

Running Head: NUTRITION IN PREGNANT WOMEN

Differences in food intake and knowledge among pregnant women living in urban and rural areas  
in Bulgaria

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**ABSTRACT**

The study was carried out for the verification of impact of region of residence of pregnant women on the knowledge and food intake in the context of Bulgaria. In addition to this, the research also provided a thorough plan under the title of key recommendations for researchers of future on the topic of knowledge and food intake of pregnant women. Moreover, as opposed to the primary aim of research, the researcher also measured some secondary objectives of research. In order to obtain information that is relevant to the topic, quantitative research design was chosen by the researcher, whereas secondary data collection has been chosen as the method of collecting the data. With the help of SPSS software and through descriptive analysis and independent t-test, the data was analysed in order to achieve the outcomes of the study. The results of the study showed that pregnant women residing in urban areas have more knowledge of food intake, alcohol consumption, and smoking habits as compared to pregnant women residing in rural areas of Bulgaria.

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**DECLARATION**

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## CHAPTER 1: INTRODUCTION

### *1.1. Introduction to the Research*

Pregnancy is a state of celebration all over the world as it announces the upcoming of a new human being into the world. However, many communities around the world have undesirable child and maternal health indices due to a number of factors including maternal nutritional status. Factors including absence or presence of food restrictions, quality of diet, dietary indiscretions, inadequate nutritional knowledge, and feeding habits are independent variables that are linked with outcomes of pregnancy and weight gain during the period of pregnancy (Campbell and Campbell, 2008). Undernutrition is considered to have wide-ranging and drastic effects on children and women, if not managed properly. In its severe form, high levels of mortality and morbidity are recorded (Picot et al., 2012). Food avoidance and food taboos have been reported in many communities among pregnant women with the result of inadequate intake of nutrients. There are various factors that can be linked with such avoidance of certain foods, including teenage pregnancy, prim gravidity, low levels of household income, lack of education, signifying low mass index and socio-economic status (Oni and Tukur, 2012).

### *1.2. Contextual Background*

Over recent years, maternal diets during the period of pregnancy have gained a great attention. It is because of the recognition of increased metabolic, physiologic, and nutritional demand that is placed on women during pregnancy. The intake of pregnant women must be such that it provides nutrients and energy to both mother and fetus (King, 2000). According to researches, inappropriate intake of diet leads to outcomes that are unfavorable. Insufficient

dietary intake and supplemental iron results in anaemia of iron deficiency involving a risk for labor complications and morbidity (Picot et al., 2012).

Many researches have been carried out around the world evaluating the feeding habits and dietary intake of pregnant women. A study conducted in South Africa highlighted the top food items consumed by pregnant women, including coffee, tea, cold drinks, fresh milk, bread rolls, rice and sugar, magou, fruit juice, and maize meal (Kersa, 2004). The nutrient intakes and dietary habits of 279 pregnant women were evaluated by researchers in Ghana with the help of interview guides and dietary recall forms. The impact of socio-demographic variables on intakes of pregnant women and changes in habits were studied. It was found that mean energy, folic acid, iron and zinc intakes were inadequate as compared with recommended intakes. The contributions of macronutrients to caloric intake were fat (34.7%), protein (13.3%), and carbohydrate (52.1%). A significant association was found between mean protein intake and level of education as well as between mean protein intake and level of income.

Nutrition and superstitions of pregnant women in Nigeria were studied and it was found that 15% of the respondents that adhere to traditional and customary beliefs about feeding practices and nutrition in pregnancy. Ojofeitimi et al., (2008) carried out the study regarding dietary intake of 840 women from urban and rural areas. In about 75% of the respondents, inadequate dietary intake of energy was found, while 65% of the respondents showed the adequate amount of protein. 70% of women reported inadequate intake of Vitamin C, while only 18% of the pregnant women showed inadequate intake of folate.

The situation is almost the same in many other parts of the world also. In Pakistan and many other countries and parts of Asian sub-continent, micronutrient deficiencies in pregnant women are widespread. These are linked with under-nutrition in women and intra-uterine growth



retardation. Dietary assessment of 284 pregnant women in Iran showed a higher amount of intake among women of rural areas than women residing in urban areas. According to Chinese National Nutrition and Health Survey in 2002, a wide range of nutritional inappropriateness was found from over-nutrition to deficiency (excess of both is detrimental to health) in population across China. Compared to earlier surveys of national nutrition in China, it was found that the quality of intake among Chinese population has improved but still there were differences between urban and rural areas and pregnant women of those parts of China. Maternal health during pregnancy and preconception is vital for health and growth of fetus as well as newborn baby. Because of the fetal origins theory of disease, interest in nutrition during the period of pregnancy has increased. Vast amount of literature and researches can be found on nutrition programming of pregnant women.

