



# Knowledge, Attitude and Beliefs of medical practitioners towards exercise during pregnancy

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## Abstract:

### Background and purpose:

The purpose of the study is to find the knowledge, attitude and belief of medical practitioner towards exercise during pregnancy. No such study had been published or reported till date in India regarding same, which have measured or portrayed actual scenario of knowledge and belief of medical practitioners towards exercise during pregnancy. With the above mentioned reasons, a strong need for this study is identified and planning to conduct a survey amongst medical practitioners of Bangalore urban. Hence, the purpose of the study is to find the knowledge, attitude and belief of Bangalore medical practitioners towards exercise during pregnancy in Bangalore Urban Community.

### Method:

Number of 120 subjects were screened for the study purpose who were fitted in inclusion and exclusion criteria. The study was conducted at Bangalore. It was a Convenience sampling method. Duration of the study was single time study.

### Results:

Most obstetricians were inclined to recommend mild over moderate exercise. Thus, there is a need for paradigm shift in how activity during pregnancy is viewed, as well as improved accuracy of the advice given. Healthcare providers should be reminded that in the absence of pathology or health risk to mother and/or foetus, pregnancy is a physiological state with benefits to be gained from exercise.

### Conclusion:

The medical practitioners appears to largely support the belief that exercise is beneficial during pregnancy, and believe that they have a role to play in exercise promotion on a primary care level, but lacked accurate specifics with regard to exercise prescription (mode, frequency, intensity and duration) and are not adequately promoting it to their patients.

**Keywords** - Knowledge, Attitudes, Pregnancy, Medical practitioners, Exercise

## INTRODUCTION

Pregnancy is the term used to describe the period in which a woman carries a foetus inside her. In most cases, the foetus grows in the uterus. Pregnancy usually lasts about 40 weeks, or just over 9 months, as measured from the last menstrual period to childbirth. Pregnancy is divided into three trimesters<sup>1</sup>. During pregnancy the body experiences physiological and psychological changes which is natural and to remain healthy, the pregnant woman must indulge in regular physical activities. The primary goal of health care during pregnancy is the achievement of the best possible maternal and foetal state.<sup>2,3</sup>

The Millennium Development Goal 5 (MDG 5) by United Nations calls for a three-fourth reduction in the maternal mortality ratio (MMR) by 2015 compared to 1990 levels. However, In spite all efforts, the progress is slow, and globally an estimated 358,000 mothers died of pregnancy or related complications in 2008. Out of which 87% (313,000) deaths were in Africa and Asia, India being the second highest. Additionally, over 50 million pregnant women each year suffer from morbidity due to acute complications from pregnancy globally. The most common predisposing factor being lack of physical activity.<sup>4</sup>

Antenatal Care means "care before birth", and includes education, counselling, screening and treatment to monitor and to promote the well-being of the mother and foetus. Antenatal care is the care that a woman receives during pregnancy, helps to ensure healthy outcomes for women and newborn (WHO/UNICEF 2003). It is a key entry point for a pregnant woman to receive a broad range of health services including nutritional support and prevention and treatment of anaemia; prevention, detection and treatment of malaria, tuberculosis and sexually transmitted infections (STIs/HIV/AIDS). Antenatal care is an opportunity to promote the benefits of skilled attendance at birth and to encourage women to seek postpartum care for themselves and their newborn.

Healthcare providers should be aware of current recommendations for maternal physical activity and the research base behind them. This awareness will facilitate their ability to give proper advice to patients about how physical activity affects the normal physiological changes that occur during pregnancy, including the possible benefits and risks of Exercise for the mother and foetus<sup>5</sup>. The health benefits of an active pregnancy are well known. Several positive associations between regular activity and maternal outcomes have been clearly demonstrated. For example, an active pregnancy has shown an improvement in cardiovascular and

metabolic function, and increased strength and bone density<sup>1</sup>. Regular exercise appears to lower the risk of gestational diabetes mellitus (GDM), gestational hypertension, and preeclampsia<sup>2</sup>. Evidence also exists for the role of exercise in preventing incontinence during pregnancy and in the postpartum period. In addition, it has been shown to reduce excessive gestational weight gain (EGWG), which is an important predictor of numerous adverse maternal outcomes<sup>6</sup>.

