



## A STUDY TO FIND OUT THE FATTY LIVER BY ULTRASOUND FINDING AND ITS CORRELATION WITH DAILY LIFE STYLE AMONG THE STUDENTS OF G. R. MEDICAL COLLEGE, GWALIOR, A HISTORICAL CITY OF INDIA

**Jain A. K**

Dr.Amit Kumar Jain(P.G Student, dept.Of Radiodiagnosis G.R.Medical College, Gwalior)

**Baghel R\***

Dr Rjesh Baghel (Asso. Prof. Dept. Of Radiodiagnosis, G.R.Medical College, Gwalior)\*Corresponding Author

**Dr Akshara Gupta**

Prof. Dept. Of Radiodiagnosis, G.R.Medical College, Gwalior)

**ABSTRACT**

**BACKGROUND-** Non-alcoholic fatty liver disease (NAFLD) is now the most frequent chronic liver disease that occurs across all age groups and is recognized to occur in 14%-30% of the general population, representing a serious and growing clinical problem due to the growing prevalence of obesity and overweight. ( Relationship between aminotransferase levels and histopathological findings in patients with nonalcoholic steatohepatitis. **OBJECTIVE** – To diagnose fatty liver by ultrasonography in medical students and to determine the association of risk factors with the fatty liver and assess the correlation between ultrasonographic graded fatty liver and degree of obesity and physical activity.

**MATERIAL & METHODS** – This is a cross sectional study performed in 210 medical students, after obtaining written informed consent. A detailed structured proforma was used, with special emphasis on presenting complaints, dietary, history, past history, family history of obesity, hypertension or diabetes, smoking, alcohol and duration of sleep.

Physical examination was performed to assess hepatomegaly, splenomegaly or other signs of liver disease

The results were recorded on Microsoft excel 2007 sheet using windows XP. Mean values, standard deviation, correlation value (r) and charts were calculated using Microsoft excel sheet, P value was calculated by using Analysis of variance test (ANOVA) on anovaonline software and p value <0.05 was considered statistically significant.

**RESULT-** In this study out of total non alcoholic male, only 8.9% and 7.1 % of non alcoholic female are found to have fatty liver finding. Among the alcoholic group male are found to have 33.3% and female have found to have 80% of fatty liver finding.

In this study about 24% of smokers and 14.6% non smokers had fatty liver finding. In most of cases with over calorie consumption there is increasing trends of fatty liver finding, with more calorie consumption.

**CONCLUSION-** This study concludes that incidence of fatty liver is higher in subjects with risk factor like obesity low physical activities, high alcohol consumption, smoking and high dietary intakes. The family history of obesity, hypertension and diabetes mellitus has higher impact on finding of fatty liver.

**KEYWORDS** : NAFLD- Non alcoholic fatty liver disease, FL – Fatty liver, PL – Physical activities

**INTRODUCTION**

Fatty liver disease is only one of the conditions that encompasses hepatic steatosis; it is actually a portmanteau word, addressing blended lifestyle factors acting together and leading to the occurrence of fat deposits in the liver.[1] Nonetheless, obesity, as NAFLD, is not the exclusive consequence of an imbalance between food intake and physical exercise, modulated by endocrine and genetic factors, and this explanation, probably correct overall, has several limitations.[2] Several reports remarked that increased sedentary behaviour, decreased physical activity and low fruit intake are associated with the occurrence of fatty liver in comparison with lean and no-fatty liver children.[4] But other factors, such as sleep curtailment,[5] have metabolic and endocrine effects on obesity.

Several anthropometric measures are closely associated with the occurrence of NAFLD, indicating central obesity as a possible culprit of liver steatosis.[6]

Liver biopsy is the gold standard for diagnosis of NAFLD. The diagnosis of NASH, which includes necroinflammation, ballooning degeneration and fibrosis, is essentially based on histological examination of a liver specimen obtained by liver biopsy. However, liver biopsy is a painful and invasive procedure[7] with rare, but potentially life threatening complications[8,9] and that is prone to sampling errors.[10,11]

The present study thus aims to diagnose fatty liver by ultrasound and correlate with life style changes (Physical activity, BMI, Alcohol, Calorie intake, smoking, caffeine intake, Sleep and associate risk factors).

