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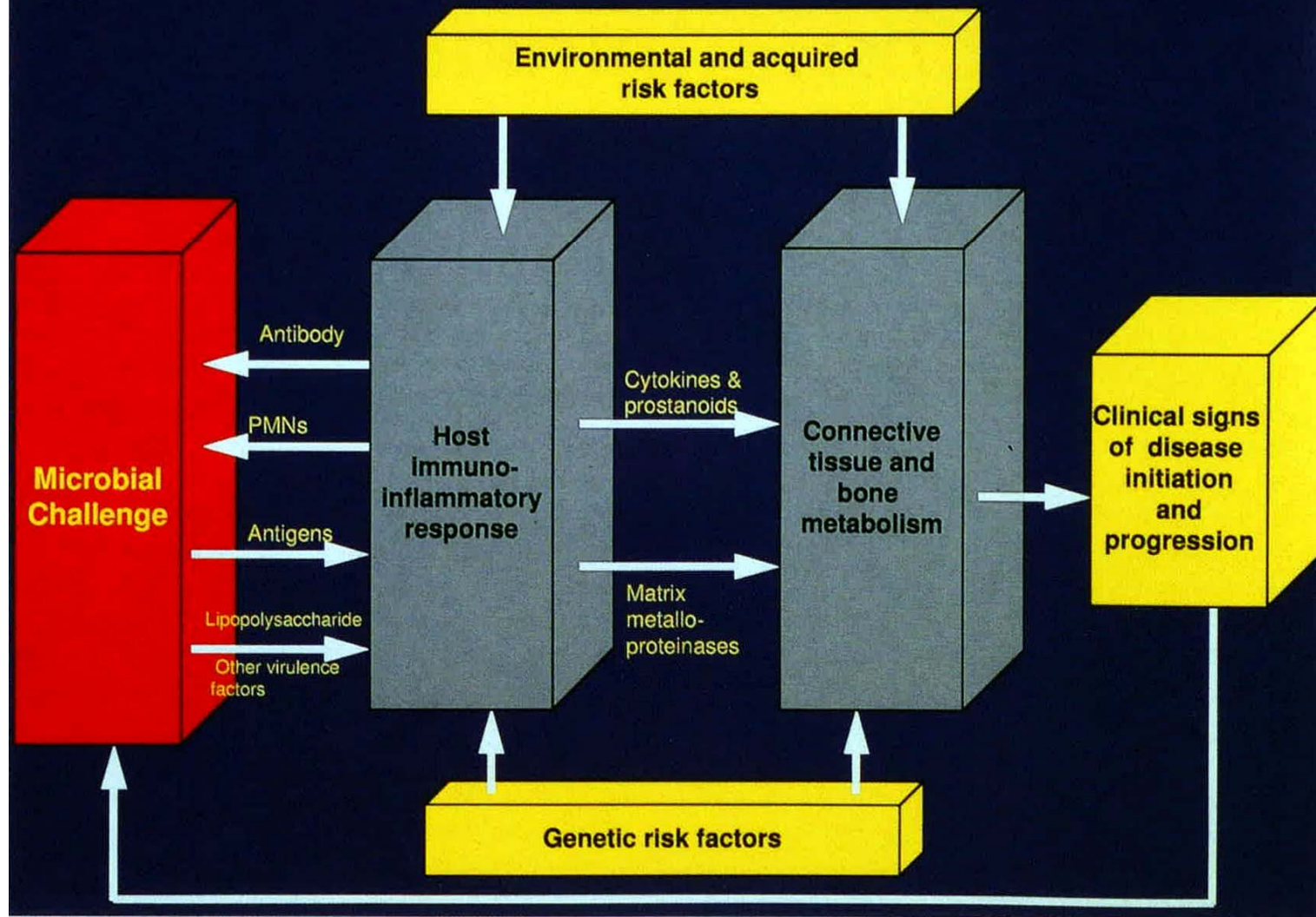
# A community study on the relationships of stress and periodontitis


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# Pathogenesis of Human Periodontitis





