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Gender Differences in Motivation to Physical Activity in Port Harcourt, Nigeria

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Abstract

Background: Physical activity is essential to good health and longevity. The underlying motivations for individuals to engage in physical activity are of critical public health importance. The study aimed to identify the factors that motivate sustained physical activity between females and males.

Method: This comparative cross-sectional study applied an online semi-structured, self-administered questionnaire to survey 820 anonymous respondents (female=410, male=410) in Port Harcourt. Descriptive statistics were used to report the prevalence of motivators. Independent-sample t-tests were performed to determine gender differences in motivators for physical activity, with statistical significance set at p-value <0.05.

Result: The results indicated females are mostly motivated by positive health (mean = 4.63 ±0.66), ill-health avoidance (mean = 4.53 ±0.87), and appearance (mean = 4.44 ±0.91). The males are mostly motivated by positive health (mean = 4.56 ±0.86), ill-health avoidance (mean = 4.42 ±1.05), and nimbleness (mean= 4.24 ±1.18). Significant gender differences existed in motivators, with the females being more motivated by appearance (p = 0.00, t = 3.14), nimbleness (p = 0.01, t = 1.62), stress management (p = 0.02, t = 2.02), affiliation (p = 0.02, t = 2.56), and enjoyment (p = 0.04, t = 0.81) than the males.

Conclusion: There are gender differences in motivation to physical activity. Females are more motivated to engage in physical activities for appearance, nimbleness, stress management, social affiliation, and enjoyment than males. To improve physical activity participation and adherence, there is a need for programs that promote health and well-being across genders in the population.

Keywords: Gender differences, Physical activity, Motivation, Port Harcourt.



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Introduction

Physical activity plays a critical role in balancing energy consumption and expenditure which is essential to long life lived in good health.¹ Some rehabilitation experts use the word ‘exercise’ to distinguish structured programs from incidental daily physical activity, such as cleaning and grocery shopping. The consensus is that it matters less how physical activity is classified as incidental, exercise, or sport. What is most important is how much, how often, and how intensely it is done.^{2,3}

The World Health Organization (WHO) describes physical activity as ‘all forms of bodily movement produced by skeletal muscles that require energy expenditure’. Common forms of physical activity include walking, dancing, swimming, running, skipping, cycling, wheeling, sports, and other active leisure-time activities. Physical activity can be carried out at any level of skill and intensity. It can be engaged at home, the workplace, recreational centers, sports centers, places of worship, or while moving from one point to another.⁴

Planned physical activity is often erroneously viewed as most desirable for only the elderly. People also indulge in planned physical activity to improve health and reduce perceived morbidity and mortality. Scientific evidence abounds showing planned physical activity can extend years of active independent living even from youthful years, reduce disability, and improve quality of life at any age or stage of life.⁵ The formulators of the old elementary school curriculum in Nigeria appreciated the importance of imbibing the culture of physical activity early in life. They put enormous emphasis on physical activity such that up to three times weekly, children had morning outdoor physical exercises supervised by the teachers. Inter-house and inter-school sporting competitions were very common. School sporting activities and winning laurels for the school were high on the school agenda.

Regular physical activity profoundly benefits physical, mental, and social health.⁶ On a physiological level, physical activity enhances cardiovascular and muscular function, significantly reducing the risk of non-communicable diseases (NCDs) such as cardiovascular disease, type 2 diabetes, and certain cancers. Mechanistically, physical activity improves insulin sensitivity, lipid profiles, and endothelial function, which collectively mitigate metabolic syndrome and its associated risks.

Cognitively, physical exercise promotes neuroplasticity, which enhances cognitive processes including judgment, learning, and memory. Exercise-induced neurogenesis in

the hippocampus, along with increased synaptic plasticity and cerebral blood flow, underpins these cognitive improvements. Neurochemical changes, such as elevated levels of brain-derived neurotrophic factor (BDNF) and endorphins, play crucial roles in mitigating anxiety and depressive symptoms by enhancing mood and reducing stress responses.