**AIMS AND OBJECTIVES**

- To diagnosis fatty liver by ultrasonography in all medical students ( undergraduate and postgraduate) attending the Department of Radiodiagnosis in JA group of Hospitals.
- To determine the association of risk factors with the fatty liver.
- To assess the correlation between ultrasonographic graded fatty liver and degree of obesity and physical activity.

**MATERIALS AND METHODS**

This observational cross -sectional study was conducted in the department of radiodiagnosis, Gajra-Raja Medical College and J.A. Group of Hospitals, Gwalior for a period of one year (May 2016 to May 2017).

All medical student of Gajra Raja Medical College in whom fatty liver is suspected were inspected by ultrasonography in the Department of Radiodiagnosis.

Ultrasound examinations were performed on Colour Doppler ALOKA PROSOUND ALPHA using 2.5-6 MHz frequency. A total of 210 students, who visited radiology department during this period for radiology posting, which included 135 males and 75 females subjects were evaluated in our department for fatty liver.

**Inclusion criteria-**

1. All medical (UG and PG) students (studying in G.R.M.C. Gwalior), who given the consent
2. Subject more than 18 years and less than 30 years.
3. Both gender male and female.

**Exclusion Criteria** : Students with history of drug intake like -

Steroids, synthetic, estrogens, heparin, valproic acid, amodarone, antiviral agents.

Subjects were considered cases if they had fatty liver according to the standard criteria accepted by the American Gastroenterology Association. The degree of involvement was standardized with a semi quantitative scale of the degree of hepatic involvement. The diagnosis of hepatic steatosis was made on the basis of characteristic sonographic features:

1. Increased echogenicity of liver
2. Increased liver contrast compared to kidney.
3. Vascular blurring – mainly of portal veins.
4. Attenuation of echogenic level in deep seated area.

Physical examination was performed to assess hepatomegaly, splenomegaly or other signs of liver disease.

Radiological findings noted in all cases. The results were recorded on Microsoft excel 2007 sheet using windows XP. Mean values, standard deviation, correlation value (r) and charts were calculated using Microsoft excel sheet, P value was calculated by using Analysis of variance test (ANOVA) on anovaonline software and p value <0.05 was considered statistically significant.

### OBSERVATIONS AND RESULTS

A total of 210 patients which included 135 males and 75 females patients were evaluated in radiology department for fatty liver by means of ultrasonography performed for any reason in the department of Radiodiagnosis.

**Table-1 Showing distribution of study participants as per age and sex**

Sr no.	AGE GROUP	MALE	Percent	FEMALE	Percent
A	18-22	59	43.7%	38	50.66
B	23-26	31	22.96%	16	21.33
C	27-30	45	33.33%	21	28.00
TOTAL		135	64.28%	75	35.71%

In the study group the majority of patients were in the 18-22 years age group, 97 (46.19%) followed by 27-30 years group, 66 (31.42%) and 47 (22.38%) in 23-26 years age group.

In the study majority were males i.e. 135 (64.28%) while females constituted 75 (35.71%) of the total 210 patients

**TABLE-2 Showing Signs and Symptoms in Fatty Liver Subject**

Sr no.	Sign/symptoms	FL	Number of Subjects having fatty liver(n=210)	Number of subject without FL	Total
1	Abdominal pain	+	6 (2.85%)	18	24 (11%)
		-	29 (13.80%)	155	186
2	Fatigue	+	14 (6.6%)	30	44 (20.9%)
		-	21 (10%)	145	166
3	Malaise	+	7 (3.3%)	27	34 (16.1%)
		-	27 (12.9%)	149	176
4	Hepatomegaly	+	7 (3.3%)	21	28 (13.3%)
		-	28 (13.3%)	154	182

Out of 210 subject, 136 (64.76%) were asymptomatic. Among the symptomatic subjects, abdominal pain was reported in 24 (11%) subjects, fatigue in 30 (20.9%), malaise in 34 (16.1%) and

hepatomegaly in 28 (13.3%) subjects.

**TABLE NO- 3 Showing distribution and correlation between Different Category of BMI and prevalence of fatty liver**

Sr no.	BMI Category	Male			Female		
		FL Present	FL Absent	Total	FL Present	FL Absent	Total
1	Underweight	5 (13.5)	32 (27)	37	0 (0)	12 (100)	12
2	Normal	17 (23.94)	54 (52)	71	3 (6.66)	42 (43)	45
3	Overweight	7 (25.9)	20 (20)	27	3 (17.6)	15 (16)	18
RR		1.27			1.68		
P VALUE		0.529			0.529		

This table is showing that 13.5% of underweight male had FL finding, but majority of fatty liver among male belonged to overweight category i.e. 25.9%. Similarly among the female counterparts, most of the females with fatty liver finding belonged to overweight group. These finding reflects that BMI has positive impact on fatty liver finding.

