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**ASSOCIATION OF ANEMIA WITH OXIDIZED TEA
DRINKING IN AFFLUENT PAKISTANI FEMALE
UNIVERSITY STUDENTS**

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Abstract:

Background- Around the world one of the major beverages is tea intaking. The impact of excessive tea intaking on human health is positive as well negative. In healthy women apparently there are many factors that worsening the anemic condition and anemic. This study is about to observe the relation between tea intaking and anemia and its comparison with the cut-off values set by the World Health Organization.

Methods- It is a case control and cross-sectional study conducted in King Edward Medical University Lahore. In single or unmarried girls lies within the age group of 17-25 years old a questionnaire was distributing for conducting survey after their consent. Any girl who was suffering in any kind of disease related to vitamins, mineral, medication was excluded. For haematological indices and complete blood count their blood samples were collected and examined thoroughly. Anthropometric indicators were also analyzed during this study. For data analzyation SPSS-21 was used. Tabulation of results was done as Mean \pm SD and data was compared.

Results- In this study it was found that red blood cells and Hemoglobin in regular tea drinkers is less than the non-tea drinker that is $(10.84 \pm 1.34 \text{ g/dl} / 4.09 \pm 0.32 \text{ million/mm}^3)$ and the normal non-tea drinkers this is $(11.08 \pm 0.88 \text{ g/dl} / 4.11 \pm 0.36 \text{ million/mm}^3)$ and the overall anemia prevalence is 80.7%. In non-tea drinkers the mean corpuscular volume MCV is $(82.63 \pm 7.91 \mu\text{m}^3)$ whereas in tea drinkers MCV is much lower that is $(78.87 \pm 7.10 \mu\text{m}^3)$. However, there was no significant relation found between anthropometric and WBCs with tea intaking.

Conclusion- In our region due to tea drinking anemia is prevailing in girls or worsening of anemic condition is associated with tea intaking.

Keywords: Non tea drinkers, Tea drinkers, Anthropometric indices, Anemia,

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INTRODUCTION:

Tea intake ranks as a major beverage globally which is one of the major sources of flavonoid. There are two forms of tea which is black and green. The impact of excessive tea intaking on human health is positive as well negative. In healthy women apparently there are many factors that worsening the anemic condition and anemic. This study is about to observe the relation between tea intaking and anemia and its comparison with the cut-off values set by the World Health Organization. There are also some advantages of tea intaking as brewed tea consist of phytochemicals and beneficial bioactivities. The risk of obesity, diabetes, arthritis and coronary heart disease reduces due to tea. According to some research it was found that in case of vascular health the flavonoids in tea could be very important.

Tea is very helpful in lowering the lipid effect and also tea is very cardio-protective. Flavonoids present in tea has antioxidant effects and vasodilator and also reduces the risk of cancer and it also lower the blood pressure.

There is also some research evidence that reduced risk of coronary heart disease and diabetes is associated with the hot beverage. People who intake hot tea they had lower Body Mass Index and waist circumference. By intaking black tea, the diastolic and systolic blood pressure also reduced to great extent.

But besides this it also has some negative impacts on human health. In tea milk or artificial sweetener can resulted in higher Body Mass Index. Additionally, excess f tea intaking is associated with the iron deficiency and anemia in human.

METHODS:

It is a case control and cross-sectional study. In single or unmarried girls lies within the age group of 17-25 years old a questionnaire was distributing for conducting survey after their consent. Any girl who was suffering in any kind of disease related to vitamins, mineral, medication (suffering in any disease) and smokers was excluded. For

hematological indices and complete blood count their blood samples were collected in (K3EDTA) tube and examined thoroughly. Body Mass Index was measured with plus minus gm accuracy and height by stadiometer with 100% accuracy. Waist circumference was measured at the point between the iliac crest ribs and hip circumference was measured from the backside at the broadcast part of hips by keeping the feet together. Anthropometric indicators were also analyzed during this study. For data analyzation SPSS-21 was used. Unpaired t-test was employed, and tabulation of results was done as Mean \pm SD and data was compared where n is the total number of subjects.

RESULTS:

For survey two groups were randomly selected one of tea drinkers and other was non-tea drinkers. For this, 85 girls were selected in which 7 were excluded as they were according to the criteria. 55.13% girls that is 43 were not habitual of taking tea while 44% of them which is 35 out of 85 were habitual of taking tea which is at least three cups in a day from the past five years. The mean age of all participant was 20.5 ± 1.64 . In this study it was found that red blood cells and Hemoglobin in regular tea drinkers is less than the non-tea drinker that is $(10.84 \pm 1.34 \text{ g/dl}, 4.09 \pm 0.32 \text{ million/mm}^3)$ and the normal non-tea drinkers this is $(11.08 \pm 0.88 \text{ g/dl}, 4.11 \pm 0.36 \text{ million/mm}^3)$ and the overall anemia prevalence is 80.7%. In non-tea drinkers the mean corpuscular volume MCV is $(82.63 \pm 7.91 \mu\text{m}^3)$ whereas in tea drinkers MCV is much lower that is $(78.87 \pm 7.10 \mu\text{m}^3)$. However, there was no significant relation found between anthropometric and WBCs with tea intaking.