# **Psychological factors associate with inflammatory periodontal disease**

**(Marcenes & Sheiham 1992, Genco et al. 1999)**

- Stressful life situations and necrotizing periodontal diseases (Monteiro et al. 1995)
- Psychosocial factors associated with poor periodontal health (Marcenes & Sheiham 1992, Green et al. 1986, Freeman & Grossi 1983, Erie County Risk Factor Study: Grossi et al 1994, 1995)



# Major components of the stress process:

1. **Stressor**
  - *life event*
  - *daily strain*
2. **Moderating & mediating factors**
  - *coping*
  - *personality trait*
3. **Stress reactions**
  - *psychological response*
  - *somatic response*



# Aim

- To investigate the relationship of periodontal disease to psychosocial stress, making reference to the major components of the stress process including **stressor**, **mediating and moderating factors**, and **stress responses**.

# Method (1)

3 general dental practices:

Hong Kong Island, Kowloon & New Territories

N = 1000; 25-64 year, dentate individuals

## Questionnaire survey

1. Demography/Socio-economy
2. Medical history
3. Dental habits and dental care utilization
4. Smoking
5. Psychological instruments
  - Life event/changes: LEQ, SRRS, daily strain: measure of chronic strain, Coping: COPE, Personality trait: DASS-T, Psychological & somatic responses: DASS-S, SCL-90

## Periodontal examination

- Full mouth, 6 sites per tooth:
  - Calculus, BOP, Rec, PPD, CAL
- Full mouth mean CAL: Healthy, Low, Moderate, High, Severe (Genco et al. 1999)



## Method (2)

- Dichotomize full mouth mean CAL:
  - 0 = healthy/low mean CAL categories,
  - 1 = high/severe mean CAL categories
- Stepwise ordinal logistic regression analysis of potential risk indicators for CAL (n = 767)
- Median split of scores (MacCallum et al 2002)
  - COPE: Problem-focused  
Emotion-focused
  - Anxiety Trait
  - Depression Trait



# RESULTS







**Table 1. Demographic characteristics of subjects**

<b>Demographic characteristics</b>	<b>Sample</b>		<b>Population (%)</b>
	<b>n</b>	<b>%</b>	
<b>Gender</b>			
Male	469	46.9	48.5
Female	531	53.1	51.5
<b>Age in years</b>			
25 to 34	292	29.2	28.2
35 to 44	355	35.5	34.6
45 to 54	233	23.3	24.4
55 to 64	120	12.0	12.8
<b>Marital status</b>			
Never married	350	35.0	31.9
Married	550	55.0	59.4
Separated/divorced	65	6.5	2.7
Widowed	35	3.5	6.0
<b>Education</b>			
None/pre-school	38	3.8	3.8
Primary	213	21.3	21.4
Secondary	576	57.6	48.0
Tertiary (non-degree)	45	4.5	12.7
University degree or above	128	12.8	14.1



**Table 1. Demographic characteristics of subjects – con't**

**Monthly household income (in Hong Kong Dollars)**

<b>≤ \$ 4,999</b>	<b>100</b>	<b>10.9</b>	<b>14.9</b>
<b>\$ 5,000 - \$ 9,999</b>	<b>277</b>	<b>30.2</b>	<b>29.4</b>
<b>\$ 10,000 - \$ 14,999</b>	<b>236</b>	<b>25.7</b>	<b>23.6</b>
<b>\$ 15,000 - \$ 19,999</b>	<b>128</b>	<b>13.9</b>	<b>11.8</b>
<b>\$ 20,000 - \$ 24,999</b>	<b>73</b>	<b>8.0</b>	<b>8.2</b>
<b>\$ 25,000 - \$ 29,999</b>	<b>32</b>	<b>3.5</b>	<b>3.8</b>
<b>≥ \$ 30,000</b>	<b>72</b>	<b>7.8</b>	<b>8.2</b>