### ***1.3. Research Question***

Research question is constructed on the basis of objectives that the researcher expects to achieve from the study. The research questions that would be addressed in this study is:

Are there any differences in food intake and knowledge among pregnant women living in urban and rural areas in Bulgaria?

### ***1.4. Aim and Objectives***

The aim of this research is to find out whether the dietary intake of pregnant women has anything to do the area or location where the women reside or not. In order to accomplish the aim, it is sub-divided into small objectives which would guide the researcher in carrying out the study smoothly. These objectives are:

- To find out the knowledge and food intake of pregnant women residing in urban areas
- To find out the knowledge and food intake of pregnant women residing in rural areas
- To find out the rate of alcohol consumption and smoking habits of pregnant women residing in urban and rural areas.

### ***1.5. Significance of the Study***

In developed countries, usually malnutrition is not a very big issue but still there is a need to recommend best diet to pregnant women in order to enhance their health and development conditions as well as their offspring. Such recommendations should be based on evidence and not it is recognized that the studies related to birth starting before or during pregnancy and then offspring and the family make significant contributions to evidence. Avon Longitudinal Study of Parents and Children (ALSPAC) is one of those studies that has followed birth cohort from mother's pregnancy to offspring's adulthood. It is unusual in collection information related to diet of mothers, partners and their offspring.

### ***1.6. Rationale of the Study***

The study reviews the publications that have used data available related to dietary habits of pregnant women in different areas of the world. The study is carried out in order to find out the differences in food intake and knowledge among pregnant women living in urban and rural areas in Bulgaria. From the review of previous literature regarding differences in dietary intake and knowledge in pregnant women, it is inferred that the women residing in rural areas have higher and good intake of nutrients than the pregnant women of urban areas. Prohibition against particular foods is more found in urban areas as compared to women residing in rural areas.

## CHAPTER 2: LITERATURE REVIEW

### *2.1. Introduction*

This chapter aims to cover in depth various aspects that are involved in the notion of food intake and other dietary habits. Moreover, through this chapter, the researcher aims to study, in broad terms, the differences that usually occur in the food intake level and dietary habits amongst pregnant women who tend to live in both the urban as well as rural areas of Bulgaria. Besides this, the literature review also comprises of a discussion regarding the key compounding variables underlying the research topic. Furthermore, the literature review also presents various dimensions of the topic, i.e. the dietary intake during pregnancy between the urban and the rural areas in Bulgaria. Lastly, the dietary habits are also studied as along with the perspectives of alcohol consumption during pregnancy and the use of other drugs.

### *2.2. Food intake*

In a report from UNICEF (2006), pregnancy is considered as one of the good sign where the newborn is wholeheartedly welcomed in the world. However, in many of the communities, there has been witnessed that women tend to have an undesirable maternity and child health indices which often makes their lives very difficult. Likewise, many important variables in any society make pregnancy far more challenging, including the poor maternal nutritional intake. Moreover, many dietary factors also concern the propensity to hinge the presence or the absence of food restrictions considering the overall quality and quantity of the food intake by pregnant women in the rural as well as the urban areas. It has also been determined that the domain of food intake is not acknowledged by the majority of pregnant women due to lack of adequate

knowledge regarding beneficial nutrition intake (Oken, Guthrie, Bloomingdale, Platek, Price, Haines and Wright, 2013).

Furthermore, it has been argued by Quirk, Williams, O'Neil, Pasco, Jacka, Housden and Brennan (2013) that undernutrition and inadequate food intake may lead to drastic and harsh outcomes for both the women as well as the children, if not handled diligently. The appropriate food intake or maternal diet during pregnancy has watched the attention of many concerned people over the past years. It has also been reported by Cockx, Francken and Pieters, (2015) that during the pregnancy condition many women have also faced premature delivery of baby or abortion just because they paid least attention to having a healthy nutritious diet. As explained by Cheng, Dibley, Zhang, Zeng and Yan (2009), the food intake and the adequate maternal nutrient protein intake during the pregnancy is exceedingly necessary to ensure fundamental and essential birth outcomes from the pregnant women in both urban and rural areas of the world.

It has been further referred from the learning that the usual dietary intake amongst the urban and the rural area pregnant women of China is significantly coherent. The average level of better nutritious food intake amongst Chinese pregnant women, except for the rural areas women, the things were way better. Meaning the urban areas women were still better on food intake and nutrient diet whereas the rural were low on protein, fat, iron and zinc. There were also witnessed that the rural areas health from the perspective of being pregnant the intakes of folate were considerably low, i.e. 97%, zinc 91% and 64/5 inadequate consumption of iron. From this, it can be remarked that the rural areas women need more knowledge and awareness regarding the pregnancy element and the futile food intake required in this time span.

