

# ASSESSMENT OF KNOWLEDGE OF AVERAGE WEIGHT GAIN DURING PREGNANCY IN URBAN AND RURAL AREAS OF AHMEDABAD DISTRICT, GUJARAT

Ila Vishnubhai Patel, Prof. (Dr.) Chirag J. Trivedi

Research scholar, Department of Statistics, School of Sciences, Gujarat University, Ahmedabad

Statistician cum tutor, Department of Community Medicine, Gujarat Adani Institute of Medical Sciences, Bhuj, Kutch

E- mail: iladave87@gmail.com

Contact no. 8490890844

Head, Associate Professor, Statistics Department, R J Tiberwal Commerce College, Vastrapur, Ahmedabad

E-mail: chiragtrivedi580@yahoo.com

## Abstract

Weight gaining process during the pregnancy is a natural thing. For the healthy baby it is necessary too. To find the weight gain during pregnancy in which areas of Ahmedabad district is good. Formative research was conducted including semi-structured questionnaire in online and offline format. The participants were pregnant women (N = 380) residing in an urban and rural region of Ahmedabad, Gujarat. Descriptive and chi square test were used to examine the primary outcomes of gestational weight gain and healthy eating knowledge and informational sources. According to the findings rural areas of pregnant women follow low weight gaining knowledge while urban areas of pregnant women follow high weight gaining knowledge. As urban women follow balanced diet, maintain their physical health to doing regular exercise, taking proper rest, they are less number of anemic. Socio-economic factors, financial condition, parity, regular antenatal visit this factors are also matters.

**Keywords:** Weight gain, pregnancy, diet, Chi-square test, Statistical data analysis

## INTRODUCTION

The amount of weight gained during pregnancy can affect health of a women and their babies. There are many research to supports association between excessive weight, gestational weight gain and increased birth weight<sup>(1)</sup>. In 2009, the Institute of Medicine (IOM) published revised gestational weight gain guidelines that are based on pregnancy body mass index (BMI) ranges for underweight, normal weight, overweight, and obese women recommended by the world health organization and are independent of age, parity, and ethnic background.<sup>(2)</sup> Gestational weight gain (GWG) guidelines (normal weight: 25-35 lb., overweight: 15-25 lb., obese: 11-20 lb.)<sup>(3)</sup>. Here some information is shown in table format.

Table: New Recommendations for Total and Rate of Weight Gain during Pregnancy, by Prepregnancy BMI<sup>(4)</sup>

Pregnancy BMI	Total Weight Gain		Rates of Weight Gain * 2 <sup>nd</sup> and 3 <sup>rd</sup> trimester	
	Range in kg	Range in lbs.	Mean ( range ) In kg/week	Mean ( range ) In lbs./week
Underweight ( <18.5 kg/m <sup>2</sup> )	12.5 - 18	28 - 40	0.51 ( 0.44-0.58 )	1 ( 1-1.3 )
Normal weight ( 18.5-24.9 kg/m <sup>2</sup> )	11.5 - 16	25 - 35	0.42 ( 0.35-0.50 )	1 ( 0.8-1 )
Overweight ( 25.0-29.9 kg/m <sup>2</sup> )	7 - 11.5	15 - 25	0.28 ( 0.23-0.33 )	0.6 ( 0.5-0.7 )
Obese ( >30.0 kg/m <sup>2</sup> )	5 - 9	11 - 20	0.22 ( 0.17-0.27 )	0.5 ( 0.4-0.6 )

\* Calculations assume a 0.5–2 kg (1.1– 4.4 lbs.) weight gain in the first trimester (based on Siega-Riz et al., 1994; Abrams et al., 1995; Carmichael et al., 1997)

High Gestational weight gain leads to complications such as diabetes, postpartum weight retention, and long term obesity development<sup>(5-10)</sup>.

In most of the cases pregnant women are not taking healthy, balanced diet. Antenatal healthy eating recommendations include proper intake of vegetables, fruits, milk, grains, and iron-folate-calcium, to meet nutrient and energy needs to further support fetal growth and development<sup>(11,12)</sup>.

Most of the women should gain between (11.5 to 16 kg) during pregnancy. Most will gain 1 to 2 kg during the first trimester and then 0.5 kg a week for the rest of the pregnancy the amount of the weight gain on the woman's situation.

