



A STUDY OF HEALTH OF PREGNANT WOMEN IN KOLHAPUR DISTRICT USING STATISTICALS TOOLS AND TECHNIQUES

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ABSTRACT

Pregnancy complications are health issues that arise during the course of the pregnancy. They can affect the health of the mother, the baby, or both. Some women experience health issues during pregnancy, while others experience health issues prior to conception that could lead to complications. To reduce the risk of pregnancy difficulties, women should seek medical attention before and during their pregnancy and maternal mortality is a critical health indicator, because the direct causes of maternal death are well-known and, for the most part, avoidable and curable. The major complications that account for nearly two-thirds of all maternal deaths are severe bleeding (mostly bleeding after childbirth), infections (usually after childbirth), high blood pressure during pregnancy (pre-eclampsia and eclampsia), complications from delivery and unsafe abortions

In this study we studied the problems faced by pregnant women's in Kolhapur district by collecting primary data from 150 pregnant women's through systematic questionnaires containing several attributes and the collected data is analyzed by using various statistical tools and techniques.

KEYWORDS: PCOS, PCOD, Graphical Representation, Testing of Hypothesis, Level of significance.

INTRODUCTION

Pregnancy is a unique, exciting, and frequently joyful time in a woman's life since it displays the women's incredible creative and nurturing abilities while also bridging the gap to the future. Pregnancy comes at a price, but a pregnant women must also be a responsible women in order to best support her future child's health. For all of its needs, the growing fetus is completely reliant on its mother's healthy body. As a result, pregnant women must make every effort to stay as healthy and well-nourished as possible. Pregnant women should consider a variety of health care and lifestyle options.

Quality of life is described by the World Health Organization (WHO) as "individuals' view of their place in life in the context of the culture and value systems in which they live, as well as in connection to their objectives, aspirations, worries, and expectations." This is a wide term that can be influenced in a variety of ways by the subject's physical health, psychological condition and amount of independence, social relationships, and relationship with the important parts of his or her environment." [1]. It is thus based on a combination of objective elements like as environmental quality and living conditions, as well as subjective factors such as those related to the personal sphere and measured in terms of happiness and well-being. Health-related quality of life refers to health status as an important component of overall quality of life (HRQOL) [2]. Pregnancy is a transitional time marked by significant physical and emotional changes [3]. Even in easy pregnancies, these changes can impact pregnant women's quality of life as well as maternal and newborn health (pregnancy monitoring, pregnancy outcomes, mother postpartum health, and the infant's psychomotor development) [4–8]. Prenatal maternal and child health providers strive to ensure that their patients are satisfied with their preconception and pregnancy experiences [2]. Traditionally used pregnancy outcome measures, such as morbidity and mortality rates, remain essential. However, they are not sufficient on their own because population health should be assessed, not only on the basis of saving lives, but also in terms of improving quality of life [2, 9]. Over the past decades, numerous instruments have been developed to measure HRQOL in various patient populations, with 2 basic approaches: generic and disease-specific [10]. While generic measures (for example the SF-36 Short-Form Item 36 and WHOQOL-BREF World Health Organization's Quality of Life Scale) have broad application across different types and severity of diseases, disease-specific measures are designed to assess particular diseases or patient populations. To our knowledge, there is no review of the literature to describe the quality of life of pregnant women in primary care. The objectives of this study were to describe the quality of life during uncomplicated pregnancy and to assess its associated socio-demographic, physical and psychological factors in developed countries. The United Nations (UN), is available online [11]. Studies measuring quality of life with a single question were excluded [12, 13].



What is PCOD?

PCOD (Polycystic Ovarian Disease) is a medical condition in which the woman ovaries produce immature or partially mature eggs in large numbers and over the time these become cysts in ovaries. Due to this ovaries become large and secrete large amount of male hormones (androgens) causing infertility, irregular menstrual cycles, hair loss and abnormal weight gain. PCOD can be controlled by diet and lifestyle modifications.

What is PCOS?

