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## CHRISTIAN MISSIONARIES AND MODERN EDUCATION IN KASHMIR

Khalid Bashir  
Ab Majeed Mir.

### ABSTRACT

Modern education does not seem to have existed in Srinagar until the advent of Christian missionaries in Kashmir when a changed outlook gradually came into being. Prior to the advent of Christian missionaries it is obvious that the city was very backward in education. Even the Administration Report of 1873 which is the first of its kind in the Jammu and Kashmir State testifies to the educational backwardness of the city population. It were because of the Christian missionaries that the modern education arrived in Kashmir. In spite of the opposition from the common-masses and the Dogra government the missionaries' whole heartedly involved themselves in spreading the modern education in Kashmir. They also tried their best to improve the deplorable conditions of the common-masses. For their upliftment they opened schools and started girls' schools in the city and its adjacent areas.

### INTRODUCTION

It was only after the end of Sikh rule in 1846 and the establishment of the Dogra rule in Kashmir that the Christian missionaries were attracted to Kashmir. Though the Christian Missionary society of London started its activities in Srinagar in the sixties of the last century, it had to face serious opposition from the state authorities. As first the missionaries thought it prudent to administer medical relief to the people of Srinagar during periods of epidemics. The useful services rendered by the medical missionaries made them popular among Kashmiri's and this encouraged them to illiteracy. These were not a single school in Srinagar, where the right type of education could be imparted. Maharaja Ranbir Singh's school established in 1874 was The only school but here the media of instruction were Sanskrit and Persian. It cannot be denied that the Dogra Government's attitude towards education of their subjects was indifferent.

The proposals of the Christian missionary to found schools in Kashmir were approved by the C.M.S. in London. The founder of the modern schools in Srinagar was Rev. J.H.Knowles. It was in 1880 that Knowles laid the foundation of the C.M.S. School on the hospital premises in Srinagar. In its infancy the C.M.S school had to face a number of problems. The

most pressing problem was that of school building. It was owing to this difficulty that Clark's first school was abandoned in 1864. But the missionaries did not lose heart and tried its best to spread the modern education in Kashmir in which they succeed by establishing number of schools in the valley of Kashmir.

### DISCUSSION

After the Dogras became the masters of the valley of Kashmir, missionaries were attracted to it. Kashmir's pleasant climate, its beautiful people and its location promised it to become a great Christian center amid China, Tibet, Yaqand, Samrkand, and Bukhara. Missionaries held the prejudice that the people of Kashmir would be converted easily, as they had first converted from Hinduism to Buddhism and vice versa and finally to Islam in the 14th century. These missionaries knew about the deplorable conditions of the people of Kashmir, their mass illiteracy, ignorance, poverty, disease, and how they were oppressed and tortured, their main aim and objective was to spread the message of Christ. Though Maharaja Gulab Singh had good relations with the British, he did not allow the Europeans to stay in Kashmir during the winters.

1. June, 1684. The first European to visit Kashmir was Bernier, a French physician. He came along with King Aurangzeb, in 1665. Bernier stayed in the valley for some time and left his account to posterity. Many European followed, and recorded their observations and impressions. These writings certainly are of great historical importance. In 1715, Ippolito Desideri and Mannel Freyre sojourned the valley, only to be shocked by its deplorable conditions and they soon left for Tibet. Next came the Hungarian Cosma Sandor in 1822, a brief stay and he left for Ladakh. The Kashmir mission was born in 1849 in Srinagar, yet, it had its real go with the arrival in 1864 of col. Martin and Robert Clark. The latter wrote. "The valley is remarkably fit by its geographical position by its pleasant climate and by its beauty and fertility to become a useful Christian missionary centre for the vast countries of Tibet, China Yaqand, Afghanistan, and Turkistan." The missionaries knew that Buddhism had spread into central Asia and China and Tibet through Kashmir. They wanted Christianity to progress on the same lines.

2.2 Robert Clark, started in the year 1864 with a permanent mission established in Srinagar. It was opposed by the people of the city. His effigy was set ablaze. And then Dr. Elmslie arrived in the year 1865 as regards and medical side, the official of state did not like missionaries and arranged demonstration against them. The Governor informed the Resident that the majority of the people in the valley were ignorant and fanatic Muslims, the presence of Christian missionaries would create trouble, and that people would revolt. He wanted the Resident to dissuade the missionaries from entering Kashmir. The state govt. maintained a cold shoulder attitude towards the missionaries. The British directed the State to take every possible step for the safety of the missionaries. Clark preached on the road side and toured the valley. The Maharaja again wrote to the British that the missionaries were not safe in Kashmir, as it was primarily populated by Muslims, who being ignorant, might insult them. But the British turned a deaf ear to it.

3.3 Subsequently, the Maharaja accredited a top officer of the state, Diwany

Jawala Sahi, to apprise the governor General of the situation and request him not allow the missionaries to enter Kashmir. The Maharaja appointed intelligence people to keep track of the missionaries to enter Kashmir. The attitude of the state government towards the missionaries was not good and friendly, and was based on hate and suspicion. On the other hand, the missionaries were eager to help the down-trodden people of Kashmir. It should be remembered that the missionaries first made their appearance in 1854, when Colonel Martin, a retired army officer of Peshawar, Rev, Robert Clark of the Punjab missionaries and two Christians entered Srinagar. This preliminary exploration was followed by 18 years later in the summer of 1862. It was in 1864 that a permanent mission was established in Srinagar. But the establishment of a permanent mission in Kashmir was not a bed of roses for Christian missionaries.

4.4. Some British officer, including Robert Montgomery, Governor of Punjab, sent a medical mission, in 1864, under Dr. Elmslie and thus the first mission hospital was built by him in Srinagar. The missionaries established other hospitals, schools and orphanages. Some of them fought for the rights of the Kashmiri people, and against injustice and even sacrificed their lives for the welfare of the people of the valley. Robert Throp was the first freedom fighter of the valley; he offered his life in sacrifice to this cause. On seeing the deplorable and pathetic condition of the people of Kashmir, he felt shocked and began of appeal to the British, but the state government directed him to leave Kashmir. He refused and died a mysterious death, of poison. He lies buried in the Srinagar cemetery.

5.5 Clark opened a school at Srinagar, in spite of stiff opposition from the people and the government. The parents who dared to send their children to this school were threatened, both by the people and the government. The school had to face many other difficulties and finally Clark left Srinagar. However, there were good relations between the people and the missionaries. But missionary schools were not allowed to rent houses. Thus, the school

was started in C.M.S Hospital, Drugjan, with only four or five students on the rolls. Mr. Knowles was the principal of the school in 1880. Drugjan was situated on the outskirts of Srinagar, and students complained of inconvenience. In 1883, a building was hired at Sheikh Bagh for the school. The people got furious at the mission occupying this large building in the heart of the city. It was in 1890 that the government permitted the school to hire a building near Fateh Kadal. The number students meanwhile rose from 200 to 300. Knowles worked very hard and established the school. In accomplishing this task he was assisted by Burges and some Kashmiri teachers. Miss Helan Burges was the first European lady to establish a kindergarten here. Knowles was a good writer and 'Folk Tales of Kashmir and Kashmir Proverbs' is his living legacy.

6.6 The missionaries then paid more attention to education. The Dogra kings were not interested them.

7.7 Till 1880 not a single school was functional in Srinagar. The Patshalas and Maktabas run by Maulwis and Pandiths. The opening of the C.M.S. school was a red-letter day in the history of Kashmir. It ushered in a new era by imparting scientific education on modern lines. P.N.Bazaz, in his book. 'Daughters of Vitasta'

8.8 rightly remarks that the importance of the opening of the C.M.S school in the valley was next to the introduction of Buddhism by Ashoka in the 3<sup>rd</sup> century B.C. and the acceptance of Islam by Renchan Shah in the 14<sup>th</sup> century. It was the year 1880 that the Rev. Hilton Knowles started educated Kashmir's, on the western pattern. He laid the foundation of Church Mission School in Kashmir. In the beginning, Knowles' school was shifted from place to place, it was finally established near the third bridge and came to be known as Knowles Sahib's School and later as Biscoe Sahib's School.

9.9 Knowles was a man of indomitable courage and scientific planning. He introduced the teaching of English against stiff opposition. He took personal interest in the children being taught in English. This continues to be a noteworthy feature of the Mission school. He introduced cricket; he had the

horizontal parallel bars installed in the school compound; he taught gymnastics. The pupils were generally apathetic to all this. They played cricket and other games clad in long Pherans; the spirit of the games was lacking. But the Rev. Knowles paddled his canoe successfully. He soon started another school at Islamabad, 55 Km's from Srinagar. He served in the C.M.S schools for 10 years (1880-1890) then, he handed the reins to the Rev. Biscoe. Biscoe writes, "The Rev. H. Knowles was born in 1854. He commenced the C.M.S school in 1880, with twelve pundits handed over to him by the Rev. Dixey, at the Mission Hospital, followed by a small collection of mud huts at Drugjan one of which was used as a classroom in 1881 the school was moved to Amira Kadal and in 1889 to a merchant's house at Fateh Kadal. He translated the Bible into Kashmiri and was given the B.D. degree by the Archbishop of Canterbury."

10. 10 Lord Roberst, then commander-in-Chief of India visited the school in 1889. He wrote, "We offer our congratulations to Mr. Knowles and hope that he will in time be able to extend his work throughout Kashmiri."

11. 11 Of all the missionaries which Church Missionary Society sent to India. I think the Rev. Cannon C.E. Tyndale Biscoe was the most outstanding personality. He arrived in Kashmir in 1890 when the country was more or less in shambles. There were schools for teaching Persian, Arabic and Sanskrit and games were out of the question. The first school of the C.M.S was found on the left bank of the Jehlum at Fateh Kadal, amongst the poorest localities of the town, by the Rev. J.H Knowles. It was the central school to which feeder schools were founded at Ranawari, Nawakadal, Habba Kadal and Amira Kadala and a high school at Anantnag. The boys would come to these schools wearing long loose garments called Pherans and wearing wooden cogs. Uniforms were unknown to them. They had dirty feet, dirty hands and dirty bodies. Their clothes were also filthy.

12. 12 When Mr. Biscoe first visited the school, the impression of the boys was not favourable to him. He introduced the game of football. Boys did not like to touch the unholy leather and to pick up the ball with the foot strapped in to wooden clog

was impossible. The clog was also expelled up in the air when the ball was kicked. There was great opposition. But over due course of time persistence smoothened the way and boys became expert players and played regular matches with European officials. Other schools copied the Mission school and inter school tournaments started off. Other games were introduced also, like Cricket, Boating water Polo, Swimming. The boys did not like Boating, because it was mean job and that it would degrade their family name, because boatman was looked down upon. It took him sometime to get boy stop paddle boat. Swimming was made compulsory .Any boy who could not swim after he was 12 years of age had to pay an extra fee. His strong will and perseverance won the very day the boys became Swimmers and efficient paddlers and rowers.

13. 13 People in those times, dreaded the Wular lake. They thought that spirits and alligators haunted the waters. This dread was dispelled when Mr. Biscoe along with three other masters went in for a swim. Two masters gave in owing to the fear of spirits. The third master, Mr. Darim Chand, under the lead of his chief swam the lake (seven miles). After crossing the lake, Mr. Biscoe cycled 34 miles to Srinagar and sent a note to all school, reading: "Darim Chand swam across the lake. Let all boys know this"

14. 14 The world famous regattas were performed in the Gagribal Lake. The Empire day Regatta (May 24), was organized wherein school boats represented British Empire countries and the '12 oared cutter' a British Man of war. All crews were in rainbow colours. The '12 oared cutter' stood in the enter, and the school boats round it. When the band played 'God Save the King' the crew along with the paddles and oars stood up like an effulgence of lighting. This training was to make boys cool in times of danger and hence they were able to save several hundred people from drowning. In his school, in the middle of working hours, his boys would go for a physical drill for five minutes and then various squads would ground perform feats of clubbing, jumping and horizontal bars and so on and would re-

assemble and observe a minutes silence for peace of the world.

15. 15 Mr. Biscoe was the coxswain of the Cambridge boat which defeated Oxford in 1884. He coaxed the Jesus College boat, ahead of the river for three years and won the Diamond Sculls at Henley in 1886. To expand the vision of the boys he named the rooms of his school after the continents of the British Empire and furnished rooms with picture of each country so that they would visualize it, and in moving from one class to another they would learn about the world. Indian is now beginning to adopt this kind of visual education.

16. 16 He infused love for nature in to the teacher and the students. Excursions were arranged to study the country and the flora and fauna of the place visited. Teachers were sent on educational tours to Burma, Ceylon, Bombay and other places in order to impart first-hand knowledge to the boys. Magic lantern lectures and film shows were arranged for the boys. Once a week, specifically on Thursdays, a meeting of the teachers was held. The principal passed on the world news to the teachers who were to reach the boys. At the end of the term, the boys were examined in general knowledge (not only history and geography), world news, map of Srinagar, birds, flowers and things of general interest. Generally on Saturday, he delivered sermons in the school, teaching the boys to become good Samaritans. The aim of his system of education was to live for others. He taught the boys to love animals. Every year hundreds of mudas of paddy were often either lame or sore-backed. Mr. Biscoe turned a part of the compound of the Central High School and Sheikh Bagh School into stables to which boys brought lames, sore-backed donkeys and horses and fed them. When their masters came they were made to pay the cost of feeding but were offered medicines, free of cost. This led the state to create officers for preventing cruelty to animals. A fire pump was kept in the schools. Whenever a fire broke out in the vicinity of the school, the boys would rush with fire pump to extinguish the fire.



17. 17 Canon Biscoe came here at the time when Kashmir's were steeped in ignorance and apathy which is generally attributes of a backward community. A callously unsympathetic system of administration lasting for centuries on end had reduced them to barbaric conditions of living which stultified their imagination and brought about their intellectual stagnation. Amidst this darkness, Canon Biscoe set out to kindle a spark of enlightenment and liberal knowledge, and immediately came up against prejudice, Superstition and social taboos. He was misunderstood by man and these reactions at that time were natural. But he did not feel discouraged by these initial setbacks. His was an inspiring way of winning the people whom he had come to serve from across the four seas. With sympathy, love and understanding he associated himself with them and shared in their joys and sorrows and thus overcame one prejudice after another, till in the end he succeeded in creating for himself a place in their hearts.

