Trends and Correlates of Anemia among Women in Jammu and Kashmir

(Evidence from NFHS Data)

Submitted to
Ministry of Health and Family Welfare Government of India,
New Delhi -10008

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Febuary-2024

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ABBREVIATIONS

Abbreviation	Full Form
ANM	Auxiliary Nurse Midwife
ASHA	Accredited Social Health Activist
BBC	Behaviour Change Communication
Fe	Ferrum (Iron)
g/dl	Gram per Deciliter
g/L	Gram per litter
Hb	Haemoglobin
HPDs	High Priority Districts
IDA	Iron- deficiency anemia
IFA	Iron and Folic Acid
MA	Mild Anemia
MoA	Moderate Anemia
MOHFW	Ministry of Health and Family Welfare
NFHS	National Family Health Survey
NHM	National Health Mission
NPW	Non Pregnant Women
OBC	Other Backward Class
PM-AMBA	Pradhan Mantri Anemia Mukt Bharat Abhiyan
PW	Pregnant Women
RBC	Red Blood Cells
RCH	Reproductive and Child Health Programme s
RKSK	Rashtriya Kishor Swasthya Karyakram
SA	Severe Anemia
SCs	Scheduled Casts
STs	Scheduled Tribes
UNICEF.	United Nations International Children's Emergency Fund
UNSDGs	United Nations Sustainable Development Goals
UT	Union Territory
WBC	White Blood Cells
WHO	World Health Organization

PREFACE

Nutritional deficiency anemia during pregnancy continues to be a major health problem in India. At individual as well as at the community level, number of steps had been taken to educate the women regarding the elimination of anemia and to aware them about various causes and its remedy measures. It is the responsibility of every member of the responsible society that a special emphasis should be given about the nutritional education among the women, so that they can improve their nutritional quality that results in reduction in the ratio of anemia among them. Since long Government of India, non-government agencies and different organizations have formulated and implemented different policies regarding the elimination of anemia among women and these policies have witnessed successful improvement from time to time in minimizing the burden of anemia.

*Among the different states and union territories of India, Jammu and Kashmir is one among the states, which had half of women population anaemic and the prevalence of severe and the moderate anemia among the non-pregnant women and also among young girls at the higher side. Furthermore, it was found that severe and moderate anemia increased over a period of 15 years in Jammu and Kashmir. To know the prevalence, incidence and the intensity of anemia among the women population of Jammu and Kashmir, it was decided by the research committee of Population Research Centre, to carry out the research study, on "**Trends and Correlates of anemia among Women in Jammu and Kashmir"** to estimate the change in anemia among women over a period of 15 years from NFHS-3 to NFHS-5.*

We thank Mr. Syed Khursheed Ahmad Coordinator of the PRC and Mr. Bashir Ahmad Bhat Ex. Coordinator and research staff, Population Research Centre (PRC), Srinagar Kashmir for their constructive inputs and suggestions. It is hoped that the findings of this study will be helpful to both the Union Ministry of Health and Family Welfare and the UT Government in taking necessary steps.

February, 2024
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1. INTRODUCTION

Anemia is one of the global health problems faced by people around the world, especially in developing countries as it is a large contributor worldwide. It is a global threat among women of reproductive age (WRA), of 15–49 years old, both in developed and developing countries. Anemia is considered as a condition in which the number and size of red blood cells, or the haemoglobin concentration, falls below an established cut-off value, as a result leads to impairment of the capacity of the blood to transport oxygen around the body. Anemia is observed as an indicator of both poor nutrition consumption and poor health status of an individual. It damages the health and well-being in women and increases the risk of maternal and neonatal adverse outcomes. During pregnancy anemia is responsible for a lot of complications among women.

According to the World Health Organization (WHO), anemia among women is defined as a haemoglobin concentration of <120 g/L for non-pregnant women aged 15 years and above, and a haemoglobin concentration of <110g/L for pregnant women. Anemia is not a disease; it is a manifestation of various diseases and pathologic conditions. Blood consists of cellular elements and plasma and these cellular elements include erythrocytes, or red blood cells; leucocytes, or white blood cells; and platelets. Red blood cells are the most numerous cells in the blood; approximately 20 billion of them circulate in the blood of an adult. They are required to transport oxygen to the tissues and organs of the body.

World Health Organizations, (WHO) defines anemia as a condition in which the Haemoglobin (Hb) content of blood is lower than normal (11.0 g/dl) as a result of deficiency of one or more essential nutrients, regardless of the cause of such deficiencies among the ever-married women of the age 15–49 years. The anemia among the women is categorised into three degrees i.e., severe anemia, moderate anemia and mild anemia and these three levels of severity of anemia are distinguished as: mild anemia (10.0–10.9 grams/decilitre for pregnant women and 10.0–11.9 g/dl for non-pregnant women), moderate anemia (7.0–9.9 g/dl), and severe anemia (less than 7.0 g/dl). Prevalence of anemia in WRA is higher by

fourfold in developing country, based on extensive studies and surveys conducted by WHO and UNICEF.

Anemia may be caused by several factors: nutrient deficiencies, inadequate diet (or the inadequate absorption of nutrients), infections, inflammation, chronic diseases, gynaecological and obstetric conditions, and inherited red blood cell disorders. The women of reproductive age have more chance of being anaemic due to loss of menstruation and childbirth. Also it is caused by pregnancy, specifically because a woman's body needs more iron (Fe) with the increasing gestational age. Anemia due to iron deficiency is recognized as a major public health problem throughout the world.

1.1 Anemia among Women at Global Level

It was estimated at the global level that the anemia prevalence in women of reproductive age was 29.9 percent; equivalent to over half a billion women aged 15–49 years in 2019 and its prevalence was higher among the pregnant women with 36.5 percent than non-pregnant women (29.6 percent) (WHO, 2022). In South Asia it was estimated in 2019, that in the women of reproductive age group, the anemia rate was 49 percent among non-pregnant women and 48 percent among the pregnant women. For instance, the 65th World Health Assembly (WHA) in 2012 approved global targets for maternal, infant, and young child nutrition, with a commitment to halve anemia prevalence in women of reproductive age (15–49 years) by 2025. Following this, WHO and UNICEF proposed extending this target to 2030 to align with the UN Sustainable Development Goals (SDGs) 2- End hunger, achieve food security and improved nutrition and promote sustainable agriculture. According to the epidemiological data collected from multiple countries by the World Health Organization, 35 percent of women and 43 percent of young children are affected by anemia worldwide. In developing countries, about a half of women and young children were anemic.