PCOS (Polycystic Ovary Syndrome) is a metabolic disorder in which the woman affected by hormonal imbalance in their reproductive years (between ages 12 and 51). Due to increase level of male hormones females might skip menstrual periods, have irregular ovulation making it hard to get pregnant, get abnormal hair growth on the body and face simultaneously it can lead to heart disease and diabetes in long term. PCOS is a serious medical condition, and it requires proper medical attention or surgical treatment.

What Is a Miscarriage?

A miscarriage is the loss of a baby before the 20th week of pregnancy. The medical term for a miscarriage is spontaneous abortion. But it isn't an abortion in the common meaning of the term.

As many as 50% of all pregnancies end in miscarriage -- most often before a woman misses a menstrual period or even knows they're pregnant. About 15%-25% of recognized pregnancies will end in a miscarriage.

More than 80% of miscarriages happen within the first 3 months of pregnancy. Miscarriages are less likely to happen after 20 weeks. When they do, doctors call them late miscarriages.

Causes of a Miscarriage

There are potentially many reasons why a miscarriage may happen, although the cause is not usually identified. The majority are not caused by anything you have done. It's thought most miscarriages are caused by abnormal chromosomes in the baby. Chromosomes are genetic "building blocks" that guide the development of a baby. If a baby has too many or not enough chromosomes, it will not develop properly. In most cases, a miscarriage is a one-off event and most people go on to have a successful pregnancy in the future.

Nutrition and Healthy Diet

Women who are physically active, eat a nutritious diet and have a normal BMI are more likely to have a healthy pregnancy. Preconception diet and lifestyle are especially important in the case of maternal obesity, which has a significant impact on both immediate pregnancy outcomes and the child's chance of becoming fat and developing non communicable diseases later in life. Recent intervention studies have found that pharmacological (metformin) and behavioral (diet/physical activity) interventions during pregnancy have only a limited impact on maternal and infant prenatal outcomes in obese pregnant mothers, implying that interventions prior to conception are needed to improve outcomes

OBJECTIVE

- Distribution of blood group of women according to area.
- To study health pattern of women.
- Distribution of kit used for confirmation of pregnancy.
- To study of distribution of genetic disease.
- Distribution of responses about mental stress during pregnancy period.
- To study age distribution of pregnancy women.
- To study distribution of family type.
- To study the pattern of occupation of pregnant women.
- Distribution of daily drink of water, milk and food.
- Distribution of different kinds of symptoms.
- To study relation between area and health of pregnant women.
- To study the selection of occupation in different area is uniformly distributed or not.
- The choice of different diet plans are equally selected or not.
- The average pregnancy in different age group is equal or not.
- The distribution of pregnant women in rural and urban area is same.

METHODOLOGY

The qualitative methods are used for data collection. Primary data was collected with the help of social survey technique through questionnaire. Due to Covid-19 we faced lot of problems to get data of pregnant ladies. For collecting data we took permission of doctors of respective hospitals. Then we visited several hospitals nearby our area following Covid-19 protocols.



Also we visited “Anganwadi” in our area where we got data about pregnant ladies. Some of data has been collected by direct interaction with pregnant ladies. Those we collected a samples amounting 150 observations.

Statistical Software

- MS – Excel
- MS – Word

Statistical Tools

- **Graphical Tools** : Bar diagram , Multiple Bar Diagram, Pie chart
- **Test** : Chi-square for independence of attributes
- **Non-Parametric Test** : Kruskal Wallis test , Mann-Whitney U test

Methods of Data Collection :

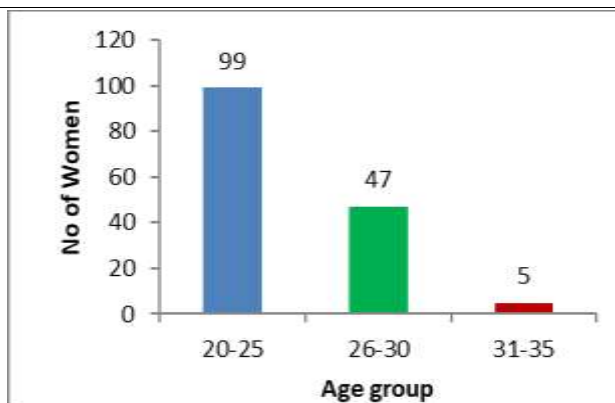
For this study, we have collected primary data of 150 observations via direct interaction.



