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ASSOCIATION OF SELF-EFFICACY, SOCIAL SUPPORT, AND RESILIENCE WITH SELF-MANAGEMENT PRACTICES AMONG PEOPLE WITH TYPE 2 DIABETES IN KEBBI STATE, NIGERIA

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ABSTRACT
Type 2 diabetes mellitus requires consistent self-management practices to prevent complications and maintain glycaemic control. Effective self-management is essential for preventing complications and maintaining glycaemic control among individuals living with type 2 diabetes mellitus. Psychosocial factors such as self-efficacy, social support, and resilience may be associated with the patients' ability to sustain recommended self-care behaviours. However, evidence regarding the combined association of these factors remains limited in northern Nigeria. A descriptive cross-sectional study was conducted among adults with type 2 diabetes attending two major hospitals in Birnin-Kebbi, Kebbi State, Nigeria. A total of 422 participants were recruited using proportionate sampling, of whom 413 provided complete data for analysis. Standardized instruments were used to assess diabetes self-management practices, self-efficacy, perceived social support, and resilience. Descriptive statistics, chi-square tests, and multivariable logistic regression analysis were performed using IBM SPSS version 25, with statistical significance set at $p < 0.05$. The mean age of participants was 54.6 ± 11.2 years. Slightly more than half (54.2%) demonstrated good diabetes self-management practices. Multivariable logistic regression analysis showed that higher self-efficacy (OR = 2.51, 95% CI: 1.36–4.63, p = 0.003), stronger perceived social support (OR = 2.20, 95% CI: 1.25–3.88, p = 0.006), and greater resilience (OR = 1.98, 95% CI: 1.04–3.76, p = 0.039) were independently associated with better self-management practices. The overall model was statistically significant ($\chi^2 = 26.85$, $p < 0.001$) and explained approximately 14% of the variance in self-management behaviour. Self-efficacy, social support, and resilience were statistically associated with diabetes self-management practices. Strengthening these factors through patient education, supportive care, and community-based interventions may improve diabetes management practice in similar settings.
Keywords: *Type 2 diabetes mellitus, self-efficacy, social support, resilience, self-management, Nigeria.*

INTRODUCTION
Diabetes mellitus represents one of the most pressing chronic health challenges globally. The International Diabetes Federation estimated that 537 million adults were living with diabetes in 2021, with projections indicating this number will reach 643 million by 2030 and 783 million by 2045 (International Diabetes Federation, 2021; Sun *et al*., 2022). This rise is particularly concerning in Africa, where diabetes cases are expected to increase by 143% (Agofure *et al*., 2020; Abiodun *et al*., 2024). Sub-Saharan Africa faces an anticipated 129% increase in type 2 diabetes by 2045, intensifying the burden of diabetes-related complications (Goedecke & Mendham, 2022).

Nigeria, Africa's most populous nation, confronts an exceptionally heavy burden of type 2 diabetes. Current estimates suggest a national prevalence of approximately 5.77%, affecting around 11.2 million individuals (International Diabetes Federation, 2021). Other reports indicate that between 8% and 10% of Nigerians are affected (Okafor *et al*., 2023). The financial strain is substantial, with diabetes accounting for more than one billion US dollars in annual healthcare costs across the region (Ojo *et al*., 2022; Opeyemi, 2023). In Nigeria specifically, diabetes-related complications contribute to approximately 15% of hospital admissions and 22% of deaths (Tella *et al*., 2021).

Effective diabetes management depends largely on self-management, which includes following a healthy diet, regularly monitoring blood glucose, taking prescribed medications, exercising, and practising proper general and foot care (Alhaiti *et al*., 2019; Abiodun *et al*., 2020; Yoon *et al*.,

2022; Ampofo *et al*., 2022; Abiodun *et al*., 2024). Research indicates that approximately 95% of diabetes care is undertaken by patients themselves or their families (Ampofo *et al*., 2022). Achieving good glycaemic control, therefore, relies heavily on consistent self-care behaviours (Abiodun *et al*., 2024).