Even more compelling is the recent evidence for foetal origin of adult disease. Maternal obesity may provide an early embryo environment that appears to have a major impact on the health of the offspring in adulthood<sup>5</sup>. Where obesity is prevalent and has been found to be strongly associated with physical inactivity<sup>7</sup>.

As the beneficial evidence for exercise during pregnancy mounts, the American College of Obstetricians and Gynaecologists (ACOG) guidelines have become less restrictive since initially released in 1985<sup>8</sup>. Unsurprisingly, pregnant women, in the absence of medical or obstetric complications, are encouraged to participate in moderate-intensity aerobic and low-intensity strengthening exercise. Some additional considerations may include restrictions to supine activities, or activities that may increase the risk of falling or contact<sup>8</sup>. Furthermore exercise duration, frequency and intensity can be prescribed on an individual basis to avoid potential hyperthermia. Although care needs to be taken when prescribing exercise, the benefits of being active during the prenatal period far outweigh the risks<sup>9</sup>.

Primary health care providers are well placed to promote exercise to the pregnant population, and may have an important role to play in advising and educating women on healthy behaviours<sup>10,11</sup>. In fact, in the general population, brief counselling from a general practitioner has shown to be a cost effective and successful method of improving activity levels<sup>10</sup>.

Therefore, primary care prevention of disease may have a profound effect on, not only the prenatal population, but the health of future generations as well. Although encouraging exercise in women with an uncomplicated pregnancy should form an integral part of prenatal care, little is known about views of medical practitioners on this subject.

Although there is evidence that knowledge and belief of medical practitioners towards exercise during pregnancy plays an important role no such research has been carried out in India. Therefore there is a need of this study to determine the knowledge, attitude and belief of medical practitioners of India towards exercise during pregnancy.

## METHODOLOGY

### Population and Sample

Number of 120 subjects were screened for the study purpose who were fitted in inclusion and exclusion criteria. The study was conducted at Bangalore. It was a Convenience sampling method. Duration of the study was single time study.

### Inclusion Criteria:

1. This study was conducted in Bangalore over 120 medical practitioners. Experience with <15 years or >15 years.
2. General practitioners.
3. Obstetricians and gynecologists.

### Exclusion Criteria:

1. Not willing to participate
2. Not registered with medical directory

### Data and Sources of Data

This study was conducted to determine exercise and pregnancy knowledge of medical practitioners. As it is a survey study 33 item questionnaires which was designed and used in previous studies, was used in this study. This questionnaire will be given to all medical practitioners practicing in private health care sector and will be asked to fill it. Questionnaires will be distributed manually or by email. To maintain confidentiality, no personal identifying information was collected.

Personal demographic information like occupation, gender, age, practice location, years of practising and main focus of practise was collected by the questionnaire consisted of 15 likert type scale questions; 15 selected responses and 3 open ended questions (Appendix- 2). The initial 9 questions were designed to assess demographic information, including participant degree, practice location, years of experience, specialty, gender, age, race, patient population, and percent of practice involving obstetrics. The next 11 questions were designed to assess participants' beliefs and attitudes toward exercise during pregnancy. A 4-point Likert scale was used to assess how much the provider agreed or disagreed with a statement. Response choices were strongly agree, agree, disagree, and strongly disagree. Statements included in this portion of the questionnaire are shown in the Appendix-2. Questions were written in both positive and negative tone in order to reduced response bias. A neutral response was not included in the Likert scale, as it has been found to be a questionable scaling option. The final portion of the survey was designed to assess current provider practice regarding exercise advice to patients. The majority used a 4-point Likert scale to assess how often a provider gives advice or restrictions about exercise during pregnancy, with responses including never, seldom, often, and always.

### Outcome measures

Questionnaire is valid and reliable measure, used to determine the knowledge, attitude and belief of medical practitioners for exercise during pregnancy. Healthcare providers can have a positive effect on their patient's attitudes towards exercise. Knowledge of the benefits of exercise may motivate pregnant women to become more active<sup>7</sup>.

**RESEARCH METHODOLOGY****Statistical methods:**

Descriptive statistical analysis- frequency and percentage of responses has been carried out in the present study to analyse the Questionnaire.

**Statistical tests:**

Chi-squared tests is used to examine the differences in response by age, years of experience, focus of practice and years of practice.