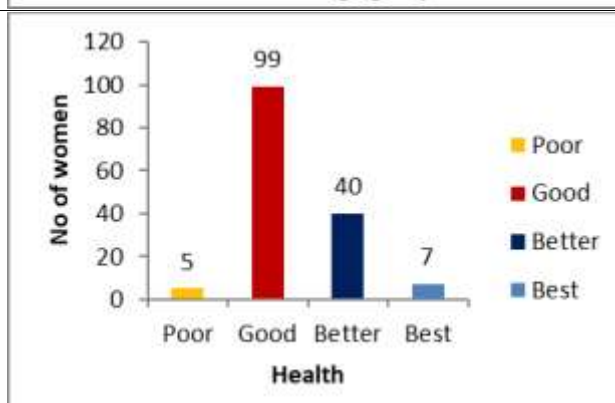


GRAPHICAL REPRESENTATION

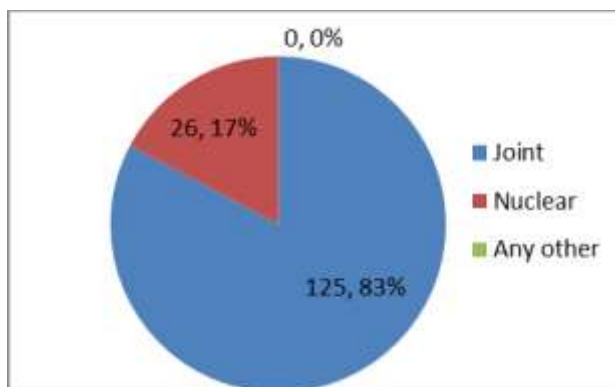
Age group	No. of Women
20-25	99
26-30	47
31-35	5
Total	151



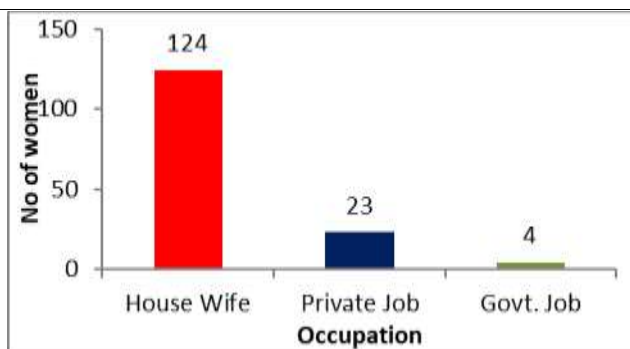
Health	No. of Women
Poor	5
Good	99
Better	40
Best	7
Total	151