Several psychosocial factors are associated with self-management effectiveness, and understanding how they interact requires a theoretical lens. Social Cognitive Theory (Bandura, 1986) provides the primary framework for this study. The theory posits that human behaviour is shaped by the interplay between personal cognitive factors, behaviour, and the social environment. Within this framework, self-efficacy, an individual's confidence in their ability to perform specific health-related tasks, occupies a central role. People with higher self-efficacy are more likely to adopt lifestyle changes, follow treatment plans, and maintain psychological well-being, all of which are associated with better blood glucose control (Qin *et al*., 2020; Tan *et al*., 2021; Ojewale *et al*., 2021). Complementing this, Self-Determination Theory (Deci & Ryan, 2000) highlights the importance of autonomous motivation and social support in sustaining health behaviours. Social support, encompassing emotional, informational, and tangible assistance through formal and informal networks, enables individuals to feel valued, accountable, and encouraged in their self-care efforts (Drageset, 2021; Dinh & Bonner, 2023). Furthermore, resilience, the capacity to recover from adversity and adapt positively to challenges, enables individuals to maintain consistent self-care despite the setbacks inherent in chronic disease management (Boell *et al*., 2020; Kusnanto *et al*., 2020). For people living with diabetes, resilience is reflected in the ability to sustain self-care, achieve reasonable glycaemic control, and maintain a positive outlook despite the demands of the condition. Taken together, these three constructs, each theoretically distinct yet mutually reinforcing, are proposed as independent variables associated with diabetes self-management behaviour.

While studies have examined these factors in other contexts, significant gaps remain in the literature on northern Nigeria. Specifically, whereas Ojewale *et al*. (2021) assessed self-efficacy among people living with diabetes in Ibadan, southwestern Nigeria, and Samuel *et al*. (2024) examined self-management and support systems in north-central Nigeria, no study to date has simultaneously examined the combined role of self-efficacy, social support, and resilience in a single analytical model in northern Nigeria. Prior research has largely focused on individual psychosocial factors in isolation or has been conducted in southwestern Nigeria. This region differs substantially from the north in terms of cultural norms, predominant religion (Islam), dietary practices, and patterns of formal healthcare utilisation. Kebbi State, as a predominantly rural, northern state characterised by strong communal family structures, high rates of informal social networks, and limited specialist healthcare infrastructure, represents a socioculturally distinct context in which the interplay of these psychosocial variables may manifest differently. Understanding how self-efficacy, social support, and resilience are jointly associated with self-management practices in this context could provide culturally appropriate insights for designing effective psychosocial interventions for diabetes care in northern Nigeria. This study, therefore, aimed to assess the association of these three psychosocial factors with self-management practices among people with type 2 diabetes in Kebbi State.

METHOD

Study design and setting

This study employed a descriptive cross-sectional design and was conducted at two healthcare facilities in Birnin-Kebbi, Kebbi State, northern Nigeria: Federal Teaching Hospital and Sir Yahaya Memorial Hospital. These institutions were purposively selected as primary referral centres with substantial type 2 diabetes patient populations.

Participants

The study population comprised adults aged 18 years and above with diagnosed type 2 diabetes receiving care at the selected hospitals. Inclusion criteria required participants to have attended diabetes treatment services for at least two months, provided voluntary consent, and demonstrated adequate mental capacity. Exclusion criteria comprised pregnant women, individuals with mental or cognitive difficulties, and those experiencing severe illness at recruitment.

Sample size determination

Sample size was calculated using Cochran's formula for cross-sectional studies: $n = Z^2 \times P \times (1–P) / d^2$, where $Z = 1.96$ for 95% confidence, $P = 0.5$ for maximum variability, and $d = 0.05$ for 5% precision. This yielded 384 participants. Adding 10% for potential non-response produced a final sample of 422.

Proportionate stratified sampling was used, with the two hospitals serving as strata. The total eligible patient population was obtained from diabetes clinic registers at each facility. A sampling interval (k) was calculated by dividing the total eligible patient population at each site by the required sample from that stratum, yielding 169 participants from Federal Teaching Hospital (40%) and 253 from Sir Yahaya Memorial Hospital (60%). Within each stratum, the first participant was selected randomly from the clinic register, and every k-th eligible patient attending the diabetes clinic on subsequent clinic days was recruited to participate. Research assistants screened patients for eligibility at the point of registration before their medical consultation.