**Statistical software:**

The Statistical software namely SPSS 16.0 (originally, Statistical Package for the Social Sciences, later modified to read Statistical Product and Service Solutions was released in its first version in 1968 after being developed by [Norman H. Nie](#), Dale H. Bent and C. Hadlai Hull. It is now officially named "IBM SPSS Statistics" in its version 20.0), Stata 8.0, MedCalc 9.0.1 and Systat 11.0 were used for the analysis of the data and Microsoft word and Excel have been used to generate graphs, tables etc. ( Other software are PASW Statistics IBM SPSS Statistics)

**IV. RESULTS AND DISCUSSION****Table 1: Analysis of demographics of participants in the study Q01 to Q09**

QUESTIONS	COMPONENTS	FREQUENCY	PERCENTAGE
Q1: What is your current occupation?	General Practitioner	3	2.5
	Obstetrician	61	50.8
	Gynaecologist	56	46.7
	Specialist	---	--
	Other	---	--
	TOTAL	120	100.0
Q2.Where is your practice located?	Urban	117	97.5
	Sub-urban area	3	2.5
	Other	---	--
	TOTAL	120	100.0
Q3. How many years have you been practicing?	1-5	31	25.8
	6-10	47	39.2
	11-15	32	26.7
	16-20	10	8.3
	>20	---	--
	TOTAL	120	100.0
Q4. What is the main focus or specialty of your practice?	Obstetrics	61	50.8
	Gynaecology	56	46.7
	Family medicine	3	2.5
	Other	---	--
	TOTAL	120	100.0
Q5.What is your gender?	Male	62	51.7
	Female	58	48.3
	TOTAL	120	100.0
Q6.What is your race?	Caucasian	---	--
	African	---	--
	Asian	---	--
	Indian	120	100.0
	Coloured	---	--
	Other	---	--
Q7. What races make up 20% or more of your patient population? (Please tick all that apply.)	Caucasian	---	--
	African	---	--
	Asian	---	--
	Indian	120	100.0
	Coloured	---	--
	Other	---	--
Q8. What is your age?	<30	---	--
	30-39	100	83.3
	40-49	16	13.3
	50-59	4	3.3
	>60	---	--
	Total	120	100.0
Q9. What percent of your practice involves obstetrics?	100%	95	79.2
	75%	21	17.5
	50%	1	.8
	25%	3	2.5

	Other	---	---
	Total	120	100.0

### Summary of question 1 to 9:

Total 120 participants participated in the present study, among 120 respondents, 50.8% of respondents are Obstetrician, 46.7% respondents are Gynaecologist, 97.5% respondents are practicing in Urban, 2.5% of respondents are practicing in Sub-urban area, 25.8% respondents are with 1-5 years' experience, 39.2% respondents are with 6-10 years' experience, 26.7% respondents are with 11-15 years' experience, and 8.3% respondents are with 16-20 years' experience, their main focus or specialty of practice was 50.8% respondents focus or specialty is Obstetrics, 46.7% respondents focus or specialty is Gynaecology, there were 51.7% are male respondents and 48.3% are female respondents whereas all the respondents are Indians. Participants 20% or more of their patient population are all Indians. The participants in the study belongs to different age groups where 83.3% respondents are between age group 30-39 years, 13.3% respondents are between age group 40-49 years, 3.3% respondents are between age group 50-59 years, their percent of practice that involves obstetrics are 79.2% respondents involve in 100% practice of obstetrics, 17.5% respondents involve in 75% practice of obstetrics, 0.8% respondents involve in 50% practice of obstetrics, and 2.5% respondents involve in 25% practice of obstetrics.