It has been also determined by Gao, Stiller, Scherbaum, Biesalski, Wang, Hormann and Bellows (2013) that the poor maternal nutrition needs to be focused from the aspect of food

intake during pregnancy, especially during the third trimester of the pregnancy as the rate is high for getting miscarriages profoundly emerging from the inappropriate food intake. The micronutrient deficiencies have also been remarked to transgress from the lower consumption of the necessary food intake while pregnancy is it rural or urban. Also, in correspondence to the traditional Chinese culture, the pregnant women in rural areas are more clearly and timely advised to focus more on food intake while at the same time are imposed to strictly adhere with a specific set of nutrient dietary precautionary plan.

As per the revelations from the learning's of Cheng, Dibley, Zhang, Zeng and Yan (2009), the pregnant women in the western area of China, i.e. the rural area, the women are termed to face more criticality aspect pertaining to their diets since they are not guided and aware duly what to eat in each trimester. Hence, following their own methodology during pregnancy days is the choice, which ultimately in majority of the cases moves them to lie in the pitfall of abortion or death of mother and the baby. Regarding the food intake and the usual food habits amongst the pregnant women of Indonesia in both rural and urban areas, it has been referenced by Hartini (2004) that before the world crisis, the majority of women lacked the ability to even eat anything worth as been pregnant; it was the time when it was recorded that more than 80% of pregnant women had been entitled to have insufficient energy within them while on the other hand, 40% of the pregnant women were those who lacked in scarce Vitamin C, calcium, zinc and iron.

In addition to this, the food intake of the pregnant women was also contemplated to be below the par level and they only knew taking boiled rice and nuts would help them complete the pregnancy duration efficiently. Moreover, the food intake also consisted more of having those items which had efficacy of being hot and in the end the child inside the womb was greatly

affected (McGowan and McAuliffe, 2013). Being accurate about the food intake amongst the pregnant women in rural Indonesia, the major source of food intake was rice, since it was the only food item available after war in excessive amount. Comparing it fundamentally with the food intake system of the urban area pregnant women, it has been also determined, they were very conscious as per their diet systems and avoided taking any type of infected food item that may eventually terminate their pregnancy (Hartini, 2004). Also, the urban pregnant women had more resources to make their pregnancy a better one, but in the end faced the issue of fat intake lacking.

As per the study of Hossain, Sarwar, Reja and Akter (2013), it has been estimated that the food intake of the pregnant women both in urban and rural area was a catastrophe and needed commendable improvement. Moreover, the food intake situation amongst the pregnant women lacked nutritious diet in the urban region of Kushtia, Jhenaidah and Jessore district of Bangladesh. The proper education level, low standard training and lack of awareness regarding food intake system in pregnant women increased the ratios of terminated pregnancy. Also, the malnutrition and being highly under-weighted were the two major primitive reasons amongst the pregnant women of Bangladesh in both urban and rural areas.

### **2.3. Dietary Habits.**

In the view of Farre (2016), the dietary habits and the intake during the pregnancy time for women is one of the most talked about discussion in today's world. Moreover, the maternal diets along with proper eating habits have been focused more as compared to any other aspect of pregnancy. For the importance of proper dietary habit, Singh, Saboo, Elkilany, Hristova and De Meester (2015) stated that the dietary intake by the pregnant women needs to be duly taken care

of since it is important for both the mother and the foetus. Continuing to this notion, the dietary intake if becomes in any case insufficient, be in rural or urban areas, then it surpassingly transgresses the situation to unfavourable outcomes. The unfavourable outcomes in many cases are the occurrence of iron, vitamin and calcium deficiency with adding fewer labour complications also.

It has been studied in South Africa that the top ten food or dietary items which must be included in every pregnant women routine is fresh juices of fruits, milk, maize meal, rice and sugar. However, the dietary intake witnessed in the rural areas assessed that the women are just simply avoiding the top ten fundamental dietary elements from their routines and are facing severe pregnancy complications. In addition, the dietary habits witnessed in the rural areas were exceedingly disappointing and the pregnant women had no other option then losing the pregnancy or their own life. It has been also in support for this contemplation stated by Valente and Suarez (2016) that in majority of the cases the socio-demographic factor is ignored; however, it is one of the vital phenomenon's that must be duly catered while focusing on the dietary habits of the pregnant women. Besides this, the socio demographic factor hindrance was seen overriding in the rural areas where the pregnant women were extensively found avoiding the intake of mean energy, vitamin B12, folic acid, zinc and iron, subsequently.

