam University. These considerable inter-study variations are unlikely to reflect true population differences alone, but rather the confounding influence of heterogeneous measurement tools, attitudinal constructs, and scoring thresholds, which limit direct cross-study comparisons. From a theoretical perspective, the relatively favorable attitudinal profile observed in this sample may be partly attributable to the professional socialization inherent in nursing education, in which students are systematically exposed to patient-centered values and non-judgmental approaches to health [3]. However, the persistence of less favorable attitudes in nearly one-third of partici-

pants (30.2%) is clinically significant, as attitudinal barriers in healthcare providers have been associated with suboptimal counseling quality and reduced patient willingness to seek reproductive health services [5, 9]. This underscores the need for structured attitudinal interventions, including reflective practice, values clarification exercises, and standardized patient simulations, within the nursing curriculum to ensure that all graduates are equipped to deliver non-stigmatizing reproductive health care.

Table 5: Overall reproductive health practices

Characteristics	Frequency (n = 354)	Percentage (%)
Practices		
Good	130	36.7
Poor	224	63.3

According to Table 5, the low prevalence of good reproductive health practices (36.7%) represents the most concerning finding of this study and points to a substantial KAP gap. This rate is markedly lower than those documented in studies of Vietnamese high school students (77.8%) [10] and first-year health science students (42.5%) [8] but is broadly consistent with rates observed among military medical students (56.1%) [7] when accounting for differences in study populations, measurement instruments, and operationalization of ‘good practices.’ The disparity between relatively adequate knowledge (76.6%) and attitudes (69.8%) on one hand, and poor practices (63.3%) on the other, is theoretically significant. Consistent with the Information-Motivation-Behavioral Skills model, these findings posit that knowledge and motivation are necessary but insufficient conditions for behavioral change; rather, the translation of awareness into action requires behavioral skills, self-efficacy, and environmental enablement [7, 9]. In the Vietnamese university context, structural barriers, including limited access to confidential reproductive health services, persistent social stigma around premarital sexuality, and inadequate peer support networks, may further impede appropriate reproductive health behaviors regardless of students’ knowledge or attitudinal readiness [8, 11]. These findings collectively argue for

a paradigmatic shift in reproductive health programming, from knowledge-transmission models toward comprehensive interventions that develop behavioral competencies, address structural and social determinants, and create enabling environments for safe reproductive practices.

D. Factors associated with knowledge, attitudes, and practices on reproductive health

Table 6: Association between general characteristics and reproductive health knowledge among female nursing students (n = 354)

Factors	Knowledge, n (%)		OR (95% CI)	p
	Good	Poor		
Age				
< 21	133 (67.2)	65 (32.8)	1	
21–22	131 (89.1)	16 (10.9)	4.00 (2.20–7.28)	< 0.001
> 22	7 (77.8)	2 (22.2)	1.71 (0.35–8.47)	0.511
Ethnicity				
Kinh	208 (75.4)	68 (24.6)	1	
Khmer	58 (80.6)	14 (19.4)	1.35 (0.71–2.58)	0.356
Hoa	5 (83.3)	1 (16.7)	1.64 (0.19–14.24)	0.656
Academic year				
First year	87 (76.3)	27 (23.7)	1	
Second year	46 (54.1)	39 (45.9)	0.37 (0.20–0.67)	0.001
Third year	80 (90.9)	8 (9.1)	3.10 (1.33–7.22)	0.009
Fourth year	58 (86.6)	9 (13.4)	2.00 (0.88–4.56)	0.099

As presented in Table 6, univariate logistic regression revealed that reproductive health knowledge was significantly associated with both age and academic year. Students aged 21–22 years were four times more likely to demonstrate adequate knowledge compared with those under 21 years (OR = 4.00; 95% CI: 2.20–7.28; p < 0.001), while third-year students were three times more likely to have good knowledge than first-year students (OR = 3.10; 95% CI: 1.33–7.22; p = 0.009). These findings are consistent with cumulative learning models, wherein successive academic exposure to health science content progressively builds and consolidates reproductive health knowledge. This pattern aligns with Vo Thi Kieu Mi et al. [9], who similarly identified academic year as a significant predictor of reproductive health knowledge, and with Cao Van Anh [4], who observed meaningful knowledge disparities between year groups. Notably, second-year students demonstrated significantly poorer

knowledge than first-year counterparts (OR = 0.37; $p = 0.001$), a counterintuitive finding that may reflect a transitional phase in which students are moving beyond foundational health content toward more specialized clinical subjects, temporarily reducing their engagement with reproductive health topics. This U-shaped pattern across academic years suggests that reproductive health content may not be optimally distributed or reinforced throughout the Nursing program. From a curriculum design perspective, these findings underscore the importance of longitudinal, spiral integration of reproductive health content, rather than confining it to specific year levels, to ensure progressive and sustained knowledge development across all stages of training.