QUESTIONS	SUBCOMPONENTS	FREQUENCY	PERCENTAGE
Q10. Exercising during pregnancy is beneficial.	Strongly agree	108	90.0
	Agree	9	7.5
	Disagree	3	2.5
	Strongly disagree	---	---
	TOTAL	120	100.0
Q11. Advising patients on exercise during pregnancy is not a major component of prenatal care	Strongly agree	91	75.8
	Agree	19	15.8
	Disagree	6	5.0
	Strongly disagree	4	3.3
	TOTAL	120	100.0
Q12. If exercise is discussed by you or your staff, it does not include individualized recommendations.	Strongly agree	103	85.8
	Agree	17	14.2
	Disagree	---	---
	Strongly disagree	---	---
	TOTAL	120	100.0
Q13 Pregnant patients follow the advice given during their office visits.	Strongly agree	106	88.3
	Agree	13	10.8
	Disagree	1	.8
	Strongly disagree	---	---
	TOTAL	120	100.0
Q14. A sedentary woman, with an uncomplicated pregnancy, should not begin an exercise program during pregnancy.	Strongly agree	---	---
	Agree	---	---
	Disagree	9	7.5
	Strongly disagree	111	92.5
	TOTAL	120	100.0
Q15. Pregnant women who are chronic exercisers should be encouraged to continue an exercise program throughout pregnancy.	Strongly agree	115	95.8
	Agree	4	3.3
	Disagree	1	.8
	Strongly disagree	---	---
	TOTAL	120	100.0
Q16. Pregnant women should not participate in a strength-training program during pregnancy.	Strongly agree	1	0.8
	Agree	11	9.2
	Disagree	108	90.0
	Strongly disagree	---	---
	TOTAL	120	100.0
Q17. What do you feel are the main benefits of exercising during pregnancy?	1 to 11	20	16.7
	1 to 11,13	11	9.16
	1 to 11,16	01	0.8
	1 to 11,13,16	11	9.16
	1 to 12	5	4.16
	1 to 13	13	10.8
	1 to 13,16	51	42.5
1 to 16	8	6.7	

6-endocrine system changes 7-improves respiratory fuction 8-weight gain management 9-postural changes 10-increased fitness levels 11-increased strength level 12-improved self-image 13-better sleeping pattern 14-increased viability of the placenta 15-increased amniotic fluid 16-preventing incontinence	Total	120	100.0
Q18. During pregnancy, woman should be recommended to exercise at moderate intensity.	Strongly agree	115	95.8
	Agree	3	2.5
	Disagree	2	1.7
	Strongly disagree	---	--
	TOTAL	120	100.0
Q19. Exercising during pregnancy increases the risk of low birth weight babies.	Strongly agree	---	--
	Agree	---	--
	Disagree	2	1.7
	Strongly disagree	118	98.3
	TOTAL	120	100.0
Q20.The possible harmful effects of exercise on the foetus are minimal if not non-existent.	Strongly agree	---	--
	Agree	---	--
	Disagree	18	15.0
	Strongly disagree	102	85.0
Q21. Does your office give advice to your pregnant patients about pregnancy and exercise?	Yes	117	97.5
	No	3	2.5
	If no, please skip to question 22.		
Q21. A. If yes, who in your office gives this advice?	Yourself	25	20.83
	Nurse	26	21.66
	Other	66	55
Q21. B. If yes, at what stage in pregnancy would this occur? (Tick all that apply.)	Initial visit	03	2.5
	1st trimester	4	3.33
	2nd trimester	44	36.67
	3rd trimester	116	96.67
	Postpartum	117	97.5
	TOTAL	117	97.5
	Q21. C. How long would a typical exercise advice session take?	5-10 minutes	117
	11-20 minutes	03	2.5
	21-30 minutes	0	0
	>30 minutes	44	36.67
	TOTAL	117	97.5
	Not answered	03	2.5
Q22. Do your pregnant patients ask you questions about exercising during pregnancy?	Never	---	--
	Seldom	---	--
	Often	116	96.7
	Always	4	3.3