On other hand, studies and illustrations from Nigeria depict that 15% of the pregnant women tend to hold on to the traditional norms about the nutrition and feeding practices in the pregnancy. Considering adequate supply of diet that was fit from generation to generation and side by side encompassing of the probation of diet like eggs, pasta, coca beverages, snail and cassava fufu meals, in rural areas. It has been studied from the work of Sholeye, Badejo and Jeminusi (2014), in Osun state, 75% of women in the rural area are dominantly consuming poor

dietary energy intake while the protein intake amongst them was considerably sufficient averaging to about 65% of the women. Moreover, the only source of having protein as a food intake in the rural area was due to the plant origin. Furthermore, it was also regarded that in the rural areas the 70% of the pregnant women have deficit of vitamin C, folate intake was also subsequently quite low ranging to 28%, which indicates that over 71% were the only women who had adequate dietary intake of folic acid.

In another context, it has been discussed by Banjare (2016) that the situation of the pregnant women in other parts of the world is also no different. They also tend to pertain to poor conditions during pregnancy and no correct measures taken for it. In addition to this, the food intake as well as the dietary intake for the maternal micronutrient is exceedingly deficient in the urban areas of the world too. Further analysis when carried out, it was also examined that the dietary assessment of more than 300 pregnant women in western Iran, Maku, demonstrated that there tends to be a greater nutrient intake along with food intake amongst the rural women and the urban counterparts. It was also revealed from the study amongst Iranian pregnant women that the mean consumption of food items like grain and other dairy products was significantly much extensive amongst the rural women as compared to that of the urban women. In addition, it has been focused that the urban women have a tendency of consuming more sufficient diet while pregnancy than the rural women.

However, the urban women have been estimated of consuming 140g of fruits as compared to those of the rural area. In addition, regarding to the average level of energy consumption the total of the calories still undertaken by them is carbohydrates, fats, iron, and vitamin all greater in proportionate than the rural pregnant women. Studied further for the dietary habit and the food intake by the pregnant women of India, it has been showing some significant



and essential differences amongst the consumption between rural and urban women. The dietary habits amongst the pregnant women in the urban colonial part of India reflected nothing different from the non-pregnant counter areas of India more relatively in the domain of food items and nutrition diet. In addition, when these assertions were evaluated in the light of recommended daily allowance RDA, it illustrated a variably insignificant criterion the consumption of protein in both pregnant and non-pregnant women of urban and rural areas lack the efficiency of energy, protein, vitamin C and folic acid (Volgyi, Carroll Hare, Ringwald-Smith, Piyathake, Yoo and Tylavsky, 2013).

#### ***2.4.Social Class and Socio Economic Status***

In the words of Cheng, Dibley, Zhang, Zeng and Yan (2009), there has been surpassingly witnessed a lower socio economic status amongst the Bulgarian population that is somehow associated with the higher consumption of relatively cheaper foods such as the terms ‘social class’ and ‘socioeconomic status’ tend to be used interchangeably in western world and boundaries. Apart from this, it has been determined that the social class and the socio-economic status can be best viewed in Australian context. Moreover, the prestige in the health related statistics and studies define that there has been used a large number of different measures for the socio economic status that indirectly affects the dietary habits and food intake amongst the pregnant women. It has been ascertained that in Australian rural areas the difference and poor conditions of food intake amongst the pregnant women is surpassingly high because of the differences and lack in the income, poverty , deprivation, housing and living conditions, cultural differences, religion and the location of residence.

### ***2.5. Chapter Summary***

It has been dynamically brought under consideration that many women belonging to any part of the world is exceedingly facing the maternity issue, where the pregnancy is not duly monitored in terms of having effective food intakes which encompass of nutrients too. In addition to this, the chapter also reflected how the pregnant women in Bangladesh, China, Indonesia, Nigeria and India rural areas as well urban, all face complications in pregnancy due to inadequate supply of proteins, fat, zinc, iron and calcium. Furthermore, in the above discussion it has also been studied that the pregnant women in rural as well as urban areas both must be provided with due training and informative sessions as to how to carry their pregnancy in a flourishing way and do not lie in the pitfall of abortion or miscarriage. However, in these sessions the women would also be guided about the entire 9 trimester food intake dietary habit. Lastly, it has been also discussed in the document that the pregnancy diet and the proper intake must be carefully evaluated as to avoid any negative outcome.