**Time of last dental visit**

**1 year or less**

<b>for check-up and professional cleaning</b>	<b>249</b>	<b>24.9</b>
<b>for dental problem</b>	<b>112</b>	<b>11.2</b>
<b>1 to 3 years</b>	<b>317</b>	<b>31.7</b>
<b>More than 3 years</b>	<b>252</b>	<b>25.2</b>
<b>Never visited dentist</b>	<b>59</b>	<b>5.9</b>
<b>Could not remember</b>	<b>11</b>	<b>1.1</b>

**Tooth brushing habit**

<b>Three times daily</b>	<b>15</b>	<b>1.5</b>
<b>Twice daily</b>	<b>707</b>	<b>70.7</b>
<b>Once daily</b>	<b>263</b>	<b>26.3</b>
<b>Brushed occasionally</b>	<b>7</b>	<b>0.7</b>
<b>Never brushed</b>	<b>8</b>	<b>0.8</b>

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**Table 2. Prevalence of systemic diseases, smoking habits in the study sample (N = 1,000)**

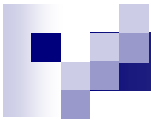
	<b>Prevalence (n)</b>	<b>Percentage (%)</b>
<b>Systemic diseases</b>		
Allergy	110	11.0
Diabetes	62	6.2
Hypertension	77	7.7
