Dedication

To my family
To my teachers
To my friends
To any person help me
I dedicate my research

Acknowledgment

All thanks to my god, who gave me the patience to complete this research.

My thanks and loves to my parent, for continuing support and dedication.

I am deeply grateful to dr. **Mansour Mohammed mansour** who guided me and gave me support for completing this research.

Last thanks to my second family in clinical chemistry department.

Contents

Dedication	I
Acknowledgment	II
Content	III
List of abbreviations	VIII
List of table	IX
List of figures	XI
Abstract (English)	XII
Abstract (Arabic)	XIII
	Chapter one
1.1 Introduction	1
1.2 literature review	2
	_
1.2.1 Pregnancy	2
1.2.1.2Stage of pregnancy	2
1.2.1.2.1 First trimester	2
1.2.1.2.2 Second Trimester	3
1.2.1.2.3Third Trimester	3
1.2.1.2.4 Physiological Changes in Pregna	ancy 4

1.2.1.2.4.1Endocrine system (non-reproductive)	4
1.2.1.2.4.2Cardiovascular system	5
1.2.1.2.4.3Respiratory system	6
1.2.1.2.4.4Alimentary system	6
1.2.1.2.4.5Urinary tract	7
1.2.1.2.4.6Haematological	7
1.2.1.2.4.7 Metabolic	8
1.2.1.2.4.8Skin	8
1.2.1.2.4.9Musculoskeletal	8
1.2.2 Lipid	11
1.2.2.1 Cholesterol	12
1.2.2.1.1Physiology	12
1.2.2.1.3Function	13
1.2.2.1.3 Dietary sources	14
1.2.2.1.4Biosynthesis	15
1.2.2.1.5Regulation of cholesterol synthesis	16
1.2.2.1.6Plasma transport and regulation of absorption	16
1.2.2.1.7Metabolism, recycling and excretion	18
1.2.2.1.8. Clinical significance	19
1.2.2.1.8.1 Hypercholesterolemia	19

1.2.2.1.8.2Hypocholesterolemia	20	
1.2.2.1.8.2.1 Causes	21	
1.2.2.2 Triglyceride	21	
1.2.2.2.1Metabolism	22	
1.2.2.2.2 Clinical significant	22	
1.2.2.3 Lipoprotein	24	
1.2.2.3.1 Classification of lipoprotein	25	
1.2.2.3.2 Lipoprotein metabolism	26	
1.2.2.3.2.1 Exogenous pathway	26	
1.2.2.3.2.2 Endogenous pathway	27	
1.2.3 Pregnancy and body Mass index (BM	MI) 28	
1.2.3.1 Weight gain	28	
1.3 background study	29	
	Chapter two	
2.1 Objective	33	
2.1.1General objective	33	
2.1.2 Specific objective	33	
2.2 Rationale	34	
	Chapter three	
3.1 Study approach	35	
3.2 Study type	35	
3.3 Study design	35	
3.4 Study area	35	

3.5 Study variables	35
3.5.1 Dependant variables	35
3.5.2 Independent variables	35
3.6 Sampling technique	35
3.7 Sampling unit	35
3.8 Inclusion criteria	35
3.9 Exclusion criteria	35
3.10 Ethical consideration	36
3.11 methods and tools	36
3.11.1 Data collection	36
3.11.2 Reagent preparation, storage and stability	36
3.11.3 Instruments	36
3.11.4 Specimen collection and preservation	36
3.11.5 Data analysis	36
3.12 Lipid profile	37
3.12.1 Cholesterol estimation	37
3.12.1.1 Principle	37
3.12.1.2 Procedure	37
3.12.1.3 Calculation	37
3.12.2 Triglyceride	38
3.12.2.1Principle	38
3.12.2.2 Procedure	38
3.12.2.3 Calculation	39
3.12.3 High density lipoprotein (HDL)	39
3.13.3.1 Principle	39