	TOTAL	120	100.0
Q23. Do you provide informational pamphlets on pregnancy and exercise to your patients?	Never	3	2.5
	Seldom	113	94.2
	Often	4	3.3
	Always	---	--
	TOTAL	120	100.0
Q24. Do you obtain exercise histories on your pregnant patients?	Never	2	1.7
	Seldom	115	95.8
	Often	3	2.5
	Always	---	--
	TOTAL	120	100.0
Q25. Do you give each pregnant patient an individualized exercise program for her to follow?	Never	3	2.5
	Seldom	114	95.0
	Often	3	2.5
	Always	---	--
	TOTAL	120	100.0
Q26. Are you aware of the 2002 ACOG guidelines for pregnancy and exercise?	Never	106	88.3
	Seldom	13	10.8
	Often	1	.8
	Always	---	--
	TOTAL	120	100.0
Q27. Do you routinely give exercise restrictions to your pregnant patients?	Yes	5	4.2
	No If no, please skip to question 28. a. If yes, please list some of the examples below:	115	95.8
Q28. Who do you refer your pregnant patients to for exercise recommendations?	Personal trainer	---	--
	Bio kinetics	---	---
	Physiotherapist	120	100.0
	Other	---	---
	TOTAL	---	---
Q29. Do you recommend your patients exercise during pregnancy?	Yes	119	99.2
	No	1	0.8
If no, please skip to question 29. a. If yes, what types of exercise do you recommend for your patients? (Please circle all that apply; feel free to add others.)	Walking	117	97.5
	Running	116	99.67
	Swimming	117	97.5
	Cycling	117	97.5
	Aerobics	117	97.5
	Other	3	2.5
Q30. Do you recommend your patients avoid certain types of exercise?	Yes	120	100.0
	No	---	--
If no, please skip to question 31. a. If yes, please write examples in the space below:	Jumping, skipping, deep knee bend, full sit ups etc.		

Q31. Are you aware of any exercise classes or trainers in your area that could benefit your patients?	Yes	119	99.2
	No If no, please skip to question 31.	1	.8
Q31.A. If yes, do you recommend your patients go to any of these opportunities?	Never		
	Seldom		
	Often		
	Always		
	TOTAL		
Q32. Would you or someone from your practice be interested in attending a workshop on pregnancy and exercise if offered?	Yes	119	99.2
	No	1	.8
	a. If no, please explain in space below:		
Q33. What intensity would you recommend your patients exercise at?	Low	---	--
	Moderate	120	100.0
	Vigorous	---	--

### Summary of Question no.10 to 20

Participants responded that, 90% respondents strongly agree exercising during pregnancy is beneficial, 75.8% respondents strongly agree advising patients on exercise during pregnancy is not a major component of prenatal care, 85.8% respondents strongly agree if exercise is discussed by them or their staff, it does not include individualized recommendations, 88.3% respondents strongly agree that pregnant patients follow the advice given during their office visits, 92.5% respondents strongly disagree that A sedentary woman, with an uncomplicated pregnancy, should not begin an exercise program during pregnancy, 95.8% respondents strongly agree that pregnant women who are chronic exercisers should be encouraged to continue an exercise program throughout pregnancy, 90% respondents disagree that pregnant women should not participate in a strength-training program during pregnancy, 42.5% respondents mentioned that that the benefits of exercise during pregnancy includes decreased risk of gestational diabetes, decreased risk of pre-eclampsia, decreased risk of gestational, hypertension, cardiovascular system enhancement, musculoskeletal improvements, endocrine system changes, improves respiratory function, weight gain management, postural changes, increased fitness levels, improved self-image, better sleeping pattern and preventing incontinence, 95.8 % respondents strongly agree that during pregnancy, woman should be recommended to exercise at moderate intensity, 98.2% of respondents strongly disagree that Exercising during pregnancy increases the risk of low birth weight babies, 85% of respondents strongly disagree that the possible harmful effects of exercise on the fetus are minimal if not non-existent.

### Summary of Question no.21 to 33

97.5% respondents responded that their office give advice to the pregnant patients about pregnancy and exercise. 96.7% respondents responded that their pregnant patients ask often questions about exercising during pregnancy. 94.2% respondents responded that seldom they provided informational pamphlets on pregnancy and exercise to their patients. 95.8% respondents responded that seldom they obtain exercise histories on their pregnant patients. 95% respondents responded that seldom they give each pregnant patient an individualized exercise program for her to follow. 88.3% responded that they never aware of the 2002 ACOG guidelines for pregnancy and exercise. 95.8% respondents responded that they routinely don't give exercise restrictions to their pregnant patients. 100% respondents responded they refer their pregnant patients for exercise recommendations to a Physiotherapist. 9.2% respondents responded that they recommend their patients exercise during pregnancy. 100% respondents responded to yes that they recommend their patients avoid certain types of exercise. 99.2% respondents responded to Yes that they are aware of exercise classes or trainers in their area that could benefit their patients. 99.2% respondents responded to yes that they or someone from their practice be interested in attending a workshop on pregnancy and exercise if offered. 100% respondents responded to moderate intensity of exercises they would recommend to their patients.