Cardiovascular	26	2.6
Anaemia	27	2.7
Asthma	51	5.1
Others	23	2.3
Hepatitis B carrier	98	9.8
<b>Smoking habit</b>		
None	860	86.0
Very light	11	1.1
Light	39	3.9
Moderate	35	3.5
Heavy	55	5.5

**Table 3. Stepwise ordinal logistic regression analysis of potential risk indicators for clinical attachment levels.**

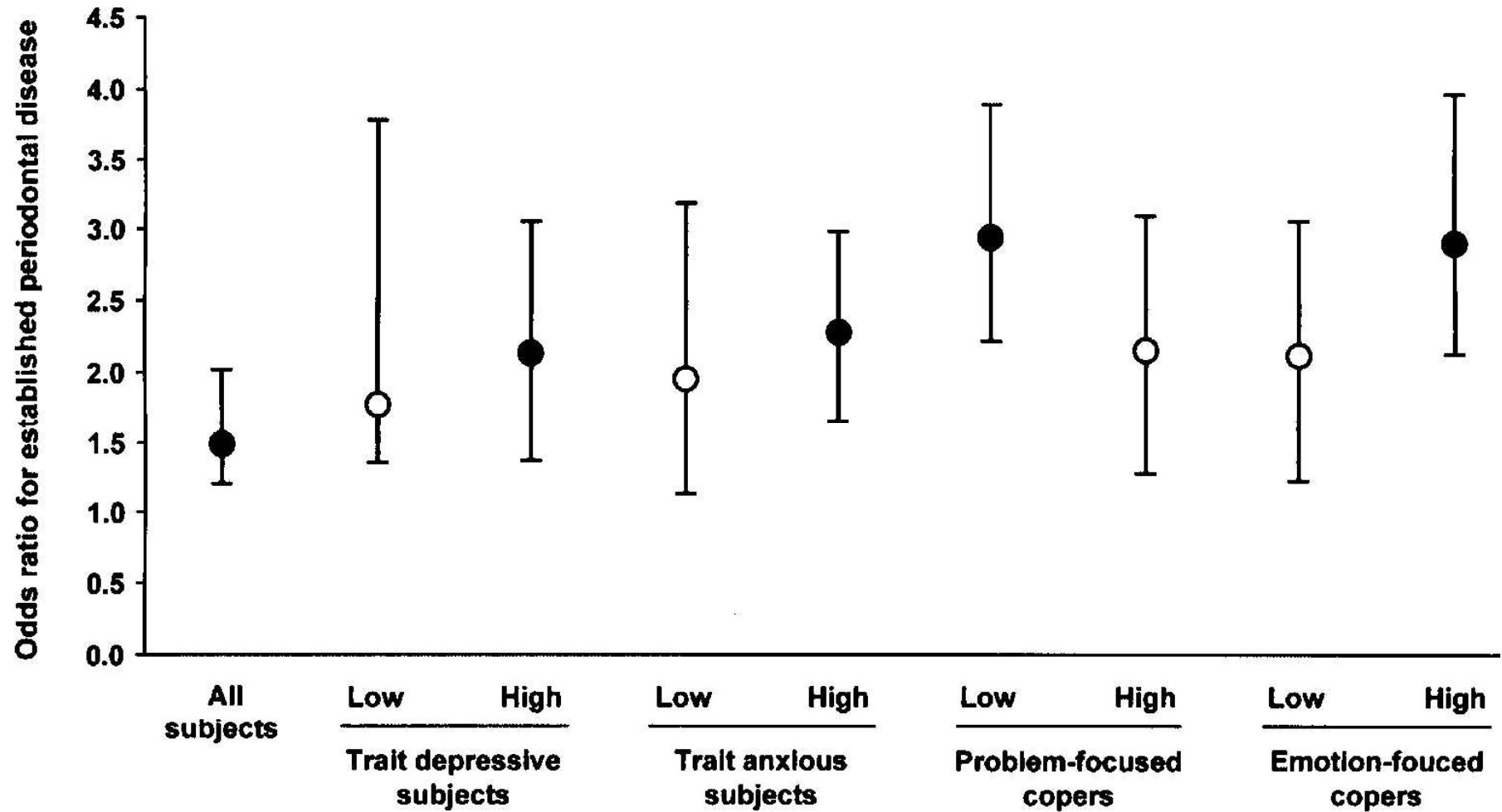
	Estimated odds ratio	95% confidence interval
Heavy Smoker	4.61	2.88 - 5.68
Age 55-64	4.07	2.89 - 5.81
Age 45-54	3.50	2.50 - 4.92
Moderate smoker	2.69	1.39 - 4.31
Light smoker	2.33	1.32 - 3.52
Age 35-44	2.24	1.05 - 3.87
Diabetes	2.15	1.31 - 2.87
Depression (Trait)	1.62	1.15 - 2.35
Anxiety (Trait)	1.51	1.09 - 2.72
Job strain	1.47	1.21 - 2.01
Depression (SCL-90)	1.41	1.17 - 2.78
Financial strain	1.38	1.13 - 1.71
Gender (male)	1.27	1.05 - 1.65
Emotion-focused coping	1.21	1.09 - 1.73
Problem-focused coping	0.85	0.71 - 0.90
Allergy	0.77	0.58 - 0.96
Education	0.75	0.59 - 0.91