18. 18 Canon Biscoe patiently and persistently tried to in still in our youth the spirit of self-help, esprit de corps and social service. The institution with which he was connected were places where young Kashmiri's not only were taught high and noble ideals, but were imbued with enthusiasm to strive for them. On 17 June 1947, Lord Mountbatten, the British Viceroy of India, published a plan for the partition of this country. The Indian Independence Act embodied the British would leave Indian on 15 august 1947 wherefrom she was to be sovereign State. A part of her territories having Muslim majority was to be constituted in to Pakistan to be recognized as another sovereign State. On 15 august 1947 the English did leave India. The British Resident, Col. W.F Webb, closed the residency in Srinagar (this was housed where now Kashmir Govt. Arts Emporium is). That ended the protection of British subjects in Kashmir. Transport was quickly arranged for the British living Kashmir. Biscoe had no wish to leave Kashmir. He had a long association with the people of the valley, he was sure he could be some help to his old students now honest men fight the Devil in Kashmir. But, it

was thought, in certain quarters, that Biscoe's presence might cause difficulties for the new principal Dr. Phil Edmonds, Ph.D. Biscoe much against his wishes left Srinagar, on 9 Oct. 1947. Then all was quiet and peaceful in the Valley. He left after 57 years of service. He left in grand style. 30 of his school staff pulled his car from Sheikh Bagh

to Amira Kadal Bus Stand ahead played the school band. The route was lined for quarter mile by senior as well as the junior students of the school. Crossing the Jhelum at Kohala, 133 miles down, Biscoe was in Pakistan. He met his son-in law Lt. Col. Dick, in Rawalpindi. Dick had brought a military truck, with Gurkha guard, 200 miles from Lahore to take Biscoe's luggage to Delhi. Dick also arranged for Biscoe's flight to Delhi in a military Dakota. Here tens of thousands of refugees were fleeing by road and rail to possible safety. Over 1,000 refugees were butchered in one train alone. It was ghastly sight all around. In Delhi General Smith and his wife gave Biscoe shelter and all kindness .For a few previous days General had to guard, day and night, his Muslim servants and all their families crowded into his house. From Delhi, Biscoe traveled by train to Bombay; here he was kindly treated by Mr. Butcher at CMS House. Biscoe next left for Rhodesia, here his brother Ted lived with his nephew Ronald and his wife Margaret. "What is going to happen to our hospital and school and to the beautiful land of Kashmir?" was his constant itch. He was of heard say: "If God be on my side, whom then should I fear?: Real worship is service to mankind; Love thy neighbour as thyself, A Jellyfish always swims against the current; The palm is to pat and the fist to fight."

19. 19 To the missionaries, the education of girls was very important as they were the mothers of future generations. Accordingly, the missionaries started a girl's school at Fateh Kadal, in 1895. The people of Srinagar, fearing that the character of the girls would be spoiled, revolted. The principal of the school invited some of the European ladies to Srinagar city for the first prize day of the school. The hope was that this would provide encouragement for the girls and their parents. As one British lady entered the school,

someone in the street shouted that the English had come to kidnap the girls. Maddened by the warning, people rushed to the school and commanded the girls to jump out the windows. Before the visitors could enter the school, all the people present had left. The school faced various other difficulties and for some time it had to shut down. The missionary ladies who promoted female education in Kashmir were a few. Miss Fitz started a girl's school in 1912. In the beginning, she had to face stiff opposition from the people of Srinagar. In 1916 the number of girl students increased in the school, and in 1918 it was raised to the middle standard, in 1922 Miss Mallinson played an important role in the educational and cultural development of Kashmiri women. She introduced swimming, dancing and mountaineering in the school. In 1938 she led 40 girl students to the Mahadev, 13000 ft. above sea level. Besides teaching English, Urdu, Persian and natural science she introduced Hindi in 1944. In 1947 science subjects were introduced in the school. Attention was also paid to wicker work and other handicrafts. When Mallinson came to Kashmir, there was not a single trained lady teacher present. Education of girls among Muslims was taboo. Mallinson's dedication to the cause of female education attracted girls to the school and exposed them to modern education. Miss Mallinson was a pioneer of female education in the state. She served the Kashmir mission school for 40 years (1922-1962). She gave full affection to Kashmiri's they were equally warm. Among her students were many girls who later attained great heights. Some became social workers, some doctors and some educationists, contributing to the advancement of female education. But female education was not the only aim in her life. Her struggle was against atrocities that Kashmiri females were subjected to. She waged a war against child marriage and fought for the dignity of women. Kashmiri women were kept in utter seclusion; they would not be allowed to move out of their homes. Miss Mallinson was the first lady who organized girl's camps and took the girls out. She, as the Girl Guide Commissioner, organized the girl guides in the state. She had great qualities; she

was humble, vigorous, energetic and full of zeal. While offering profound love to the girls she enforced a strict discipline among them. She always bicycled her way from her home at Sheikh Bagh to the school at Fateh Kadal. When she joined the C.M.S school, it was very small. It steadily grew up under her care. She was admired and loved by everybody in Srinagar. High officials and businessmen would halt their cars on the way, get down, and greet her. Miss Mallinson taught girls to pray for the health, happiness and prosperity of one and all. She imparted moral and spiritual education to them. She offered them dedication, hope and love. Poverty and misery ruled the roost amongst the Kashmiri girls, superstitions would not permit them to develop and progress. Miss Mallinson proved to be a lady with the lamp. Truly, the missionaries have revolutionised the Kashmiri way of life. They lit lights in thousands of households. Miss Mallinson paid full attention to female education. Miss Mallinson dedicated her life to our children; she expounded the relationship between Man and his Maker. She generated respect for mothers and daughters, infused self-respect and confidence into them. She truly educated the downtrodden sex, for over 40 years. She bravely fought and defeated illiteracy, ignorance, superstition and other associated ills. Miss Mallinson used to pay visits to the homes of each girl's student. She would help them solve their problems. She always helped the poor and the sick. She ingrained a new zeal into the teachers who were not well qualified. She shared their personal problems and helped them to solve them. She welded them into one whole dedicated team. She truly carried the torch of knowledge to the females of Kashmir. Her temperament facilitated her moving freely into Kashmiri homes; everywhere she shared her joys and sorrows. She knew that time was running very fast and she was anxious that her students should be ready to meet the challenge of a rapidly changing social order, without getting entangled in mental conflicts.

20. There was once a rumor about the school that Miss Mallinson intended to bequeath her skeletal remains to the school laboratory. All her

students wept and protested that they would never allow their beloved Mallinson's bones to be displayed publicly. Miss Mallinson, deeply touched by the sentiments of her students, implored, 'My dear girls, May you learn from me even when I am no more. My bones teach you physiology'. Miss Mallinson died in the month of June 1984.

## CONCLUSION

We have seen that the spread of modern education in Srinagar was obviously beset with innumerable difficulties. But the successes of the private and the government schools, established in Srinagar after 1880, makes it clear that the demand for education was increasing. The missionaries gave their best to spread the modern education in the valley of Kashmir and in this mission they came out victorious. Schools were opened to educate the students and with the passage of time separate schools for girls were started with female teachers. As first the missionaries thought it prudent to administer medical relief to the people of Srinagar during periods of epidemics. The useful services rendered by the medical missionaries made them popular among Kashmiris and this encouraged them to literacy. The proposals of the Christian missionary to found schools in Kashmir were approved by the Christian Missionary Society in London. The founder of the modern schools in Srinagar was Rev. J.H. Knowles. It was in 1880 that Knowles laid the foundation of the C.M.S. School on the hospital premises in Srinagar. The opening of the mission school in Srinagar heralded the dawn of a new era in the annals of modern Srinagar. There was a time change, so that when Rev. Tyndale Biscoe joined the school in 1881, there were 250 pupils on the school's roll. Mr. Biscoe had to strive very hard to make his mission to success. In the beginning he found himself beset with numerous difficulties in imparting a new type of education to the Brahman boys. Biscoe's was a Herculean task but he ultimately succeeded to some extent in dispelling ignorance of the Kashmiris.

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## HARMFUL EFFECT OF PESTICIDES ON SOME SELECTIVE BLOOD BIO-CHEMICAL PARAMETERS OF NOTOPTERUS NOTOPTERUS (PALLAS, 1769) EXPOSED TO MIXTURE OF 0.1 PPM CONCENTRATION OF MALATHION, PARATHION AND ENDRIN

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### ABSTRACT

During the present experiment, *Notopterus notopterus* were exposed to lethal concentration (0.1 ppm) of malathion and parathion and Endrin for a period of 60 min in triplicates. The results on the biochemical parameters aspect of the experiment (5 replicas) revealed significant ( $P < 0.05$ ) increase in serum Bilirubin (mg/dL) (0.2 to 0.52), Creatinin (0.2 to 54)  $\text{Na}^+$  and  $\text{K}^+$  values as (mEq/L) slightly change and decrease in plasma protein (g/dL), Albumin, Globulin, Glucose (mg/dL), as well as lipid profile Cholesterol (g/dL), TG, reduced respectively.

### INTRODUCTION

Pesticides drained to the aquatic environments primarily of agriculture origin and may also stem from effluents from manufacturing plants. Since there is great concern about toxic hazards in the aquatic ecosystem due to pesticides, either from surface runoff from paddy fields or through direct application into ponds for the control of parasites, it is necessary to study the cellular changes in fish tissue associated with toxicity. The effect of organochlorine pesticides on fishes has been experimentally recorded by several workers [1, 2]. The toxicity of benzene hexachloride has been studied by [3] in *Cirrhinamrigala* and *Colisafacitadistribution* of benzene hexachloride on different tissues *Limandalimanda* was studied by [Klick and Steinhart](#) [4]. Indiscriminate discharge of these pesticides from agriculture runoff and in aquaculture operation may be washed into nearby water bodies and affects non-target organism such as fish and prawn which are of economics importance to humans. Recently the various pesticides, herbicides, weedicides, insecticides, organophosphate pesticide used in the agriculture field for prevention of the insect pest. Unfortunately, application of these

synthetic derivatives of pyrethrins is highly toxic to a number of non-targets organisms such as bees, freshwater fish and other aquatic organism even at very low concentration [6-7].

Among the aquatic animals fish are highly sensitive to the pyrethroids pesticides due to their neurotoxic effects and the pesticides are lethal to fish at minimum concentration (10-1000 lower) than the corresponding values for other groups of mammals and birds. The use of biochemical and haematological technique in fish culture is growing in importance for toxicological research, environmental monitoring and fish health conditions. Many works has been conducted on haematological changes of pesticides in the fish such as [Das and Mukherjee](#) [8], [Adebayo, et al.](#) [9], [Patnaik and Patra](#) [10], [Sampath, et al.](#) [11] noted that there is a possibility that studies on fish blood might reveal conditions within the body of the fish long before there is any outward manifestation of disease or disorder.

The environment is continuously loaded with foreign organic chemicals released by urban communities and industries. In the



20th century, many thousands of organic trace pollutants, such as polychlorinated biphenyls (PCBs), organochlorine pesticides (OCPs), polycyclic aromatic hydrocarbons (PAHs), polychlorinated dibenzofurans (PCDFs) and dibenzop- dioxins (PCDDs) have been produced and, in part, released into the environment[12]. Since the early sixties mankind has become aware of the potential long-term adverse effects of these chemicals in general and their potential risks for aquatic and terrestrial ecosystems in particular. The ultimate sink for many of these contaminants is the aquatic environment, either due to direct discharges or to hydrologic and atmospheric processes [13]. Today, water quality management faces greater problems than at any time in its history. In addition to natural pollutants, varied contaminants exist in surface waters including multiple chemical compounds and different products of industrial and agricultural revolution. The insecticides constitute one group of these pollutants, both synthetic and natural, which contribute to the environmental problems. At present, it seems that the problem is more conspicuous in developing countries, where lately there has been an increase in the use of insecticides as a means of increasing agricultural productivity, without much concern to the consequences of indiscriminate application.

There are many pathways by which insecticides leave their sites of application and distribute throughout the environment and enter the aquatic ecosystem. The major route of insecticides to water ecosystems in urban areas is through rainfall runoff and atmospheric deposition [14,15]. The uses of pesticides have negative impact on biotic factor including fisheries resources, threatened and endangered species, and their habitats. Pesticides include products, such as insect repellants, weed killers, disinfectants and swimming pool chemicals, which are designed to prevent, destroy, repel or reduce pests such as insects, mice and other animals, weeds, fungi, bacteria and viruses. Pesticides are used in nearly every home, business, farm, school, hospital

and park and are found almost everywhere in our environment. In recent studies of major rivers and streams, one or more pesticides were detected more than 90% of the time in water, in more than 80% of fish sampled, and in 33% of major aquifers [16].

## MATERIALS AND METHODS:

Original healthy *Notopterusnotopterus*(Pallas) fishes weighing 150 to 170gm with a mean body length of 24 to 26 cm, were collected from the fish hatchery in Bhopal, M.P. Fish were brought to the laboratory and acclimatized for two weeks prior to experimentation. The fishes were fed with balanced diet/pelleted feed with 35% crude protein diet at 2% biomass. It is manufactured by Bharat Insecticides Limited/Agro Chemical Industries India. Malathion is one of the organophosphorus insecticides bearing a chemical name O,O-dimethyl dithiophosphate of diethyl merceptosuccinate. Malathion is a pesticide that is widely used in agriculture, residential, landscaping and mosquito control and also health pest control etc. This insecticide has come to forefront in the market. This is known to attack the animals by inhibiting acetylcholinesterase enzyme activity. The lethal concentration (0.1ppm) of the pesticide was prepared by dissolving 1ml of original concentration of pesticide individually in 10 liter of chlorine free water. 30 L of the diluent water was used as control. The fishes (n = 30) were kept in each aquarium in triplicates for each treatment. The stock solution of 0.1 ppm of the solution was introduced separately in each tank. The fishes were observed for 0-60 minutes for any mortality during the exposure time. The blood samples from the challenged fishes were taken after every 1 hour, 2 hours and 3 hours. Blood samples were collected from the caudal tail vessels with 21 or 23 gauge needles and 1 or 3 cc syringes before ventilator response was noticeably depressed.