Data collection instruments

A structured questionnaire comprising five sections was used to collect data. Section A captured sociodemographic and clinical information, including age, gender, marital status, education, employment, fasting blood glucose (FBG) measured using the CONTOUR PLUS glucometer, duration of diabetes, treatment methods, and complications. Section B assessed self-management practices using the 16-item Diabetes Self-Management Questionnaire (DSMQ) developed by Schmitt *et al*. (2013) to examine nutrition control, medication adherence, glucose monitoring, exercise participation, and medical consultation patterns. Responses used a four-point scale from 'does not apply' to 'applies very much.' Total scores were converted to a 0-10 scale. In the present sample, internal consistency was satisfactory (Cronbach's $\alpha = 0.79$). Section C measured self-efficacy using the 8-item Diabetes Empowerment Scale–Short Form (DES-SF) developed by Anderson *et al*. (2003). Participants rated agreement on a five-point scale from 'strongly disagree' to 'strongly agree.' Scores of 4.0-5.0 represented high self-efficacy, 3.0-3.9 moderate, and 1.0-2.9 low. Cronbach's α in the present sample was 0.82. Section D evaluated perceived social support using the 12-item Multidimensional Scale of Perceived Social Support (MSPSS) developed by Zimet *et al*. (1988), examining support from family, friends, and significant others on a seven-point scale. Scores of 5.1-7.0 indicated high support, 3.0-5.0 moderate, and 1.0-2.9 low. Cronbach's α in the present sample was 0.89. Section E assessed resilience using the 10-item Connor–Davidson Resilience Scale (CD-RISC-10) developed by Connor and Davidson (2003). Participants indicated the frequency of resilience characteristics on a five-point scale from 'never' to 'almost always.' Scores above 30 suggested high resilience, 20–30 moderate, and below 20 low. Cronbach's α in the present sample was 0.83. All instruments have established validity and reliability in Nigerian populations. The Cronbach's alpha values reported above confirm satisfactory internal consistency for the current sample.

Data collection procedure

Official letters of introduction were obtained from the Dean of the Faculty of Nursing via the Head of the Department of Medical-Surgical Nursing, University of Ibadan. At each facility, the

researcher introduced the study and explained its purpose to potential participants. Written informed consent was obtained before participation. Questionnaires were administered face-to-face with assistance from four research assistants. FBG values were retrieved from clients' consultation cards, a routine measurement taken before medical consultation. The questionnaire was originally developed and administered in English. However, for participants who experienced difficulty understanding English, particularly those with lower formal education, the questionnaire content was verbally translated into Hausa by the researcher and trained research assistants during administration to ensure comprehension. No separately printed Hausa version was distributed; translation was provided orally and interactively as needed. Each questionnaire required 15-20 minutes to complete and was checked for completeness upon return. Data collection occurred from 8:00 am to 2:00 pm on clinic days over 9 weeks (3rd April to 5th June 2025).

Data analysis

Data were analysed using IBM SPSS version 25.0. Descriptive statistics, including frequencies, percentages, means, and standard deviations, summarised participant characteristics and study variables. Chi-square tests examined associations between self-efficacy, social support, resilience, and self-management practices. Multivariable logistic regression analysis, using continuous scores for all three psychosocial variables, determined the strength of their association with self-management behaviour. Statistical significance was set at $p < 0.05$.

Ethical Considerations

Ethical approval was obtained from the Federal Teaching Hospital Ethics Committee (approval number FTH/BK/HP/045/P/517/VOL.V/073, 10th February 2025) and Sir Yahaya Hospital Ethics Committee (SYMHBK/BK/SUB/VOL.I, 30th April 2025). All participants provided written informed consent. Confidentiality was maintained by assigning participant codes instead of recording personal identifiers. Participation was voluntary with no penalties for withdrawal.

RESULTS

Participant recruitment and characteristics

Of 422 participants enrolled, 413 provided complete data for analysis, yielding a response rate of 98%. Table 1 presents sociodemographic and clinical characteristics. Participants comprised slightly more females (53.5%) than males (46.5%), with a mean age of 54.6 (± 11.2) years. Most were married (73.4%), while 22.3% were widowed and 4.3% divorced. Educational attainment varied: 18.9% had no formal education, 22.8% completed primary school, 26.4% attained high school education, and 18.2% held tertiary qualifications. Nearly half (47.7%) were self-employed, 24.5% formally employed, and 27.9% unemployed. Main support came from family members (47.0%) and spouses (40.9%), with 12.1% relying primarily on friends.