**Table 4. Statistics of subjects stratified according to anxiety and depression dispositions, and coping styles.**

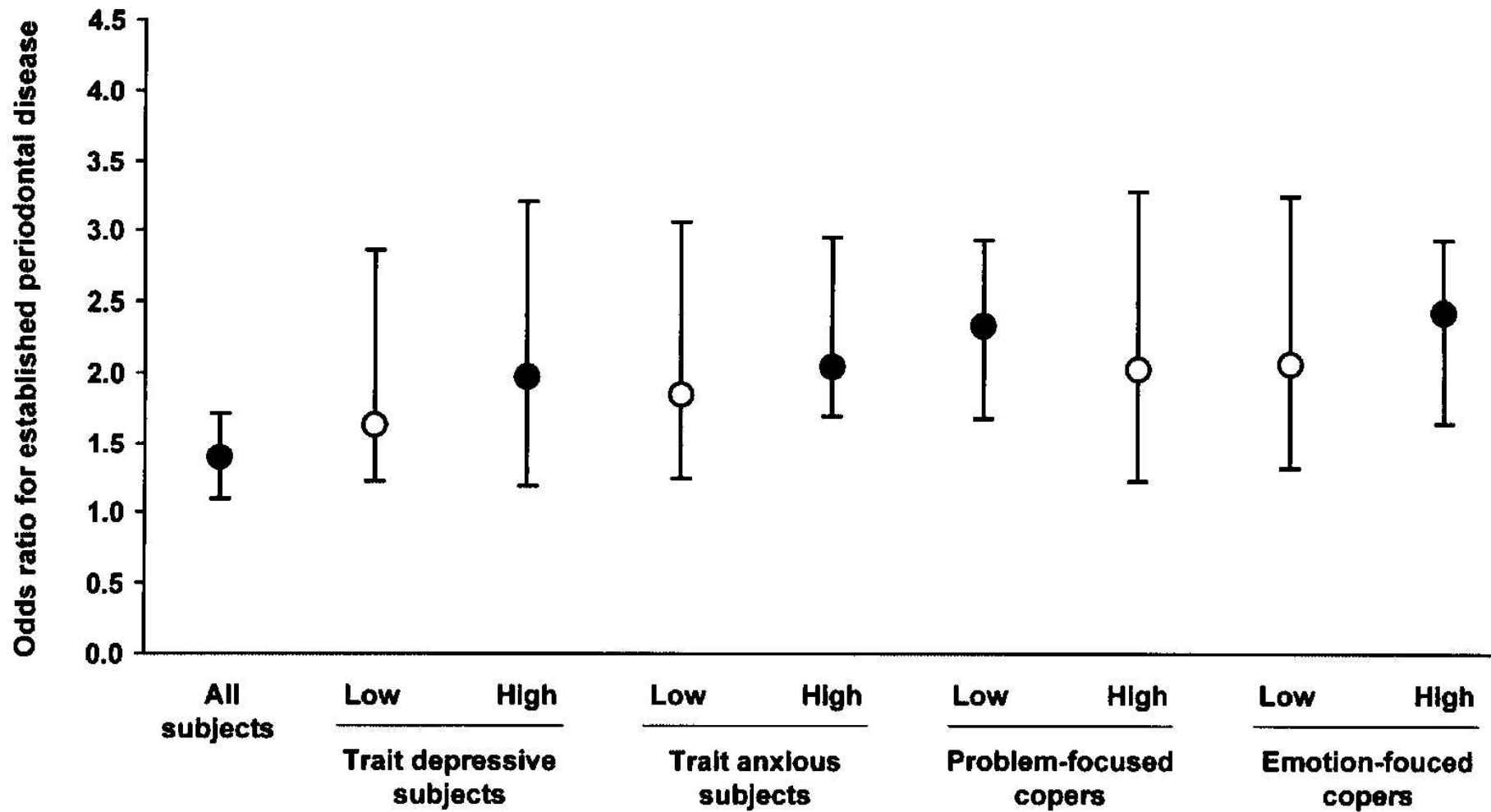
	<b>High (Mean ± SD)</b>	<b>Low (Mean ± SD)</b>	<b>t-statistics</b>	<b>significance</b>
<b>Depression - Trait</b>	<b>9.48 ± 5.07</b>	<b>2.17 ± 1.09</b>	<b>31.96</b>	<b>P &lt; 0.001</b>
<b>Anxiety - Trait</b>	<b>9.99 ± 4.32</b>	<b>2.19 ± 1.91</b>	<b>32.28</b>	<b>P &lt; 0.001</b>
<b>Problem-focused coping</b>	<b>26.19 ± 1.10</b>	<b>18.20 ± 3.22</b>	<b>45.89</b>	<b>P &lt; 0.001</b>
<b>Emotion-focused coping</b>	<b>17.51 ± 2.52</b>	<b>24.24 ± 2.60</b>	<b>36.46</b>	<b>P &lt; 0.001</b>



### (A) Job strain



**(B) Financial strain**





# Conclusion

- **Chronic job and financial strain** (stressor), **inadequate coping and maladaptive trait dispositions** (moderating and mediating factors), and **depression** (stress reactions) are significant risk indicators for periodontal attachment loss.
- **Adequate coping and adaptive trait dispositions**, e.g. high problem-focused coping, and low anxiety, depression trait may reduce the stress-associated odds for periodontal attachment loss.





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**Symbols**

COPE      The COPE Inventory

DASS-S    Depression Anxiety Stress Scales - State

DASS-T    Depression Anxiety Stress Scales - Trait

LEQ        Life event questionnaire

SCL-90    The symptom checklist 90

SRRS      Social re-adjustment rating scale

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