A balanced nutrient-rich diet, along with exercise is the basis for a healthy pregnancy. According to some research for most pregnant women the right amount of calories is: 1800 calories per day in the 1<sup>st</sup> trimester, 2200 calories per day in the 2<sup>nd</sup> trimester, 2400 calories per day in the 3<sup>rd</sup> trimester. All pregnancy are different. Some women are already overweight when they get pregnant other women gain weight quickly during their pregnancy. If women does not gain enough weight during pregnancy then newborn baby and women face some problems.

Benefit of proper weight gain during pregnancy:

Gaining the right amount of weight during pregnancy can help protect women's health and the health of their baby. If some women gain too little weight during the pregnancy then they may have a premature baby. A premature baby is born too early, before 37 weeks of pregnancy or they may have a baby with low birth weight. Low birth weight means their baby is born weighing less than 2.4 kg.

If some women gain too much weight during pregnancy then, they may have premature baby. Premature babies may have health problems at birth and later in life. Including being overweight or obese, they may have a baby with fetal macrosomia. Macrosomia means baby is born weighing more than 3.9 kg having a baby this large can cause complications, like problems during labor and heavy bleeding after birth, they may need cesarean (C-section) birth. And they may have trouble losing weight after baby's birth. This can increase their risk for health conditions like diabetes and high blood pressure.

This all are information and knowledge regarding weight gain in pregnancy. In most of the cases women and their family do not know about weight gain, weight gaining factor, how much weight gain is suitable for the women, how to control weight gaining process, etc. Knowledge of the average weight gain during pregnancy in urban and rural areas of pregnant women were studied.

## METHODS

This cross sectional observational study carried out 380 pregnant women who were in their first, second, third trimester and some other women who recently gave a birth to single baby or twin's baby. The data collection was initiated in August 2021 to February 2022. We were able to collect data from rural and urban areas of Ahmedabad district which is located in Gujarat. The socio-demographic variables include age, occupation, education, area of residence, types of family, parity, etc.

It was an online and offline study. In this study pregnant women included, who are regularly or irregularly attending the antenatal clinic in a rural area's and urban areas private and government health center. Some participants with access to the internet could participate in study and some rural area's participants who are unable to access internet they gave a simple answer in offline form of the questionnaires. A convenience sampling technique was used. An online semi-structured questionnaire was developed by using Google forms. The link of the questionnaire was sent through e-mails, whatsapp and other social media to the contact of the investigator. The online self-reported questionnaire developed by us contained the following sections related to education, knowledge, occupation of the family, eligibility criteria and financial condition can be studied.

## DATA ANALYSIS AND GRAPHICAL PRESENTATION

Table and graph give the information regarding socio-economic and clinical characteristic of rural and urban area of Ahmedabad district in percentage format.

Table 1: Socio-economic data of rural and urban area of Ahmedabad

Characteristic		Rural (N=190, %)	Urban (N = 190, %)
Age	Below 25	99, 52.10%	70, 36.84 %
	25 & above	91, 47.89%	120, 63.15 %
Education	Literate	107, 56.31 %	142, 74.73 %
	Illiterate	83, 43.68 %	48, 25.26 %
Occupation	Working	100, 52.63 %	130, 68.42 %
	Not working	90, 47.36%	60, 36.31 %
Parity	0-2	102, 53.68 %	121, 63.68 %
	3 or more	88, 46.31 %	69, 36.31%
Types of family	Nuclear	84, 44.21 %	112, 58.94 %
	Joint	106, 55.78 %	78, 41.05 %