## Biochemical analysis

Blood was collected as described for haematological analysis as firstly blood of healthy (non-toxicated) fish *Notopterusnotopterus* were collected directly in dry and sterilized centrifuge by cutting the caudal peduncle of living fish with a sharp sterilized dry knife. Before

cutting the caudal peduncle the fish was blotted with blotting paper to avoid the haemolysis. The blood was allowed to clot for 10 minutes and centrifuged at 3000rpm for 20 min. the serum was carefully taken out with the help of pipette and stored at 4°C all the test were performed within 72 hours.

**Plasma Protein Determination:** The total serum protein was determined by Gornall's biuret method. The solution [Gornall reagent: 1.5 g CuSO<sub>4</sub>.5H<sub>2</sub>O (Copper sulphate pentahydrate); 6.0 g KNaC<sub>4</sub>H<sub>4</sub>O<sub>6</sub> (Potassium sodium tartarate); 500 ml of distilled water; 300 ml of 10% NaOH (prepared by diluting 65-70% carbonate-free stock solution)] Plasma protein was determined as per the method described by Keller (1991)<sup>[17]</sup> by using MERCK auto analyser kit with the help of microlab 200, MERCK Ltd, Worli, Mumbai and the values were expressed as g/dL.

**Serum Albumin:** The albumin concentration was determined by the commercially available kit of Pointe Scientific from Ranbaxy Diagnostics. The spectrophotometer was set to blank at 630 nm. The absorbance of all the tubes were recorded.

Calculation

$$\text{of} \frac{\text{Absorbance of unknown}}{\text{Absorbance of standard}} \times \text{conc.}$$

$$\text{Standard} = \text{Albumin (gm/dL)}$$

**Serum Globulin:** Globulin concentration in serum was indirectly determined by subtracting the albumin concentration from the total protein concentration and the results expressed as gm/dL. **Serum**

**Glucose:** Glucose in serum was determined by using MERCK autoanalyzer kit as described by Mayne (1994)<sup>[19]</sup> with the help of microlab 200 at 546 nm and the value was expressed as mg/dL. **Creatinine:** For the estimation of creatinine, using a photocalorimeter using a green filter (520-540 nm), setting the zero optical density (OD) with the help of blank solution, and

the content calculated by the following formula: (NCCLS, 1992)<sup>[20]</sup>.

$$x = \text{creatinine mg} \quad \frac{\text{OD test}}{\text{OD standard}} \times 0.01 \text{ mg}$$

**Serum Bilirubin:** Bilirubin concentration was determined by using Malloy and Evelyn method. Calculation Concentration of bilirubin (mg/dL) =  $A_{TT} \times F \times 2$  F = calibration factor 2 = dilution

**Serum Sodium:**

Calculation

$$\text{Standard} = \frac{\text{Abs. of unknown}}{\text{Abs. of Standard}} \times \text{Conc. of}$$

**Serum Potassium:**

0.2 ml of serum was taken in 10 ml centrifugation tube. 0.5 ml of silver iodate reagent was mixed. Then 3.3 ml of tungstic-phosphoric acid was mixed. The solution was centrifuged for 5 minutes at 2000 rpm. 1.0 ml of supernatant was transferred into a 25 ml conical flask. Then 1 ml of 2% potassium iodide solution was added and titrated against 0.005 N sodium thiosulphate, till the rainbow

colour of the iodine nearly disappeared.

Calculation

Chloride concentration in serum (mmol/L) =  $T_t/T_s \times 100$  where,  $T_t$  = Titration value of (specimen) sample  $T_s$  = Titration value of standard 100 = Concentration of standard (mmol/L)

Calculation

$$\frac{\text{Abs. of unknown}}{\text{Abs. of Standard}} \times \text{Conc. Of Standard} = \text{Magnesium mEq/L}$$

**Serum Cholesterol determine as per given formula**

Calculation:

$A_t/A_s \times 0.4 \times 20 = \text{mg P/dL serum}$   $A_t$  = absorbance for the test solution  $A_s$  = concentration of the standard (mg /dL)

20 = dilution of the serum. **Serum Cholesterol:** The optical densities of the standard, control and test were determined by using spectrophotometer, setting zero

optical density with the blank at 590 nm wavelengths.

Calculations 
$$\frac{\text{OD test}}{\text{OD standard}} \times 200 = \text{cholesterol in mg/dL}$$

## Determination of triglyceride(mg/dL)and Determination of HDL (mg/dL):

To obtain the HDL fraction, the LDL and VLDL lipoprotein were precipitated with Baker's precipitation reagents containing 50-kDa dextran sulphate and magnesium chloride. 0.25mL of plasma was mixed with 20L of precipitation reagents in a 1.5 mL Eppendorf tube. HDL-C measurements were calibrated with standards from Diagnostic Medical Associates, Inc., Arlington, and TX76011

## RESULTS:

For investigation into the effect of pesticides on the biochemical indices there are ten (10). The plasma proteins expressed in g/dL was  $3.8 \pm 0.024$ . After 20 minutes of exposure, the plasma proteins ranged from 2.72-2.98 with a mean $\pm$ SD value of  $2.85 \pm 0.06$  g/dL. The plasma proteins showed a decrease after the time of exposure was increased to 40 minutes, ranging from 2.34-2.56 with a mean $\pm$ SD of  $2.45 \pm 0.02$  g/dL. The plasma proteins further showed a decrease after 60 min. of exposure, ranging from 1.75-2.25 with a mean $\pm$ SD of  $2.0 \pm 0.05$  g/dL. The mean $\pm$ SD value of total albumin expressed in g/dL was  $1.3 \pm 0.012$ . After 20 minutes of exposure, the total albumin ranged from 1.0-1.2 with a mean $\pm$ SD value of  $1.1 \pm 0.01$  g/dL. The total albumin showed a decrease after the time of exposure was increased to 40 minutes, ranging from 0.75-0.85 with a mean $\pm$ SD of  $0.8 \pm 0.01$  g/dL. The lowest albumin was recorded after 60 min. of exposure, ranging from 0.44-0.56 with a mean $\pm$ SD of  $0.5 \pm 0.02$  g/dL.

The mean $\pm$ SD value of total globulin expressed in g/dL was  $1.7 \pm 0.013$ . After 20 minutes of exposure, the total globulin ranged from 1.34-1.46 with a mean $\pm$ SD value of  $1.4 \pm 0.01$  g/dL. The total globulin showed a decrease after the time of exposure was increased to 40 minutes, ranging from 1.14-1.26 with a mean $\pm$ SD of  $1.2 \pm 0.01$  g/dL. The lowest

globulin was recorded after 60 min. of exposure, ranging from 0.71-0.89 with a mean $\pm$ SD of  $0.8 \pm 0.05$  g/dL. The mean $\pm$ SD value of total creatinine expressed in g/dL was  $0.2 \pm 0.012$ . After 20 minutes of exposure, the total creatinine ranged from 0.32-0.38 with a mean $\pm$ SD value of  $0.35 \pm 0.02$  g/dL. The total creatinine showed an increase after the time of exposure was increased to 40 minutes, ranging from 0.41-0.49 with a mean $\pm$ SD of  $0.45 \pm 0.02$  g/dL. The highest creatinine was recorded after 60 min. of exposure, ranging from 0.43-0.61 with a mean $\pm$ SD of  $0.52 \pm 0.01$  g/dL. The mean $\pm$ SD value of total glucose expressed in mg/dL was  $108.0 \pm 3.20$ . After 20 minutes of exposure, the total glucose ranged from 72-78 with a mean $\pm$ SD value of  $75.0 \pm 3.5$  mg/dL. The total glucose showed a decrease after the time of exposure was increased to 40 minutes, ranging from 57-67 with a mean $\pm$ SD of  $62 \pm 6.2$  mg/dL. The lowest glucose was recorded after 60 min. of exposure, ranging from 49-53 with a mean $\pm$ SD of  $51 \pm 1.35$  mg/dL. The mean $\pm$ SD value of total bilirubin expressed in g/dL was  $0.2 \pm 0.001$ . After 20 minutes of exposure, the total bilirubin ranged from 0.28-0.38 with a mean $\pm$ SD value of  $0.33 \pm 0.02$  g/dL. The total bilirubin showed an increase after the time of exposure was increased to 40 minutes, ranging from 0.42-0.48 with a mean $\pm$ SD of  $0.45 \pm 0.02$  g/dL. The highest bilirubin was recorded after 60 min. of exposure, ranging from 0.43-0.61 with a mean $\pm$ SD of  $0.52 \pm 0.01$  g/dL.

The mean $\pm$ SD value of total sodium expressed in mEq/L was  $72.0 \pm 2.35$ . After 20 minutes of exposure, the total sodium ranged from 60.0-68.0 with a mean $\pm$ SD value of  $64 \pm 3.62$  mEq/L. The total sodium showed a decrease after the time of exposure was increased to 40 minutes, ranging from 48.0-56.0 with a mean $\pm$ SD of  $52 \pm 3.65$  mEq/L. The lowest sodium was recorded after 60 min. of exposure, ranging from 39-47 with a mean $\pm$ SD of  $43 \pm 2.11$  mEq/L. The mean $\pm$ SD value of total potassium expressed in mEq/L was  $39.0 \pm 1.33$ . After 20 minutes of exposure, the total potassium ranged from 27.0-35.0 with a mean $\pm$ SD value of  $31 \pm 2.54$  mEq/L. The total potassium showed an increase after the time of exposure was increased to 40 minutes, ranging from 26.0-30.0 with a mean $\pm$ SD of  $28 \pm 2.58$  mEq/L. The highest potassium was recorded after 60 min. of exposure, ranging from 21-27 with a mean $\pm$ SD of  $24 \pm 2.15$  mEq/L. The mean $\pm$ SD value of total cholesterol expressed in mg/dL was  $164.0 \pm 3.30$ . After 20 minutes of exposure, the total cholesterol ranged from 138-142 with a mean $\pm$ SD value of  $140.0 \pm 4.25$

mg/dL. The total cholesterol showed a decrease after the time of exposure was increased to 40 minutes, ranging from 122-128 with a mean $\pm$ SD of 125 $\pm$ 8.22 mg/dL. The lowest cholesterol was recorded after 60 min. of exposure, ranging from 104-116 with a mean $\pm$ SD of 110 $\pm$ 3.52 mg/dL.

The mean $\pm$ SD value of total triglyceride expressed in mg/dL was 132.2 $\pm$ 2.21. After 20 minutes

of exposure, the total triglyceride ranged from 94.1-96.3 with a mean $\pm$ SD value of 95.2 $\pm$ 2.21 mg/dL. The total triglyceride showed a decrease after the time of exposure was increased to 40 minutes, ranging from 87.8-89.6 with a mean $\pm$ SD of 88.7 $\pm$ 2.2 mg/dL. The lowest triglyceride was recorded after 60 min. of exposure, ranging from 75.2-77.4 with a mean $\pm$ SD of 76.3 $\pm$ 2.1 mg/dL. (Table 1)

**Table 1: Mean biochemical parameters of *N. notopterus* (Pallas) exposed to mixture of 0.1 ppm Malathion, Parathion and Endrin**

Parameter	Control	20 min.			40 min.			60 min'≠'		
		Min.	Max	Mean $\pm$ SE	Min.	Max	Mean $\pm$ SE	Min.	Max	Mean $\pm$ SE
Plasma protein (g/dL)	3.8 $\pm$ 0.024	2.72	2.98	2.85 $\pm$ 0.06 <sup>ab</sup>	2.34	2.56	2.45 $\pm$ 0.02 <sup>a</sup>	1.75	2.25	2 $\pm$ 0.05 <sup>a</sup>
Serum Albumin (g/dL)	1.3 $\pm$ 0.012	1	1.2	1.1 $\pm$ 0.01 <sup>a</sup>	0.75	0.85	0.8 $\pm$ 0.01 <sup>ab</sup>	0.44	0.56	0.5 $\pm$ 0.02 <sup>ab</sup>
Serum Globulins (g/dL)	1.7 $\pm$ 0.013	1.34	1.46	1.4 $\pm$ 0.01 <sup>a</sup>	1.14	1.26	1.2 $\pm$ 0.01 <sup>a</sup>	0.71	0.89	0.8 $\pm$ 0.05 <sup>a</sup>
Serum Creatinine (mg/dL)	0.2 $\pm$ 0.012	0.32	0.38	0.35 $\pm$ 0.02 <sup>a</sup>	0.41	0.49	0.45 $\pm$ 0.02 <sup>ab</sup>	0.43	0.61	0.52 $\pm$ 0.01 <sup>a</sup>
Serum Glucose (mg/dL)	108 $\pm$ 3.20	72	78	75 $\pm$ 3.52 <sup>ab</sup>	57	67	62 $\pm$ 6.23 <sup>ab</sup>	49	53	51 $\pm$ 1.35 <sup>b</sup>
Total serum bilirubin (mg/dL)	0.2 $\pm$ 0.001	0.28	0.38	0.33 $\pm$ 0.02 <sup>ab</sup>	0.42	0.48	0.45 $\pm$ 0.03 <sup>a</sup>	0.46	0.58	0.52 $\pm$ 0.06 <sup>a</sup>
Sodium (mEq/L)	72 $\pm$ 2.35	60	68	64 $\pm$ 3.62 <sup>b</sup>	48	56	52 $\pm$ 3.65 <sup>ab</sup>	39	47	43 $\pm$ 2.11 <sup>a</sup>
Potassium (mEq/L)	39 $\pm$ 1.33	27	35	31 $\pm$ 2.54 <sup>b</sup>	26	30	28 $\pm$ 2.58 <sup>ab</sup>	21	27	24 $\pm$ 2.15 <sup>ab</sup>
Serum cholesterol (mg/dL)	164 $\pm$ 3.30	138	142	140 $\pm$ 4.25 <sup>a</sup>	122	128	125 $\pm$ 8.22 <sup>a</sup>	104	116	110 $\pm$ 3.52 <sup>ab</sup>
Triglycerides(mg/dL)	132.2 $\pm$ 2.21	94.1	96.3	95.2 $\pm$ 2.21 <sup>b</sup>	87.8	89.6	88.7 $\pm$ 2.2 <sup>ab</sup>	75.2	77.4	76.3 $\pm$ 2.1 <sup>b</sup>

**Note:** Values are mean $\pm$ SD of five replications (d.f. 5, 30). Means in the same row having different superscripts are significantly different ( $P < 0.05$ ) and values in the same row with same superscript are not significantly different ( $P > 0.05$ ). '≠'Death time \* No statistical analysis was possible as determinations were performed on pooled samples.