### Discussion

There is considerable evidence for the positive effects of exercise during a healthy pregnancy, and this belief appears to be strongly supported by MPs in this study.

Exercise is a powerful tool to manage excessive gestational weight gain, and its associated complications, a view which is well supported in the current study. In addition, our study found that over half the respondents were knowledgeable on the role of exercise in improving cardiovascular fitness, strength, sleeping patterns and reducing the risk of gestational diabetes. However, the findings suggest that most practitioners were unaware of the benefits of exercise in preventing and treating incontinence.

Women are encouraged to initiate pelvic floor exercises during pregnancy, and in the postpartum period, a concept that should be reinforced at a primary healthcare level. Likewise, a recent systematic review suggests a reduced risk of preeclampsia with exercise, but few of the practitioners in this study were aware of this. Although the MPs in this study had a good knowledge of most of the benefits of exercise during pregnancy, awareness and education of its role in preventing incontinence and preeclampsia needs to be improved. There appears to be a common disconnect between research and clinical knowledge on exercise during pregnancy. Other studies have highlighted the lack of healthcare provider's knowledge of ACOG guidelines. Similarly, i found that only a small portion of the practitioners in this study were aware of the ACOG guidelines. Encouraging practitioners to advice on moderate

exercise, inclusive of strength training, to all healthy pregnant patients. This statement, along with the ACOG guidelines, provides a clear outline for exercise prescription and applicable restrictions. However, the lack of awareness of the guidelines may explain why many of the practitioners in this study did not routinely provide restrictions, and many believed that one should not participate in strength-training during pregnancy. Furthermore, despite the health risks of being sedentary during pregnancy there is still a portion of practitioners that are reluctant to encourage previously sedentary patients to embark on an exercise programme during pregnancy. Nonetheless, when compared to their overseas counterparts, many more practitioners appear to encourage these pregnant women to start a new exercise programme. Studies have suggested that pregnancy may be viewed by clinicians as a high-risk state, in which even marginal foetal risk should be avoided, despite the potential benefit to the mother. In line with this, many practitioners in this study believed women should exercise at low intensities.

This is consistent with a study by Evenson et al., where most obstetricians were inclined to recommend mild over moderate exercise. Thus, there is a need for paradigm shift in how activity during pregnancy is viewed, as well as improved accuracy of the advice given. Healthcare providers should be reminded that in the absence of pathology or health risk to mother and/or foetus, pregnancy is a physiological state with benefits to be gained from exercise. There appears to be a great need for better dissemination of current guidelines and research to healthcare practitioners. Encouragingly, the majority of the study participants indicated their willingness to attend a workshop on the subject. This interest in continued education has been echoed in other studies and can provide great potential for improving the occurrence and impact of physician advice, which can have an integral role to play in improving activity levels at a primary healthcare level.<sup>29,30</sup>

In fact, a study by Lewis and Lynch found that physician training can double the amount of advice given.<sup>28</sup> Therefore, training in the form of workshops may be warranted. This education and evidence-based medicine should be furthermore incorporated into the undergraduate medical degree curriculum. Research has shown that healthcare providers can have a positive effect on their patient's attitudes towards exercise.<sup>8,27</sup> Indeed, gaining knowledge of the benefits of exercise may motivate pregnant women to become more active<sup>8</sup>.

Our study shows that over half the women asked their providers about exercise. Similarly, a study by de Jersey et al.<sup>25</sup> reported that women are interested in receiving education, but there appears to be a disparity between what they want and what is provided by their healthcare practitioners. Prenatal advice available to women is often overwhelming, and various healthcare providers should provide an accurate and standard message<sup>25</sup>. Vague and conflicting information may explain why women tend to reduce their activity levels during pregnancy<sup>26</sup>, making correct exercise prescription in the prenatal period all the more important.

#### LIMITATIONS OF THE STUDY:

1. low response rate with convenience sample design
2. small numbers of subjects
3. response bias is a limitation because of non-randomisation of the subjects

#### Conclusion

The medical practitioners appears to largely support the belief that exercise is beneficial during pregnancy, and believe that they have a role to play in exercise promotion on a primary care level, but lacked accurate specifics with regard to exercise prescription (mode, frequency, intensity and duration) and are not adequately promoting it to their patients.

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