1.2: Anemia among women in India

The Government of India has also been taking several efforts to address the burden of anemia among women especially anemia among pregnant women. In particular, a

persistently high level of anemia among women in India (53 percent of all women have anemia as per the National Family Health Survey 2015–2016) is of great concern, and the 2017 National Health Policy tabled by the Ministry of Health and Family Welfare, Government of India, acknowledges this high burden. Iron- deficiency anemia (IDA) is a common problem among women, primarily due to their recurrent menstrual loss.

Demand for iron is higher among pregnant women, and women with anemia in combination with early onset of childbearing, a high number of births, short intervals between births and poor access to antenatal care and supplementation are likely to experience of poor pregnancy outcome. In India, under the Government's Reproductive and Child Health Programme, iron and folic acid tablets are provided to pregnant women in order to prevent anemia during pregnancy. Among all the states and union territories, there was a decline of 3.5 percentage points in Iron Deficiency Anemia (IDA) among all women in India, varying by states during 2005-06 to 2015-16. In addition, NFHS-4 (2015–2016) indicates that the National Iron plus Initiative (NIPI) did not yield the desired reduction in IDA nationally. However, during the same period, out of total states and union territories in India, for IDA in eight states increased: Delhi-National Capital Territory, Haryana, Himachal Pradesh, Kerala, Meghalaya Tamil Nadu, Punjab and Uttar Pradesh.

There have been consistent global efforts to address the burden of anemia. The Anemia Mukt Bharat (AMB) which was launched in 2018 as part of the Strengthened Nationwide Iron Plus Initiative Project aims to lower the prevalence of anemia by 1 to 3 percentage points each year, targeting children and women of reproductive age group. Despite the significant efforts, 2/3rd of all women of reproductive age in India are still having any form of anemia (mild, moderate, and severe). Though, all types of anemia must be given due importance, moderate and severe anemia in non-pregnant women are to be treated with utmost care as significant health consequences are predominantly associated with moderate to severe anemia. In many cases, mild and asymptomatic anemia requires no management.

According to Ministry of Health and Family GOI (2015), there are wide disparities in the prevalence of Anemia among women across states within India. North-eastern states like Mizoram, Manipur, Nagaland and Sikkim, and smaller states/UTs like Goa and Kerala, are the best performing regions. Eastern and Northern states/UTs like Jharkhand, West Bengal, Bihar, Haryana, Andaman and Nicobar Islands, and Dadra and Nagar Haveli are some of the worst-performing states. The better performance of north eastern states can be attributed to greater gender equality in terms of "work participation, literacy, infant mortality and sex ratio," making women in these states healthier and less anemic (Mahanta 2013). Rural areas have a higher percentage of anemic women than urban areas resulting from poorer access to healthcare and sanitation combined with lower family incomes.

1.3: Anemia Mukt Bharat Initiative

There have been several programmes working towards eliminating anemia in India in action for decades. The National Nutritional Anemia Prophylaxis Programme, launched in 1970, provided iron and foliate supplements to children under the age of five, pregnant women, and nursing mothers. However, it was ineffectively implemented, and the consumption of IFA tablets was much lower than the distribution (Kurian et al., 2017), a problem that still exists. Weekly Iron Folic Acid Supplementation (WIFS), launched in 2013 under the Rashtriya Kishor Swasthya Karyakram (RKSK), aims to mitigate anemia in the adolescent population (National Health Mission). This programme has been initiated in all States/UTs and covers 11.2 crore beneficiaries across India and has performed better due to the inclusion of counselling as a critical intervention to improve compliance amongst adolescents. However, some implementation gaps remain.

In 2018, the Government of India launched the Anemia Mukt Bharat (AMB) strategy with the target to reduce anemia in the vulnerable age groups such as women, children and adolescents in life cycle approach providing preventive and curative mechanisms through a 6X6X6 strategy including six target beneficiaries, six interventions and six institutional mechanisms for all stakeholders to implement the strategy. Under AMB strategy, the interventions for tackling the problem of anemia in all the States and UTs include:

i. Prophylactic Iron and Folic Acid Supplementation in all six target age groups

ii. Intensified year-round Behaviour Change Communication (BCC) Campaign for:

(a) Improving compliance to Iron Folic Acid supplementation and de-worming,

(b) Enhancing appropriate infant and young child feeding practices.

(c) encouraging increase in intake of iron-rich food through diet diversity/quantity/frequency and/or fortified foods with focus on harnessing locally available resources, and

(d) Ensuring delayed cord clamping after delivery (by 3 minutes) in health facilities

iii. Testing and treatment of anemia, using digital methods and point of care treatment, with special focus on pregnant women and school-going adolescents

iv. Addressing non-nutritional causes of anemia in endemic pockets with special focus on malaria, haemoglobin apathies and fluorosis

v. Management of severe anemia in pregnant women undertaken by administration of IV Iron Sucrose/Blood transfusion

vi. Providing incentives to the ANM for identification and follow-up of pregnant women with severe anemia in high priority districts (HPDs)

vii. Training and orientation of Medical Officers and front line-workers on newer Maternal Health and Anemia Mukt Bharat guidelines

viii. Field level awareness by ASHAs through community mobilization activities and IEC and BCC activities.

1.4: Overview of Prevalence of Anemia in Jammu and Kashmir

According to the estimates of NSSO 2022, in Jammu and Kashmir, majority of the women were found anaemic. It was, estimated that 66 percent of women in Jammu and Kashmir have anemia, including 25 percent with mild anemia, 38 percent with moderate anemia, and 3 percent with severe Anemia. The prevalence of anemia is more among the rural women than the urban one in the age group of 15-19 years, and also among the backward

categories of the society particularly in SCs and STs. It was analysed from the NFHS-4 that 49 percent non-pregnant women aged between 15-49 years were found anaemic, which has increased to 67.3 percent during NFHS-5, with an increase of more than 36 percent. However, slight improvement has been in anaemic condition of pregnant women aged 15-49 years as during NFHS-4 46.9 percent women were found anaemic while during NFHS-5, 44.1 percent, with an overall decrease of 6 percent.

Over all the anaemic condition of all women aged 15-49 has increased from 48.9 percent in NFHS-4 to 65.9 percent in NFHS-5, with an increase of one-third. Furthermore, it was found that 66 percent of women in Jammu and Kashmir have anemia, including 44 percent pregnant and 67 percent Non-pregnant women. Among these, 25 percent women are with mild anemia, 38 percent with moderate anemia, and 3 percent with severe Anemia (NFHS-5).