## DISCUSSION:

The present investigation there are ten biochemical parameters of blood chemistry of *N. notopterus* due to malathion, parathion and endrin intoxication after 20 min, 40 min 60 min respectively. The significance change were noted from the healthy values ( $P < 0.05$ ). The values which showed decrease from normal

values include plasma protein 3.8 $\pm$ 0.024 to 2 $\pm$ 0.05(g/dL); serum albumin from 1.3 $\pm$ 0.012 to 0.5 $\pm$ 0.02(g/dL) as well as other parameters seen the results table no. 1 present investigation was exposed to combination of three pesticides as malathion, parathion and endrin intoxication the significant values were observed chronic anemic condition leukemia and thrombocytopenia. The hematological



changes related to metabolic activity dysfunctioning the haematological and blood chemistry related disruption of iron synthesizing machinery due to inhabitation of aerobic glycolysis could be the region for the decrease of the blood parameters in the stress fish.

The present investigation resembling to the many workers and investigators have been provided observations due to pesticides intoxication., David [18] (Largemouth bass); Ferrando *et al.* [19] (European eel, *Anguilla anguilla*); Hilmy *et al.* [20] (*Anguilla vulgaris* and *Mugilcephalus*); Jeffrey *et al.* [21] (Fathead minnows, *Pimephalespromelas*); Max [22] (ThreespineStickleback); Robert & Abe [23] (Red Crawfish, *Procambarusclarki* (Girard)); Serianiet *al.* [24] (*Oreochromisniloticus*); Conclusively, the present investigation of the above experiment revealed that the three pesticides namely malathion, parathion and endrin are destructive when used as individual pesticides against the fish, and act more strongly when used in combinations of pesticides used were highly toxicated. The toxic affects of pesticides harmful on the aquatic animals like fishes that intake of the changes of the food chain. The pesticides induced biochemical alteration and cause metabolic activity significant, changes of metabolic effects on the physiological activity consequences these biochemical parameters offer a rapid sensitive means of monitoring towards the impact of the pesticides on aquatic biota and ultimately whole of the ecosystem. The edible fresh water fishes constitute on the measure sources of nutritious food for human. The pesticides induced by stress disturbed by metabolism many fested as in habitation of enzymes retardation of growth damage and dysfunction of the haepoitic organs. The pesticides generally effect the biologically active molecule such transaminases phospho mono stress and other enzymes. The present investigation the pesticides product to aquatic pollution and disturbed the aquatic environment animals. It is suggest here the pesticides not used to pest control but biological control are used for pest control.

## Conclusion:

The present investigation revealed that significant ( $P < 0.05$ ) increase in Bilirubin(mg/dL) ((0.2 to 0.45), Creatinine (0.2 to 0.39)  $\text{Na}^+$  and  $\text{K}^+$  values as (mEq/L) slightly change (72.0 to 70 and 39.0 to 39.0) and decrease in plasma protein(g/dL)(, Albumin(g/dL), Globulin(g/dL), Glucose(mg/dL), as

well as lipid profile Cholesterol(g/dL), TG, HDL(mg/dL),LDL(mg/dL),VLDL(mg/dL) were decreased and same serum ionic substances like Ca, Mg, Chloride(mEq/L) and phosphorus reduced respectively.

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प्रस्तुत शोध शीर्षक “इन्टरनेट की प्रभाविता का ग्रामीण एवं शहरी विद्यार्थियों की इन्टरनेट के प्रति प्रतिक्रियाओं के आधार पर तुलनात्मक अध्ययन” एक सर्वेक्षण प्रकार का शोध है, जिसमें इन्टरनेट की उपयोगिता का विद्यार्थियों की प्रतिक्रियाओं के सन्दर्भ में तुलनात्मक अध्ययन किया गया। प्रस्तुत शोध का उद्देश्य “ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों की तुलना करना” था। प्रस्तुत शोध कार्य की परिकल्पना “ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों में कोई सार्थक अंतर नहीं होगा” थी। शोध के न्यादर्श हेतु उद्देश्यपरक न्यादर्श तकनीक का उपयोग किया गया। प्रस्तुत शोध में इन्दौर शहर के देवी अहिल्या विश्वविद्यालय से संबंधित महाविद्यालयों के कला, वाणिज्य एवं विज्ञान संकाय से संबंधित कुल 80 विद्यार्थियों को न्यादर्श के रूप में लिया गया। प्रस्तुत शोध में इन्टरनेट की प्रभाविता के सन्दर्भ में ‘विद्यार्थियों की प्रतिक्रियाएँ’ परिवर्ती से संबंधित प्रदत्त एकत्र किए गए। इस परिवर्ती के आकलन हेतु शोधकर्ताओं द्वारा विकसित प्रतिक्रिया मापनी का उपकरण के रूप में उपयोग किया गया। प्रस्तुत शोध में प्रदत्त विश्लेषण हेतु स्वतंत्र ‘टी’ परीक्षण (Independent ‘t’ test) सांख्यिकी का उपयोग किया गया। प्रस्तुत शोध से अग्र निष्कर्ष प्राप्त हुआ— “ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों में कोई सार्थक अंतर नहीं पाया गया अर्थात् ग्रामीण एवं शहरी दोनों आवासीय पृष्ठभूमि के विद्यार्थियों हेतु इन्टरनेट एक समान रूप से प्रभावी पाया गया”।

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प्रस्तुत शोध शीर्षक “इन्टरनेट की प्रभाविता का ग्रामीण एवं शहरी विद्यार्थियों की इन्टरनेट के प्रति प्रतिक्रियाओं के आधार पर तुलनात्मक अध्ययन” एक सर्वेक्षण प्रकार का शोध है, जिसमें इन्टरनेट की उपयोगिता का विद्यार्थियों की प्रतिक्रियाओं के सन्दर्भ में तुलनात्मक अध्ययन किया गया। अन्तरजाल, पदजगतमजद्ध सूचनाओं व ज्ञान के आदान-प्रदान हेतु अन्तर्संबंधित कम्प्यूटर नेटवर्क की एक वैश्विक प्रणाली है, जो अन्तर्राष्ट्रीय इन्टरनेट प्रोटोकाल (टी सी पी/आय पी) पर आधारित है और करोड़ों उपयोगकर्ताओं को लाभान्वित करता है। आज अन्तरजाल का विभिन्न निजी एवं सामाजिक क्षेत्रों में बहुतायत से प्रभावी उपयोग किया जा रहा है। शिक्षा का क्षेत्र भी इसका अपवाद नहीं है। शिक्षा में शिक्षण कार्यों में अन्तरजाल का उपयोग किया जाता है। जैसे— स्मार्ट क्लासेस, वीडियो कान्फ्रेंसिंग, ऑनलाइन व्याख्यान इत्यादि। विभिन्न प्रकार की शैक्षणिक एवं प्रतियोगी परीक्षाओं में भी इसका उपयोग नया नहीं है। विभिन्न क्षेत्रों में अन्तरजाल के माध्यम से भर्ती प्रक्रिया जैसे— ऑनलाइन आवेदन, प्राथमिकताओं का चयन, चयनित अभ्यर्थियों को बुलावा भेजना इत्यादि का संचालन किया जाता है। विभिन्न विद्यालयों एवं विश्वविद्यालयों के अपने अनेकानेक कार्यों का संचालन उनकी शैक्षणिक वेबसाइट्स के माध्यम से ही किया जाता है। अन्तरजाल न केवल इन कार्यों के प्रभावी संचालन में सहायक होता है, वरन् यह समस्त कार्यों के गुणवत्ता पूर्ण क्रियान्वयन में सहायक होता है। शिक्षण, मूल्यांकन व प्रसार कार्यक्रमों के साथ ही शोध कार्य भी अन्तरजाल की प्रभाविता एवं उपयोगिता से अछूता नहीं है। क्या ग्रामीण एवं शहरी दोनों आवासीय पृष्ठभूमि के विद्यार्थियों के लिए इन्टरनेट का यह उपयोग सहायक होता है अथवा बाधा उत्पन्न करता है? या किसी एक विशेष आवासीय पृष्ठभूमि के विद्यार्थियों के लिए

इन्टरनेट का अधिक प्रभावी उपयोग है? इन्हीं प्रश्नों के उत्तर जानने हेतु उपरोक्त शोध शीर्षक का शोधार्थियों द्वारा चयन किया गया।

संबंधित साहित्य के अध्ययन से स्पष्ट है कि प्रस्तुत विषय पर अग्र शोधकों ने शोधकार्य किये हैं। जैसे—सेलाची (1991) ने पश्चिम बंगाल के उच्चतर माध्यमिक विद्यालयों में शैक्षिक तकनीकी की उपलब्धता तथा उपयोगिता का अध्ययन किया। महाजन (1991) ने कम्प्यूटर शिक्षा हेतु ऑटोमेशन पर साफ्टवेयर का विकास किया। मिश्रा (1993) ने शिक्षा अध्ययनशाला के बी. एड. स्तर के विद्यार्थियों के सन्दर्भ में कम्प्यूटर शिक्षा का अध्यापक शिक्षा में भविष्य विषय पर शोध कार्य किया। शिन्दे (1993) ने एम. एड. स्तर पर विद्यार्थियों हेतु कम्प्यूटर साफ्टवेयर के विकास पर शोध कार्य किया। राठौर एवं तिवारी (2003) ने बी. एड. स्तर पर मनोवैज्ञानिक परीक्षणों हेतु कम्प्यूटरीकृत डेटाबेस के विकास पर शोध कार्य किया। कुमार व सिंह (2008) ने आधुनिक व्यवसाय में कम्प्यूटरीकृत लेखाजोखा (Accounting) की भूमिका का अध्ययन किया। बेहरा एवं राठी (2013) ने माध्यमिक विद्यालयों के विद्यार्थियों की कम्प्यूटर शिक्षा के प्रति अभिवृत्ति का अध्ययन किया। सिंह (2013) ने परीक्षा एवं मूल्यांकन में कम्प्यूटर की उपयोगिता का अध्ययन किया। जीबिन एवं नसीमा (2013) ने भारतीय शिक्षा में आकाश II टेबलेट के महत्व का अध्ययन किया। संबंधित साहित्य के अध्ययन से स्पष्ट होता है कि इस दिशा में अल्प शोधकार्य हुए हैं तथा इन्टरनेट की प्रभाविता का ग्रामीण एवं शहरी विद्यार्थियों की इन्टरनेट के प्रति प्रतिक्रियाओं के आधार पर तुलनात्मक अध्ययन संबंधी कोई शोध कार्य नहीं हुआ है। इससे प्रस्तुत शोध की आवश्यकता प्रतिपादित होती है।

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प्रस्तुत शोध कार्य का अग्र उद्देश्य था—

ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों की तुलना करना

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प्रस्तुत शोध कार्य की अग्र परिकल्पना थी—

ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों में कोई सार्थक अंतर नहीं होगा

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प्रस्तुत शोध की समष्टि मध्य प्रदेश के देवी अहिल्या विश्वविद्यालय से संबंधित महाविद्यालयों के कला, वाणिज्य एवं विज्ञान संकाय से संबंधित विद्यार्थी थे। इस समष्टि में से शोध के न्यादर्श हेतु उद्देश्यपरक न्यादर्श तकनीक का उपयोग किया गया। इस समष्टि में से इन्दौर शहर के देवी अहिल्या विश्वविद्यालय से संबंधित महाविद्यालयों के कला, वाणिज्य एवं विज्ञान संकाय से संबंधित कुल 80 विद्यार्थियों को न्यादर्श के रूप में लिया गया। इन शोधार्थियों की उम्र 18–22 वर्ष के मध्य थी। इनमें छात्र एवं छात्राएँ दोनों सम्मिलित थे। इनमें 42 ग्रामीण एवं 38 शहरी आवासीय पृष्ठभूमि वाले विद्यार्थी थे। इनमें 30 विद्यार्थी कला संकाय, 25 विज्ञान संकाय एवं 25 विद्यार्थी वाणिज्य संकाय के थे। चयनित विद्यार्थियों में तीनों सामाजिक-आर्थिक स्थिति (उच्च, निम्न व मध्यम) के विद्यार्थी सम्मिलित थे। इनमें शहरी व ग्रामीण दोनों पृष्ठभूमि वाले विद्यार्थी सम्मिलित थे। ये विद्यार्थी अनुसूचित जाति, अनुसूचित जनजाति, पिछड़ा वर्ग व सामान्य वर्ग से संबंधित थे। साथ ही चयनित विद्यार्थियों में विज्ञान और गैर विज्ञान (कला एवं वाणिज्य) दोनों संकाय के विद्यार्थी सम्मिलित थे।

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प्रस्तुत शोध एक सर्वेक्षण प्रकार का शोध कार्य था, जिसमें इन्टरनेट की प्रभाविता इन्टरनेट के प्रति प्रतिक्रियाओं के सन्दर्भ में अध्ययन करने हेतु 80 विद्यार्थियों पर सर्वेक्षण किया गया गया। शोध के परिवर्ती इस प्रकार थे—

अ) मानदण्ड या आश्रित परिवर्ती— शोध में 'इन्टरनेट के प्रति विद्यार्थियों की प्रतिक्रियाएँ' मानदण्ड परिवर्ती था।

ब) स्वतंत्र परिवर्ती— शोध में 'विद्यार्थियों का संकाय' (कला, वाणिज्य एवं विज्ञान) स्वतंत्र परिवर्ती थे।

उपकरण

प्रस्तुत शोध में 'इन्टरनेट के प्रति विद्यार्थियों की प्रतिक्रियाएँ', एवं 'संकाय' परिवर्तियों से संबंधित प्रदत्त एकत्र किए गए। इनमें से विद्यार्थियों के 'संकाय' परिवर्ती से संबंधित जानकारी से संबंधित प्रदत्त के एकत्रीकरण के लिए 'सामान्य जानकारी प्रपत्र' का उपयोग किया गया। इन्टरनेट के प्रति विद्यार्थियों की प्रतिक्रियाएँ परिवर्ती के आकलन के लिए प्रतिक्रिया मापनी का उपकरण के रूप में उपयोग किया गया। प्रतिक्रिया मापनी में इन्टरनेट के विभिन्न पक्षों में उपयोग से संबंधित कुल 30 कथन थे। प्रतिक्रिया मापनी में 14 सकारात्मक एवं 14 नकारात्मक कथन थे। प्रत्येक कथन के सामने पाँच विकल्प पूर्णतः सहमत (Strongly