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## CHAPTER 3: METHODOLOGY

### *3.1 Introduction*

This chapter of the research study pertains towards creating a foundation for the research by explaining and justifying the methodological choices made by the researcher with respect to the philosophical assumptions that were catered in this research study. This chapter explains the research design and research approach, justifies the sampling technique, sample size, and provides the reader an understanding of data collection method. This chapter of the research study also reviews the ethical considerations and research limitations faced by the researcher.

### *3.2 Research Approach*

Research approach refers to the central ideology on which the research study is based. It can be categorized as a deductive approach or an inductive approach based upon the relevance of the hypothesis that is being tested. The main distinction between the two approaches pertains to the testing of the hypothesis. If any research study is aimed at testing of a single or a range of hypotheses, then it is said to be carried out using a deductive approach. On the other hand, an inductive research approach does not involve the testing of hypothesis. It has research questions which need to be answered and aims and objectives that need to be achieved during the research process (Bernard and Bernard, 2012). For this research study, the researcher has aimed to test the hypothesis regarding the nutrient intake and alcohol and smoking habits among pregnant women in Bulgaria. Hence, the researcher has used a deductive approach.

### ***3.3 Research Design***

Research design refers to the type of data collection that has been conducted in order to achieve the aims and objectives of the research study (Creswell, 2013). In general terms, there are two different types of research design: qualitative data pertaining to the subjective feelings, perceptions and all kinds of non-quantifiable data, and quantitative data pertaining to the numerical aspects of data or the topic. In order to cover a more in-depth analysis of the research topic, some researchers use a mixed design by collecting both types of data. This gives the research study a wider approach and makes the results more reliable and validated. For this research study, the researcher has collected quantitative data through questionnaires from different pregnant women in rural and urban areas of Bulgaria. Quantitative data is easily collected and measured and analysed and gives more reliable results as compared to qualitative data.

### ***3.4 Data Collection Method***

The data collection method for any research study pertains towards identifying the process through which the data is collected. This is directly in accordance with the aims and objectives of the research study and frames the foundations for the results and findings of the study (Maxwell, 2012). The main types of data collection methods can be categorized as primary data collection which refers to the collection of first hand data gathered from the sample size and secondary data collection which pertains to the collection of data through previous researches and past literature. For this research study, the researcher has used a mixed approach and used primary data collected from pregnant women in Bulgaria using questionnaires and secondary

data studied in the literature review of the research study. The questionnaire was designed accordingly with the aims and objectives of this research study.

### ***3.5 Sampling Method***

Sampling methods are generally categorized as non-probability or probability sampling (Kumar, 2010). In probability sampling, everyone who is recognized as a member of the target population has an equal chance of being selected for the study. In contrast to that, in non-probability sampling, the chances of selection are uneven amongst the target population. For this research study, the target population are all the pregnant women in Bulgaria which is big population to cover; hence, the researcher has used non-probability sampling method.

### ***3.6 Sampling Technique and Sample Size***

Sampling technique varies with respect to the sampling method that has been selected. For this research study, the researcher has used convenience sampling technique. This involves all the participants who are in close proximity of the researcher and are easily accessible and reachable for the researcher to collect data from. Using this sampling technique, the researcher has collected the data from 40 pregnant women using questionnaires.

### ***3.7 Data Analysis Technique***

The techniques used to analyse data varies in accordance to the type of data that has been collected. For this research study, the researcher has used frequency distribution analysis using the SPSS (Statistical Package for the Social Sciences) software. It helped the researcher to display the frequency of the various outcomes and evaluate the trends and comparisons in the

results. In addition to that, the researcher has also used descriptive analysis for describing the basic features of the data that were collected.

### ***3.8 Ethical Considerations***

The ethical considerations followed by the researcher in this study pertain mainly towards the confidentiality of the primary data that was collected. The questionnaire did not contain any information apart from the ID that would give away the identity of the respondent. Apart from that, the researcher also ensured that all the participants agreed to a consent form which mentioned that the participant had the complete right to withdraw from the research process at any time and that the data collected will not be used for any other purpose apart from this research study. The researcher also ensured to use proper citations and references to avoid any plagiarism and to give the previous researchers due credit for their work.

### ***3.9 Research Limitations***

- One of the main limitation pertaining to this research study refers to the time and budget constraint due to which the researcher was forced to keep the sample size to a limit of 40 respondents. Keeping a large sample size would have given more viable results and increased the validity of the findings.
- The scope of this research study also acts as a limitation. The researcher has only aimed to study the results within the geographical boundaries of Bulgaria. The economic and environmental conditions of every country differ from each other and this limits the general applicability of the results over pregnant women in general.