1.5: Objectives of the Study

The broad objective of the study is to estimate the prevalence of anemia among women in Jammu and Kashmir while the specific objectives are as follows.

1. To examine the levels of anemia among pregnant and non-pregnant women by different characteristics.
2. To analyze the trend of anemia among the women in Jammu and Kashmir

1.6: Data and Sample size

The Study is based on secondary sources of data and the main source of data was National Family Health Survey conducted by Ministry of Health and Family Welfare (GOI). For this study, we have utilized the data of three latest rounds of NFHS (NFHS-3, NFHS-4, and NFHS-5) and these rounds were conducted during 2005-06, 2015-16 and 2019-21. The relevant parameters of anemia among women and their background characteristics were analyzed. In Jammu and Kashmir, the NFHS-3 survey is based on a sample of 2,415 households that is representative at the state level and within the state at the urban and rural levels. During

the survey a total of 3,281 women in the age group of 15-49 and 1,076-men age 15-54 were interviewed to obtain information on population, health, and nutrition in the state.

The figures of NFHS-4 and that of earlier rounds may not be strictly comparable due to differences in sample size and NFHS-4 had remained a benchmark for future surveys. For Jammu & Kashmir and information was collected from 17,894 households, 23,800 women age 15-49 (including 7,163 women interviewed in PSUs in the state module), and 6,013 men age 15-54. Survey response rates were 98 percent for households, 97 percent for women, and 92 percent for men. The NFHS-5 was conducted in 2019 and information was collected from 18,086 households, 23,037 women age 15-49 (including 3,388 women interviewed in PSUs in the state module), and 3,087 men age 15-54.

1.7: Demographic and Socio-economic features of Jammu and Kashmir

As per Census 2011, the total population of the country is 1210 million in which Jammu and Kashmir comprises of 12 million accounting roughly one percent of the total population of the country. The decadal growth rate of population is 31 percent substantially higher than the national decadal growth rate of 21 percent. It is evident that the population grew by 70 percent during 1991-2011, with much higher rate than in 1981-91. The crude birth rate and crude death rate of the State is lower than the national average (Table 1). Infant and child mortality rates are good indicators of socio-economic development and the status of health and population programmes. The infant mortality rate has come down from 50 in 2001 to 26 in 2017 which is lower than the national average of 34. The total fertility rate of the State is 1.9 which is lower than the national average of 2.4. The sex ratio, which has alarmingly come down from 933 in census 2001 to 883 in census 2011 is lower than the national sex ratio (940 females per thousand males). The scheduled caste population of the State is only 8 percent as against 16 percent in the country. However, the schedule tribes of the State are higher (11 percent) than the national average (8.6 percent). The literacy rate in the State has improved by more than 14 percent points from 54 percent in 2001 to 68.7 percent in 2011. The literacy rate for the population of seven years and above is 78 percent for males and 58 percent for females and 69 percent for the total population, although it is lower than the

national average. The detailed figures of major health and demographic indicators are mentioned in below. (Table 1)

Table 1: Demographic Characteristics of Jammu and Kashmir and India		
Indicator	**J&K**	**India**
Total Population (Crores)	12.54	1210.19
Decadal Growth (percent)	31.42	21.54
Crude Birth Rate (SRS 2017)	15.7	20.4
Crude Death Rate (SRS 2017)	5.2	6.9
Natural Growth Rate (SRS 2017)	10.8	14.0
Infant Mortality Rate (SRS 2017)	24	34
Maternal mortality Rate (SRS 2011)	NA	254
Total Fertility Rate (SRS 2014)	1.9	2.4
Sex Ratio (Census 2011)	883	940
Child Sex Ratio (Census 2011)	859	914
Schedule Caste Population (percent) (Census 2011)	8.0	16.6
Schedule Tribe Population (percent) (Census 2011)	11.0	8.6
Total Literacy rate (percent) (Census 2011)	68.74	74.04
Male Literacy Rate (percent) (Census 2011)	78.26	82.14
Female Literacy Rate (percent) (Census 2011)	58.01	65.46

Results and Discussion

2. Trend and Types of Anemia among Women in Jammu and Kashmir (Evidences from NFHS Data)

2.1: Severe Anemia among Women in Jammu and Kashmir

Anemia causes decreased oxygen-carrying capacity of the blood leading to tissue hypoxia and if the haemoglobin level of patient is in between 6.5 to 7.9 g/dl. Among the different groups of women (Pregnant and Non pregnant) the prevalence of severe anemia was found high among non-pregnant women than the pregnant women**.** The analysis of the data shows that severe anemia among non-pregnant women increases from 1.5 percent in 2006 (NFHS-3) to 3 percent in 2021 (NFHS-5) with an increase of almost double during these rounds of NFHS while as in case of pregnant women there was a decline in severe anemia from year 2006 (NFHS-3) to year 2021 (NFHS-5). In the year 2006, it was 2.5 percent which declined to 0.8 percent in 2021. The severe anemia among all women was 1.6 percent in 2006 which declined to one percent in the year 2021. (Table 2)

2.2: Moderate Anemia among Women in Jammu and Kashmir

The moderate anemia corresponds to a level of 7.0-9.9 g/dl, while severe anemia corresponds to a level less than 7.0 g/dl. From the analysis of different rounds of NFHS data, it was also found that non-pregnant women were the victims of moderate anemia. It was found that in 2006, 12.2 percent of non-pregnant women had moderate anemia which increased to 39 percent in 2021. The moderate anemia among pregnant women declined from 26 percent in 2006 to 21 percent in 2021 with an improvement of five percent over a period of 15 years. Further, the analysis shows that among all the women moderate anemia declined from 13 percent in 2006 to 11 percent in 2021. (Table 2)

2.3: Mild Anemia among Women in Jammu and Kashmir

Mild anemia is a common and treatable condition that can develop in anyone. It may come about suddenly or over time, and may be caused by your diet, medicines you take, or another medical condition. Mild anemia corresponds to a level of hemoglobin concentration of 10.0-10.9 g/dl for pregnant women and children under age 5 and 10.0-11.9 g/dl for non-

pregnant women. In Jammu and Kashmir, it was inferred from NFHS data that all the women irrespective of any category (pregnant and non-pregnant), mild anemia was higher. In 2006 it was found that around 36 percent of all women had mild anemia which declined to 29 percent in 2021. In case of non-pregnant women, it was 37 percent in 2006 which declined to 25 percent in 2021, while among pregnant women it was 27 percent in 2006 which declined to 22 percent in 2021. It was inferred that among non-pregnant women the decline of mild anemia was higher than the pregnant women. In case of non-pregnant women, it declined at the rate of 32 percent while among pregnant women it declined at the rate of 18 percent during last 15 years (2006-2021). (Table 2)