63 girls out of 85 i.e. 80.7% were observed to have hemoglobin less than 12g/dl while the remaining ones had normal level of hemoglobin. Out of these 63 girls 28 were observed to have mild hemoglobin level, 34 have moderate and one of them have severe one.

The girls of both age groups had the approximately same WHtR, WHR, BMI, hip, waist, height and weight as in table below.

Table-1: Number of distribution of subjects

Variables	Number	Percentage
Non Anaemic	15	19.23
Anaemic		
Overall	63	80.77
Mild	28	35.89
Moderate	34	43.59
Severe	1	1.28

Table-2: Participants having anaemic indicators (n=78)

Anaemic	Non anaemic
Hb \leq 12 g/dl= 63 (80.77%)	Hb \geq 12 g/dl= 15 (19.23%)
RBC Count \leq 4.2 million/mm ³ = 49 (62.82%)	RBC Count \geq 4.2 million/mm ³ = 29 (37.18%)
3	3
MCV \leq 80 μ m = 33 (42.31%)	MCV \geq 80 μ m = 45 (57.69%)

Table-3: Anthropometric measurements of participants (Mean±SD)

Anthropometric indices	Non-tea drinkers NTDs	Tea drinkers TDs	p
Age (Year)	20.3±1.57	20.7±1.74	0.2
Weight (Kg)	48.15±9.25	51.31±9.63	0.1
Height (Cm)	155.32±5.39	156.25±5.45	0.4
Waist (Cm)	68±9.58	69.6±9.62	0.4
Hip (Cm)	87.93 ±9.49	90.77±9.20	0.1
BMI (Kg/m²)	20.30±4.27	21.01 ±4.08	0.4
WHR	0.77±0.06	0.77±0.05	0.5
WHtR	0.44±0.08	0.44±0.77	0.9

Table-4: Haematological parameters of participants (Mean±SD)

Haematological parameters	Non-tea drinkers (NTDs)	Tea drinkers (TDs)	p
Haemoglobin (g/dl)	11.08±0.88	10.84±1.34	0.3
Haematocrit (%)	33.35±2.82	32.54±3.82	0.2
RBCs (million/mm³)	4.11±0.36	4.09±0.32	0.8
MCV (μm³)	82.63±7.91	78.87±7.10	0.03*
MCH (pg)	26.94±2.97	26.96±3.35	0.9
MCHC (%)	33.25±1.34	33.59±1.02	0.2
WBCs (per mm³)	7462±1355.94	7260±1661.36	0.5
Neutrophils (%)	66.65±5.92	65.74±5.65	0.4
Lymphocytes (%)	29.17±5.99	30.00±5.65	0.5
Eosinophils (%)	1.74±0.44	1.66±0.48	0.4
Basophils (%)	0.13±0.46	0.14±0.42	0.9
Monocytes (%)	2.65±0.72	2.6±0.14	0.7

DISCUSSION:

Around the world anemia is considered as one of the major concerns as its prevalence is found on girls of almost of all age groups even pregnant women also. However, there is very less research on this prevalence of anemia in girls. This study was monitored according to the set standard of world health organization. In healthy women apparently there are many factors that worsening the anemic condition and anemic. This study is about to observe the relation between tea intaking and anemia and its comparison with the cut-off values set by the World Health Organization. In this study 63 girls out of 85 i.e. 80.7% were observed to have haemoglobin less than 12gd/dl while the remaining ones had normal level of haemoglobin. Out of these 63 girls 28 were observed to have mild haemoglobin level, 34 have

moderate and one of them have severe one.

This result found under this study is consistent with the international communities. However, the prevalence of anemia in Pakistan is found to higher as compared to some developed countries. There are two possible reasons of growing anemic prevalence in Pakistan in which first one is the malnourished food deficient in iron there is no solid evidence of that but there is need to conduct a study on this too. The second one is association of anemic status to the intaking of excessive tea. It was also found in this study that there was no significant relation found between anthropometric and WBCs with tea intaking. However, in girls the leading reason of anemia could be the monthly loss of blood.

Pakistani traditional tea is a mixture of sucrose, oxidized tea and milk. This study is a control cross sectional study where the sample size is very small which should be larger.

CONCLUSION:

This study concludes that in our region due to tea drinking anemia is prevailing in girls or worsening of anemic condition is associated with tea intaking.

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