## CHAPTER 4: DATA ANALYSIS

### *4.1 Introduction*

This section of the study deals with analysis of impact of knowledge and food intake on pregnant women residing in urban and rural of Bulgaria. As already mentioned in the last chapter, the data was collected through distribution of questionnaires. The data that was collected was analyzed using SPSS software in order to achieve the objectives of the research. This chapter explains the proportion of agreements and disagreements of the respondents i.e. pregnant women with the statements included in the questionnaire. Descriptive statistics were inferred from the data in order to get the results of such analysis. The independent sample t-test is applied in order to find out the mean differences of knowledge and food intake of pregnant women residing in urban and rural areas of Bulgaria. The dependent variables selected for the study are the regions i.e. rural and urban areas while the independent variables that have been selected by the researcher are knowledge of food intake, smoking habits, and alcohol consumption. The hypotheses that were developed in the first chapter will also be addressed in this chapter.

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#### 4.2 Quantitative Analysis

	N	Minimum	Maximum	Mean	Std. Deviation
Level of knowledge about food, alcohol, and smoking habits	40	.00	4.00	1.9375	1.12767
Level of appropriateness of food intake during pregnancy	40	.00	4.00	1.9750	1.20868
Region	40	.00	1.00	.5000	.50637
Valid N (listwise)	40				

The descriptive statistics was performed on SPSS in order to summarize the information about the variables that have been selected for the study such as the standard deviation, mean, maximum and minimum point of observations or the number of observations collected for the data analysis. As evident from the table of descriptive statistics, the total number of respondents is 40. Each of the respondents gave her response in every case which can be seen from the column that is denoted by “N”. The minimum value in every case can be seen as zero. However, the maximum value in the case of level of knowledge about food, alcohol, and smoking habits during pregnancy is found to be 4 which are taken as a high level of knowledge possessed by pregnant women about the variables selected. Similarly level of appropriateness of food intake is also tested and it is evident from the table the maximum value of this variable is also 4. The mean of level of knowledge about food, alcohol, and smoking habits during pregnancy is found to be 1.9375 which is very close to the level of being moderate. Similarly, the mean of level of appropriateness of food intake during pregnancy is found to be 1.9750 which is also very close to being moderate.



Independent Samples Test

		Levene's Test for Equality of Variances		t-test for Equality of Means
		F	Sig.	T
Level of knowledge about food, alcohol, and smoking habits	Equal variances assumed	.041	.840	10.598
	Equal variances not assumed			10.598
Level of appropriateness of food intake during pregnancy	Equal variances assumed	2.044	.161	6.646
	Equal variances not assumed			6.646

Independent Samples Test

		t-test for Equality of Means		
		df	Sig. (2-tailed)	Mean Difference
Level of knowledge about food, alcohol, and smoking habits	Equal variances assumed	38	.000	1.92500
	Equal variances not assumed	37.789	.000	1.92500
Level of appropriateness of food intake during pregnancy	Equal variances assumed	38	.000	1.75000
	Equal variances not assumed	37.591	.000	1.75000



Independent Samples Test

		t-test for Equality of Means		
		Std. Error Difference	95% Confidence Interval of the Difference	
	Lower		Upper	
Level of knowledge about food, alcohol, and smoking habits	Equal variances assumed	.18164	1.55729	2.29271
	Equal variances not assumed	.18164	1.55722	2.29278
Level of appropriateness of food intake during pregnancy	Equal variances assumed	.26333	1.21692	2.28308
	Equal variances not assumed	.26333	1.21673	2.28327

The table of independent sample test is the main table of t test results. First of all Levene's test for equality of variances is conducted. Upon looking at the sig-value from the table i.e. 0.840 which is greater than 0.05, we can say that the variance are the same in both of the

samples. These variances or standard deviation (that also represents the variance of the variable) do not have to be exactly the same but closer or nearer to each other. Now the data analysis is proceeded the sig-value. The sig value shown in the table is 0.000 which means that the null hypothesis is rejected. The null hypothesis of independent t test is that the mean of both the samples are equal. So upon looking at the significant value i.e. 0.000 we can conclude that the means of both samples are not same. The upper and lower values show the range within which the mean of the sample is lying. In the table, there is no difference in the significant values in both the cases i.e. when variances are assumed as equal and when the variances are not assumed as equal. This is because the standard deviation in the table of group statistics is very close to each other or nearly equal to each other. Hence, the result of hypothesis would be:

- Pregnant women residing in urban areas of Bulgaria have high level of knowledge about food, alcohol, and smoking habits that should be considered during the period of pregnancy.
- Pregnant women residing in urban areas of Bulgaria have high Level of appropriateness of food intake that should be considered during the period of pregnancy.