2.4: Non-Anemic Women in Jammu and Kashmir

The normal haemoglobin range is generally defined as 13.2 to 16.6 grams (g) of hemoglobin per deciliter (dL) of blood for men and 11.6 to 15 grams (g) of hemoglobin per deciliter (dL) of blood for women. It was found from the NFHS data that among all groups of women around half of the women had not any anemic issue it was found that among non-pregnant women there was a decrease of 10 percentage points in non-anemic, while among pregnant women it increased from 44 percent in 2006 to 56 percent in 2021. (Table 2)

Table- 2: Trends And type of Severity of Anemia among Women in Jammu and Kashmir

Variables	Type of Anemia				
	Severe	Moderate	Mild	Not anemic	Total
Over all					
NFHS 3 (2006)	1.6 (49)	13.1 (398)	36.7 (1116)	48.6 (1478)	3041
NFHS 4 (2016)	3.3 (772)	25.4 (5943)	20.7 (4843)	50.6 (11839)	23397
NFHS 5 (2021)	1 (223)	11 (2449)	29 (6458)	59 (13138)	22,268
Non-Pregnant					
NFHS 3 (2006)	1.5 (364)	12.2 (296)	37 (899)	49.3 (1197)	2430
NFHS 4 (2016)	0.8 (154)	10.5 (2018)	29 (5572)	59.7 (11471)	19216
NFHS 5 (2021)	3 (547)	38.9 (7090)	25.5 (4647)	32.6 (5832)	18226
Pregnant					
NFHS 3 (2006)	2.5 (03)	26.1 (33)	27.1 (34)	44.3 (55)	126
NFHS 4 (2016)	0.7 (07)	16.4 (164)	21 (210)	61.9 (619)	1001
NFHS 5 (2021)	0.8 (66)	20.9 (1722)	22.4 (1845)	55.9 (4606)	8241

Note: Figures in Parenthesis are Numbers

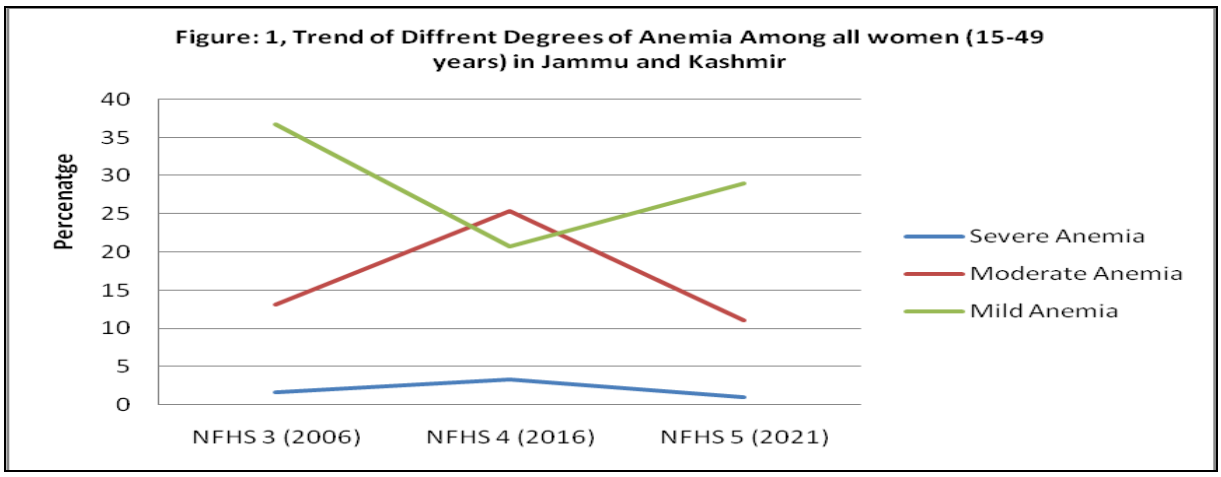


Figure: 1, Trend of Diffrent Degrees of Anemia Among all women (15-49 years) in Jammu and Kashmir
Percenatge
40
35
30
25
20
15
10
5
0
NFHS 3 (2006)
NFHS 4 (2016)
NFHS 5 (2021)
Severe Anemia
Moderate Anemia
Mild Anemia

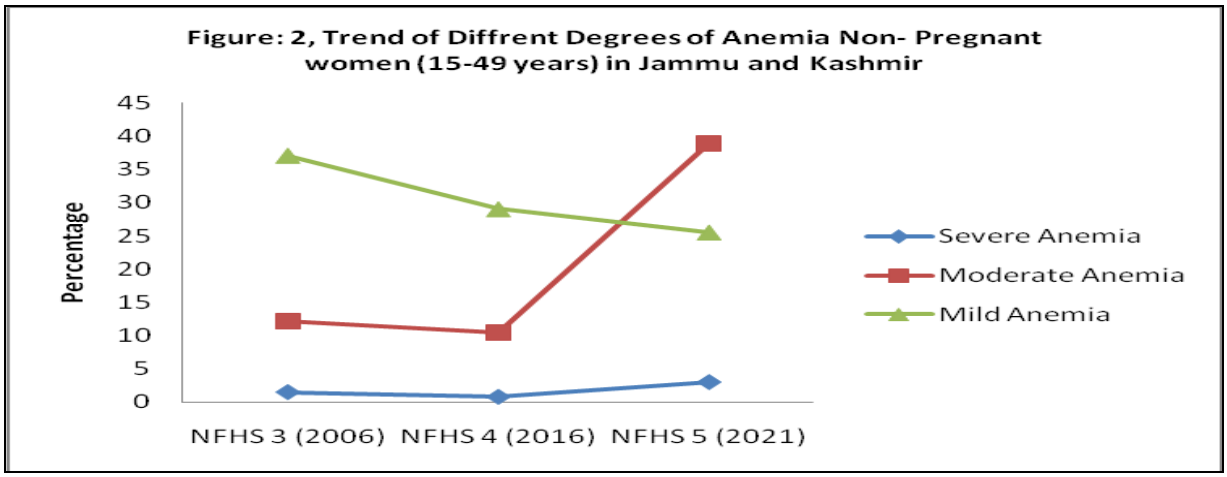


Figure: 2, Trend of Diffrent Degrees of Anemia Non- Pregnant women (15-49 years) in Jammu and Kashmir
Percentage
45
40
35
30
25
20
15
10
5
0
NFHS 3 (2006)
NFHS 4 (2016)
NFHS 5 (2021)
Severe Anemia
Moderate Anemia
Mild Anemia