Table 7: Association between general characteristics and reproductive health attitudes among female nursing students (n = 354)

Factors	Attitudes, n (%)		OR (95% CI)	p
	Good	Poor		
Age				
< 21	145 (73.2)	53 (26.8)	1	
21–22	96 (65.3)	51 (34.7)	0.69 (0.43–1.09)	0.113
> 22	6 (66.7)	3 (33.3)	0.73 (0.18–3.02)	0.666
Ethnicity				
Kinh	189 (68.5)	87 (31.5)	1	
Khmer	54 (75.0)	18 (25.0)	1.38 (0.77–2.49)	0.284
Hoa	4 (66.7)	2 (33.3)	0.92 (0.17–5.12)	0.925
Academic year				
First year	95 (83.3)	19 (16.7)	1	
Second year	51 (60.0)	34 (40.0)	0.30 (0.16–0.58)	< 0.001
Third year	50 (56.8)	38 (43.2)	0.26 (0.14–0.50)	< 0.001
Fourth year	51 (76.1)	16 (23.9)	0.64 (0.30–1.35)	0.238

Academic year was identified as a significant predictor of reproductive health attitudes. Compared with first-year students, those in the second and third years were significantly less likely to hold positive attitudes (OR = 0.30, $p < 0.001$ and OR = 0.26, $p < 0.001$, respectively), while fourth-year students did not differ significantly from first-year students (OR = 0.64, $p = 0.238$) (see Table 7). This non-linear trajectory is both noteworthy and theoretically complex. The marked attitudinal decline observed in second- and third-year students, followed by apparent recovery in the fourth year, may reflect a period of attitudinal transition driven by increased clinical exposure to sensitive reproductive health cases, interpersonal challenges in applying values-based

care, and heightened awareness of social taboos surrounding sexuality in the Vietnamese cultural context. These experiences may initially generate ambivalence or moral uncertainty before being resolved through professional identity consolidation in later years [7, 9]. This observation reinforces evidence by Vo Thi Kieu Mi et al. [9], who similarly identified academic year as a significant attitudinal correlate, but contrasts with Mai Thuy Mai et al. [7], who found no significant association ($p = 0.81$). The discrepancy between these studies may reflect methodological differences, particularly in the construction of attitudinal scales, response formats, and the clinical contexts in which students were embedded at the time of data collection. These findings have important implications for professional development programming: targeted values-clarification workshops and reflective debriefing sessions should be strategically embedded in the second- and third-year curricula to support students through this attitudinally vulnerable period and prevent the entrenchment of stigmatizing beliefs before clinical graduation. However, a study by Mai Thuy Mai et al. [7] did not identify a relationship between academic year and attitudes ($p = 0.81$).

Table 8: Association between general characteristics and reproductive health practices among female nursing students (n = 354)

Factors	Practices, n (%)		OR (95% CI)	p
	Good	Poor		
Age				
< 21	58 (29.3)	140 (70.7)	1	
21–22	66 (44.9)	81 (55.1)	1.97 (1.26–3.07)	0.003
> 22	6 (66.7)	3 (33.3)	4.83 (1.17–19.96)	0.030
Academic year				
First year	35 (30.7)	79 (69.3)	1	
Second year	23 (27.1)	62 (72.9)	0.84 (0.45–1.56)	0.576
Third year	38 (43.2)	50 (56.8)	1.72 (0.96–3.06)	0.068
Fourth year	34 (50.7)	33 (49.3)	2.33 (1.25–4.34)	0.008

As shown in Table 8, both age and academic year were significantly associated with reproductive health practices. Older students (aged 21–22 and over 22) were significantly more likely to report good practices compared with younger peers (OR = 1.97, $p = 0.003$ and OR = 4.83, $p = 0.030$, respectively), suggesting that accumulated life experience and greater autonomy in decision-

making may play a role in the adoption of appropriate reproductive health behaviors. With respect to academic year, fourth-year students were 2.33 times more likely to demonstrate good practices compared with first-year students ($p = 0.008$), while second- and third-year students did not differ significantly from first-year counterparts. This finding aligns with results reported by Vo Thi Kieu Mi et al. [9], who similarly identified a significant association between academic year and practice quality ($p < 0.05$), suggesting that extended clinical training and practical skill development in later academic years may reinforce behavioral competencies related to reproductive health. However, the absence of significant improvement in second- and third-year students indicates that behavioral development does not proceed linearly alongside knowledge acquisition; instead, it may require a threshold of clinical exposure and professional role internalization before manifesting in practice. This interpretation is theoretically grounded in social learning theory, wherein behavioral adoption is contingent not only on knowledge and attitudes but also on observational learning from role models, self-efficacy, and perceived social norms within the clinical training environment [7, 9, 11]. These findings reinforce the argument that practice-oriented reproductive health interventions, including skills-based training, mentored clinical encounters, and structured peer support programs, must be intentionally incorporated across all years of the Nursing program, with particular emphasis on bridging the behavioral gap evident in the second and third years.

V. CONCLUSION AND RECOMMENDATIONS

Based on a survey of 354 female nursing students at Tra Vinh University, the study found that 76.6% demonstrated good reproductive health knowledge, while 23.4% had insufficient knowledge. Regarding attitudes, 69.8% expressed positive attitudes toward reproductive health, whereas 30.2% showed less favorable attitudes. Regarding practices, only 36.7% reported good reproductive

health practices, while 63.3% exhibited inadequate practices.

The analysis indicated that reproductive health knowledge was significantly associated with age and academic year, with higher-level students demonstrating better knowledge due to cumulative learning and increased exposure; in addition, participation in community activities was also identified as a contributing factor influencing students' knowledge levels.

Findings from this study provide an important foundation for the university to design appropriate reproductive health education programs, with an emphasis on contraception, prevention of sexually transmitted infections, and comprehensive reproductive healthcare for students. In addition, the study suggests the need for policies and intervention strategies aimed at strengthening health and psychological support systems, as well as improving reproductive health education and communication. These efforts have the potential to generate positive impacts not only within the student community but also in the broader society, fostering greater awareness and proactive engagement in reproductive health issues. Ultimately, such initiatives can enhance students' well-being and overall quality of life throughout their academic journey and personal development.

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