Adolescent Students' Perceived Self-efficacy on Disease Prevention Actions and Associated Socio-demographic Factors [1]

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Abstract

Adolescents are in a critical period of development for forming healthy behaviours; however, empirical data on their self-efficacy in disease prevention are limited in Nepal. The study aims to fill gaps in municipal-level data, specifically regarding self-efficacy and its socio-demographic determinants among adolescents attending schools in grades six to twelve in Bardibas Municipality, Mahottari District. A quantitative cross-sectional design was used. The 280 students studying in four randomly selected community schools selected, using cluster sampling and proportional representation of gender and class. The data were gathered using a self-administered questionnaire that included questions on socio-demographics, precautionary measures, and a 20-item self-efficacy scale with a 5-point Likert scale. The scale had good internal consistency (Cronbach's alpha = 0.72). SPSS version 20 was used to conduct descriptive statistics, t-tests, ANOVA, and general linear regression analysis. The overall self-efficacy mean score was moderate to high (M = 66.57, SD = 6.95), with the highest scores on nutritional behaviour and hygiene practices and the lowest on mask use. The significant predictors were gender, age, class level, and language ($p < 0.05$), whereas income, caste, and religion did not have a significant impact. Multivariate analysis revealed that domain-specific behaviours and health practice items were significant predictors of self-efficacy. The overall level of self-efficacy in disease prevention among adolescents was positive; however, there are still some gaps in particular behavioural domains. School- and

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community-based health education programs that are culturally are gender-sensitive to support self-efficacy and preventive actions in adolescents are urgently needed.

***Keywords*:** Adolescents, Self-efficacy, Disease prevention, Socio-demographic factors, Health behaviour, Cross-sectional study

Introduction

Adolescence (10 -19 years) is a critical developmental period where health behaviours, such as hygiene, exercise, sexual and reproductive health, and help-seeking, are formed and followed into adulthood, thus affecting lifetime risks of disease and general well-being. Though it is often considered a healthy age, adolescents face significant preventable morbidity and mortality in every part of the world and face obstacles to information sharing and access to services (WHO, n.d.). Empowering adolescents, enhancing their life skills, and creating supportive environments is the focus of global approaches to enhance adolescent health (UNICEF, n.d.). Self-management and disease-prevention behaviours, e.g., hand washing and vaccination uptake, are highly reliant on self-efficacy within this preventive agenda, i.e., the confidence of adolescents in their ability to plan and implement behaviours to achieve the desired results (WHO, 2021).

In social-cognitive theory, Bandura assumes that perceived self-efficacy is a major factor that dictates whether people engage in and continue with health-promoting behaviours and surmount challenges. Self-efficacy shapes affective states and cognition, goal setting, and resilience, and is developed through experiences of mastery, vicarious learning, social persuasion, and regulation of physiological states (Bandura, 1997). During adolescence, systematic reviews show that self-efficacy is a predictor of various health behaviours (e.g., physical activity, safe sex, treatment adherence) and risk reduction, as well as beneficial mental health (Dishman et al., 2019).

In Asian settings, research has shown a positive correlation between increased self-efficacy and adherence to preventive measures against infectious diseases among adolescents. For example, an Indonesian cross-sectional study found that adolescents with high self-efficacy and motivation had much higher compliance with COVID-19 prevention measures (Hidayat et al., 2022). South Asian reviews also identify self-efficacy, health knowledge, social support, and affordability as important predictors of self-management of major non-communicable diseases (PLOS Global Public Health, 2024).

The health situation of Nepali adolescents shows the existence of chronic health promotion behaviour and access gaps. A national school-based survey found that self-reported emotional/behavioural problems had a 14.2⁻ prevalence rate, with strong correlations to academic achievement and negative life experiences (Adhikari et al., 2023). The recent studies in Nepalese schools also reveal that over 50 % of adolescents have poor scores on overall health-promoting behaviours, and they are especially low in stress management and nutrition; the determinants are age, parental education/occupation, and school health nurses' availability (Pokharel & Bajracharya, 2024). In previous research, the role of socio-demographic determinants in shaping the health behaviour has been highlighted (Khanal, 2021; 2023; Khanal, 2022) highlighted that self-efficacy had a significant influence on the disease-prevention behaviours of school-aged adolescents and thus supported the social-cognitive theory. Adequate health literacy among adolescents contributes to the development of a general sense of self-efficacy (Khanal et al., 2025).