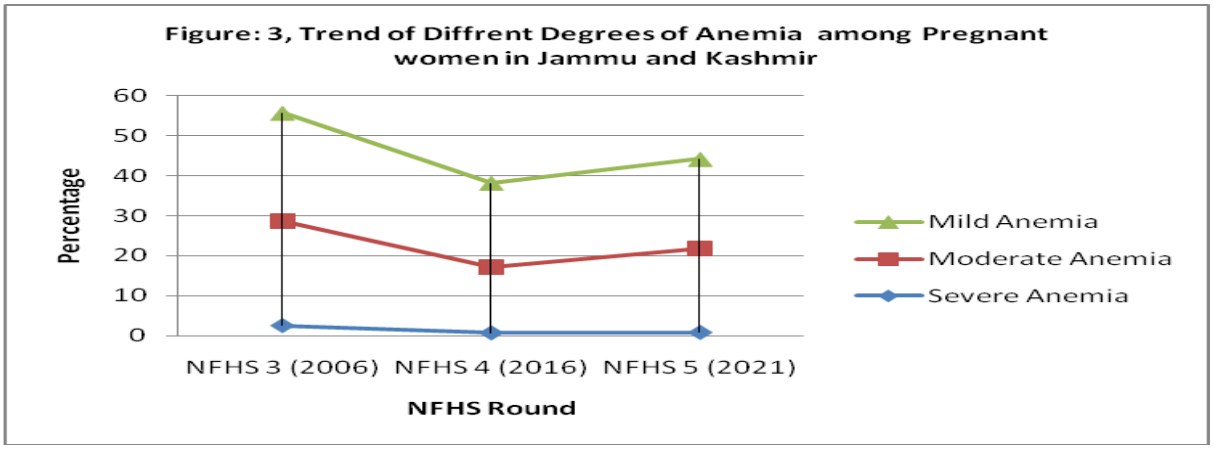
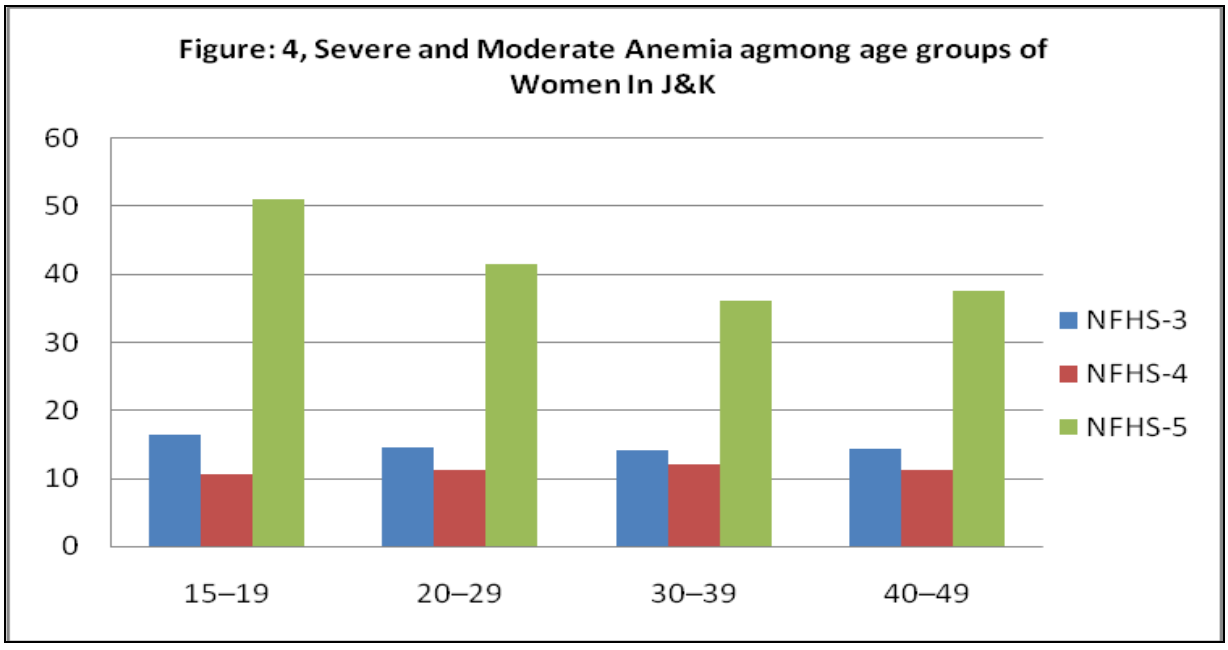


Figure: 3, Trend of Diffrent Degrees of Anemia among Pregnant women in Jammu and Kashmir
Percentage
60
50
40
30
20
10
0
NFHS 3 (2006)
NFHS 4 (2016)
NFHS 5 (2021)
NFHS Round
Mild Anemia
Moderate Anemia
Severe Anemia

3: Anemia among Women with Background Characteristics

3.1: Anemia by Age of the Women in Jammu and Kashmir

Women of reproductive age (WRA; ages 15–49 years) are particularly at increased risk of iron deficiency and, therefore, anemia, compared to men, due to physiological changes such as menstruation (blood loss pathway), pregnancy (inadequate production pathway due to increased demand) and bleeding in childbirth. From the analysis of NFHS-5 it was found that among all the age groups of the women, one-fourth had mild anemia, while as in case of severe or moderate anemia, it was highest in the age group of 15-19 years followed by 20-29 years with 41 percent and lowest was found in 30-39 years. Further, the analysis of NFHS-5 data shows that severe anemia among the young women population between the age of 15-19 years has increased by more than 35 percentage points during last 15 years, while among the older women population, it has increased by 23 percentage points during the same period. In case of the mild anemia there was a declining trend of anemia among all the age groups of the women, but the highest decline was also in the older population of 40-49 years. The younger age group of 15 -19 years is more vulnerable to any type of anemia in Jammu and Kashmir. (Table 3 and Fig. 4))