3.12.3.2 Procedure		39
3.12.3.3 Calculation		40
3.12.4 Low density lipoprotein (LDL)		40
3.12.4.1 Calculation		40
	Chapter Four	
4. Result		41
	Chapter Five	
5. Discussion		43
	Chapter Six	
6.1 Conclusion		45
6.2 Recommendation		46
Reference		
Appendix		

List of abbreviation

BMI body mass index

HDL high density lipoprotein

LDL low density lipoprotein

VDRL very low density lipoprotein

AST aspartate aminotransferase

ALT alanine aminotransferase

ALP alkaline phosphatase

TSH thyroid stimulation hormone

T4 thyroxine

T3 triiodothyronine

Apo apoprotien

STD standard

CHE cholesterol esterase

CHOD cholesterol oxidase

POD peroxidase

4AAAP 4amino-antipyrine

GK glycerol kinase

GPO glycerol 3 phosphate oxidase

ADP adenine diphosphate

LPL lipoprotein lipase

List of tables

Table 4.1 the mean and standard deviation of total cholesterol in three trimester of pregnancy
Table 4.2 the mean and standard deviation of triglyceride in three trimester of pregnancy
Table 4.3 the mean and standard deviation of HDL in three trimester of pregnancy
Table 4.4 the mean and standard deviation of LDL in three of pregnancy
Table 4.5 the mean and standard deviation of cholesterol in normal, low and high BMI
Table4.6 the mean and standard deviation of triglyceride in normal, low and high BMI
Table 4.7 the mean and standard deviation of HDL in normal, low and high BMI
Table 4.8 the mean and standard deviation LDL in normal, low and high BMI
Table 4.9 the correlation between total cholesterol and trimesters of pregnancy
Table 4.10 the correlation between triglyceride and trimesters of pregnancy
Table 4.11 the correlation between HDL and trimester of pregnancy
Table 4.12 shows the correlation between LDL and trimester of pregnancy
Table 4.12 the correlation between total cholesterol and

Γable 4.13 the correlation between triglyceride and BMI	
Table 4.14 shows the correlation between HDL and BMI	
Table 4.15 shows the correlation between LDL and	

List of figures

- Figure 4.1 shows the mean of total cholesterol in three trimesters
- Figure 4.2 shows the mean of total triglyceride in three trimesters
- Figure 4.3 shows the mean of HDL in three trimesters
- Figure 4.4 shows the mean of LDL in three trimesters
- Figure 4.5 shows the mean of total cholesterol in different BMI
- Figure 4.6 shows the mean of triglyceride in different BMI
- Figure 4.7shows the mean of HDL in different BMI
- Figure 4.8 mean of LDL in different BMI

Abstract

Pregnancy greatly increases demand for metabolic fuels that are needed for growth and development of the fetus and its support structures. The major change in energy expenditure and in the accumulation of fat occurs at different times during pregnancy. Altered metabolic and hormonal status of the body in pregnancy leads to changes in lipid profile. High Lipid profile level is the major factor behind atherosclerosis that may lead to unconsciousness. To avoid such problems during pregnancy study was done to investigate the effect of pregnancy on lipid profile changes during all three trimesters. In this study, Lipid profile changes were estimated in a total number of 100 subjects between ages 24-35 years during each trimester of pregnancy and different BMI. We compared to determine the relationship between the level of lipid and stages of pregnancy, and found negative correlation between total cholesterol and pregnancy trimester with p-value (0.03). No statistical significant changes were found in triglyceride at different stage of pregnancy with p-value (0.8). Negative correlation was found between HDL and pregnancy trimester with p-value (0.02). When LDL correlated with pregnancy trimester it shows no statistical different with p-value (0.8). According to BMI show no correlation in cholesterol with p-value (0.00). No statistical difference between BMI and triglyceride with pvalue (0.5). In contrast HDL do not change significantly in different BMI with p-value (0.6). Positive correlation between LDL and BMI with p –value (0.02). There it can be concluded that level total cholesterol and HDL change according to stage of pregnancy but triglyceride and LDL are not affected. Increase in BMI means increase in level of LDL but not in total cholesterol, triglyceride and HDL.