With a literacy rate of 72.5 per cent, the 2021 census of Bardibas Municipality, in the Mahottari district of the Nepal province of Madhesh, was 74,361 (36,711 males and 37,650 females) (Bardibas Municipality, 2021). There are 76 educational institutions, including 52 publics and 22 private schools, consisting of pre-schools (52), basic schools (69), and secondary schools (34), and 13 of them provide grades 11-12 +2 level (Bardibas Municipality, 2021). The prominent secondary level institutions are Deurali Secondary School, Janata Secondary School, and Bardibas Siddhartha Public English School (Bardibas Municipality, 2021). It is this educational environment which offers the basis of studying adolescent self-efficacy in health behaviour because the different types of schools, the levels of infrastructure and their student populations influence the access to knowledge and capacity-building opportunities.

Although the global and regional evidence base continues to grow, little Nepalese municipality-level research that quantifies and empirically investigates the self-efficacy of adolescents in disease-prevention activities and sociodemographic determinants of such activities in grades 6-12 is available. The paper meets these gaps by carrying out a cross-sectional survey of all students in grades 6-12 in selected schools in Bardibas Municipality (Mahottari) on self-efficacy of disease-prevention behaviours, their status, and sociodemographic predictors of self-efficacy. So, this study aimed to examine the

level of self-efficacy on disease prevention actions and its sociodemographic factors associated with self-efficacy on disease prevention actions of the school adolescents.

Methods and Materials

Research design

This study used a quantitative cross-sectional design with correlational analysis to examine self-efficacy for disease prevention actions and its associated socio-demographic factors among school adolescents in Bardibas municipality of the Mahottari district.

Participants and sampling procedure

In this study, all the students of grades 6 to 12 in the community secondary school of Bardibash municipality of Mahottari district. The study area was selected using convenience sampling. Out of the 10 government secondary schools in Bardibas Municipality, we have selected only 4 schools as the sample study area using a random sampling method. Out of the total students (n=1020) studying in 6 to 12 classes in the four schools,280 students (27.5%) were selected using the Raosoft sample size calculator. The respondents were divided into four strata, based on the schools, and 70 respondents were selected from each school and 5 males and 5 female students were selected from each class from each school randomly to ensure proportionate gender representation.

Table 1

Study Population and Sample Size of the Respondents

S.N	School	Class 6	Class 7	Class 8	Class 9	Class 10	Class 11	Class 12	Total Students	Selected Students
1	A	23	35	30	34	34	30	30	216	70 (35/35)
2	B	25	30	32	28	32	24	25	196	70 (35/35)
3	C	35	38	35	36	30	40	35	249	70 (35/35)
4	D	45	42	40	42	50	70	70	359	70 (35/35)
Total									1020	280

Note. Gr. = Grade; numbers in parentheses indicate male/female split (35 male/35 female)

Data collection tools

This study used a researcher-developed self-administered questionnaire, containing two parts to collect necessary data. First part was a socio-demographic profile, which includes the socio-demographic characteristics of the participants, comprising 11 items (age, sex, class, religion, caste, parental income, family types). The second part of the questionnaire comprised 18 items on the participants' precautionary

measures. This part addresses a total 17 items, based on the dimensions of protective behaviour such as hand hygiene (6 items), social distancing (3 items), use of masks (3 items) and nutritional behaviour (5 items) related to disease prevention actions. These items were administered using a 5-point Likert-type response format (1 = strongly disagree to 5 = strongly agree).

Validity and reliability

Content validity was gained through consultation with the specialized experts. The self-efficacy of disease prevention action scale was pretested with 30 respondents beyond the main study area before entering the field. After feedback from the pretest results and an expert, three items were eliminated, and the study tools were finalised and restructured. Similarly, the Cronbach's alpha of the self-administered questionnaire was tested and found to be acceptable (α= 0.72).

Data collection method

The first author collected the data for this study by visiting the sample schools, with an official letter from the Department of Health and the Population Education to the principal. The researcher visited the class and politely and clearly consulted with a sample of students. For quantitative data collection, the questionnaire was distributed to a sample of students. They were asked to fill out the questionnaire.