Mean diabetes duration was 4.5 (± 2.7) years, with 39.0% living with the condition for five years or more. Mean fasting blood glucose level was 159.8 ± 28.7 mg/dL, with 79.2% having elevated levels. Average blood pressure was 135/85 ± 12/8 mmHg, with 71.7% maintaining normal readings. Nearly all participants (93.7%) were on medication, while 74.1% practised dietary control, 55.2% engaged in regular exercise, and 43.3% attempted weight loss. Only 10.4% reported complications, primarily vision problems (5.8%) and hypertension (4.6%). Most participants (96.1%) lived with others.

Table 1. Sociodemographic and clinical characteristics of participants (n = 413)

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	192	46.5
	Female	221	53.5
Age (years)	Mean ± SD	54.6 ± 11.2	
Marital status	Married	303	73.4
	Widowed	92	22.3
	Divorced	18	4.3
Education	No formal education	78	18.9
	Primary school	94	22.8
	Junior school	57	13.8
	High school	109	26.4
	University	75	18.2
Employment	Employed	101	24.5
	Self-employed	197	47.7
	Unemployed	115	27.9
Main support	Spouse	169	40.9
	Family members	194	47.0
	Friends	50	12.1
Diabetes duration	Mean ± SD (years)	4.5 ± 2.7	
	Less than 1 year	38	9.2
	1-2 years	96	23.3
	3-4 years	118	28.6
	5+ years	161	39.0
Treatment	Medications	387	93.7
	Diet	306	74.1
	Exercise	228	55.2
	Weight loss	179	43.3
Complications	Vision problems	24	5.8
	Hypertension	19	4.6
	None	370	89.6
Living pattern	Lives alone	16	3.9
	Lives with others	397	96.1
FBG (mg/dL)	Normal (less than 126)	86	20.8
	High (126 or above)	327	79.2
	Mean ± SD	159.8 ± 28.7	
Blood pressure	Normal (less than 140/90)	296	71.7
	High (140/90 or above)	117	28.3
	Mean ± SD (mmHg)	135/85 ± 12/8	

FBG: Fasting blood glucose; SD: Standard deviation

Self-efficacy level, perceived social support, resilience level, and Self-management practices among people living with type 2 diabetes mellitus

Table 2 shows self-efficacy distribution among participants. Close to half (47.9%) demonstrated moderate self-efficacy, while 41.6% expressed high self-efficacy. Only 10.4% indicated low self-efficacy. Also, analysis revealed that 49.2% of participants perceived high social support, 42.6% moderate support, and 8.2% low support. Nearly one-quarter of participants (23.7%) demonstrated high resilience, while the majority (62.2%) fell within the moderate range. A smaller proportion (14.0%) recorded low resilience. Result also showed that 54.2% of participants exhibited good self-management practices, scoring above the mean, while 45.8% displayed poor self-management.

Table 2. Self-efficacy level, social support level, resilience level, and Self-management level among participants (n = 413)

Self-efficacy level	Frequency (n)	Percentage (%)	Mean	± SD
High (4.0-5.0)	172	41.6	3.84	0.69
Moderate (3.0-3.9)	198	47.9		
Low (1.0-2.9)	43	10.4		
Social support level				
High (5.1-7.0)	203	49.2	5.08	1.15
Moderate (3.0-5.0)	176	42.6		
Low (1.0-2.9)	34	8.2		
Resilience level				
High (31 or above)	98	23.7	27.36	5.82
Moderate (20-30)	257	62.2		
Low (below 20)	58	14.0		
Self-management level				
Good (above mean)	224	54.2	6.12	1.41
Poor (at or below the mean)	189	45.8		

SD: Standard deviation

Association between psychosocial factors and self-management

Table 3 below presents a logistic regression analysis which evaluated the predictive capacity of self-efficacy, perceived social support, and resilience on self-management practices. Participants with high self-efficacy showed 2.5-fold increased odds of achieving optimal self-management compared to those with low self-efficacy (OR = 2.51, 95% CI: 1.36-4.63, p = 0.003). Those reporting high perceived social support demonstrated approximately 2.2-fold greater likelihood of maintaining effective self-management (OR = 2.20, 95% CI: 1.25-3.88, p = 0.006). Participants with high resilience exhibited nearly double the probability of engaging in appropriate self-management relative to their low-resilience counterparts (OR = 1.98, 95% CI: 1.04-3.76, p = 0.039).