3.2: Anemia and Maternity status

Marital status is a person's civil status in relation to their spouse. Marital status is a legally defined marital state. Analysis of NFHS-5 data it was found that one-fourth of the pregnant women, as well as the lactating mothers had mild anemia, while 46 percent of the pregnant women and 37 percent of breastfeeding mothers had severe and moderate anemia. From 2006 to 2021 the severe and moderate anemia among the pregnant women increased by 24 percentage points, while in case of lactating mothers it increased by 20 percentage points during last 15 years. The mild anemia declined by around one percent among the pregnant women and in case of lactating mothers it declined by 40 percent. (Table 3)

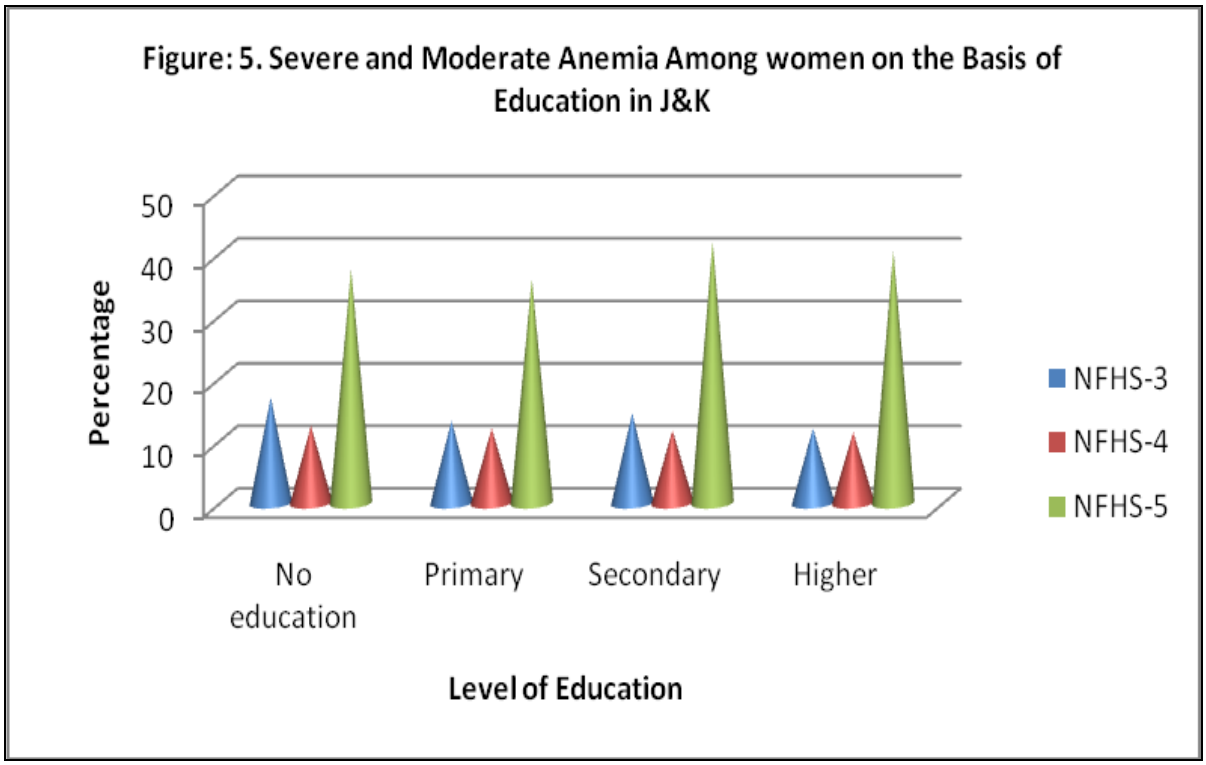
3.3: Anemia by Type of Residence of Women

Place of residence is the locality where a person has lived continuously for more than 12 months. Place of residence (urban–rural) has a pervasive influence on fertility transition in the country like India. According to the estimates of NFHS-5 data, around one-fourth of women of each rural and urban area had mild anemia, while severe and moderate anemia was higher among rural women (42 percentage) than urban women (36.4 percentage). From 2006 to 2019, in urban areas severe and mild anemia has declined by 26 percentage points and 13 percentage points respectively. In rural areas severe and moderate anemia increased by 26 percent points and mild anemia declined 12 percentage point during 2006 to 2021. (Table 3)

3.4: Anemia by Education of the Women

Education is the transmission of knowledge, skills, and character traits and comes in many forms. The formal education has been categorized into various levels like: early childhood education, primary education, secondary education, and tertiary education. From the analysis of NFHS-5 data, it was found that the severe anemia was highest among the women with secondary educational level with 42 percent followed by higher educated women (40 percent) and the least prevalence of anemia was found among the women with the education of only up to the primary standard. In case of the mild anemia it was found that around one-fourth of the women were found anemic among all level of educated women. During 2006 to 2021 the rate of severe anemia has increased highest among the higher

educated women with more than 28 percentage points followed by women with secondary education that increased by around by 28 percentage points and lowest increase was seen among the illiterate women. In case of the mild anemia, a declining trend was witnessed among all groups of educated women in Jammu and Kashmir. (Table 3 and Fig 5)



3.5: Anemia by Religious Background

On the basis of religion of women, it was found that women of Muslim community had the higher prevalence of severe anemia with 43 percent followed by the Sikh community 39 percent, Hindu women with 36 percent, while the mild anemia was highest among the Hindu women (26.4 percent), followed by Muslim women (24.9 percent) and Sikh women with 22 percent. It was pertinent to mention that severe anemia among the Hindu women increased by 9 percentage points during 2006 to 2021, while among Muslim women it increased by 29 percentage points during the same period and among the Sikh women it increased by 27 percentage points. The mild anemia declined by 15 percentage points among Hindu women, 10 percentage points among Muslims and 15 percentage points among Sikh women.

3.6: Prevalence of Anemia by Caste and Tribe

On the basis of social category of the population of Jammu and Kashmir, it was found that the anemia rate among the backward categories of women was higher than the general category. From the analysis of NFHS-5 data, it was inferred that women of other backward category (OBC) had the highest rate of severe and moderate anemia with 45 percent of the women population followed by the scheduled tribe population with 44 percent, and the least severe and moderate anemic women were found in scheduled caste women population with 36 percent. The mild anemia was found highest among the scheduled caste women population with 30 percent, followed by OBCs with 26 percent and the least was found among the other than any category i.e. general population. From the given analysis it was found that the severe and moderate anemia has increased by 20 percentage points among the scheduled castes women, and among scheduled tribes it increased by 14 percentage points, while as among OBCs it increased by more than 32 percentage points. The mild anemia among the all category of women population in Jammu and Kashmir had showed the declined trend.