Family Type	No. of Women
Joint	125
Nuclear	26
Any other	0
Total	151

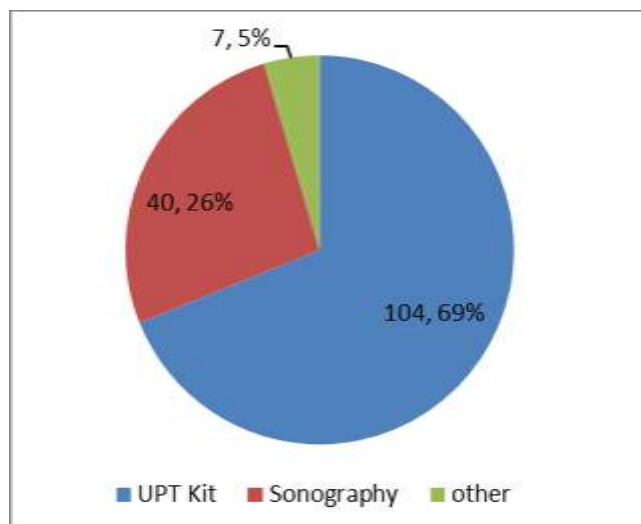


Occupati on	No. of Women
House Wife	124
Private Job	23
Govt. Job	4

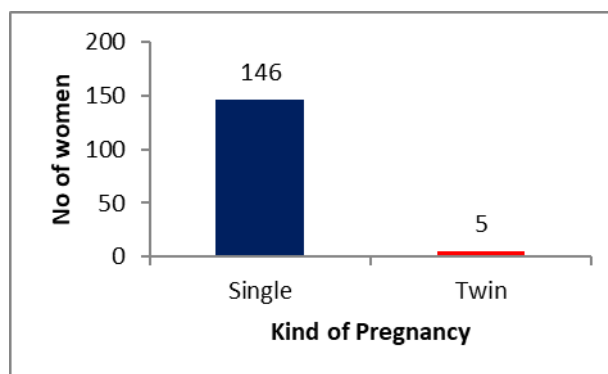




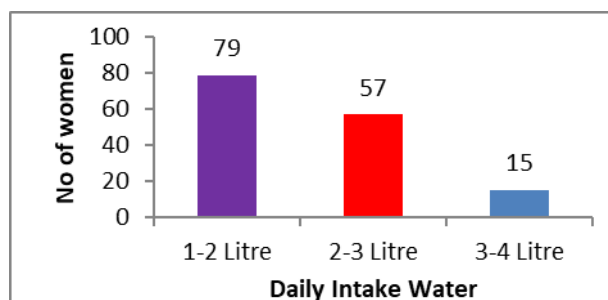
Pregnancy Confirmation Method	No. of Women
UPT Kit	104
Sonography	40
other	7
Total	151



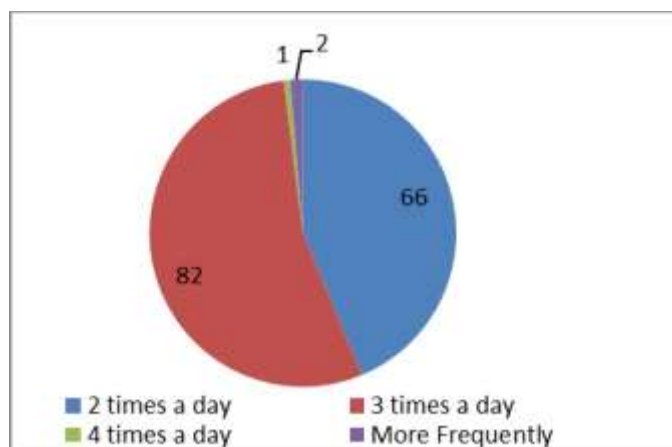
Kind of Pregnancy	No. of Women
Single	146
Twin	5
Triple	0
Quarterplet	0
Total	151



Daily Intake Water	No. of Women
1-2 Litre	79
2-3 Litre	57
3-4 Litre	15
Total	151

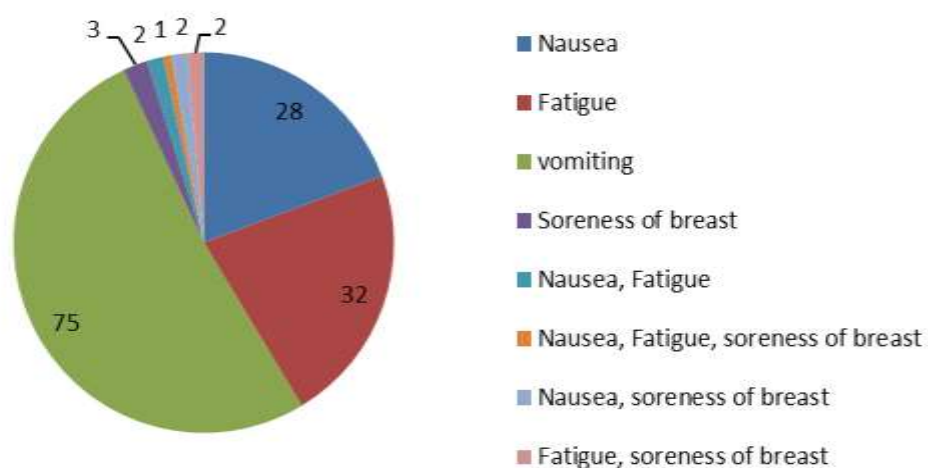


Daily food times	No. of Women
2 times a day	66
3 times a day	82
4 times a day	1
More Frequently	2
Total	151