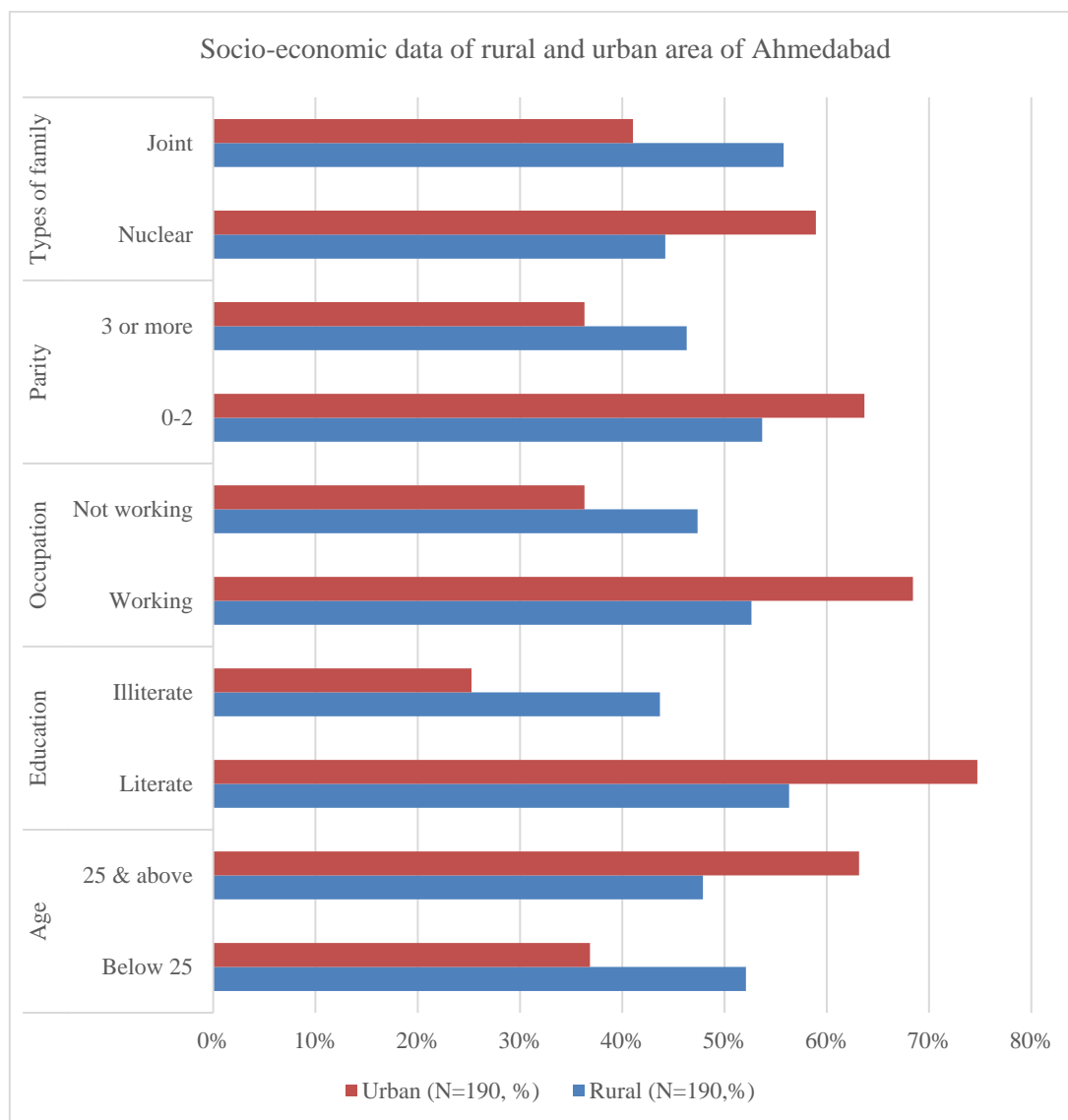
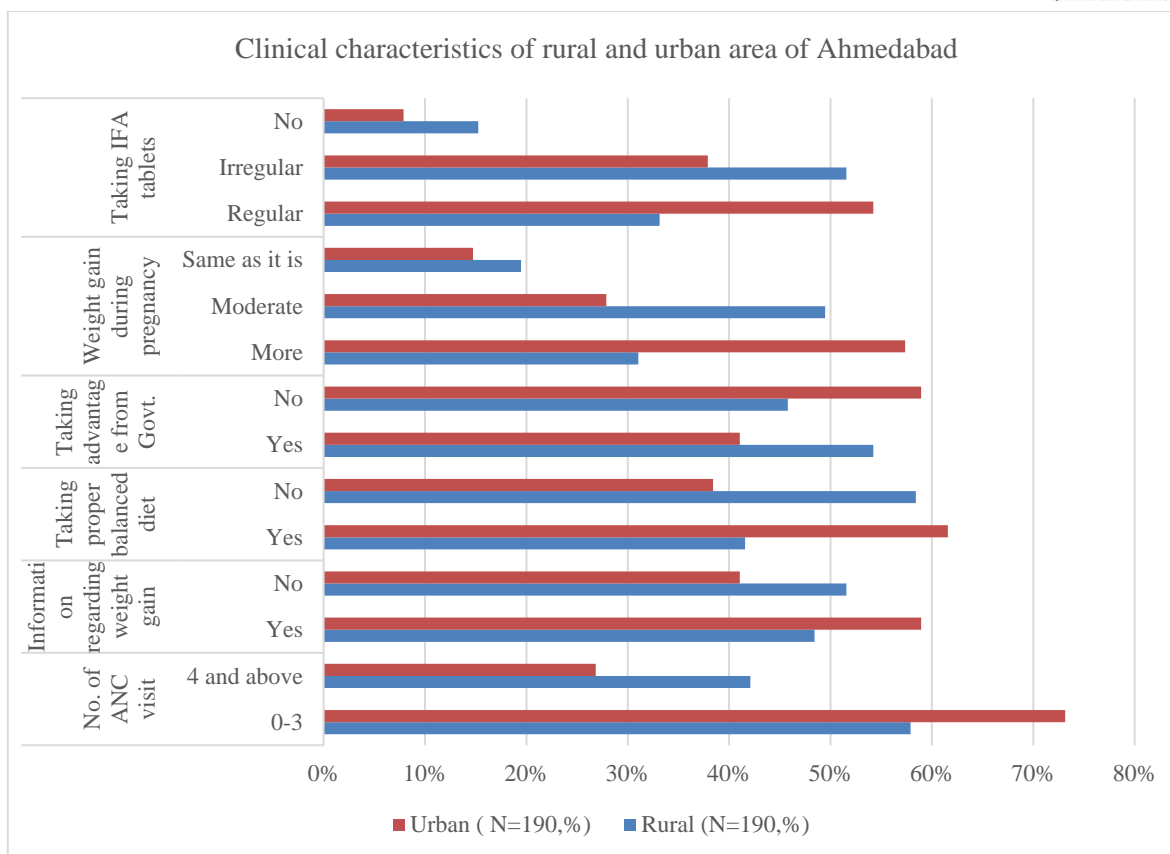