Table No: 3 Percentage of Anemic Women on the Basis Background Characterises in Jammu & Kashmir

	NFHS 3 (2006)			NFHS 4 (2016)			NFHS 5 (2021)		
	Severe & Moderate	Mild	Total Women	Severe & Moderate	Mild	Total Women	Severe & Moderate	Mild	Total Women
Age									
15–19	16.4	37.1	617	10.5	29.8	3,878	51	25.2	3220
20–29	14.5	36.8	1,110	11.2	28.2	8,294	41.6	25.2	8287
30–39	14.2	39.2	776	12	29.7	6,576	36.2	24.9	6390
40–49	14.3	36	538	11.2	28.4	4,649	37.6	26.1	4371
Maternity status									
Pregnant	28.6	27.1	126	17.1	21	1,001	46.8	25.6	8241
Breastfeeding	16.6	41.9	485	10.1	31.2	3,180	36.9	25.1	13718
Neither	13.7	37	2,430	11.3	29	19,216	37.1	26.5	308

Continue	NFHS 3 (2006)			NFHS 4 (2016)			NFHS 5 (2021)		
	Severe & Moderate	Mild	Total Women	Severe & Moderate	Mild	Total Women	Severe & Moderate	Mild	Total Women
Type of place of residence									
Urban	11.8	37.9	851	11.6	31.5	6,977	36.4	25	5898
Rural	16	37.1	2,190	11.2	27.9	16,420	42.1	25.4	16370
Highest educational level									
No education	16.9	34.8	1267	12.4	28	6867	37.4	25.6	4,780
Primary	13.2	33	131	12	27.2	438	35.9	26	274
Secondary	14.4	40	873	11.6	29.4	7,421	42	24.9	5,810
Higher	12	39.3	771	11.4	29.6	1,551	40.4	25.8	4,066
12 or more years complete	*	*	*	9.4	29.3	5121	39.9	25.2	7,338
Religion									
Hindu	17	43.5	1,013	9.3	28.3	6,355	35.8	26.4	6,844
Muslim	13.7	34.2	1,963	12.1	29.3	16,411	42.9	24.9	14,887
Sikh	11.6	41.7	52	9.8	28.3	434	38.8	23.1	487
Others	*	*	*	11.9	29.7	197	43.3	22.2	51
Caste/tribe									
Scheduled caste	16.2	44.5	350	8.3	27.5	2,122	36.1	29.7	2,353
Scheduled tribe	19.7	34.5	244	10.3	27.6	2,153	43.7	24.9	1,535
OBC	12.9	41.9	247	10.9	30.2	1,169	45.1	26.2	1,972
Other	14.2	36	2,191	11.8	29.2	17,912	40.4	24.6	16,371
Don't know	*	*	*	14.4	29.7	41	44.8	17.7	36

3.7: District wise Prevalence of Anemia in Jammu and Kashmir

In Union territory of Jammu and Kashmir, there were some districts that had low level anemia prevalence, while as some districts had higher prevalence of anemia. It is pertinent to mention that districts of Kashmir division had higher prevalence of anemia than the districts of Jammu division, except the district Kishtwar. Furthermore, it was found in Kashmir that those districts which are far away from the capital city of Srinagar had higher prevalence of anemia. The analysis of NFHS-5 data shows that the highest rates of anemia prevalence among all groups of women was found in district Kishtwar with 84.8 percent

followed by district Ganderbal 77.2 percent and district Kulgam has 77 percent in the age group of 15-49 years. (Table 4)

Furthermore, it was found that the highest rates of anemia among pregnant women was reported in Kishtwar with 63.2 percent, followed by Kulgam 63 percent. Furthermore, it was found that the districts that perform better in eliminating anemia prevalence are: Srinagar with lowest anemia among women in the age group of 15-49 year (52.5 percent), followed Kathua (55.2 percent), Poonch (56.3 percent) and Udhampur (57.3 percent). All these four districts have achieved the target of reducing anemia up-to 60 percent. The districts that have anemia in between 60-65 percent are as Ramban, Rajouri, Samba, Reasi and Shopian. Poonch has the lowest (24.9 percent) pregnant anemic women followed by Kathua with 28.4 percent and Shopian though hilly district having difficult topography has a percentage of 33.5 anaemic pregnant women between 15-49 years' age group in J & K. (Table 4)

3.8: Anemia among Non-Pregnant Women

The analysis of various rounds of NFHS data shows that the highest rates of anemia prevalence among the Non-pregnant women was found in district Kishtwar with 86.2 percent followed by district Ganderbal 77.7 percent and district Kulgam has 77.5 percent in the age group of 15-49 years. The lowest overall rates of anemia in non-pregnant women were reported in Srinagar with 52.5 percent followed by Kathua 55.2 percent and 56.3 percent in Poonch district. (Table 4)

Table 4: District wise Anemia Rate in Jammu and Kashmir, 2020-2021 NFHS-5

District	Non-pregnant women age15-49 Years	Pregnant women age 15-49 years	All women age15-49 years
Kishtwar	86.2	65.3	84.8
Ganderbal	77.9	63	77.2
Kulgam	77.5	63.2	77
Anantnag	75.7	54.1	74.3
Budgam	75	57	73.9
Bandipora	74.3	55.3	73.7
Kupwara	75.6	45.7	73.5
Pulwama	74.7	37.7	73.2
Baramulla	73.1	56	72.5
Jammu	68.2	41.7	66.6

Continue……. District	Non-pregnant women age15-49 Years	Pregnant women age 15-49 years	All women age15-49 years
Doda	67.9	47.7	66.5
Shopian	65.5	33.5	63.9
Reasi	65.1	40.3	62.9
Samba	63.6	41.1	62.4
Rajouri	62	41.8	60.6
Ramban	61.7	36	59.7
Udhampur	57.3	44.5	56.5
Poonch	56.3	24.9	54.1
Kathua	55.2	28.4	53.6
Srinagar	52.5	38.8	51.7
J&K	**67.3**	**44.1**	**65.9**

Furthermore, it was found that the districts that perform better in eliminating anemia prevalence in non-pregnant women below 65.5 percent in comparison to UT of Jammu and Kashmir are as Reasi, Samba, Rajouri, Ramban, Udhampur, Punch, Kathua and Srinagar.