Agree)] सहमत (Agree)] अनिश्चित (Undecided)]

असहमत (Disagree)] एवं पूर्णतः असहमत (Strongly Disagree) दिए गए थे। सकारात्मक कथनों हेतु प्रत्येक विकल्प पर अंकभार क्रमशः 5, 4, 3, 2 एवं 1 तथा नकारात्मक कथनों हेतु अंकभार क्रमशः 1, 2, 3, 4 व 5 था।

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सर्वप्रथम इन्टरनेट की उपयोगिता से संबंधित विभिन्न पहलुओं का निर्धारण किया गया। तत्पश्चात् इन निर्धारित पहलुओं के आधार पर प्रतिक्रिया मापनी हेतु विभिन्न कथनों का निर्माण किया गया और विषय विशेषज्ञों के परामर्श के आधार प्रतिक्रिया मापनी का अंतिम प्रारूप तैयार किया गया। तत्पश्चात् विद्यार्थियों को शोध के उद्देश्य स्पष्ट किए गए और उनके साथ आत्मीय संबंध स्थापित किए गए। इसके पश्चात् विद्यार्थियों को प्रतिक्रिया मापनी भरने को दी गयी। अन्त में, विद्यार्थियों से प्रतिक्रिया मापनी एकत्र की गयी और पूर्व निर्धारित अंक भार के आधार पर विद्यार्थियों के इन्टरनेट की उपयोगिता के सन्दर्भ में प्रतिक्रियाओं के प्रदत्त एकत्र किए गए। साथ ही विद्यार्थियों के 'संकाय' परिवर्ती से संबंधित जानकारी से संबंधित प्रदत्त के एकत्रीकरण के लिए 'सामान्य जानकारी प्रपत्र' का उपयोग किया गया। इसके माध्यम से इस परिवर्ती से संबंधित जानकारी, विद्यार्थियों से उनसे संबंधित वर्ग या श्रेणी पर सही का चिन्ह लगाकर प्राप्त कर ली गयी।

inük fo' yšk k

उद्देश्यानु रूप प्रदत्त विश्लेषण के लिए स्वतंत्र 'टी' परीक्षण (Independent 't' test) सांख्यिकीय तकनीक का उपयोग किया गया।

परिणाम एवं विवेचना

प्रस्तुत शोध कार्य का उद्देश्य 'ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों की तुलना करना' था। इस उद्देश्य से संबंधित प्रदत्त का विश्लेषण स्वतंत्र 'टी' परीक्षण द्वारा किया गया। प्रदत्त विश्लेषण से प्राप्त परिणाम को तालिका 1 में प्रदर्शित किया गया है—

तालिका 1: इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांक, संख्या, मानक विचलन एवं 'टी' मान को प्रदर्शित करती तालिका

आवासीय पृष्ठभूमि	संख्या	माध्य	मानक विचलन	'टी' मान
ग्रामीण आवासीय पृष्ठभूमि	42	106.00	9.47	0.58 **
शहरी आवासीय पृष्ठभूमि	38	104.81	8.85	

\*\* – 0.01 सार्थकता स्तर पर सार्थक नहीं

तालिका 1 से स्पष्ट है कि आवासीय पृष्ठभूमि के लिए 'टी' का मान 0.58 है, जो स्वतंत्रता की कोटि= 78 तथा 0.01 सार्थकता स्तर पर पर सार्थकता स्तर पर सार्थक नहीं है, अर्थात् ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों में कोई सार्थक अंतर नहीं है। अतः इस स्थिति में शून्य परिकल्पना "ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलांकों में कोई सार्थक अंतर नहीं होगा" निरस्त नहीं की जाती है। अतः निष्कर्ष रूप से कहा जा सकता है कि ग्रामीण एवं शहरी



विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलाकों में कोई सार्थक अंतर नहीं पाया गया अर्थात् ग्रामीण एवं शहरी दोनों आवासीय पृष्ठभूमि के विद्यार्थियों हेतु इन्टरनेट एक समान रूप से प्रभावी पाया गया”।

fu"d"l

प्रस्तुत शोध से अग्र निष्कर्ष प्राप्त हुआ—

“ग्रामीण एवं शहरी विद्यार्थियों के इन्टरनेट के प्रति प्रतिक्रियाओं के माध्य फलाकों में कोई सार्थक अंतर नहीं पाया गया अर्थात् ग्रामीण एवं शहरी दोनों आवासीय पृष्ठभूमि के विद्यार्थियों हेतु इन्टरनेट एक समान रूप से प्रभावी पाया गया”

ifj l heu—

प्रस्तुत शोध कार्य की निम्नलिखित परिसीमाएँ थी—

1. प्रस्तुत शोध केवल देवी अहिल्या विश्वविद्यालय के विद्यार्थियों पर किया गया।
2. शोध कार्य सीमित विद्यार्थियों (80) पर ही किया गया।
3. केवल चयनित परिवर्ती जैसे— आवासीय पृष्ठभूमि से संबंधित प्रदत्त ही एकत्र किए गए।
4. शोध कार्य में उद्देश्यपरक न्यादर्श तकनीक का उपयोग किया गया।

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## A vision document - Chinese dam on Brahmaputra India outraged ; special focus on Water Wars: The Brahmaputra River and Sino-Indian Relations

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### ABSTRACT

The term Brahmaputra means “son of brahma” and in the early days of Indus valley civilizations Brahmaputra River is the subject of faith and legends of Bharat. The Brahmaputra flows for about 1,625- km inside the Tibet Autonomous Region of China and for a further 918-km inside India. This is not the first time that tension is building up between India and China over Brahmaputra projects, which could affect the flow of water into India. Water has the potential to be one of the great challenges of the twenty-first century. According to United Nations estimates, more than half the global population will live in water-stressed or water-scarce countries by 2025. The vast majority of these people will be in China and India. As China and India struggle to grow, provide for their citizens, and expand their respective roles as major players on the world stage, the two countries are increasingly facing water constraints. This challenge is made more complex by its shared nature: much of India’s river water originates in China. Of the rivers that cross the Sino-Indian border, the most important is the Brahmaputra. It is not clear what caused the sudden but temporary cessation of the Brahmaputra’s flow in March of 2012. What is clear, however, is that demand for the river’s water exceeds supply, and that the potential for conflict between the world’s two most populous countries over this finite resource is real.

### INTRODUCTION

#### Water Demand in India and China-

India is home to about 17% of the world’s population but less than 4% of water resources, and the country is dependent on foreign-originating rivers for about a third of its surface water. Water shortages will exact rising economic and social costs in the country as India’s population and water needs continue to grow. India’s freshwater supply is also significantly influenced by weather patterns, with the short monsoon season responsible for the lion’s share of the country’s annual precipitation. Approximately half of nationwide precipitation falls over just 15 days, and 90 percent of river flows are concentrated in the wettest four months of the year.

China is home to almost 20% of the world population, but only about 7% of water

resources. The country faces water scarcity, and its water needs are further stressed by pollution. At present, China’s Ministry of Environmental Protection has deemed a quarter of China’s river water so dirty as to be unsuitable for drinking, agriculture, or even industrial use. Moreover, although China is almost entirely water independent—that is, almost all of the country’s renewable freshwater supply comes from rivers that originate within the country—the distribution of surface water is geographically uneven. The bulk of the country’s freshwater resources are located in the country’s south and southwest, which benefits that region’s farms and factories but leaves the wheat-producing heartland and industrial north dry. To address this imbalance, Beijing has undertaken an extraordinarily ambitious hydrological engineering plan called South to North Water Diversion. By 2050, China hopes to move 45 billion cubic meters of water

per year through a series of tunnels, aqueducts, and canals. Engineers also seek to link the country's four major waterways: the Huang He, Yangtze, Huai He, and Hai He. The water diversion plan includes three routes—eastern, central, and western—with a total estimated price tag of around US\$62 billion. Water division plans on the Chinese portion of the Brahmaputra are crucial to the western route.

## Total Available Renewable Water Resources

Country	China	India
External Water Resources (million m3)	17,169	647,220
Total Water Resources (million m3)	2,840,000	1,907,760
External Dependency	0.9%	33.4%

Source: United Nations Food and Agriculture Organization, Aqua stat online data 2011

## Brahmaputra River: Course, Length, and Geography-

The Brahmaputra begins from its source in the Kailas range of the Himalayas and flows 2,300 miles before emptying into the Bay of Bengal in Bangladesh. Its course takes it through China, India, and Bangladesh, and its watershed also falls within parts of Nepal, Bhutan, and Burma. Reflecting the diversity of people and geography along its course, the river goes by many names, including the Yarlung Tsangpo (also spelled Zangbo) in Tibet, the Brahmaputra in India, and the Jamuna in Bangladesh. Beginning in the Tibetan Plateau's Angshi Glacier, the river flows eastward for nearly 700 miles between the main range of the Himalayas to its south and the Kailas Range to its north, gaining strength from tributaries along the way. The river's journey through Tibet takes place at an average altitude of more than 12,000 feet, making it the world's highest-flowing river system.

After passing the city of Pei in Tibet, the river turns northeast and makes its so-called Great Bend in Tibet's Nyangtri Prefecture. Here the river runs through narrow gorges in a series of rapids and cascades before turning south and southwest to flow through the Grand Canyon of the Tsangpo, the longest, steepest, and one of the deepest canyons on earth. The canyon's overall average depth is about 7,440 feet, and at its deepest reaches 19,714 feet, more than twice as deep as the Grand Canyon. During its journey through the canyon, the Brahmaputra has the largest slope deflection of any river surface in the world at 75.35 percent. The geology creates the potential for immense hydropower generation if the river is tamed.

After leaving the Tibet Autonomous Region, the river then passes through the territory of Arunachal Pradesh, whose control remains disputed by China and India. This 56,000-square-mile area is currently controlled by India but was captured by China during their 1962 border war. Although Beijing subsequently withdrew voluntarily to the current effective line of demarcation, it still refuses to recognize India's control over the region. The resulting border conflict, along with similar conflicts over other disputed segments of the border, remains one of the most significant potential flashpoints affecting Sino-Indian relations. The river next enters Assam state in north-eastern India, where it is fed by other Himalayan tributaries to become the Brahmaputra. It is a powerful river even in the dry season, and during the rains its banks are more than six miles apart at points. The river runs for several hundred miles through India before crossing the border into Bangladesh, where it follows a 150-mile course as the Jamuna. It then joins with the Ganges, Hinduism's holiest river, before emptying into the Bay of Bengal.

The Ganges-Brahmaputra is a huge river system, with more people living in its basin than in all of Western Europe and North America combined. The river system's average discharge is the third largest in the world, behind only the

Amazon and the Congo. At its terminus, more than 1,000,000 cubic feet per second of water flow into the ocean, approximately 700,000 of which are supplied by the Brahmaputra.

## **Food Security: Food Imports as “Virtual Water”–**

Although raw materials like minerals, timber, and oil obviously differ from one another, they are each fungible, internationally traded commodities; in other words, oil or timber or minerals from one part of the world can largely be substituted for similar quantities of the same material from elsewhere. As a result, they behave similarly on international markets. Water is different. As a resource for which there is functionally no international marketplace—at least until demand becomes sufficiently acute to create such a market—and for which access is determined primarily by geography, water as a strategic commodity is unique. Because there is no major world market for trading water itself, to understand how water moves around the globe today it is necessary to look at trade in other goods, introducing the concept of virtual water. All finished products require water to greater or lesser degrees for their production. Therefore, importing intermediate or finished products is an indirect way of importing the embedded water required to grow or make them. In China and India, where agriculture currently accounts for 70 percent and more than 50 percent, respectively, of water consumption, the most significant tradable commodities from a water perspective are foodstuffs. At present, both China and India are net exporters of food. According to Brahma Chellaney, “China and India together account for ... 52.8 percent of the world’s rice production, 30.1 percent of the wheat, 21 percent of the corn, and 28.5 percent of the total grain.

As China and India continue to grow, and as they grow wealthier and the inputs to their citizens’ diets move further up the value chain, they are likely to cross the threshold to become net food importers. Water scarcity will increase the prospect of this transition taking place and force one or both of these countries to seek additional imports from the water-rich countries

better able to provide the embedded water that goes into growing surplus food. This requirement, anathema to planners seeking domestic food security, will add yet another dimension to China and India’s already complicated strategic calculus vis-à-vis commodity demands.

The concept of water scarcity leading to food insecurity is one of the thorniest issues in most cross-border water disputes, and the conflict over the Brahmaputra is no exception. China’s ability to control the river’s flow through damming and diversion could potentially give Beijing the ability to choke off the food supply to its largest neighbor. It has been likened to the ability to lay siege to an enemy’s castle without ever having to cross one’s own border. Moreover, unlike some other sources of power in international diplomacy, the threat of water diversion is not “use it or lose it.” Once the dams have been built, the ability to create suffering at the human level in India and Bangladesh through induced water and food shortages will stand implicitly behind any request coming from Beijing.

The implications are not lost on New Delhi. For India, even the intimation of such a threat in the context of the Brahmaputra could be a nearly existential hazard. It is not difficult to imagine Indian military planners preparing for such an eventuality by exploring options to destroy or otherwise neutralize the offending dams. The result is that the food security issues that accompany dam building give birth to a flashpoint and source of tension that, once created, will be difficult to undo. This makes food security one of the drivers most likely to spur New Delhi into action over Beijing’s moves on the river.

## **Water Governance Is Simultaneously International and Domestic**

Along cross-border rivers, water consumption choices made by the upper riparian state affect the downriver state. However, actual water consumption decisions are generally made either at the local level, or by central government planners who have local consumption in mind. (This is even true of China’s giant water



diversion projects, which are meant to provide water for local use in regions currently suffering from scarcity.) For this reason, domestic politics can play an equal or greater role than international relations when it comes to how water resources are actually used. In China, the state-planned economic model in place since 1949 is overlaid atop a historical imperative dating back to imperial times to control the country's flood-prone rivers. The result has been a "campaign" mentality focusing on huge capital investments in large-scale hydro projects. Rather than making hard choices about allocating limited local water resources—or devolving authority to the local level to make those decisions—Beijing has promulgated large, capital-intensive solutions such as the South-to-North Water Diversion Project.