Table 2: Clinical characteristics of rural and urban area of Ahmedabad.

Clinical Characteristic		Rural (N=190, %)	Urban (N = 190, %)
No. of ANC visit	0-3	110, 57.89%	139, 73.15 %
	4 and above	80, 42.10 %	51, 26.84 %
Information regarding weight gain	Yes	92, 48.42 %	112, 58.94 %
	No	98, 51.57 %	78, 41.05 %
Taking proper balanced diet	Yes	79, 41.57 %	117, 61.57 %
	No	111, 58.42 %	73, 38.42 %
Taking advantage from Govt.	Yes	103, 54.21 %	78, 41.05 %
	No	87, 45.78 %	112, 58.94 %
Weight gain during pregnancy	More	59, 31.05 %	109, 57.36 %
	Moderate	94, 49.47 %	53, 27.89 %
	Same as it is	37, 19.47 %	28, 14.73 %
Taking IFA tablets	Regular	63, 33.15 %	103, 54.21 %
	Irregular	98, 51.57 %	72, 37.89 %
	No	28, 15.26 %	15, 7.89 %



To find there is any association between socio-economic and clinical characteristic of types of areas of pregnant women.

Table 3 Socio-economic and clinical characteristics of rural and urban area of Ahmedabad

Characteristics		Rural (N=190)	Urban (N = 190)	Total (380)	Chi square value	Cramer's V	P-value
Age	Below 25	99	70	169	8.35	0.148	0.0039
	25 & above	91	120	211			
Education	Literate	107	142	249	13.47	0.188	0.0002
	Illiterate	83	48	131			
Occupation	Working	100	130	230	9.26	0.1561	0.0023
	Not working	90	60	150			
Parity	0-2	102	121	223	3.918	0.1015	0.0477
	3 or more	88	69	157			
Types of family	Nuclear	84	112	196	8.260	0.1474	0.00405
	Joint	106	78	184			
No. of ANC visit	0-3	110	139	249	9.7974	0.1605	0.00174
	4 and above	80	51	131			
Information regarding weight gain	Yes	92	112	204	4.2335	0.1055	0.0396
	No	98	78	176			
Taking proper balanced diet	Yes	79	117	196	15.215	0.2001	0.000096
	No	111	73	184			
Taking advantage from Govt.	Yes	103	78	181	6.5937	0.1317	0.01023
	No	87	112	199			
Weight gain during pregnancy	More	59	109	168	27.562	0.190	<0.00001
	Moderate	94	53	147			
	Same as it is	37	28	65			
Taking IFA tablets	Regular	63	103	166	18.069	0.154	0.00019

<https://www.gapgyan.org/>

	Irregular	98	72	170		
	No	29	15	44		

## RESULT

Association between information regarding weight gain, taking advantages, from government, taking proper balanced diet, taking regular iron folic acid supplements (IFA), socio-economic status, number of ANC visits was calculated using Cramer's v at 5% level of significance.

Information regarding weight gain, taking advantages from government, taking proper diet, taking IFA supplement, number of ANC visits and socio-economic status all showed positive significance association with the types of areas of pregnant women. i.e. p-value were found <0.05.