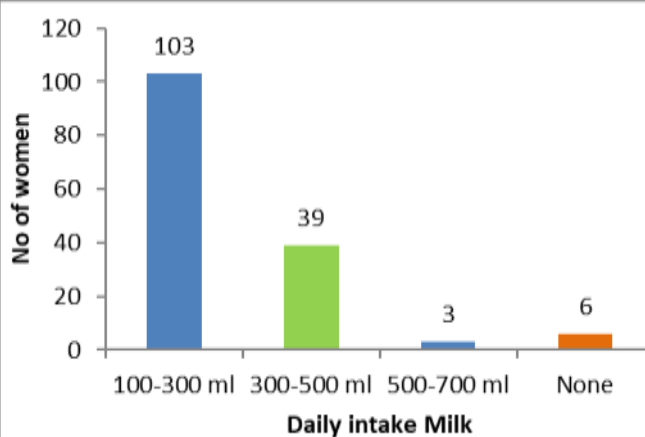


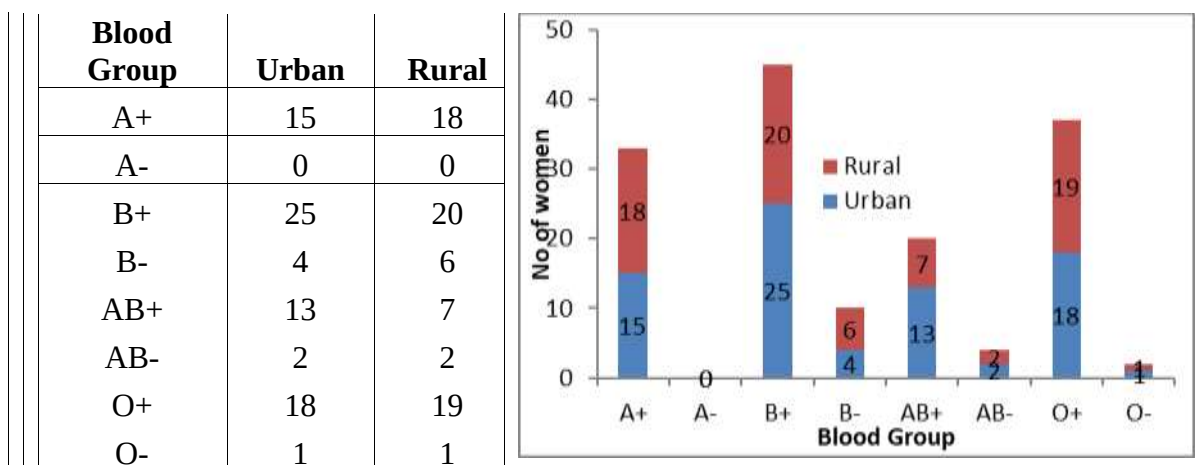


Symptoms	No. of Women
Nausea	28
Fatigue	32
vomiting	75
Soreness of breast	3
Nausea, Fatigue	2
Nausea, Fatigue, soreness of breast	1
Nausea, soreness of breast	2
Fatigue, soreness of breast	2
Total	145



Daily intake of Milk	No. of Women
100-300 ml	103
300-500 ml	39
500-700 ml	3
None	6
Total	151





Testing Of Hypothesis

a) Chi-Square Test: Area V/S Use of Iron & Calcium Supplement

H_0 : There is independence between area and Use of Iron & Calcium supplement's

H_1 : There is no independence between area and Use of Iron & Calcium supplement.