The lowest anemia among pregnant women in the age group of 15-49 year was (24.9 percent) in Poonch, followed Kathua (28.4 percent), and Shopian (33.5 percent), while the district Kishtwar of Jammu division again is with highest prevalence of anemia among pregnant women with 65.3 percent followed by district Kulgam 63.2 percent and in district Ganderbal anaemic pregnant women constituted 63.0 percent which is almost more than 20 percent higher than UT of Jammu and Kashmir (44.1 percent). All the districts of Jammu division except district Kishtwar, Doda and Udhampur have higher prevalence than that of UT of Jammu and Kashmir while all districts of Kashmir division except Shopian (33.5 percent) and Srinagar district (38.5 percent) have prevalence of anemia among pregnant women lower than over all Jammu and Kashmir prevalence (44.1 percent). (Table 5)

Table :5: Division Wise Anemia among Women in Jammu and Kashmir

Kashmir division	Non-pregnant women age15-49 years	Pregnant women age 15-49 years	All women age 15-49 years
Kashmir Division			
Kulgam	77.5	63.2	77
Ganderbal	77.9	63	77.2
Badgam	75	57	73.9
Baramulla	73.1	56	72.5
Bandipora	74.3	55.3	73.7
Anantnag	75.7	54.1	74.3
Kupwara	75.6	45.7	73.5
Srinagar	52.5	38.8	51.7
Pulwama	74.7	37.7	73.2
Shopian	65.5	33.5	63.9
Jammu Division			
Punch	56.3	24.9	54.1
Kathua	55.2	28.4	53.6
Ramban	61.7	36	59.7
Reasi	65.1	40.3	62.9
Samba	63.6	41.1	62.4
Jammu	68.2	41.7	66.6
Rajouri	62	41.8	60.6
Udhampur	57.3	44.5	56.5
Doda	67.9	47.7	66.5
Kishtwar	86.2	65.3	84.8
Jammu & Kashmir	**67.3**	**44.1**	**65.9**

In Jammu division, district Kishtwar had highest number of anaemic women with 85 percent followed by Jammu district with 67 percent and Doda 66 percent. Further, the number of anaemic pregnant women was highest in Kishtwar district (65 percent), followed by Doda 47 percent and Udhampur 44 percent. The Poonch district had with the lowest anaemic pregnant women of 24.9 percent in pregnant women followed by the district Kathua 28.4 percent and Ramban district with 36 percent. (Table 5)

4. CONCLUSION, RECOMMENDATIONS AND SUGGESTIONS

Anemia is largely preventable and easily treatable if the determinants at the local and national level are identified, appropriate strategies are devised and implemented to combat anemia recognising its multi factorial etiology. The findings of the last three rounds of NFHS data in India indicated that the prevalence of anemia which includes severe, moderate and mild anemia among women of reproductive age has increased from 52 percent to 56 percent in last 15 years, though there was a slight decline in year 2016. The analysis of three rounds of NFHS data indicated that there has been a little or no progress in the reduction of anemia, despite the intensive programmatic efforts in the country. The consistent high prevalence of severe or moderate anemia among women of reproductive age groups over the past two decades is a serious concern which may lead to several complications and consequences. It has been found from various studies that the women's education and socio-economic improvement of women are the most important determinants of anemia control among women of reproductive age group which must be addressed through appropriate structural interventions to improve and ensure universal coverage of anemia control programmes in the country. As it is observed from this study that there is variability in the anemia in-terms of severe and moderate anemia in Jammu and Kashmir and the intensity of severe and moderate anemia among the all categories is very high. In Jammu and Kashmir, the prevalence of severe and moderate anemia was found the highest among the non-pregnant women, and around 40 percent of the non-pregnant women were the victims of moderate anemia. The moderate anemia among the non-pregnant women has increased by more than 27 percent points during last 15 years. In case of the mild anemia among the non-pregnant women it was lowest with only 27 percent of the total pregnant population of Jammu and Kashmir. It is pertinent to mention that the declining rate of mild anemia among the non-pregnant women was higher than the pregnant women which has declined by 12 percent points. As per the estimates of NFHS-5, around half of women population of 15-49 years of age was of non-anemic.

From the analysis of NFHS-5 data, it was found that among all the age groups of the population, one-fourth of women have mild anemia, while as in case of severe or moderate anemia, it was highest in the age group of 15-19 years followed by 20-29 years' age with 41

percent and lowest was found in 30-39 years' age group. The younger age group between 15 -19 is more severe and moderate anemic than the older age group. The incremental increase in the severe and moderate anemia among the lactating mothers has increased alarmingly. From 2006 to 2019 in urban areas severe and moderate has increased by four percent while as mild anemia has declined by 34 percent. Furthermore, it was found that women of Muslim community have more severe anemia than the Hindu and Sikh community women. Also severe anemia among the SCs is more than the STs.

4.1. Recommendations and Suggestions

It was found that severe and moderate anemia rates among adolescent girls, non-pregnant women and also among the rural as well as backward categories of the society have witnessed a drastic increase despite the fact that there are well-established government policies and programmes for the elimination of anemia in India as well as in Jammu and Kashmir but still the optimal results are yet to come. Therefore, it is suggested that these programmes should be followed more aggressively at all the levels and also there is a need for proper monitoring mechanism at all levels so that the performance of these anemia elimination programmes can yield successful results to achieve the desired goals.

Though the distribution of IFA among the women in Jammu and Kashmir has witnessed a good progress, but there is a need to strengthen the timely supply chain so that IFA be made available well in time at all health facilities in the UT. Furthermore, a quality vigil on this programme is recommended by engaging ASHA coordinators and ANMs at block and village level to ensure the intake of IFA by women through proper education to the clients. Also continuous monitoring and supportive supervision to ASHAs may provide impetus to well planted programme to shape it as a good public programme. Further, there is need to facilitate the training programmes for ASHAs regarding screening and distribution of IFA more specifically for severe anemia and moderate anaemic women in their localities. Line listing of all anemic women needs be made at all health facilities with proper follow-up and vigilant monitoring. Besides IFA distribution there is need to make accessibility and availability of nutritional food items at AWCs so that pregnant women from weaker sections of the society can be benefited.

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