#### **4.3 Discussion**

The aim of this research is to find out whether the dietary intake of pregnant women has anything to do the area or location where the women reside or not. In order to accomplish the aim, it is sub-divided into small objectives which would guide the researcher in carrying out the study smoothly. These objectives are:

- To find out the knowledge and food intake of pregnant women residing in urban areas
- To find out the knowledge and food intake of pregnant women residing in rural areas

- To find out the rate of alcohol consumption and smoking habits of pregnant women residing in urban and rural areas.

Under nutrition is considered to have wide-ranging and drastic effects on children and women, if not managed properly. In its severe form, high levels of mortality and morbidity are recorded (Picot et al., 2012). Over recent years, maternal diets during the period of pregnancy have gained a great attention. It is because of the recognition of increased metabolic, physiologic, and nutritional demand that is placed on women during pregnancy. The intake of pregnant women must be such that it provides nutrients and energy to both mother and fetus (King, 2000). Bulgarian population has improved but still there were differences between urban and rural areas and pregnant women of those parts of Bulgaria. Maternal health during pregnancy and preconception is vital for health and growth of fetus as well as newborn baby. From the review of previous literature regarding differences in dietary intake and knowledge in pregnant women, it is inferred that the women residing in rural areas have higher and good intake of nutrients than the pregnant women of urban areas. Prohibition against particular foods is more found in urban areas as compared to women residing in rural areas. The impact of socio-demographic variables on intakes of pregnant women and changes in habits were studied. It was found that mean energy, folic acid, iron and zinc intakes were inadequate as compared with recommended intake. The average level of better nutritious food intake amongst Bulgarian pregnant women, except for the rural areas women, the things were way better. Meaning the urban areas women were still better on food intake and nutrient diet whereas the rural were low on protein, fat, iron and zinc.

Comparing the food intake system of the urban and rural area pregnant women, it has been also determined that the pregnant women of urban regions were very conscious as per their

diet systems and avoided taking any type of infected food item that may eventually terminate their pregnancy. Also, the urban pregnant women had more resources to make their pregnancy a better one, but in the end faced the issue of fat intake lacking.

Studied further for the smoking habits and alcohol consumption by the pregnant women of Bulgaria, it has been showing some significant and essential differences amongst the consumption of alcohol and smoking habits between rural and urban women. The smoking habits and alcohol consumption amongst the pregnant women in the urban part of Bulgaria reflected nothing different from the non-pregnant counter areas of Bulgaria more relatively in the domain of smoking habits and alcohol consumption.

#### ***4.4 Chapter Summary***

Comparing the food intake system of the urban and rural area pregnant women, it has been also determined that the pregnant women of urban regions were very conscious as per their diet systems and avoided taking any type of infected food item that may eventually terminate their pregnancy. From the table of group statistics it can be seen that the mean of level of knowledge about food, alcohol, and smoking habits during pregnancy is found to be 1.9375 which is very close to the level of being moderate. Similarly, the mean of level of appropriateness of food intake during pregnancy is found to be 1.9750 which is also very close to being moderate. The sig value shown in the table of independent sample test is 0.000 which means that the null hypothesis is rejected. The null hypothesis of independent t test is that the mean of both the samples are equal. So upon looking at the significant value i.e. 0.000 we can conclude that the means of both samples are not same. Hence, the result of hypothesis would be that pregnant women residing in urban areas of Bulgaria have high level of knowledge about

food, alcohol, and smoking habits that should be considered during the period of pregnancy. Pregnant women residing in urban areas of Bulgaria have high Level of appropriateness of food intake that should be considered during the period of pregnancy

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## CHAPTER 5: CONCLUSION

### *5.1 Conclusion*

Food avoidance and food taboos have been reported in many communities among pregnant women with the result of inadequate intake of nutrients. There are various factors that can be linked with such avoidance of certain foods. The intake of pregnant women must be such that it provides nutrients and energy to both mother and fetus (King, 2000). According to researches, inappropriate intake of diet leads to outcomes that are unfavourable. Insufficient dietary intake and supplemental iron results in anaemia of iron deficiency involving a risk for labour complications and morbidity (Picot et al., 2012). The appropriate food intake or maternal diet during pregnancy has watched the attention of many concerned people over the past years. It has also been reported by Cockx, Francken and Pieters, (2015) that during the pregnancy condition many women have also faced premature delivery of baby or abortion just because they paid least attention to having a healthy nutritious diet. It has been further referred from the learning that the usual dietary intake amongst the urban and the rural area pregnant women is significantly coherent. The average level of better nutritious food intake amongst Bulgarian pregnant women, except for the rural areas women, the things were way better. The result of hypothesis would be that pregnant women residing in urban areas of Bulgaria have high level of knowledge about food, alcohol, and smoking habits that should be considered during the period of pregnancy. Pregnant women residing in urban areas of Bulgaria have high Level of appropriateness of food intake that should be considered during the period of pregnancy.