**Table- 4 Showing distribution and correlation between physical activity and prevalence of fatty liver**

Sr no.	Level of activity	Male (N=135)		Female (N=75)	
		NORMAL	FL (%)	NORMAL	FL (%)
1	MILD	57	21(26.9)	44	4(8.3)
2	MODERATE	33	6(15.4)	16	2(11.1)
3	VIGOROUS	16	2(11.1)	9	0(0)
TOTAL		106	29	69	6
P VALUE		0.185		0.59	

In Table 4, Among the males, as the level of physical activity decreased, finding of fatty liver also increased in our study. About 27 % of mild physical group males were found to have fatty liver finding, but in female participants most of fatty liver subjects belonged to moderate group. This may be due to little sample size.

**Table-5 Showing distribution and correlation between Different Category of Alcohols Consumption and prevalence of fatty liver**

Category of alcoholic	Males			Females		
	Non fatty liver	Fatty liver		Non fatty liver	Fatty liver	
Binge	8	8	16	5	1	6
Moderate	15	7	22	0	0	0
Heavy	19	9	28	0	0	0
P VALUE	0.427			P=0.000		

Table no. 6 shows that most of the subjects with fatty liver finding belonged to the binge category of drinkers, reflecting that continuous consumption of alcohol has more impact on fatty liver finding.

**TABLE NO.- 6 Showing distribution and correlation between Different Category of Calorie Consumption and prevalence of fatty liver**

Sr No.	Category of Calory intake	Male			Female		
		FL Present	FL Absent	Total	FL Present	FL Absent	Total
1	Below Normal	3 (8.6)	32	35	1 (8.3)	11	12

2	Normal	18 (25.0)	54	72	3 (6.6)	42	45
3	Over Consumption	8(28.6)	20	28	2( 11.1)	16	18
RR		1.46		1.58			
P VALUE		0.304		0.576			

Table no. 7 reflects that, among male participants, from below normal to over calorie consumption there is increasing trends of fatty liver finding, i.e. 8.6%, 25.0% and 28% are having fatty liver finding in their respected group, while female participants, there is not a clear trends of fatty liver finding, although, most female with fatty liver belonged to over calorie consumer i.e 11.1%. these finding reflects that over consumption of calorie for long times act as risk factor for fatty liver finding.

**Table-7 Showing distribution and correlation between Smoking and prevalence of fatty liver**

c	Smokers Total No. (n=46)		Total	Non smokers Total No. (n=164)		Total
	FL Present	FL Absent		FL Present	FL Absent	
	11 (23.9%)	35 (76%)	46	24 (14.6%)	140 (83%)	164
P-Value	0.204					

This table shows that 24% of smokers had fatty liver finding and about 14.6% non smokers had fatty liver finding. This table depicts that smokers have more chances of developing fatty liver diseases. Also most of smokers were alcoholic in our study.

## DISCUSSION

This is the first study regarding the ultrasonographic finding of fatty liver among the medical students of age group 18-30 years and its correlation with daily life style, conducted in Radiodiagnosis Department of G.R. Medical College Gwalior M.P.

Fatty liver is characterized by the accumulation of lipid within the cytoplasm of hepatocytes. The prevalence of FLD in the general population ranges from 10% to 24% in India. Fatty liver is a common hepatic manifestation of metabolic disorders that are characterized by obesity hyperinsulinemia, insulin resistance and hypertriglyceridemia.

The degree of obesity and physical activity has been correlated with degree of steatosis, therefore early diagnosis followed by carefully assessment of metabolic risk factors and appropriate life style modification is mandatory and crucial in management of fatty liver disease.