Observation Table

		Use of Iron & Calcium supplement		Total
		Yes	No	
Area	Urban	76	2	78
	Rural	65	8	73
	Total	141	10	151

$$\chi^2 = \frac{N(ad - bc)^2}{(a + c)(b + d)(c + d)(a + b)}$$

$$\chi^2_{\text{calculated}} = \frac{151 (608 - 130)}{(76 + 65) (2 + 8) (65 + 8) (76 + 2)} = 47.0505$$

$$\therefore \chi^2_{\text{calculated}} = 47.0505$$

$$\therefore \chi^2_{\text{table}} = 3.841459$$

$$\chi^2_{\text{calculated}} < \chi^2_{\text{table}}$$

b) Chi-Square Test : Health V/S Gestational Week

H_0 : The health and gestational week are independent.V/S

H_1 : The health and gestational week are not independent.

Observation Table

G.S.W	Health				Total
	poor	good	better	best	
0-13	2	12	5	1	20
14-26	1	54	20	2	77
27-40	2	33	15	4	54
Total	5	99	40	7	151



Test Statistic:

$$\chi^2_{\text{cal}} = \sum (O_i - E_i)^2 / E_i$$

$$= 1.12759$$

$$\chi^2_{\text{cal}} = 1.12759$$

$$\chi^2_{\text{table}} = 12.59159$$

$$\chi^2_{\text{calculated}} < \chi^2_{\text{table}}$$

c) Chi-Square Test : Area V/S The Pregnant Women's Health

H_0 : Area and the pregnant women health are independent. V/S

H_1 : Area and the pregnant women health are not independent.

Observation Table

Area	Health				Total
	Poor	Good	Better	Best	
Urban	1	49	23	5	78
Rural	4	50	17	2	73
Total	5	99	40	7	151

$$\chi^2_{\text{calculated}} = 2.686608343$$

$$\chi^2_{\text{table}} = 7.8147279$$

$$\text{calculated} < \chi^2_{\text{table}}$$

d) Chi-Squares Test For Uniform Distribution

H_0 : The uniform Distribution is Good fit for the data. V/S

H_1 : The uniform Distribution is not Good fit for the data.

Observation Table

Occupation	No. of Women
House Wife	124
Private Job	23
Govt. Job	4
Total	151

$$\chi^2_{\text{calculated}} = 164.884$$

$$\chi^2_{\text{table}} = 5.991465$$

$$\chi^2_{\text{calculated}} > \chi^2_{\text{table}}$$

H_0 : Age and the pregnant women health are independent. v/s

H_1 : Age and the pregnant women health are not independent.

Observation Table

		Health				Total
		Poor	Good	Better	Best	
Age	20-25	5	63	27	4	99
	26-30	0	33	12	2	47
	31-35	0	3	1	1	5
Total		5	99	40	7	151



$$\chi^2_{\text{calculated}} = 0.9482 \text{ and } \chi^2_{\text{table}} = 12.59159$$

$$\chi^2_{\text{calculated}} < \chi^2_{\text{table}}$$

e) Kruskal-Wallis Test : Gestational Week

H_0 : There is difference between gestational week.V/S

H_1 : There is no difference between gestational week.

Observation Table

Gestational Week		Health			
		Poor	Good	Better	Best
	0-13	2	12	5	1
	14-26	1	54	20	2
	27-40	2	33	15	4

Test Statistic:

$$H = \sum - 3(N+1)$$

n_1 = No of observation in poor

n_2 = No of observation in good

n_3 = No of observation in better

n_{34} = No of observation in best

$$n_i = n_1, n_2, n_3, n_4$$

N = Total No. of observations = 12

k = no. of women

Calculation:

$$H = 616.0833 - 3(12+1) = 0.07692 * 616.0833 - 3 * 13 = 47.3891 - 39 = 8.3891$$

$$\chi^2_{\text{table}} = (K-1)5\% = (3-1)0.05\% = (2)0.05 = 5.991465$$

$$H > \chi^2_{\text{table}}$$

f) Kruskal -Wallis test :- Diet Plan

H_0 : There is difference between diet plan.V/S

H_1 : There is no difference between diet plan.