Socially, engaging in regular physical activity fosters community interaction and support, which strengthens social bonds and reduces feelings of isolation. This social engagement can lead to improved mental health outcomes by providing emotional support and increasing a sense of belonging.⁶

Four levels of physical activity have been identified based on aerobic physical activity: inactive, insufficiently active, active, and highly active. At the inactive level, there is no additional moderate-intensity or vigorous-intensity physical activity apart from the basic movements of daily life activities. At the insufficiently active level, there are some physical activities, but they are less than 150 minutes of moderate-intensity physical activity or less than 75 minutes of vigorous-intensity physical activity in a week. Active level meets the WHO recommended target range of doing 150–300 minutes of moderate-intensity physical activity a week or 75–150 minutes of vigorous-intensity physical activity week. Whereas the highly active level involves doing more than 300 minutes of moderate-intensity or 150 minutes of vigorous-intensity of physical activity.⁷ In addition, the WHO recommends the reduction of the amount of time spent sitting down if one wishes to reap the optimum benefits of physical activity.⁴

In Nigeria, such a factor as rapid urbanization is associated with the high burden of physical inactivity.⁸ This, no doubt, agrees with the WHO statement “As countries develop economically, levels of inactivity increase”. Thus, in some countries, levels of inactivity can be as high as 70%, due to changing patterns of transportation and communication, increased use of technology, and urbanization.⁹

Adeloye and colleagues in a 2022 review of physical inactivity in Nigeria observed that the combined crude prevalence of physically inactive people in Nigeria was 52.0% (95% CI: 33.7-70.4), with women experiencing a higher prevalence at 55.8% (95% CI: 29.4-82.3) than men did at 49.3% (95% CI: 24.7-73.9).⁸ He further reported that urban residents were substantially more physically inactive than rural residents (18.9% vs. 56.8%, 35.3-78.4 vs. 11.9-49.8) across all settings.⁸

In order to get people to be meaningfully physically active, it is important to understand what motivates this interest.^{10,11} Among adults, health pressure, stress management, revitalization, enjoyment, and challenges are some of the popularly reported motivators.¹² Given the certainty of the benefits of being physically active and the consequences of inadequate physical activity, a study carried out in Spain noted that by having a good knowledge of the motivational factors of physical activity for a population, one can achieve more active participation in physical activity by putting into practice effective strategies that promote physical activities and improve health and wellbeing.¹³

Globally, only 31.1% of the population meets the WHO's recommended 150 minutes of moderate-intensity physical activity per week.¹⁴ In 2016, the standardized prevalence of insufficient physical activity worldwide was 27.5%, indicating a significant public health challenge. Notably, sub-Saharan Africa exhibited a lower prevalence of insufficient physical activity at 17.9%, suggesting regional variations potentially influenced by lifestyle, occupational demands, and cultural factors. This disparity highlights the necessity for region-specific strategies to address physical inactivity and promote health-enhancing physical activity behaviours on a global scale¹⁵

In Nigeria, several factors such as insecurity and fast urbanization were identified as contributing to the high burden of physical inactivity across the cities. Other factors are poorly surfaced roads, high-density traffic, haphazard residential areas, and unsafe terrains are common characteristics of Nigerian cities that make physical activity, for example, walking and cycling unattractive to people in urban areas. Furthermore, some people, especially in urban settings, regard cycling or walking as an indication of low socioeconomic status and would prefer to use motorized transport for respect and social recognition rather than be seen walking along the road.⁸

This study aims to elucidate gender-specific factors that drive sustained engagement in physical activity, with the objective of designing gender-targeted intervention programs to enhance physical activity levels across both sexes. Identifying these motivators is pivotal for tailoring interventions that effectively address the unique needs and preferences of females and males. Such gender-specific insights are crucial for informing future research and optimizing intervention strategies.¹⁵ By understanding the distinct psychological, social, and environmental factors that motivate each gender, we can develop more personalized and effective physical

activity promotion programs within clinical and community practice settings. This approach is expected to improve adherence rates and overall health outcomes, thereby advancing public health initiatives and contributing to the reduction of non-communicable diseases through increased physical activity participation.

Method

Study Design and Setting

This comparative cross-sectional study was conducted among female and male adults in Port Harcourt. Port Harcourt is a city located in southern Nigeria. It is the capital of Rivers State and a major center for the oil and gas industry, commerce, education, and entertainment. Port Harcourt has a well-developed infrastructure, including roads, an international airport, and two seaports. It is home to several higher institutions of learning. The city faces challenges such as population growth, infrastructure strain, and environmental concerns related to the oil and gas industry.