Data analysis procedure

The quantitative data were analysed using the Statistical Package for Social Sciences (SPSS) version 20. Data were found normally distributed (p=0.96) as the Kolmogorov-Smirnov test (P=0.96) test calculation, and the sample size was appropriate (N=280), indicating the application of the parametric tests. Descriptive statistics were computed with frequencies, means, and standard deviations. To examine the association between the variables, bivariate analysis such as an independent t-test and a one-way ANOVA was used. A general linear model was employed for multivariate analysis to estimate associations and identify predictors of self-efficacy.

Results

Socio-demographic profiles

The analysis reveals that the sample is equally divided between males (50%) and females (50%), and class (14.3% each), mostly from 15-20 years (61.1%) of age, followed by 10–14 (38.2%), single family type (62.5%). Almost half of the caste is from Kshetri (44.3%) followed by Janajati (28.2%), with Parents' Occupation agriculture

(45.7%), and income ranged 1,000–10,000 (38.2%). Almost all respondents are Hindu (96.1%).

Table 2

Socio-Demographic Profile of Respondents (N = 280)

Group	Category	Frequency	%
Gender	Male	140	50.0
	Female	140	50.0
Age	10–14	107	38.2
	15–20	171	61.1
	21–25	2	0.7
Class	Grade 6	40	14.3
	Grade 7	40	14.3
	Grade 8	40	14.3
	Grade 9	40	14.3
	Grade 10	40	14.3
	Grade 11	40	14.3
	Grade 12	40	14.3
Caste	Brahmins	25	8.9
	Kshetri	124	44.3
	Janajati	79	28.2
	Dalit	52	18.6
Religion	Hindu	269	96.1
	Buddhist	7	2.5
	Christian	2	0.7
	Muslim	2	0.7
Family Type	Single/Nuclear	175	62.5
	Joint	105	37.5
Parents' Occupation	Agriculture	128	45.7
	Business	47	16.8
	Other	33	11.8
	Driver	27	9.6
	Mistri	18	6.4
	Teacher	9	3.2
	Civil Service	2	0.7
Parental Income	1,000–10,000	107	38.2

10,000–20,000	87	31.1
20,000–30,000	48	17.1
30,000–40,000	8	2.9
40,000–50,000	26	9.3
>50,000	4	1.4

Note: Percentages are based on N = 280 unless otherwise indicated. NPR = Nepali Rupees. Percentages may not sum to 100.0 due to rounding.

Self-efficacy situation on disease prevention actions

The overall self-efficacy score and SD was 66.57 and ±6.95. Domain-level Mean and SD scores (expressed as summed item scores per domain) were for social distancing (12.09 ± 2.00), mask use (10.56 ± 1.76), hygiene (21.04 ± 2.88), and nutritional behaviour (20.97 ± 2.32).

Table 3

Descriptive Statistics of School Adolescents' Self-Efficacy on Disease Prevention Measures

Domains and Items	M	SD
Social Distancing	12.09	2.00
I will not go out of the house except for urgent needs.	4.01	0.92
I can maintain social distancing in school.	3.80	1.08
I stay away from any infected person.	4.28	0.79
Mask Use	10.56	1.76
I can use a mask when going to the market or crowded places.	4.26	0.78
I cannot afford to buy a mask due to poverty.	2.22	1.15
I only dispose of my mask in appropriate places.	4.08	0.93
Hygiene	21.04	2.88
I wash my hands with soap and water for at least 20 seconds.	4.25	0.79
I can regularly use alcohol-based sanitizer.	4.00	0.92
I cover my nose and mouth when coughing or sneezing.	4.23	0.75
I cannot afford to buy hand sanitizer due to poverty.	2.22	1.15
I avoid touching my face with unwashed hands.	4.11	0.85
I cannot afford to buy soap for regular handwashing.	2.23	1.16
Nutritional Behaviour	20.97	2.32

I drink enough water rather than sugary drinks.	4.30	0.64
I eat fish, meat, and eggs that are cooked thoroughly.	4.32	0.79
I regularly eat a healthy diet to avoid disease.	4.15	0.79
I can read and understand nutrition labels confidently.	4.27	0.75
I am able to change my eating behaviour considering disease risk.	3.93	1.05
Total Self-Efficacy	66.57	6.95

Note. M = mean; SD = standard deviation. Domain values represent summed scores across items within each domain. Corrected domain means: Social Distancing M = 12.09; Hygiene M = 21.04; Nutritional Behaviour M = 20.97.