The individual components that make up the South-to-North Water Diversion Project range in size, but China has already demonstrated its comfort level with giant dams such as the Three Gorges. Mega hydro projects such as these take an extraordinary toll on local residents. The Three Gorges Dam flooded important cultural and archaeological sites, affected local and downstream ecology, and forced the relocation of 1.3 million people. Many within China and abroad objected to the dam, and its construction was not without protests and opposition, but there is little that local residents in China can do to block a project of this kind from going forward once the decision has been made in Beijing. This is even more true in the ethnic minority region of Tibet than elsewhere in China. Any organized protest or opposition to a significant dam project by Tibetans would almost certainly elicit a swift and thorough government crackdown. For this reason, although India might hope to ally itself with locals in opposition to the construction of dams, China's dam-building history offers minimal hope that this would be an effective tactic.

India faces its own challenging domestic dynamic around the subject of dam building. The country's robust democracy allows local Indian interest groups to block large projects they oppose much more effectively than is possible

in China. Even more significant is that India has not dedicated nearly the same capital resources China has to hydrological infrastructure. Where China has built more than 25,800 large dams, India has constructed 4,300.20 On the Brahmaputra, although India has expressed a desire to complete more water works, the country has been unable thus far to successfully undertake major damming or river improvement projects. While this represents a good-news story to ecological groups that oppose large-scale Indian hydro works, it does little to help India stake a legal claim to river usage or to allow it to generate power or regulate river flows. It remains to be seen whether major Indian Brahmaputra projects will succeed in the future, but as long as the river's source in Tibet is under Chinese control and local Tibetan opposition to dam projects remains weak, the most significant investments in damming and changing the water's flow will remain on the Chinese side of the border.

**Water Conflict? No. Inevitable Tensions?**  
Yes.....

Discourses over the waters of the Brahmaputra River have been doing the rounds ever since China's announcement about the construction of three dams on the river last year. Despite diplomatic talks, China is keen to divert the waters from the Brahmaputra. In the past, China did not have a strong *raison d'être* to divert the flow of the river. China's Vice Minister of Water Resources, Jiao Yong, stated in 2011 that the Chinese government was not planning to conduct any diversion projects along the Brahmaputra River given that there wasn't a pressing need. However, at present, China's per capita water reserve is approximately 2300 cubic metres – one-fourth of the world's average. China is, therefore, considered as the 13th most 'water-poor' country in the world with 80 per cent of its cities severely water stressed. More so, China's northern region possesses only 14.5 per cent of the entire country's water resources. As water supplies tighten, the water quality is degrading, ecology is suffering, and lands are becoming barren. This threatens the country's

economic growth. Thus, the ever-increasing gap in the demand and supply chain in China's northern region has now pushed the country to move forward with its many dam projects.

China is keen to divert 150 billion cubic meters (BCM) of water and 'push' the waters to irrigate northern China. Of this, 50 BCM would be diverted from the Brahmaputra. In October 2013, India asserted the need for a water sharing treaty with China. This came about, following the paranoia generated after the announcement of the 510-MW Zangmu project along the course of the river. However, although former Indian Prime Minister Manmohan Singh returned with an agreement on sharing water-related information during the monsoon months, there was no mention of the planned diversion of the Brahmaputra. So far, India has been incapable in convincing China into building bilateral cooperation over the Brahmaputra River. India recognises that it is not in a position to wage a war with China. However, despite tensions and disagreements over common rivers, India has maintained relatively peaceful hydrological relations with its neighbours – with the Indus, Teesta, and Ganga Rivers being cases in point. On no occasion, did India seek to wage war as a means to resolve its water woes. In this light, India may not enter into a conflict with China over the Brahmaputra, but tensions seem probable.

### **Brahmaputra River Valley Authority: India and China Redefining their 'Global Commons'-**

Juxtaposing India's per capita water availability (1.170 cum/person/year) – i.e. lowering than the global water index vis-à-vis the Chinese geo-political assertiveness against India – to undertake gigantic water resource projects raises serious security alarms in the South Asian regime. With China recently turning down India's proposal to pursue a joint bilateral mechanism, it is necessary to assess China's unilateral self-interest in curbing its widening water deficit at the cost of accentuating the lower riparian stress.

Brahmaputra water issue has the potential to turn into a major bone of contention between both nations at a time when China is also making

geopolitical advances in the northern sphere of the country. This article explores the situation and seeks to provide a relevant assessment for redefining water as a global common in lieu of establishing a river valley authority. How should a politically sensitive Brahmaputra revisit its preservation policies and water sharing rights between both countries? More so, what are the prospects in a techno-political framework that call for the establishment of a Brahmaputra River Valley Authority.

Revisiting the 'Global Commons' not a single river-collaborative or transparency mechanism exists between China and any of its riparian neighbours pertaining to the sharing and preservation of water resources. More so, there is no discharge of data on the proposed water-related developments and projects in the Tibetan region such that the reliability factor on China stressing on being 'vigilant to its responsibility towards cooperation' remains highly bleak. India's concerns on glacial lake outbursts in the upper regions of the rivers that flow into India from Tibet have not been adequately addressed. Given the evolving political dynamics between both nations and President Xi Jinping's recent self-assertion of the 39 Chinese dam construction projects merely being run-of-the-river (ROR), it is hard to imagine China playing the role of a responsible upper riparian by maintaining a regulated flow of the waters in the basin.

Now that China has demonstrated a strong will and competence to plan, undertake and complete gigantic water resource projects against internal or external oppositions, India has to counter each move by refilling roles and responsibilities of the stakeholders towards our 'commons'. As rhetoric-filled as it may sound, the Brahmaputra River is not met, merely, for the consumptive use of China or Tibet or India or Bangladesh. It is an interconnected, transnational resource that crosses all national and ethnic frontiers.

According to Assamese experts, spearheading an awareness campaign against

China's hydro-projects on the Brahmaputra is imperative to counter the proposed 85 percent water flow deficit from China during the summer months. Diplomatic skills to work in cooperation, consistent dialogue building mechanisms, stimulate cross-border, regional hydro-sensitivity, supported by competent multilateral instruments is the key to fulfil the 'global commons theme'. If China and India manage to foster effective diplomacy between them on sharing of trans-border river waters, a new era of mutual trust and confidence would begin in the region.

## Contemplating a Brahmaputra River Valley Authority-

Constituting a BRVA to consistently monitor the flow of the river on a regular basis should help ensure Chinese intrusive activities do not take place in future without foreseeable broadcasts. The concept of a BRVA continues to have a pessimistic outlook for China to accept as noticed during the current exchange of premier discourses over the water issue. But it is inevitable that a BRVA will not only put a tab on China's legal unfettered foundation of controlling the international watercourse, but it will also ensure India engages in innovative constructs and strategic technological mechanisms that it has, relatively, failed to administer. Due to India's limited storage capacity of retaining hydro-releases during the dry season, the Brahmaputra witnesses heavy havoc each year. For example - the Three-Gorges Dam project drastically altered the weather patterns in Northeast India. As a result, the lower riparian benefactors experienced huge ecological losses and stress. Now if China has its way, the Brahmaputra River will marginally be reduced to a sizable level causing vast water shortages in the sub-regional terrain.

Namchah Barhwa (situated at the Great U-bend of the river) is decreasing by 3/4th of an inch every year. More so, the Yarlung-Tsangpo Suture Zone (YTSZ), a junction point between the Indian subcontinent and the Euro Asian plates is contracting. Since, the thrust of the suture is

stronger around the Everest region and anemic around the Sikkim-Arunachal region, the instability of basaltic salts, arsenic sedimentary deposits exacerbates. It has been verified that the eastern Himalayan mountain range, Sikkim and eastward, is made of loose soil and bear few rocks. Hence, no waterfalls are found in this region, making the entire region unsafe, unsuitable for dam construction and unreliable even for a run-of-the river (ROR) project. In this view, establishing a river valley authority that caters to the growing insecurities in the region deems vital. Agreed, a BRVA will deter China from significantly progressing to capture a greater share of the watercourse but the implications for China outweigh any positive outcome. China's proposed 39 dam construction takes into account the need to meet its mounting water requisites. With, merely, 8 percent river-water availability vis-a-vis accounting 20 percent of the total world population, China settling scores through hydro politics with its riparian neighbours remains a highly contentious issue.

## India Plans Dam on Tsangpo-Brahmaputra to Check Floods and China-

India is planning a 9,600 megawatt hydroelectric project on the Brahmaputra river to reduce flooding in eastern India and ensure its water use is protected in case of a water-rights dispute with neighbour China. The dam will hold as much as 13 billion cubic meters of water, Amarjit Singh, additional secretary in India's water ministry said in New Delhi Thursday. The project is expected to reduce flooding in the states of Assam and Arunachal Pradesh. The so-called middle Siang project will be built across the river that's known as Tsangpo in China. "This project will help protect our rights in international courts as a lower riparian nation," Singh said. China shares information on flood waters, but the two countries don't have a treaty similar to the one India signed with Pakistan on the use of Indus waters in 1960, Singh said.

The Brahmaputra river originates on the Angsi glacier in northern Himalayas and flows through Tibet, India and Bangladesh. China is building 510 megawatt hydropower capacity on the

Tsangpo in Tibet. China today has operationalised the Zam Hydropower Station built on the Brahmaputra river. It has raised concerns in India over the likelihood of disrupting water supplies. The project is built at a cost of the 1.5 billion dollars. The dam considered to be the world's highest-altitude hydropower station and the largest of its kind will produce produces 2.5 billion kilowatt-hours of electricity a year.

A vast and densely populated region of North-east India that depends on water from Brahmaputra and its tributaries is feeling agitated over China's ambitious efforts to redraw its water map. China's reported plan to divert the Brahmaputra from its upper reaches is being seen as a direct affront to India and a violation of International norms of sharing river waters. Once the construction of dam is complete, the control on the water of Brahmaputra will be in the hands of China. As the Brahmaputra is the lifeline of North East India, the life and environment in the region will be adversely affected by this development. The term Brahmaputra means "son of brahma" and in the early days of Indus valley civilizations Brahmaputra River is the subject of faith and legends of Bharat. The Brahmaputra flows for about 1,625- km inside the Tibet Autonomous Region of China and for a further 918-km inside India. This is not the first time that tension is building up between India and China over Brahmaputra projects, which could affect the flow of water into India. The BJP was quick to react to these reports and demanded that if there is fresh evidence of China's intentions then India should immediately take up this matter with the Chinese authority. "These reports are of real concern to India. Since the last two years, there are reports that China wants to divert Brahmaputra waters from the Himalayas. If it is diverted, we will have real problems which will affect the economy of the whole region," BJP spokesperson Prakash Javadekar said. The BJP MP had raised the issue in the Rajya Sabha last year.

Besides India, which raised the construction of a 510 MW dam on the Brahmaputra in talks with the Chinese leadership for many times.

Thailand, Laos, Vietnam and Cambodia had expressed similar concerns over eight dams being built on the Mekong river. The blame game, voiced in vulnerable river towns and Asian capitals from Pakistan to Vietnam, is rooted in fear that China's accelerating programme of damming every major river flowing from the Tibetan plateau will trigger environmental imbalance, natural disasters, degrade fragile ecologies, divert vital water supplies. A few analysts and environmental advocates even speak of water as a future trigger for war or diplomatic strong-arming, though others strongly doubt it will come to that. Still, the remapping of the water flow in the world's most heavily populated and thirstiest region is happening on a gigantic scale, with potentially strategic implications. On the eight great Tibetan rivers alone, almost 20 dams have been built or are under construction while some 40 more are planned or proposed.

China is not alone in disrupting the region's water flows. Others are doing it with even worse consequences. But China's vast thirst for power and water, its control over the sources of the rivers and its ever-growing political clout make it a singular target of criticism and suspicion. "Whether China intends to use water as a political weapon or not, it is acquiring the capability to turn off the tap if it wants to — a leverage it can use to keep any riparian neighbours on good behaviour," says Brahma Chellaney, an analyst at New Delhi's Center for Policy Research and author of the forthcoming book *Water: Asia's New Battlefield*. Tibet's spiritual leader, Dalai Lama, has also warned of looming dangers stemming from the Tibetan plateau. "It's something very, very essential. So, since millions of Indians use water coming from the Himalayan glaciers... I think you (India) should express more serious concern. This is nothing to do with politics, just everybody's interests, including Chinese people," he said about the talking of Chinese intentions over the redrawing water map. Although China is saying that it is constructing the dam to produce power but actually some hidden agendas are also associated with it.



The water resources of Brahmaputra will be a strong point to blackmail India. If China blocks the water in Brahmaputra, it will lead to famine in the whole NE region. India needs to take this issue seriously. The attention of international community needs to be attracted. But the problem here is that China does not care for anyone. It is trying an act of international bully. India needs a totally different tactic to tackle China. But can it handle. Thus, the important concern is that whether the Indian policy makers will wake up before it's too late. India lose its dignity in past because of sleeping diplomacy of Jawaharlal Nehru. When China started to build the Sinkiang to Ali highway in 1951 than our diplomats showed their concerned about the highway in written on October 18, 1958. In his conversation with Henry Kissinger , the than Chinese premier Zhou Enlai quoted “ even three years after the road was built, Nehru didn't know about it. In my discussion with Nehru on the Sino-Indian boundary in 1956, he suddenly raised the issue of the road. I said, ‘you didn't even know we were building a road for the last three years, and now you suddenly say that is your territory, I remarked upon how strange this was” (The National Security Archive). Although if it did not happen in the case of Brahmaputra, in the case of highway projects and railway projects, we all know the GoI failed the nation. Indian government always wake up after the happening of policy disaster.

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## A study on seasonal fluctuation in the physico-chemical and biological assessment of drinking water of Mahoba(U.P.) in terms of human health hygiene

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### ABSTRACT

Physico-chemical and biological quality of water samples from various places of Mahoba (U.P.) has been evaluated on seasonally basis (pre and post monsoon) in study period. water samples collected were analysed for their physico-chemical characteristics viz Temperature ,pH, Electrical conductivity, Turbidity, Total Solids, TDS,DO,BOD,COD,T-H, Ca-H, Mg-H, Fluoride, Nitrate, Sulphate and Phosphate. Data obtained from these were analysed statistically to determine the correlation between various water quality parameters.