Inclusion criteria

- (1) female and male adults aged 18 years and older.
- (2) independence in activities of daily living.
- (3) resident in Port Harcourt for at least one year.

Exclusion criteria

- (1) chronic medical condition at the time of study.
- (2) mobility disability
- (3) women who are pregnant at the time of study.

Ethical Approval

The approval to carry out this study was obtained from the Research and Ethics Committee of the University of Port Harcourt with Ethics number - UPH/CEREMAD/REC/MM84/032. Informed consent was obtained from each of the participants before they went ahead to answer the questionnaire. Data was collected anonymously from the participants.

Sample Size Determination

Using the Cochran formula for comparison of groups.^{17,18}

$$n = (2z^2 pq)/d^2$$

Where n = the desired sample size (when the population is more than 10,000) for comparison groups (equal numbers of female and male participants). z = the standard normal deviate set at 1.96, which corresponds to a 95% confidence level. d = degree of accuracy desired, set at 0.05. p = the estimated percentage or proportion of the attribute that is present in the population; in this case, physical activity motivation

between female and male adults in Port Harcourt or Nigeria = 50% => 0.50. n = 768.32. To increase the precision of the study, the sample size was increased by 5%. So, n = 806.7. Providing for 5% non-response, n = 845.15. Estimated sample size n = 845.

Sampling method and data collection

A non-probability convenience sampling method was used for the selection of participants. Primary data were collected from the participants via the Internet. A brief introduction of the researchers and the aim of the study was followed by the inclusion criteria. All those who met the inclusion criteria were encouraged to click on the web link to fill out the questionnaire (Microsoft form) honestly by choosing the best options that describe their own answers. Data was collected over a period of eight weeks from February 6, 2022, to April 6, 2022.

Study Instrument

A pretested, structured self-administered online questionnaire (Microsoft Forms) was used to obtain the needed information from the respondents. The questionnaire consisted of 2 sections.

Section A contained the participant’s socio-demographic characteristics, which include age, gender, educational level, marital status, and occupational status.

Section B consisted of the Modified Exercise Motivations Inventory–2 (EMI-2), a questionnaire that assesses reasons for participating in physical activity and predicts long-term adherence. It consists of 14 scales grouped into 5 motives based on Self-Determination Theory (SDT).^{19,20} The motives include Psychological Motives (Stress management, Revitalization, Enjoyment, Challenge), Interpersonal Motives (Social recognition,

Social Affiliation, Competition), Health Motives (Health pressure, Ill-health avoidance, Positive health), Body-related Motives (Weight management, Appearance), Fitness Motives (Strength and Endurance, Nimbleness). Each scale is made up of three or four subscales with items rated on a 6-point Likert scale.

Data analysis

Data analysis was conducted using Microsoft Excel and IBM SPSS Statistics (version 25.0). Descriptive statistics, such as frequency, means, and standard deviations, were calculated for the final data set. Independent-Samples t-tests were performed to determine gender differences in motivators to physical activity, with statistical significance set at a p-value of <0.05.

Results

Data Completeness

Data for this study was collected using 845 structured self-administered online questionnaires. However, after data cleaning involving the removal of questionnaires with invalid responses for key variables, 820 questionnaires were considered suitable for analysis. This gave a completed response rate of 97%. The results of the analysis are presented hereunder.

Socio-demographic characteristics of respondents

Descriptive statistics were done to determine the frequency, mean, and standard deviation (SD) for age of the respondents. While frequency distributions were determined for educational level, employment status, and marital status of the respondents. Findings are presented in Table 1.

Table 1: Distributions of socio-demographic characteristics of respondents by gender.