The joint association of self-management was statistically significant (χ^2 = 26.85, df = 3, p < 0.001). Model performance metrics revealed Nagelkerke R^2 of 0.14, indicating the framework accounts for approximately 14% of observed variation in self-management practices, with classification accuracy of 68.2%.

Table 3. Logistic regression analysis showing association between self-efficacy, perceived social support, and resilience and the self-management practices (n = 413)

Variable	B	S.e	Odds ratio	95% CL	Wald χ^2	Df	P-value
Self-efficacy (high vs low)	0.92	0.31	2.51	1.36 –4.63	8.80	1	0.003
Social support (high vs low)	0.79	0.29	2.20	1.25 – 3.88	7.43	1	0.006
Resilience (high vs low)	0.68	0.33	1.98	1.04 – 3.76	4.24	1	0.039
Constant	-1.16	0.41			7.97	1	0.005
Model fit statistics							
Chi-square (df = 3)	26.85						p < 0.001
-2 log likelihood	475.28						
Nagelkerke *r²*	0.14						
Classification accuracy	68.2%						

B: Regression coefficient; SE: Standard error; CI: Confidence interval; df: Degrees of freedom

DISCUSSION

This study examined the association of self-efficacy, social support, and resilience with self-management practices among people living with type 2 diabetes in Birnin-Kebbi, Kebbi State, Nigeria. The findings demonstrate that these psychosocial factors are significantly associated with patients' engagement in self-management practice. All three factors were independently associated with self-management behaviour in the multivariable model, with the combined model explaining meaningful variance in self-care outcomes. Specifically, individuals with higher

self-efficacy, stronger perceived social support, and greater resilience had significantly higher odds of practising effective diabetes self-management.

The demographic profile showed participants were predominantly middle-aged or older adults, consistent with known diabetes epidemiology where age-related lifestyle and metabolic changes increase risk (Centers for Disease Control and Prevention, 2022). Most were married and relied primarily on family support, highlighting the importance of family networks in diabetes management within this cultural context. Educational attainment varied considerably, underscoring the need for tailored health education approaches that accommodate different literacy levels.

Self-efficacy levels in this study were generally favourable, with nearly 90% of participants expressing moderate to high confidence in managing their diabetes. This contrasts with findings from Iraq where a larger proportion struggled with self-care confidence (Madran & Jassim, 2022), and differs from Egyptian research where fewer patients achieved high self-efficacy even after interventions (Elneblawi *et al*., 2025). The relatively strong self-efficacy observed may reflect beneficial patient education initiatives, family involvement, or engaged healthcare professionals in Kebbi State. These findings are consistent with Social Cognitive Theory and broader evidence showing that self-efficacy is a key correlate of self-management outcomes (Qin *et al*., 2020; Ojewale *et al*., 2021; Kartal & Calli, 2021).

Social support levels were similarly encouraging, with over 90% perceiving adequate to strong support networks. This finding is consistent with Nigerian studies demonstrating the protective role of family cohesion and social networks in diabetes care (Abdulsalam *et al*., 2019; Magaji *et al*., 2024). Research from Lagos and Ibadan has shown that robust social support is associated with better medication adherence and reduced depression symptoms (Olabode *et al*., 2019; Ilori & Ajetunmobi, 2019). The current results reinforce that supportive relationships provide not only practical assistance but also emotional reinforcement that may sustain health behaviours. These findings align with tenets of Self-Determination Theory, which identifies relatedness, the experience of being connected to and supported by others, as a basic psychological need that fosters autonomous motivation for self-care.