Socio-demographic factors associated with self-efficacy on disease prevention

The association between socio-demographic characteristics of participants and self-efficacy on disease prevention actions was measured using an independent samples t-test, and gender, age, class, and language were significant. Higher self-efficacy score was found in Female students (M = 67.56, SD = 6.62), 10–14 years (M = 68.41, SD = 7.44), upper basic-level students (Grades 6-8) (M = 68.13, SD = 7.64) than secondary-level students (M = 65.41, SD = 6.15), Nepali-speaking adolescents (M = 67.18, SD = 6.84).

Bivariate analysis

Table 4

Independent Samples t-Test for Self-Efficacy by Socio-demographic factors

Variable	Category	N	M	SD	SE	Test Statistic	Df	P
Gender*	Male	140	65.59	7.15	0.60	t = −2.40	278	.017
	Female	140	67.56	6.62	0.56			
Age**	10–14 years	107	68.41	7.44	0.72	F = 7.25	2, 277	.001
	15–20 years	171	65.36	6.36	0.49			
	21–25 years[c]	2	72.00	5.65	4.00			
Class*								
	Basic level (Gr. 6–8)	120	68.13	7.64	0.70	t = 3.30	278	.001
	Secondary level (Gr. 9–12)	160	65.41	6.15	0.49			
Caste**	Brahmin	25	66.28	6.31	1.26	F = 0.63	3, 276	.597
	Kshetri	124	66.41	6.88	0.62			

	Janajati	79	66.15	7.20	0.81			
	Dalit	52	67.75	7.11	0.99			
Religion**	Hindu	269	66.68	6.95	0.42	F = 0.72	3, 276	.540
	Buddhist	7	64.86	7.90	2.99			
	Christian[c]	2	61.00	4.24	3.00			
	Muslim[c]	2	63.50	6.36	4.50			
Family Type*	Nuclear	175	66.90	6.66	0.50	t = 1.00	278	.318
	Joint	105	66.04	7.41	0.72			
Parent Occupation**	Agriculture	128	66.73	6.94	0.61	F = 1.21	4, 275	.300
	Govt. service	19	66.74	6.68	1.53			
	Foreign employ.	4	67.25	2.99	1.49			
	Business	47	64.64	6.76	0.99			
	Labour	82	67.38	7.20	0.80			
Language*	Nepali	239	67.18	6.84	0.44	t = 3.18	273	.001
	Maithili	36	63.36	6.01	1.00			
Income*	Below NPR 50,000	250	66.49	6.93	0.44	t = −0.60	278	.546
	Above NPR 50,000	30	67.30	7.18	1.31			

Note: independent samples t-test; ** = one-way ANOVA. ANOVA df reported as (between-groups df, within-groups df). p values reported without leading zero per APA 7th ed. [c]Groups with n = 2 violate parametric assumptions; results for these subgroups should be interpreted with caution. Language variable: n = 275 (5 missing cases).

The multivariate analysis (Table) showed respondents in selected Q11 (hygiene action) categories, which is category 3 (B = –6.462, p = 0.014), 5 (B = –4.365, p = 0.004), 7 (B = –3.904, p = 0.047), and 8 (B = –5.325, p = 0.002) have strong negative coefficients related to predicting self-Efficacy.Q2 and Q3 have minimal significance. Income and other categories Q5, Q6, Q7, Q8, and Q9 show no significant self-efficacy.

Table 5.

Parameter Estimates for Predicting Self-Efficacy

Parameter	B	SE	T	P	95% CI LL	95% CI UL	Partial η^2
Intercept	64.49	8.71	7.41	.000	47.34	81.64	.178
Q11 Cat. 3	−6.46	2.62	−2.47	.014	−11.62	−1.31	.024

Q11 Cat. 5	−4.37	1.50	−2.91	.004	−7.32	−1.41	.032
Q11 Cat. 7	−3.90	1.96	−1.99	.047	−7.76	−0.05	.015
Q11 Cat. 8	−5.33	1.72	−3.09	.002	−8.72	−1.93	.036

Note: Only statistically significant Q11 categories shown. Full parameter estimates available in the supplementary tables. P values reported without leading zero per 0a = reference category

Multivariate analysis showed Q8 (related to domain-specific behaviours) (F(5, 253) = 3.886, p = .002, partial η^2 = .071) and Q11 (related to health practices and actions)(F(9, 253) = 2.257, p = .019, partial η^2 = .074) have statistical significance in predicting self-efficacy.