Variable	Category	Female (n = 410)	Male (n = 410)	Total (n = 820)
Age	18 – 27	288(70.2%)	168(41.0%)	456(55.6%)
	28 – 37	88(21.5%)	136(33.2%)	224(27.3%)
	38 – 47	20(4.9%)	72(17.6%)	92(11.2%)
	48 – 57	10(2.4%)	30(7.3%)	40(4.9%)
	58 – 67	4(1.0%)	4(1.0%)	8(1.0%)
Educational Level	Primary	28(6.8%)	8(2.0%)	36(4.4%)
	Secondary	98(23.9%)	74(18.0%)	172(21.0%)
	Tertiary	284(69.3%)	328(80.0%)	612(74.6%)
Employment Status	Employed	116(28.3%)	208(50.7%)	324(39.5%)
	Self-employed	116(28.3%)	86(21.0%)	202(24.6%)
	Student	116(28.3%)	84(20.5%)	200(24.4%)
	Unemployed	62(15.1%)	32(7.8%)	94(11.5%)

Variable	Category	Female (n = 410)	Male (n = 410)	Total (n = 820)
Marital Status	Single	246(60.0%)	186(45.4%)	432(52.7%)
	Married	142(34.6%)	212(51.7%)	354(43.2%)
	Separated	8(2.0%)	4(1.0%)	12(1.5%)
	Divorced	4(1.0%)	0(0.0%)	4(0.5%)
	Widowed	10(2.4%)	8(2.0%)	18(2.2%)

The males had more tertiary level of education, were more employed, and were more married. The mean ages and standard deviations for female and male respondents were 26.74 ± 7.78 and 31.91 ± 9.81 respectively.

Motivators (scales) for female versus male respondents

The means of each of the scales were determined and ranked in decreasing order of size for female versus male respondents. The findings are presented in Table 2.

Table 2: Mean ranked motivators for female versus male respondents

FEMALES				MALES			
Rank	Motivators	Mean	SD	Rank	Motivators	Mean	SD
1	Positive Health	4.63	0.66	1	Positive Health	4.56	0.86
2	Ill-health Avoidance	4.53	0.87	2	Ill-health Avoidance	4.42	1.05
3	Appearance	4.44	0.91	3	Nimbleness	4.24	1.25
4	Nimbleness	4.41	0.96	4	Strength & Endurance	4.22	1.18
5	Strength & Endurance	4.15	0.96	5	Appearance	4.10	0.92
6	Weight Management	4.11	1.04	6	Stress Management	3.87	1.20
7	Stress Management	4.10	1.06	7	Weight Management	3.86	1.23
8	Enjoyment	3.92	1.06	8	Enjoyment	3.83	1.19
9	Health Pressure	3.78	0.66	9	Revitalization	3.64	0.86
10	Challenge	3.67	1.35	10	Challenge	3.52	1.39
11	Social Affiliation	3.63	1.33	11	Health Pressure	3.40	1.50
12	Revitalization	3.62	1.09	12	Social Affiliation	3.27	1.08
13	Competition	3.49	1.55	13	Competition	3.21	1.60
14	Social Recognition	3.29	1.58	14	Social Recognition	2.92	1.62

In Table 2, the respondents reported motivators are Positive Health (F: M; Mean = 4.63:4.56), Ill-health Avoidance (F: M; Mean = 4.53:4.42), Enjoyment (F: M; Mean = 3.92:3.83), Challenge (F: M; Mean = 3.67:3.52), Competition (F: M; Mean = 3.49:3.21), Social Recognition (F: M; Mean = 3.29:2.92). While Appearance is (F: M; Mean = 4.44:4.10), Nimbleness (F: M; Mean = 4.41:4.24), Strength & Endurance (F: M; Mean = 4.15:4.22), Weight Management (F: M; Mean = 4.11:3.87), Health Pressure (F: M; Mean = 3.78:3.40), Affiliation (F: M; Mean = 3.63:3.27), and Revitalization (F: M; Mean = 3.62:3.64).

Note - F: M is (female: male). SD is the Standard Deviation.

Test of differences in motivators between females and males

An independent t-test was conducted to determine if there were significant differences in motivators for female versus male respondents. The p-values, T statistics, and degrees of freedom are as shown in Table 3.