Resilience levels indicated that most participants possessed moderate capacity to cope with diabetes-related challenges, though notably fewer demonstrated high resilience compared with self-efficacy and social support. This pattern warrants sociocultural interpretation. In the context of northern Nigeria, where stoic responses to chronic illness are culturally normative, mental health literacy is limited, and formal psychological support services are scarce, the development of structured psychological resilience skills may be constrained even among individuals who possess strong task-specific confidence and social networks. Faith-based coping, a hallmark of the predominantly Muslim communities of Kebbi State, may provide a form of spiritual resilience that is not fully captured by the CD-RISC-10. These findings suggest that while many patients manage reasonably well, targeted interventions to strengthen psychological resilience could further enhance coping capabilities, complementing the benefits of self-efficacy and social support. This is consistent with prior Nigerian research linking higher resilience with better self-care adherence and glycaemic control (Ojewale *et al*., 2019; Parviniannasab *et al*., 2024).

Self-management practices in this study were better than reported in several comparable settings. Over half of participants demonstrated good self-care, contrasting with studies in Iraq, Egypt, and Ethiopia where substantially fewer patients maintained adequate self-management (Madran & Jassim, 2022; Kader *et al*., 2023; Degefa *et al*., 2020). Similarly, research in southwestern Nigeria found very low rates of satisfactory self-care (Famakinwa *et al*., 2022). These regional variations likely reflect differences in healthcare infrastructure, patient education programmes, socioeconomic factors, and cultural influences on health behaviours.

The central finding that self-efficacy, social support, and resilience are each significantly associated with self-management aligns with established theoretical frameworks. Participants with higher self-efficacy scores had 2.5 times the odds of good self-management compared to

those with lower scores. This is consistent with Social Cognitive Theory, which holds that confidence in one's abilities is directly associated with health behaviour adoption and maintenance (Schunk & DiBenedetto, 2019). Similarly, higher perceived social support was associated with more than double the odds of effective self-management, consistent with evidence that family and community networks provide essential encouragement, accountability, and practical assistance (Chen *et al*., 2022; Wang *et al*., 2019). Higher resilience scores were also significantly associated with good self-management, confirming that adaptive coping is associated with persistence in self-care despite the challenges of living with a chronic condition (Parviniannasab *et al*., 2024).

Importantly, these factors showed a synergistic pattern in the combined model, explaining meaningful variance in self-management outcomes. This underscores that effective diabetes care requires comprehensive approaches addressing psychological, social, and behavioural dimensions simultaneously. Interventions focusing solely on clinical aspects without considering patients' confidence, support systems, and coping capacities may achieve limited success, particularly in northern Nigerian settings where psychosocial barriers to self-care are prevalent.

For healthcare practice in Kebbi State and similar northern Nigerian contexts, these findings suggest the value of integrating psychosocial assessment and support into routine diabetes care. Training healthcare providers to provide self-efficacy-enhancing brief counselling, facilitating peer support groups for patients with diabetes, and incorporating family members into diabetes education sessions are practical, low-cost strategies that could be adapted for implementation within the existing healthcare infrastructure.

Conclusion

In conclusion, this study highlights the important role of psychosocial factors in shaping diabetes self-management practices among people living with type 2 diabetes in Kebbi State. Self-efficacy, social support, and resilience were all significant predictors of patients' ability to engage in effective self-management practice. These findings suggest that diabetes management programmes should not focus solely on clinical treatment but should also incorporate strategies that strengthen patients' confidence, coping abilities, and social support networks. Integrating these psychosocial components into routine care may contribute to improved diabetes outcomes and quality of life.

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Authors' contributions

Haruna Y. Jandutsi: Conceptualization, data curation, formal analysis, investigation, methodology, and writing original draft.

Lucia Y. Ojewale: Supervision, validation, review and editing

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Declarations

Ethics approval and consent to participate

The study received ethical approvals from the facilities' ethical review boards and was conducted in full accordance with the Declaration of Helsinki. Participants were informed that their participation was entirely voluntary, and their responses would remain confidential.

Consent for publication

Not applicable

Competing interest

The authors declare that they have no competing interests.

Declarations

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Tables

Data *Availability*

The datasets generated and analyzed during this study are not publicly available because they contain confidential patient information. However, the data can be obtained from the corresponding author upon reasonable request.

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