Table 6

Tests Between-Subjects Effects for Self-Efficacy

Source	Type III SS	df	MS	F	p	Partial η^2
Corrected Model	2962.29	26	113.93	2.74	.000	.220
Intercept	16890.97	1	16890.97	406.29	.000	.616
Q8	807.73	5	161.55	3.89	.002	.071
Q11	844.45	9	93.83	2.26	.019	.074
Error	10518.14	253	41.57	—	—	—
Total	1254505.00	280	—	—	—	—
Corrected Total	13480.43	279	—	—	—	—

Note. SS = sum of squares; MS = mean square. Q8 = domain-specific behaviours; Q11 = health practices and actions. p-values reported without leading zero per

Discussion

This Study aims to determine the sociodemographic factors associated with self-efficacy for disease-prevention actions among school adolescents in Bardibas Municipality, Mahottari, Nepal. Adolescents' overall self-efficacy was moderate to high (M = 66.57 out of a possible total score of 100), indicating above-average confidence in disease prevention behaviours, though not at a ceiling level, suggesting potential for targeted health education interventions. The strongest domain was nutritional behaviour, followed by hygiene practices, and the lowest was mask use.

Self-efficacy Situation

In accordance with the hypothesis that moderate to high self-efficacy would be observed among adolescents in structured school settings, the overall score was M =

66.57 (SD = 6.95), a moderate to high self-efficacy in prevention domains. Similar findings were observed in a cross-sectional study conducted in Nepal among 487 school adolescents, in which positive self-efficacy was associated with health-promoting behaviours, especially nutrition and hygiene (Manandhar & Kakchapati, 2023). A study conducted in Surkhet, Nepal, reported that school adolescents struggle more in the health promotion domain, followed by healthcare and disease prevention (Khanal et al., 2026), and that a school-based health literacy intervention significantly improves adolescents' health-promoting actions (Khanal et al., 2025). Another study reported that health education increases school-going adolescents' confidence and ability to engage in health-promoting behaviours (Raut et al., 2024). Self-efficacy is the main determinant of disease preventive behaviour (Lu et al., 2024). In contrast, a moderate level (M=2.65/5) of health-promoting behaviour was observed among adolescent students, with the lowest engagement in nutrition (M=2.36) and physical activity (M=2.37) (Pudasaini et al., 2025). Health education can increase the health efficacy with healthy eating and physical activity (Kapali et al., 2024). In contrast, adolescents' strong mastery experiences and social support are associated with greater self-efficacy (Kleppang et al., 2023).

In line with the findings, similar studies in South Asian countries have shown that school-based health education programmes have supported adolescents' self-efficacy for health-promoting behaviour. A scoping review suggested that adolescents from India, Pakistan, and Nepal reported that school interventions have resulted in positive health behaviour outcomes, which have included mindfulness and coping (Sadhu et al., 2025).

Socio-Demographic Factors Associated with Self-Efficacy

The findings were supported by bivariate and multivariate analysis, suggesting that gender, age, class level and language were significant socio-demographic factors influencing self-efficacy and caste and religion were not significant socio-demographic factors influencing self-efficacy. A higher self-efficacy score was found among female students, primary-level students, and Nepali-speaking adolescents. Multivariate analysis reported hygiene-related behaviours and actions as significant predictors.