## 5.2 Recommendations

On the basis of objectives of this study, the researcher has derived the recommendations listed below.

- With respect to conceptual development, researchers of future may examine the impact of several concepts that are related to rural and urban areas and how they explain and influence knowledge and food intake of pregnant women of a particular region. The contribution of various factors is one area where the study can be done.
- Another area of research may be the role played by a number of other factors in explaining the behaviour of pregnant women residing in a particular region. The strength of involvement in knowledge building activities can be elaborated by this concept. Application of this concept can help in clarifying different levels of participation of respondents with regards to pregnancy and its related information.
- Another area on which an extensive research can be conducted is how health services of a particular region influence the health of pregnant women residing in that region. It is a considered opinion that hedonic approach and attitude toward pregnancy and related topics cannot fully describe the issues that the pregnant women are facing; it would be interest to examine a variable like health services. And this variable i.e. health services can act as a replacement variable in explaining the influence of several other issues faced by pregnant women.

This study has focused on Bulgarian pregnant women as they were selected as the sample for this research. Researchers of future can select some other countries and compare the results of different countries.

### ***5.3 Future Implication***

The outcome of this study contributes to existing literature on the topic. The results are based on limited variables and studies in future should make use of more and relevant variables in order to assess the significance of the region of residence of pregnant women on dietary habits and food intake. Selecting more variables will assist in contributing a wider scope of understandings with respect to pregnant in rural and urban areas. Furthermore, researches that will be conducted in future can use the data of recent period so as to study whether the relationship between the variables has changed over time or not. For example, the level of significance could either increase or decrease.

Another suggestion in this area for future researchers is that they should use a larger sample as in this case only 40 respondents were selected and the replies were considered in concluding the study. The smaller sample was selected due to lack of time and other resources available for the study. As the research was restricted to Bulgaria, future studies can be directed towards other countries. Moreover, future researchers can use this paper as a base paper and conduct new studies for the evaluation of other factors i.e. latest factors at the time of study that can have an impact on pregnant women. Furthermore, as the study used quantitative research design; future researchers can make modifications in the research methodology and use qualitative research design while conducting their research. The model used in the study can be improved by adding more key variables that may have an impact on knowledge and food intake of pregnant women. The addition of more variables will substantively cut down risks that are associated with omitted variables.



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*Appendix A: Questionnaire*

**Q1. Please fill out the following Information**

Age \_\_\_\_\_

Height \_\_\_\_\_

Weight \_\_\_\_\_

Weight before pregnancy \_\_\_\_\_

Gestation weeks of pregnancy \_\_\_\_\_

**Q2. How many numbers of children do you have?**

Number of children \_\_\_\_\_

**Q3. (Fill if applicable) The age of your youngest child is?**

- less than 2 years
- 2year to 5 years
- 6years to 10 years
- 11years and above

**Q4. What is your educational background?**

- Below 2years of education
- Secondary Education
- College Graduate
- University Graduate

**Dependent Variable: Food Intake and Knowledge**

**Independent Variable Urban Area**

**Q1. You think acquiring sufficient pregnancy knowledge before getting pregnant is necessary?**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q2. In your opinion, pregnant women should increase the consumption of vegetable based food diet**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q3. In your opinion, during pregnancy, women should be undertaking at least 2 hours of exercise daily**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree

- Strongly Disagree

**Q4. In your opinion pregnant women should consume more energy in the first trimester as compared to the second or their trimester**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q5. In your opinion during pregnancy it is important for women to make sure they are getting the right daily amount of folate.**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q6. In your opinion women who want to become pregnant should supplement folic acid before pregnancy and the first trimester in pregnancy.**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q7. In your opinion women who are pregnant or want to become pregnant should increase Iron consumption in order to avoid anaemia.**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q8. In your opinion alcohol consumption is correctly prohibited during the period of pregnancy for women**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q9. In your opinion it is necessary for women to stop smoking completely during the period of pregnancy.**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Dependent Variable: Food Intake and Knowledge**

**Independent Variable: Rural Area**

**Q1. You think acquiring sufficient pregnancy knowledge before getting pregnant is necessary?**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q2. In your opinion, pregnant women should increase the consumption of vegetable based food diet**

- Strongly Agree
- Agree
- Neither Agree nor Disagree
- Disagree
- Strongly Disagree

**Q3. In your opinion, during pregnancy, women should be undertaking at least 2 hours of exercise daily**

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