Table 3: Independent Samples Test of the motivators; (combined for females and males). Significance (P<0.05)

Motivators	p-value	T	Df
Stress Management	0.02	2.02	408
Revitalization	0.74	-0.26	408
Enjoyment	0.04	0.81	408

Challenge	0.82	1.14	408
Social Recognition	0.36	2.37	408
Social Affiliation	0.02	2.56	408
Competition	0.21	1.78	408
Health Pressure	0.06	2.62	408
Ill-health Avoidance	0.06	1.08	408
Positive Health	0.13	0.91	408
Weight Management	0.08	2.27	408
Appearance	0.00	3.14	408
Strength & Endurance	0.29	-0.71	408
Nimbleness	0.01	1.62	408

Table 3 indicates significant gender differences for stress management ($p = 0.02$, $T = 2.02$), enjoyment ($p = 0.04$, $T = 0.81$), social affiliation ($p = 0.02$, $T = 2.56$), appearance ($p = 0.00$, $T = 3.14$), and nimbleness ($p = 0.01$, $T = 1.62$). Table 4 also indicates no significant gender differences for revitalization ($p = 0.74$, $T = -0.26$), challenge ($p = 0.82$, $T = 1.14$), social recognition ($p = 0.36$, $T = 2.37$), competition ($p = 0.21$, $T = 1.78$), health pressure ($p = 0.06$, $T = 2.62$), ill-health avoidance ($p = 0.06$, $T = 1.08$), positive health ($p = 0.13$, $T = 0.91$), weight management ($p = 0.08$, $T = 2.27$), and strength and endurance ($p = 0.29$, $T = -0.71$).

Discussion

This study was undertaken to determine the differences in motivators for participation in physical activity between female and male adults in Port Harcourt. The results of the study indicated both females and males are mostly motivated by positive health, ill-health avoidance, and bodily appearance. While males are mostly motivated by positive health, ill-health avoidance, and nimbleness.

There were significant differences between male and female physical activity motivators for appearance, nimbleness, stress management, social affiliation, and enjoyment. In this study, we observed female respondents to have higher mean scores than males for these motivators - appearance, nimbleness, stress management, social affiliation, and enjoyment. Indicating the female participants are more influenced and motivated to be engaged in physical activities for appearance, nimbleness, stress management, social affiliation, and enjoyment factors than males. There were no significant gender differences in motivation to physical activity participation (no significant differences in the mean scores) for other motivators. These findings are consistent with previous studies in Malaysia by Malanorouzi et al which found significant differences in motivators, especially in appearance, with females having higher mean scores (more motivated) than males. Males were more motivated by competition/ego and mastery.¹⁶ It is also in agreement with a study conducted in Brisbane, Australia that reported 'to

improve appearance', 'to spend time with others (enjoyment)', 'to meet friends (affiliation)', and 'to lose weight' were all more motivating for females than for males.²¹ A social cognitive theory guided the Habitat study's effort to identify motivating factors for physical activity across genders. They observed that females' motivations lay in interpersonal, and body-related motives.²² The current findings are also comparable to a Finnish study that noted that appearance and psychological well-being were more motivating to women for them to engage in physical activities.²³ Anecdotally, women are much more interested in their looks and appearance than men. This feminine attribute is demonstrated across all cultures and populations over the ages. Also maintaining the feminine appearance and characteristics is a major driver for many activities and actions of the female gender.

However, a Malaysian study differed from our study in that males indicated significantly higher mean scores than females in two motivating factors; 'to have a positive effect on the sex life' and 'more energy to go about the daily activities'.²⁴ The dissimilarities in the findings might not be unconnected with the differences in the culture and importance the Malaysians attach to any deficit in reproductive health. Another study that was incongruent with our findings came from Tennessee, United States. In the Tennessee study, males responded more positively to intrinsic motivations (interest, enjoyment, inherent satisfaction) while women demonstrated extrinsic motivation (to avoid external pressure e.g.,

punishment, or to get a reward e.g., receive an allowance.²⁵ By identifying these motivators, policymakers, researchers, public health and fitness practitioners can design gender-specific interventions that address these factors to promote physical activity behaviour. This study of motivators for physical activity participation has contributed to the understanding of how to promote physical activity behaviour in the population and has provided important insights into the factors that influence physical activity behaviour across genders. This knowledge can be used to develop effective interventions that can help individuals adopt and maintain healthy physical activity behaviours for good health and well-being.