In our study, out of 210 subjects, 24 patient had complaint of abdominal pain, out of these 25% had fatty liver finding, and out of 186 with no pain abdomen, only 15.6% were found to be having fatty liver. Similarly 44 patient were with symptoms of fatigue, of these 31.8% were found to have fatty liver whereas those who were having no fatigue, only 12.6 were found to have fatty liver finding. Only 15.3% patients with malaise and 25% of patients with hepatomegaly on palpation were found to have fatty liver finding on ultrasound examination. In the study by Agarwal et al[12]. 64% patients were symptomatic and right upper quadrant pain, fatigue and malaise were the main symptoms. In the study by Bacon et al[7] symptomatic patients were 36% and had right upper quadrant abdominal pain, fatigue and malaise.

## BMI AND FATTY LIVER FINDING RELATION

Table no. 3 shows that 13.5% of underweight male had FL finding, but majority of fatty liver among male belonged to overweight category. BMI > 25. i.e. 25.9%. Similarly among the female counterparts, most of the females with fatty liver finding belonged to overweight group. Similarly in another study conducted by Roli

Agrawal et al[13]. They found that out of 124 study subjects with fatty liver, majority of study subjects 108 (87.1%) were found to be obese and only 7 (5.6%) of patients were overweight and total prevalence of overweight and obesity was 116 (93.5%) and mean BMI was found to be  $28.38 \pm 3.65$ . In another study conducted by Bajpai Pranay et al[14] they found that among the cases 122 were with BMI > 25, among them 59 were found to have FLD with a prevalence of 48.36% and there were 378 cases with BMI < 25, in which 79 were having FLD with prevalence of 20.89% indicating that central obesity with BMI > 25 have a high risk of development of FLD.

## Physical activity

Table no. 4 showing 26.9%, 15.4% and 11% of male and 8.3%, 11.1% and 0% female having fatty liver finding belonged to mild, moderate and vigorous activity level respectively. Similar finding were also found in another study conducted by Shira Zelber-Sag et al, (R)[15]. The percentage of subjects engaging in any kind of PA was 37.0% (31.6% men and 42.6% women) of which 33.3% were having FLD. Aerobic PA was practiced by 28% (26.7% men and 29% women) of which 26.0% were have FLD and resistance PA by 20% (11.8% men and 29% women) of these 13% were found to have FLD. The FLD group had a significantly higher percentage of men.

In another study conducted by Joanne B. Krasnoff et al, [16]. there were no differences found in the proportion of patients classified as active, somewhat active, or inactive using self-report among the 3 steatosis groups. 62.2% of the patients reported participating in "some" PA, and 18.9% of the sample reported no regular Physical activity participation at all.

## Alcohol Consumption and its impact on fatty liver finding.

Gender wise distribution of alcoholic fatty liver and non alcoholic fatty liver diseases among the study participants, is shown in table no 5 & 6 table shows that very few non alcoholic subjects were found to have fatty liver diseases. Out of total non alcoholic male, only 8.9% male 27.1% and female finding were found to have fatty liver. Among the alcoholic 33.3% of male and 80% of female were found to have fatty liver disease.

A number of epidemiologic studies from the United States, Europe, and Japan have demonstrated that moderate alcohol consumption may have a beneficial effect on the development of NAFLD, primarily through the improvement in peripheral insulin resistance.

The protective effect of light to moderate alcohol consumption on hepatic steatosis was recently confirmed in a meta-analysis involving 43,175 subjects (Sookoian S, Castaño GO, Pirola CJ.. Modest alcohol consumption decreases the risk of non-alcoholic fatty liver disease: a meta-analysis of 43 175 individuals. Gut 2014;63:530-2. [PubMed]) [17].

## Calorie Intake

Calorie intake and its impact of fatty liver finding: table no 7 reflects that, among male participants, from below normal to over calorie consumption there is increasing trends of fatty liver finding, i.e. 8.6%, 25.0% and 28% had fatty liver finding in their respected group, most of female with fatty liver also belonged to excess calorie consumer i.e 11.1%.

## Smoking:

This table shows that 24% of smokers had fatty liver finding and about 14.6% non smoker had fatty liver finding. This table depicts that smokers have more chances of developing fatty liver diseases. In a study conducted by Liu Y et. al. [18] they found that, as compared with never smoking, former and heavy smoking were associated with increased risk of prevalent NAFLD. In non-smoking women, passive smoking during both childhood and adulthood was associated with a 25% increase in the risk of prevalent NAFLD (OR = 1.25, 95% CI 1.05-1.50) as compared with no passive smoking.