Any all from the information, taking advantages, taking proper balanced diet, taking diet, taking IFA tablets, number of ANC visits and socio-economic status, the types of areas of pregnant women of the individual increases.

Table 1 and table 2 gives information regarding clinical and socio-economic characteristic in percentage bar chart in figure 1 shows the information regarding data of socio-economic characteristics of rural and urban areas of Ahmedabad district. Figure 2 represent the clinical characteristics of rural and urban area of Ahmedabad in bar chart format. Around 42% rural pregnant women take antenatal care visits for 4 times or more than 4 times in their pregnancy period and 26 % urban pregnant women take antenatal care visits for 4 times or more than 4 times in their pregnancy period. According to the data and graphical presentation advantages taken from government are high in urban areas as compared to rural areas. Figure shows that 49 % pregnant women gain weight in a moderate level in rural areas and 27 % pregnant women gain weight in a moderate level in urban areas.

## CONCLUSION

According to the finding urban pregnant women are well aware regarding the weight gain during pregnancy and even they taken proper balanced diet regarding their health and their newborns. Urban women follow maintain their physical health to doing regular exercise, taking proper rest. Urban pregnant women have good financial condition compare to rural pregnant women.

In opposite rural areas pregnant women have less knowledge about weight gain and some of those who have knowledge than they are not in financial position to maintain their diet.

## REFERENCE

- [1] Siega-Riz, A. M., Viswanathan, M., Moos, M. K., Deierlein, A., Mumford, S., Knaack, J., ... & Lohr, K. N. (2009). A systematic review of outcomes of maternal weight gain according to the Institute of Medicine recommendations: birthweight, fetal growth, and postpartum weight retention. *American journal of obstetrics and gynecology*, 201(4), 339-e1.
- [2] Rasmussen, K. M., & Yaktine, A. L. (2009). Weight gain during pregnancy: reexamining the guidelines.
- [3] Reinold, C. M., Dalenius, K., Brindley, P. L., Smith, B. L., & Grummer-Strawn, L. (2011). Pregnancy nutrition surveillance: 2009 report.
- [4] National Research Council. (2010). Weight gain during pregnancy: reexamining the guidelines.
- [5] Cedergren, M. I. (2004). Maternal morbid obesity and the risk of adverse pregnancy outcome. *Obstetrics & Gynecology*, 103(2), 219-224.
- [6] Dietz, P. M., Callaghan, W. M., Cogswell, M. E., Morrow, B., Ferre, C., & Schieve, L. A. (2006). Combined effects of prepregnancy body mass index and weight gain during pregnancy on the risk of preterm delivery. *Epidemiology*, 170-177.
- [7] Viswanathan, M., Siega-Riz, A. M., Moos, M. K., Deierlein, A., Mumford, S., Knaack, J., ... & Lohr, K. N. (2008). Outcomes of maternal weight gain. *Evidence report/technology assessment*, (168), 1-223.
- [8] Gunderson, E. P., & Abrams, B. (1999). Epidemiology of gestational weight gain and body weight changes after pregnancy. *Epidemiologic reviews*, 21(2), 261-275.
- [9] Siega-Riz, A. M., Viswanathan, M., Moos, M. K., Deierlein, A., Mumford, S., Knaack, J., ... & Lohr, K. N. (2009). A systematic review of outcomes of maternal weight gain according to the Institute of Medicine recommendations: birthweight, fetal growth, and postpartum weight retention. *American journal of obstetrics and gynecology*, 201(4), 339-e1.
- [10] Amorim, A. R., Rössner, S., Neovius, M., Lourenço, P. M., & Linné, Y. (2007). Does excess pregnancy weight gain constitute a major risk for increasing long-term BMI?. *Obesity*, 15(5), 1278-1286.

- [11] United States. Dietary Guidelines Advisory Committee. (2010). *Dietary guidelines for Americans, 2010* (No. 232). US Department of Health and Human Services, US Department of Agriculture.
- [12] Grimm, K. A., Moore, L. V., & Scanlon, K. S. (2013). Access to healthier food retailers—United States, 2011. *MMWR Suppl*, 62(3), 20-6.
- [13] Bill, P. M., & Communities, S. O. Folic acid and birth defect prevention.
- [14] Bodnar LM, Himes KP. Maternal nutrition. In: Resnik R, Lockwood CJ, Moore TR, Greene MF, Copel JA, Silver RM, eds. *Creasy and Resnik's Maternal-Fetal Medicine: Principles and Practice*. 8th ed. Philadelphia, PA: Elsevier; 2019:chap 12