Implications of the findings of the study

The study findings critically imply that governments and organizations should promote equal opportunities for physical activities, ensuring that both genders have access to safe and affordable sports and recreational facilities.^{26,27} Also, public health campaigns should target gender-specific attitudes and misconceptions about physical activity, emphasizing the benefits for the health of individuals.²⁸ Programs in schools and communities should focus on educating young people about the importance of physical activity, encouraging individuals from a young age to participate in sports and physical exercise.²⁹ Besides, employers should implement workplace wellness programs that are inclusive and consider the different needs and preferences of men and women.³⁰ Policies encouraging flexible work hours or on-site childcare facilities can help women find time for physical activity.³¹ Further, the findings imply fitness and recreational programs should be tailored to meet the preferences and constraints of different genders. For example, women-only fitness classes or community walking groups can be more inviting and reduce intimidation.³² Another example is encouraging family-based physical activity programs to promote a supportive environment.³³ Improve the safety of public spaces to make them more conducive to physical activity for people, especially women, including better lighting, security, and maintenance of parks and recreational areas.³⁴ Ensure that fitness facilities are accessible in terms of location, cost, and available time slots that fit the schedules of the population.³⁵ Fitness trainers and coaches should receive training on gender-specific issues and approaches to encourage and sustain people's participation in physical activity.³⁶ Increase

the number of female fitness professionals to act as role models and mentors.³⁷

Another critical implication of the findings of the study is that long-term studies to understand the changes in physical activity levels across different stages of life for both genders and how interventions can be sustained over time.³⁸ Moreover, investigate how gender disparities in physical activity intersect with other factors such as socioeconomic status, ethnicity, and geography to develop more targeted interventions.³⁹ Explore the role of psychological and social factors in influencing physical activity among women or men.⁴⁰ Research can also focus on evaluating the effectiveness of various interventions aimed at reducing gender disparity in physical activity. This may include analyzing what works, for whom, and under what circumstances.⁴¹ In addition, investigating the role of technology, such as fitness applications and online communities, in encouraging physical activity among women.⁴² Similarly, explore innovative approaches to engage different genders in physical activity, such as virtual reality fitness, gamification, and social media campaigns.⁴³

Strengths and limitations of the study

The participants engaged and completed the survey at their convenience, thereby increasing response rates and reducing barriers to participation. Data collection and analysis were conducted more quickly enabling faster turnaround times for reporting results. The participants felt more comfortable sharing honest responses online due to the perceived anonymity. This has reduced social desirability bias, where participants might otherwise respond in ways they believe is more socially acceptable. The online platform used in this study automatically collected and organized data, reducing the risk of human error in data entry and increasing the efficiency of the data collection process.

However, not everyone has equal access to the internet or the necessary technology to participate in the study. Some participants lacked the technical skills to navigate online platforms, which affected their ability to participate fully or accurately. The absence of face-to-face interaction limited researchers' ability to clarify questions or probe deeper into responses, potentially reducing the depth and richness of the data collected.

Overall, while this physical activity motivator study has numerous strengths, including broad reach, cost-effectiveness, and efficiency, they also present challenges related to data quality, security, and participant engagement. Nevertheless, the researchers carefully designed and implemented this study to mitigate these limitations and ensure robust, reliable findings.

Conclusion

This study has shown that there are gender differences in motivation for physical activity. Females are more motivated to engage in physical activities for appearance, nimbleness, stress management, social affiliation, and enjoyment factors than the males. There are no significant gender differences in other motivators. To ensure and improve physical activity participation and adherence, there is a need for programs that promote health and well-being across genders in the population.

Abbreviation and Nomenclature

EMI-2: Modified Exercise Motivations Inventory–2

F: Female

M: Male

NCDs: Non-Communicable Diseases

p-value: Probability value

SD or s.d: Standard Deviation

SDT: Self-Determination Theory

T or t: t-statistic

WHO: World Health Organization

Declarations

Ethical Consideration: The approval to carry out this study was obtained from the Research and Ethics Committee of the University of Port Harcourt with Ethics number - UPH/CEREMAD/REC/MM84/032. Informed consent was obtained from each of the participants before they went ahead to answer the questionnaire. Data was collected anonymously from the participants.

Authors' Contribution: This work was carried out collaboratively by two authors. INO wrote the proposal and designed the study. ERE acquired the data, performed the statistical analysis of the data, and wrote the protocol. Both authors wrote, read and approved the manuscript. We are responsible for the integrity of the work as a whole.

Conflict of interest: The authors report no conflicts of interest.

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