**Caffeine Intake:**

Table no 5. Shows the impact of caffeine on fatty liver finding among male and female, among male 11.1% of non drinker, 16.6% of light consumer, 28.5% moderate consumer and 39.1% of heavy consumer males are found to have fatty liver findings similarly, among the female 16.6% heavy consumer female were found to have fatty liver. Ultrasonographically these finding were correlated with finding of a study conducted by Tilmann Graeter et al.[19].

**Sleep:**

Table no 7 show that there is an increase trends in number of participants with fatty liver finding, as with duration of sleep is increasing among male, and while among females, there is not regular increase of trends, this may be due to little sample size. It may be directly or indirectly by acting as risk factor for obesity.

In a study conducted by, Ozturk A et al[20]. As sleep duration increased, BMI, which was significantly higher in girls sleeping < or =8 h, decreased ( $p < 0.05$ ). WC, MUAC, BMI were significantly higher in boys sleeping < or =8 h versus males sleeping > or =10 h. This obesity acting as a risk factor for fatty liver finding as directly or indirectly.

Family history

This table shows the impact of obesity, hypertension and diabetes mellitus on the fatty liver in the study subjects. 36.3% of person with family history of obesity have fatty liver finding ( $p = P = 0.000$ ). Similarly 28.57% subjects with family history of hypertension ( $P = 0.038$ ) and 30.1% of subjects with family history of diabetes ( $P = 0.012$ ) had finding of fatty liver. These finding are similar with the finding of a study conducted by, Nitin Pawani et al[21].

**SUMMARY & CONCLUSION**

- Present study was done to diagnosis fatty liver by ultrasonography, and to identify the risk factors, and to assess the correlation of various parameters in all medical undergraduate and postgraduate students.
- In the study group the mean age of the patients was 23.64 years (range 18-30 years). The majority of patients are in the 18-25 years age.
- As the level of physical activity is decreasing the chances fatty liver is increasing in our study, with a little exception among the female.
- In this study out of total non alcoholic male, only 8.9% are found to have fatty liver and 7.1 % of non alcoholic female are found to have fatty liver finding. Among the alcoholic group male are found to have 33.3% and female have found to have 80% of fatty liver finding.
- In this study about 24% of smokers had fatty liver finding and about 14.6% non smoker had fatty liver finding. This study depicts that smokers have more chances of developing fatty liver diseases.
- In most of cases with over calorie consumption there is increasing trends of fatty liver finding, predicting that excess calorie consumption is an important risk factor of fatty liver disease.
- Among the symptomatic subjects, fatigue in 30 (20.9%), malaise in 34 (16.1%) hepatomegaly in 28 (13.3%) and abdominal pain was reported in 24 (11%) subjects, concluding that fatigue and malaise were mostly reported in subjects with fatty liver finding.

This study concludes that family history of obesity has the most impact on finding of fatty liver, then the history of hypertension and diabetes mellitus. There is an increase trends in number of participants with fatty liver finding, as with duration of sleep is

increasing among male and while among female, there is no regular increase of trends, this may be due to little sample size.

Most of the subject with fatty liver finding belonged to the binge category of drinker, reflecting and concluding that regular consumption of alcohol has more impact on fatty liver finding.