Observation Table

Diet Type		Less	Medium	High
	Fresh Fruits	52	70	29
	Vegetables	33	24	94
	Dry Fruits	50	74	27
	Eggs	79	61	11
	Non-Veg	84	53	14



Ranks

	L	M	H
A	8	11	5
B	6	3	15
C	7	12	4
D	13	10	1
E	14	9	2
TOTAL = T_i	48	45	27
T_i^2	2304	2025	729

Test Statistic

$$H = \sum - 3(N+1)$$

n_1 = No of observation in L

n_2 = No of observation in H

n_3 = No of observation in M

$n_i = n_1, n_2, n_3$

N = Total No. of observations = 15

$k = 5$

Calculation

$$H = 1011.6 - 3 * (15+1)$$

$$= 0.05 * 1011.6 - 3 * 16 = 50.58 - 48 = 2.58$$

$$\chi^2_{table} = (k-1)5\% = (5-1)0.05\% = (4)0.05 = 9.4877$$

$$H < \chi^2_{table}$$

g) Kruskal-Wallis Test :- Health V/S Area

H_0 : There is significant difference between criteria responses about health in area.v/s

H_1 : There is no significant difference between criteria responses about health in area

Observation Table

		Health			
Area		Poor	Good	Better	Best
	Urban	1	49	23	5
	Rural	4	50	17	2
	Total	5	99	40	7

Ranks

		Health			
Age		Poor	Good	Better	Best
	Urban	1	7	6	4
	Rural	3	8	5	2
Total= T_i		4	15	11	6
T_i^2		16	225	121	36
n		2	2	2	2

Test Statistic :

$$H = \sum - 3(N+1)$$

n_1 = No of observation in poor

n_2 = No of observation in good



n_3 = No of observation in better

n_4 = No of observation in best

n_i = n_1, n_2, n_3, n_4

N = Total No. of observations = 8

k = 2

Calculation:

$$H = 199 - 3(8+1)$$

$$= 0.1666 * 199 - 3 * 9$$

$$= 33.1666 - 27$$

$$= 6.1666$$

$$\therefore H = 6.1666$$

$$\chi^2_{table} = (k-1)5\%$$

$$= (2-1)0.05\%$$

$$= (1)0.05 = 3.841459$$

$$H > \chi^2_{table}$$

h) Kruskal -Wallis Test :- Age V/S Area

H_0 : There is difference between age groups according to area.V/S

H_1 : There is no difference between age groups according to area

Observation Table

Area	Age			
		20-25	26-30	31-35
	Total	99	47	5
Urban	49	26	3	78
Rural	50	21	2	73
Total	99	47	5	151

SR NO	Original ranks	ranks		20-25	26-30	31-35
1	2	1	Urban	5	6	2
2	3	2	Rural	6	3	1
3	21	3	total=			
4	26	6	Ti	11	9	3
5	49	5	Ti ²	121	81	9
6	50	6	n	2	2	2

Test Statistic :

$$H = \sum - 3(N+1)$$

n_1 = No of observation in (20-25) years

n_2 = No of observation in (26-30) years

n_3 = No of observation in (31-35) years

n_i = n_1, n_2, n_3

N = Total No. of observations = 6

k = 2

Calculation:

$$H = 105.5 - 3(6+1) = 0.2857 * 105.5 - 3 * 7 = 30.1428 - 9.1428$$

$$\therefore H = 9.1428$$

$$\chi^2_{table} = (k-1)5\% = (2-1)0.05\% = (1)0.05 = 3.841459$$

$$H > \chi^2_{table}$$



CONCLUSION

- Most of the pregnant women's are in the age group of 20-25.
- Most of the pregnant women's are in the joint family.
- Most of the pregnant women's are house wife.
- The pregnant women's are most used UPT kit for pregnancy confirmation.
- The proportion of women's having a single child is higher.
- Most of the pregnant women's are drinking 1-2 liter water in a day.
- Most of the pregnant women's are drinking 100-300 ml milk in a day. So they get less proteins.
- Most of the pregnant women's are taking 3 times food in a day.
- Vomiting is most common symptom in the pregnant women's.
- Most of the pregnant women's health condition is good.
- The attributes area and Use of Iron & Calcium supplement are independent
- The attributes health and gestational week are independent.
- The attributes Area and the pregnant women health are independent.
- The number of woman occupation is not uniformly distributed over different criteria of occupation.
- There is significant difference between criteria responses about health in area
- There is difference between diet plan

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