### INTRODUCTION

Increase in urbanization, industrialization, agriculture activity and various human activities has increase the pollution of surface water & ground water. As the safe & potable drinking water is needed. various treatment methods are adopted to raise the quality of drinking water. Water should be free from the various contaminations viz. Organic and Inorganic pollutants, Heavy metals, Pesticides etc. as well as all its parameter like pH, Electrical Conductivity, Calcium, Magnesium, Total Hardness, Carbonate, Bicarbonate, Chloride, Total Dissolved Solid, Alkalinity, Sodium Potassium, Nitrate, DO should be within a permissible limit .

Water quality is a vital concern for mankind as it is directly linked with human welfare. With this knowledge, the present study was performed to assess the potability of drinking water in Mysore city. Water samples from different drinking water sources were collected and analyzed for physico-chemical and bacteriological parameters. Good quality water is odourless, colourless, tasteless, and free from faecal pollution. A reliable supply of clean wholesome water is highly essential in a bid to promoting healthy living among the inhabitants of a defined geographical region safe and

potable water supplies in Mahoba and surrounding area.

One of the things which make Earth a unique planet in this universe is continuous availability of water, a vital requisite for the existence of life. Water is also the essential prerequisite of agriculture and industrial production, the source of food needed for the survival of life. Thus, life on earth is entirely and exclusively dependent on water. Eventhough water covers more than 70% of the earth; only 1% of the earth's water is available as a source of drinking. Yet, our society continues to pollute it (Sadhale, 2006).

### 2. MATERIALS AND METHODS

Study Area/Sampling stations – for further study 10 locations to be selected and studied for Drinking Water quality of study area during study period-

SS1-kharka	SS2-sukaura	SS3-Raivara
SS4-sirsikhurd	SS5-Revai	

SS6-Atghar	SS7-Akbai	SS8-Sirsikalan	SS9-
khiruchi	SS10-khanmariya		

### WATER SAMPLING

Ten ground water samples were collected randomly from the study area during the



raining season in the months of july-september 2015 at regular intervals. The samples were collected from boreholes which are being used extensively for drinking and other domestic purposes. The water samples were collected using previously cleaned polythene bottles. The water samples are chemically analyzed . The analysis of water was done using procedure of standard methods.

During Study Period; the Water Samples from Mahoba and surroundings were collected from different stations in the morning hours between 10 to 12 am in Polythene jerry can regularly for every month. The water samples were immediately brought in to Laboratory for the Estimation of various physico-chemical parameters, like water temperature and pH were recorded at the time of sample collection by using Thermometer and Pocket Digital pH Meter. While other Parameters Such as DO, TDS, Free CO<sub>2</sub>, Hardness, Alkalinity, Chlorides, Phosphate and Nitrate were estimated in the Laboratory by using Indian Standard Procedures (Titration method, Atomic Absorption Spectrophotometer (AAS) Thermo M5Model)

The water samples were drawn during july-september 2015. The ground and surface water were collected from different sampling stations of Mahoba district(U.P.) and around M.P. Water samples from different location were collected in the plastic bottles of 250 ml from well, Bore well, pond and tap water. Samples collected were analyzed within 2 days go in order to avoid special preservation required. However sample in the bottles were kept in the refrigerator. Standard testing methods are used to evaluate different parameter. The pH of the ground water was estimated by pH meter. The alkalinity of water is generally due to present of carbonate and hydroxide ion. Alkalinity provides an idea of the nature of salts present in the water. The total alkalinity of ground water was calculated by standard titration method. The total solid (TS) present in 100 ml of sample water was at 1030 to 1050 c to dryness in drying oven. Cooling is done desiccators and then weight. The TS in mg/l. =  $(A-B) \times 100 / \text{sample volume in litre}$ . Where A = weight of (dried residue + dish) & B =

weight of dish. The total suspended solid (TSS) was calculated by the following formula: Total suspended solid (mg)/liter =  $(A-B) \times 100 / \text{sample vol. in liter}$ , where, A = weight of filter + dried residue. B = weight of filter paper. The total dissolved solids (TDS) term is used to describe the inorganic salts and small amount of organic matter present in solution. It was calculated by adding calcium and magnesium hardness derived by EDTA titration method. The chloride was estimated by silver nitrate titration method. Temperature of the samples measure by thermometer.

The physical parameters included temperature, pH and electrical conductivity. Chemical parameters included dissolved oxygen was carried out by titration method ,total alkalinity, total hardness determined using EDTA titration method , Calcium, Magnesium, Phosphate (PO<sub>4</sub><sup>3-</sup>), Nitrate (NO<sub>3</sub><sup>1-</sup>) and heavy metals (cu, fe, pb, cr, mn,) were determined .

## PHYSICO-CHEMICAL ANALYSIS

All the samples were analyzed for the following physicochemical parameters; pH, temperature, turbidity, Electrical Conductivity (EC), Total Dissolved Solid (TDS), Total Alkalinity(TA), Chloride, Total Hardness(TH), Ca hardness, Mg hardness, Dissolved Oxygen(DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand(COD), Nitrate, Fluoride, Phosphate, Sulphate. The physicochemical analysis of water samples were carried out in accordance to standard analytical methods .

## RESULTS AND DISCUSSION

The data obtained from the current investigation showed in table no.1 which was followed.

### Temperature

The temperature of groundwater sample slightly varied ranged from 25.11 to 27.31

### PH

The pH of the groundwater samples were about neutral, the ranged from 7.02 to 7.85.

## **Turbidity**

Turbidity of groundwater samples obtained from 2.1 to 6.2 which showed limits under the CPCB. ISSN 2320-5407 International Journal of Advanced Research (2014), Volume 2, Issue 6, 18-23 20

## **TDS**

Total dissolved solids are a measure of total inorganic substances dissolved in water . TDS indicates the general nature of water quality or salinity. During the study TDS is found between ranged 546 mg/l to 907 mg/l. The TDS concentration was found to be above the permissible limit may be due to the leaching of various pollutants into the ground water which can decrease the potability and may cause gastrointestinal irritation in human and may also have laxative effect particularly upon transits . Similar results also reported by Olaniya and Saxena .

## **Alkalinity**

The total alkalinity was found to be in the range of 76 to 198 mg/l in ground water samples which are caused mainly due to OH, CO<sub>3</sub>, HCO<sub>3</sub> ions.

## **Chlorides**

The value of chloride obtained 121 to 285 mg/l as presented in table which is further compared with the standard values 250 mg/l. Department of National Health and Welfare, Canada reported that chloride in ground water may result from both natural and anthropogenic sources such as run-off containing salts, the use of inorganic fertilizers, landfill leachates, septic tank effluents, animal feeds, industrial effluents, irrigation drainage and seawater intrusion in coastal areas. Chloride is not harmful to human at low concentration but could alter the taste of water at concentration above 250 mg/l .

## **Total Hardness**

The total hardness of ground water samples were found in the range of 150 up to 307 mg/l which is further compared with the standard value ranged 300 mg/l. Water hardness is usually due to the multivalent metal ions, which comes from minerals dissolved in the water. However, Dzik has reported

an inverse relationship between water hardness and cardiovascular disease.

## **Calcium and Magnesium hardness**

Calcium and Magnesium hardness of groundwater samples were found maximum in sample no. 2 and 7 and minimum in sample no. 5 and 6 respectively which are further compared with the standard value of CPCB.

## **Dissolved Oxygen**

DO of ground water samples were found in the range of 4.22 to 5.74 mg/l. due to the capacity of water to hold oxygen.

## **Biochemical Oxygen Demand**

The BOD ranges values from 1.4 to 3.8 mg/l. which represent the amount of oxygen that microbes need to stabilize biologically oxidizable matter.

## **Chemical Oxygen Demand**

The chemical oxygen demand ranged from 2.9 to 34.2 mg/l. The test is commonly used to indirectly measure the amount of organic compounds in water. Most applications of COD determine the amount of organic pollutants found in surface water, making COD a useful measure of water quality .

## **Nitrate**

The concentration of nitrate was found in water sample up to 54 mg/l. Although only one sample no. 6 exceeds the permissible limit but it shows a moderately high concentration. Jawad et al, have also reported increase in nitrate concentration in ground water due to waste water dumped at the disposal site and likely indicate the impact of leachate .

## **Fluoride**

The concentration of fluoride in the studied water samples ranged from 0.01 to 1.1 mg/l. The concentration of fluoride at low concentration in ground water has been considered beneficial but high concentration may causes dental fluorosis

(tooth mottling) and more seriously skeletal fluorosis

## Phosphate

Phosphate concentration showed under the permissible limit varied up to 0.05 mg/l.

## Sulphate

Concentration of sulphate in water sample ranged from 2.9 mg/l to 171 mg/l. Sulfate is a nontoxic anion but ailment like catharsis, dehydration and gastrointestinal irritation have been linked with it when concentration is high .

The results are summarised in the Observation Table-1

**Observation Table-1**

Parameter /sampling stations	SS1	SS2	SS3	SS4	SS5	SS6	SS7	SS8	SS9	SS10
Temperature °C	5.42	25.21	27.13	26.39	25.11*	25.89	26.81	27.31**	27.21	26.81
pH	7.81	7.02*	7.85**	7.61	7.23	7.11	7.43	7.59	7.68	7.77
Turbidity/NTU	6.0	4.2	5.9	3.2	2.1*	5.7	4.1	6.2**	5.7	5.2
TDS(mg/l)	896	790	837	879	546*	874	756	907**	751	869
T.A.(mg/l)	189	167	121	98	76*	101	113	198**	129	106
Cl (mg/l)	140	285**	213	109*	121	148	169	252	278	201
TH(mg/l)	295	307**	280	298	150*	200	197	247	261	219
Ca (mg/l)	110	265**	145	234	102*	167	129	196	201	182
Mg (mg/l)	58	42	35	64	48	33*	68**	51	59	37
DO(mg/l)	4.12	3.90*	4.01	3.91	5.13	4.97	6.29**	6.23	4.57	4.08
BOD(mg/l)	1.3	1.9	1.7	2.1	3.8**	2.3	1.4	1.2	1.1*	3.6
COD(mg/l)	9.2	5.7	2.8*	11.6	9.4	23.6**	12.3	8.9	13.7	12.4
NO <sub>3</sub> (mg/l)	2.1	ND	ND	22.1**	6.9	5.4	ND	7.8	ND	7.17
F (mg/l)	1.1	2.2**	0.1	0.5	ND	ND	0.7	ND	0.2	0.9
PO <sub>4</sub> (mg/l)	0.01	ND	ND	0.01	0.05	ND	ND	0.07**	ND	0.02
SO <sub>4</sub> (mg/l)	11.2	6.9	2.9*	8.1	12.7	12.2	4.6	17.1**	4.9	7.8

\* minimum value

\*\* maximum value

ND- not detected

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## ANALYSIS OF Y -SHAPE PILE

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### ABSTRACT

The cast-in-place concrete Y shaped vibro-pile(Y–pile) is a new type of displacement pile with a special Y-shaped perimeter. It is considered as an improvement of the traditional circular pile. With the same cross section area as a circular pile, the perimeter of a Y-pile is significantly larger so that the ultimate capacity of the pile is increased. A new term Perimeter/Area ratio has been introduced to check the effectiveness of the figure to offer skin friction. Also components of Y-shape pile have been varied to optimize this ratio.

### INTRODUCTION

There are special shaped piles commonly used in engineering, such as H-pile, I-pile, barrette, tapered pile, belled pile, squeezed branch pile, pipe pile, Y-section pile, and XCC pile. H-pile and I-pile are displacement pile usually made of steel. They have a strong penetration capacity, and they can bear both vertical and horizontal loads (Burdette et al. 2004; Yang et al. 2006). The depth and length of the flange can be enlarged to increase the cross-section area and the bearing capacity (Lin 1998; William et al. 2010). The shape of a barrette is a part of the diaphragm wall but the function is supporting the upper load like a pile (Gifford et al. 1986). The different cross-sections such as rectangle, criss cross, and H-shape can be used, so as to increase section modulus, horizontal shear strength, and adapt to complicated bindings in different sites. To satisfy the requirements of the bearing capacity and bending moment, the section size also can be adjusted (Lei 2001). Tapered pile have variable cross-section structure, the diameter of which is linearly proportional to part of or total depth. When a pile generates vertical displacement, both friction and supporting pressure can be produced. Under the same bearing capacity, a tapered pile can reduce

required material by 80% compared with traditional piles (Ghazavi 2007; Sakr et al. 2005). A belled pile has higher skin friction by enlarging the diameter of the pile tip. A construction method of large diameter bored piles, which has been widely used in Japan, provides the ratio of amplified diameter to pile diameter not more than 2.0. The height of the reamed end can expand up to several meters (Ng et al. 2001). Compared with a belled pile, a squeezed branch pile has multiple expanding diameters. Having higher bearing capacity, it can adjust pile-soil load-sharing to effectively decrease the settlement and cost (Zhang et al. 2004). Use of pipe piles is a mature technology, with applications in many significant engineering projects (Lee 2003). It is reported that pipe piles have been used to resist large frost-jacking forces at a large carrier wharf project and have solved several soft foundation problems, such as high salinity of the soil pore water and freeze-thaw cycles (Thomas and Mobley 1986).

The cast-in-place concrete Y shaped vibro-pile(Y–pile) is a new type of displacement pile with a special Y-shaped perimeter. It is considered as an improvement of the traditional circular pile. With the same cross section area as a circular pile, the

perimeter of a Y-pile is significantly larger so that the ultimate capacity of the pile is increased. This new technique allows less consumption of concrete. Y-pile mainly consists of driving steel casting together with closed ended pre-casted pile toe by vibration, forming a Y shaped void, pouring concrete and withdrawing the steel casing. Reinforcement steel bar is placed in upper part of the pile during concrete pouring and concrete pile cap be casted when the concrete pile body reaches certain strength. A cushion layer on the top of Y-pile is required to ensure pile and soil working together, adjusting the proportion of load distribution both in vertical and horizontal between the pile and soil and reducing the stress concentration on the bottom of road embankment and differential settlement during the forming of the reinforced road embankment of Y pile i.e. composite foundation consisting of rigid piles below flexible foundation. Up to date the Y-pile technique has been applied in soft ground improvement of expressways. The costs are generally lowered by 20% to 25% when comparing with the similar construction techniques.