**REFERENCES**

1. Méndez-Sánchez N, Arrese M, Zamora-Valdés D, Uribe M. Current concepts in the pathogenesis of nonalcoholic fatty liver disease. *Liver Int* 2007; 27:423-33.
2. Catalano D, Trovato GM, Martines GF, Randazzo M, Tonzuso A. Bright liver, body composition and insulin resistance changes with nutritional intervention: a followup study. *Liver Int* 2008; 28: 1280-7.
3. Machado MV, Cortez-Pinto H. Non-invasive diagnosis of non-alcoholic fatty liver disease. A critical appraisal. *J Hepatol* 2013; 58: 1007-19.
4. Hattar LN, Wilson TA, Tabotabo LA, Smith EO, Abrams SH. Physical activity and nutrition attitudes in obese Hispanic children with non-alcoholic steatohepatitis. *World J Gastroenterol* 2011; 17:4396-403.
5. Spiegel K, Tasali E, Penev P, et al. Sleep curtailment in healthy young men is associated with decreased leptin levels: elevated ghrelin levels and increased hunger and appetite. *Ann Intern Med* 2004; 141:846-50.
6. Ishibashi E, Eguchi Y, Eguchi T, et al. Waist circumference correlates with hepatic fat accumulation in male Japanese patients with non-alcoholic fatty liver disease, but not in females. *J Gastroenterol Hepatol* 2008; 23: 908-13.
7. Bacon B, Farahvash M, Janney C, Neuschwander-Tetri B. Nonalcoholic steatohepatitis an expanded clinical entity. *Gastroenterology* 1994;107:1103-1109.
8. Castera L, Negre I, Samii K, Buffet C. Pain experienced during percutaneous liver biopsy. *Hepatology* 1999;30:1529-30.
9. Cadranet JF, Rufat P, Degos F. Practices of liver biopsy in France: results of prospective nationwide survey. For the Group of Epidemiology of the French Association for the Study of the Liver (AFEF) - *Hepatology* 2000;32:477-81.
10. Piccinino F, Sagnelli E, Pasquale G, Giusti G. Complications following percutaneous liver biopsy. A multicentre retrospective study on 68,276 biopsies. *J Hepatol* 1986;2:165-73.
11. Bedossa P, Dargere D, Paradis V. Sampling variability of liver fibrosis in chronic hepatitis C. *Hepatology* 2003;38:1449-57.
12. Agarwal SR, Malhotra V, Sakhuja P, Sarin SK. Clinical, biochemical and histological profile of nonalcoholic steatohepatitis. *Indian J Gastroenterol* 2001; 20:183-186.
13. Roli Agrawal, Sunita Mishra, V. K. Dixit; Association of non alcoholic fatty liver with obesity.
14. Bajpai Pranay et al titled Correlation of NAFLD with BMI and this in general population,
15. Shira Zelber-Sagi et al,(R)[191] titled "Role of Leisure-Time Physical Activity in Nonalcoholic Fatty Liver Disease: A Population-Based Study" Shira Zelber-Sagi,1,3 Dorit Nitzan-Kaluski,2,3 Rebecca Goldsmith,2 Muriel Webb,1 Izabel Zvibel,1 Ilana Goldiner,1 Laurie Blendis,1 Zamir Halpern,1,3 and Ran Oren1,3, STEATOHEPATITIS/METABOLIC LIVER DISEASE.
16. Joanne B. Krasnoff et al,[192] titled" Health Related fitness and physical activity in patients with NAFLD, (ref Health-Related Fitness and Physical Activity in Patients with Nonalcoholic Fatty Liver Disease Joanne B. Krasnoff,1 Patricia L. Painter,2 Janet P. Wallace,3 Nathan M. Bass4 and Raphael B. Merriman,5, *Hepatology* Volume 47, Issue 4, Version of Record online: 11 FEB 2008
17. Sookoian S, Castaño GO, Pirola CJ. Modest alcohol consumption decreases the risk of non-alcoholic fatty liver disease: a meta-analysis of 43 175 individuals. *Gut* 2014;63:530-2. [PubMed].
18. Liu Y et. al. titled "Active smoking, passive smoking, and risk of nonalcoholic fatty liver disease (NAFLD): a population-based study in China"
19. Tilmann Graeter et al. titled Coffee consumption and NAFLD: a community based study on 1223 subjects, available at Graeter et al. *BMC Res Notes* (2015) 8:640 DOI 10.1186/s13104-015-1645-3.1
20. Ozturk A et al. titled "The relationship between sleep duration and obesity in Turkish children and adolescents." (ref (ref. Ozturk A, Mazicioglu MM, Poyrazoglu S, Cicek B, Gunay O, Kurtoglu S. The relationship between sleep duration and obesity in Turkish children and adolescents. *Acta Paediatr* 2009;98:699-702.)
21. Nitin Pawani et al. titled "Profile of Non Alcoholic Fatty Liver Disease (NAFLD) In Healthy Young Adults" (ref. Profile of Non Alcoholic Fatty Liver Disease (NAFLD) In Healthy Young Adults. 1Nitin Pawani, MD Medicine 2S N Mahajan, MD Medicine 3Monika Nathani, DGO 4Vijendra Kirnake, DNB Gastroenterology, IOSR Journal of Dental and Medical Sciences (IOSR-JDMS) e-ISSN: 2279-0853, p-ISSN: 2279-0861. Volume 15, Issue 10 Ver.III (October. 2016), PP 114-121 [www.iosrjournals.org](http://www.iosrjournals.org)