The finding that female respondents have higher self-efficacy than males across all disease prevention domains is consistent with a study done in Nepal, which shows the gendered pattern in health-promotive behavior and self-efficacy. Similarly, a study conducted among Nepali adolescent girls showed that self-efficacy is shaped by gender and socio-demographics such as caste, education and family background (Madjdian et al.,

2021). Khanal et al. (2023) stated that the school-based health literacy interventions in Nepal tend to promote decision-making and health-promoting behaviour among adolescents, with better response among females. Overall, female adolescents adopt health-protective behaviours and are responsible for family and individual health. Similar results were seen in a study done among the general population in Hong Kong, where female respondents showed better disease preventive behaviour (Lee et al., 2020) and the South Asian general population (Kaur Toor, 2021). Adult males have traditional masculine beliefs, and they think themselves as a low risk for illness and less likely to adopt any behaviour, whereas females, in a caregiver role, feel prone to illness and are more likely to adopt illness preventive measures (Springer & Mouzon, 2011). These patterns demonstrate that gender and socio-cultural roles influence health-related behavior.

Younger adolescents (10–14 years) showed higher self-efficacy in our study, which might be due to adequate parental guidance and a rigid school routine. In contrast, a study done in Nepal found that older adolescents have better self-efficacy. Family support leads to better self-efficacy (Bhatta et al., 2021). A comparable finding was observed among younger adolescents (10–14 years) in India, where they have high confidence in self-efficacy. It suggests that a supportive social and family environment leads to better self-efficacy among adolescents (Cherewick et al., 2024). Consistent with this study, a study from Malaysia showed that adolescents with better supervision and an emotional bond with their parents have higher self-efficacy (Shawaluddin et al., 2025). A systematic review showed that parental beliefs and their ability to guide their children are associated with reduced health risk behavior (Glatz et al., 2024). A study of Nepal reported that Parenting styles determine school-going adolescents' self-esteem (Bhandari et al., 2026). These findings commonly emphasise the value of parental and social support in strengthening health-related self-efficacy and actions among adolescents.

Language was identified as a strong predictor in this study. Higher self-efficacy scores were observed among Nepali-speaking students compared to Maithili-speaking students, suggesting inadequate health information access, revealing it as a contributing factor. Similarly, a study conducted in Nepal among pregnant women found that language acts as a facilitator of health-related information influencing health action (Dhungana et al., 2019). In line with this, it was found that health-seeking and language preference are important factors shaping the seeking and understanding of health-related

information. Non-dominant-language speakers have poor health literacy due to health information produced in the dominant language (Chu et al., 2022).

Non-significant predictors

Parental income, occupation, caste, and religion were not significant predictors of self-efficacy. This finding, which somewhat contradicts the hypothesis, was that actual socio-demographic structural factors were not as good a predictor of self-efficacy as other factors, such as the presence of parental guidance and social support, that are closer to the adolescent. Consistent with present findings, a study showed that health efficacy was not significantly associated with socio-demographic factors. (Pudasaini et al., 2025). However, it was widely affected by social support and parental guidance.

Limitations

There are several limitations that ought to be noted in this study. To begin with, the cross-sectional design limits the researcher's ability to link socio-demographic variables to the self-efficacy of self-initiated disease-preventive measures. Second, the research was conducted in a single municipality, Bardibas, Mahottari, and this can make the study less applicable to other parts of Nepal because of varying socio-cultural and infrastructural factors. Third, the sampling used cluster sampling in four randomly chosen schools, which, inasmuch as it is representative of the local population, may not reflect differences among the various private schools as well as in other municipalities. Fourth, self-administered questionnaires were used to collect the data, and this is prone to social desirability and recall bias that may affect the validity of the responses. Fifth, the research focused mainly on socio-demographic predictors and omitted psychosocial predictors of self-efficacy, like parental support, peer influence, and school health resources, which would have provided a more holistic picture of determinants of self-efficacy. Lastly, the research was conducted during the COVID-19 pandemic, which could have affected the views and behaviours of adolescents and restricted the externalization of the findings to non-pandemic environments.

Conclusion

Adolescents in the study area showed moderate to adequate self-efficacy in disease prevention, with significant self-efficacy in nutritional behaviours and hygiene practices and lower significance in mask use. Gender, age, class level, and language proved to be major predictors of self-efficacy, as income, caste, and religion were not related. Behavioural skills are strong predictors of overall self-efficacy. Confidence in

positive health is supported by social and family support. Overall, the findings suggest a gap in certain health-promotive actions that require urgent, school- and community-based, gender- appropriate, culturally sensitive health education programs for adolescents. These results reflect the need for gender-sensitive and culturally relevant community and school-based health education programs to enhance the preventive practices and health literacy of adolescents in multilingual contexts.

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