Field tests conducted at Shanghai-Jiangsu-Anhui express and Shanghai-Jiaxing express Foundations have fully exhibited the superior of Y-shaped vibro-pile. The main properties of it can be concluded as: (1) With same cross section area, circumference of Y-shaped vibro-pile is about 1.5 times as big as that of traditional uniform-circular cross section pile, while moment of inertia is about 1.6 times; (2) With same volume amount of concrete for pile and given same end area, Y-shaped vibro-pile can greatly enlarge friction area and promote total bearing capacity; at the same time, resistance ability of pile to horizontal loading, which is important to foundation stability, is increased, too.

The construction art of Y-shaped vibro-pile is similar to traditional vibro-pile, and the only difference is its Y-shaped tube instead of traditional circular tube. Enough attention should be paid to two aspects during the application of this pile. One is to see that the pressure difference acting to the empty Y-shaped tube does not exceed the tube's resistance in case of lest the tube yields or loses its stability. The other is

to make sure the filling coefficient of concrete meet the original design (Xiaowei Wu et. al 2013).

## Patent for making Y shape pile (CN203034444 U dtd 3<sup>rd</sup> July 2013)

It is a Y-shaped cement soil pile-forming device. The Y-shaped cement soil pile-forming device is characterized in that an extension bar is arranged at the upper end of a submersible motor, a gearbox is arranged at the lower end of the submersible motor, the cross section of the gearbox is a triangle, each of three side faces of the triangular prism gearbox is provided with two driving shafts, the left lower side face is provided with a left driving shaft A and a left driving shaft B, the right lower side face is provided with a right driving shaft A and a right driving shaft B, the upper side face is provided with an upper driving shaft A and an upper driving shaft B, and every two of the three groups of driving shafts form an included angle of 120 degrees. The Y-shaped cement soil pile-forming device can be used for forming Y-shaped cement soil pile bodies.

## PERIMETER/AREA RATIO (P/A RATIO)

To find out the effectiveness of geometrical shape to resist skin friction, a new term called perimeter/area ratio is being introduced which indicates effectiveness of the figure for resisting skin friction owing to larger perimeter.

It is the ratio of perimeter and area for the given area. Since we are dealing in SI unit and as such the unit of this ratio is m/sq m which leads to the unit metre<sup>-1</sup>. Shortly we call this as P/A ratio. Higher the ratio, better will be skin friction of that geometrical figure. This way we can know how effective a geometrical figure is for resisting skin friction.

As an example, area of a square cross section pile having a side length of 28 cm<sup>2</sup> is 784 cm<sup>2</sup> and its circumference is 112 cm. Thus P/A ratio will turn out to be 14.29 m<sup>-1</sup>.

## PARTS OF Y SHAPE PILE

There are three parts namely arm width, angle between the arms and diameter of the circle as

shown in figure no 1. To get variation in P/A ratio, angle has been changed from 60 to 120 °, arm width from 8 to 12 cm and diameter from 20 cm to 60 cm.

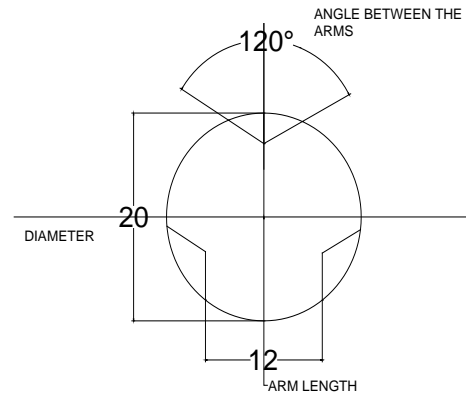


FIG 1-COMPONENTS OF Y SHAPE PILE

## METHODOLOGY INVOLVED

Following steps have been followed:

- Diagram of Y-shape pile has been prepared in AutoCad.
- Then many figures have been prepared by varying all three parameters as explained above. For each figure area and parameter has been worked out and from that this ratio P/A ratio has been worked out.

## ANALYSIS OF Y SECTION

There are certain advantages in using Y shape pile such as higher skin friction leading to lower settlement compared to circular pile. Refer figure no 02 to 4.

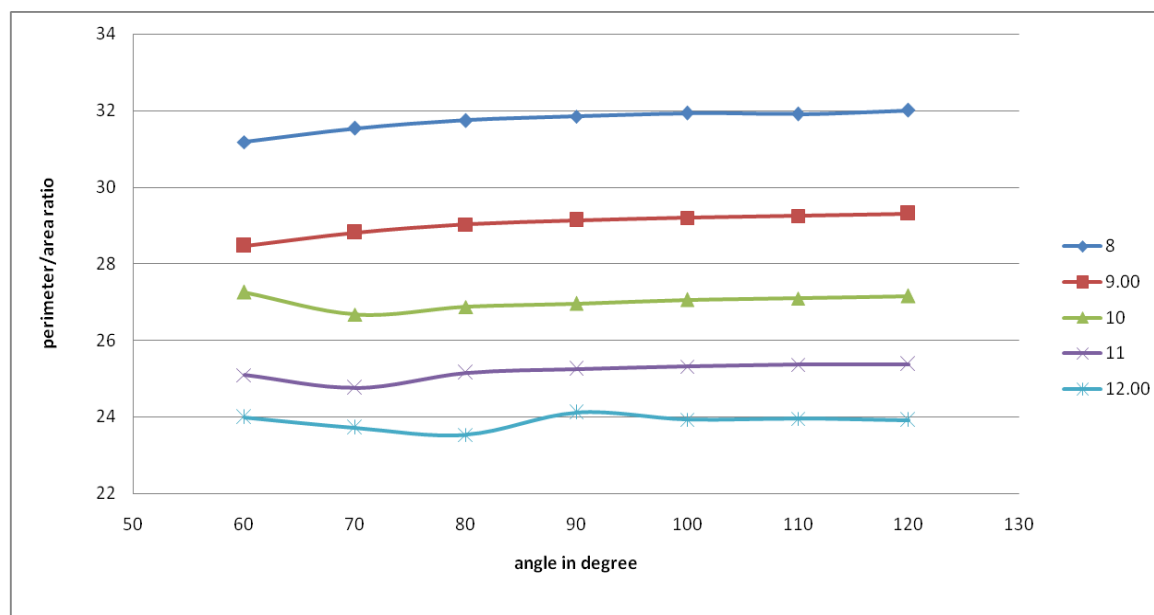


FIGURE 02: VARIATION OF P/A RATIO WITH RESPECT TO ANGLE AND ARM WIDTH-Y SHAPE PILE 20 CM DIA.

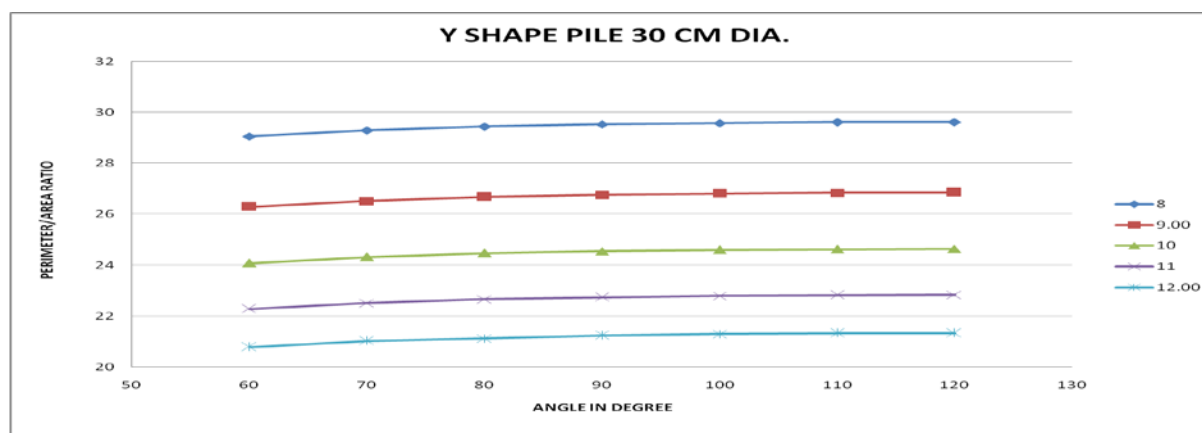
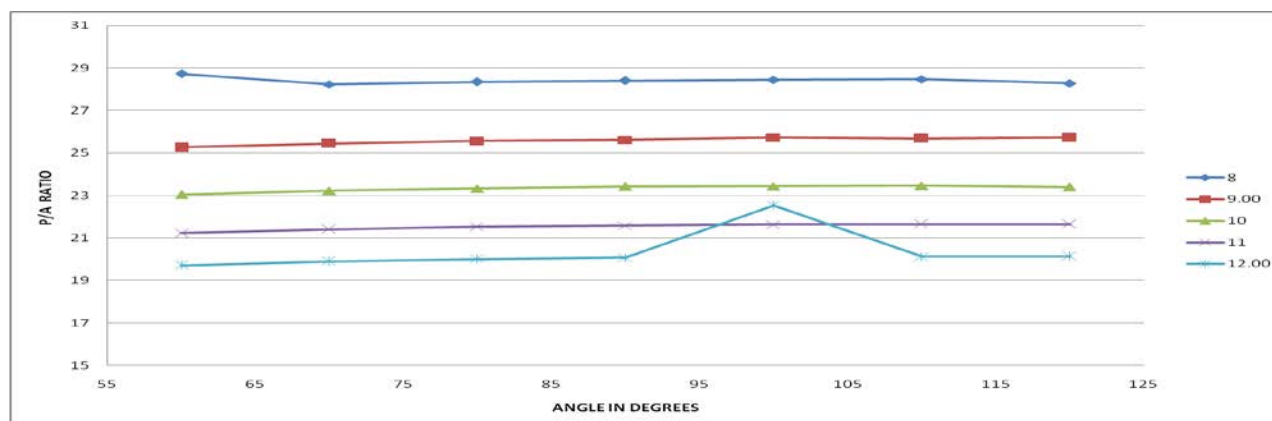


FIGURE NO 03: VARIATION OF P/A RATIO WITH RESPECT TO ANGLE AND ARM WIDTH: Y SHAPE PILE 30 CM DIA.





**FIGURE NO 04: VARIATION OF P/A RATIO WITH ANGLE AND ARM WIDTH-Y SHAPE 40 CM DIA.**

**Table 1 (dia 20 cm) - typical table is reproduced below:**

The details are indicated below

Angle varies from 60 to 120

Arm length varies from 8 cm to 12 cm

P/A ratio varies from 32 to 24 being highest at 8 cm arm width at angle 120 degree. Graph indicates that this value reduces with increase in arm width.

TABLE NO 1: ANALYSIS OF Y SHAPE PILE( DIA 20 CM)

## Y SHAPE PILE

diameter-20 cm

side	Parameter	Angle						
		120°	110°	100°	90°	80°	70°	60°
8	area sq cm	205.70	205.82	205.19	204.25	202.88	200.49	196.76
	area sq m	0.02	0.02	0.02	0.02	0.02	0.02	0.02
8	perimeter r cm	65.82	65.68	65.52	65.03	64.40	63.21	61.34
	perimeter rm	0.66	0.66	0.66	0.65	0.64	0.63	0.61
	P/A RATIO	32.00	31.91	31.93	31.84	31.74	31.53	31.18
9	area sq cm	225.50	225.31	224.63	223.58	221.92	218.90	214.18
	area sq m	0.02	0.02	0.02	0.02	0.02	0.02	0.02
9	perimeter r cm	66.10	65.90	65.60	65.14	64.40	63.06	60.96
	perimeter rm	0.66	0.66	0.66	0.65	0.64	0.63	0.61
	P/A RATIO	29.31	29.25	29.20	29.13	29.02	28.81	28.46
10	area sq cm	243.66	243.43	242.59	241.35	239.24	235.51	221.24
	area sq m	0.02	0.02	0.02	0.02	0.02	0.02	0.02
10	perimeter r cm	66.17	65.95	65.62	65.07	64.28	62.80	60.29
	perimeter rm	0.66	0.66	0.66	0.65	0.64	0.63	0.60
	P/A RATIO	27.16	27.09	27.05	26.96	26.87	26.67	27.25
11	area sq cm	260.34	259.81	259.03	257.23	254.74	250.35	243.94
	area sq m	0.03	0.03	0.03	0.03	0.03	0.03	0.02
11	perimeter r cm	66.04	65.88	65.55	64.95	64.06	61.98	61.21
	perimeter rm	0.66	0.66	0.66	0.65	0.64	0.62	0.61
	P/A RATIO	25.37	25.36	25.31	25.25	25.15	24.76	25.09
12	area sq cm	274.95	274.33	273.32	271.26	267.78	263.08	257.27
	area sq m	0.03	0.03	0.03	0.03	0.03	0.03	0.03
12	perimeter r cm	65.75	65.70	65.39	65.39	63.01	62.39	61.72
	perimeter rm	0.66	0.66	0.65	0.65	0.63	0.62	0.62
	P/A RATIO	23.91	23.95	23.92	24.11	23.53	23.72	23.99

## CONCLUSION

Following conclusions can be drawn:

1. As arm width increases P/A ratio decreases and hence to get optimum P/A we should try to keep arm width as low as possible.
2. For smaller diameter of the circle in which Y shape pile is inscribed, better P/A ratio is

obtained and hence smaller diameter of circle is desirable.

3. Only at particular angle we get highest P/A ratio usually 120° in this regard.

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## विद्यार्थी एवं शिक्षक के बीच शिक्षण प्रणाली का विकास

सहायक प्राध्यापक,  
विक्टोरिया कॉलेज ऑफ एजुकेशन, भोपाल

### 1. प्रस्तावना

भारतीय शिक्षा-पद्धति में हिन्दी का महत्वपूर्ण स्थान है। हिन्दी कहीं मातृ-भाषा के रूप में पढ़ाई जाती है, कहीं राष्ट्र भाषा के रूप में पढ़ाई जाती है तो कहीं हिन्दी का प्रयोग हिन्दी विषय को पढ़ाने के रूप में होता है। हिन्दी-शिक्षक को हिन्दी पढ़ाते समय-समय के अनुसार हिन्दी में नयी तकनीकी की आवश्यकता को नही नकारा जा सकता इस सन्दर्भ में इस तरह की तकनीकीयों का प्रयोग किया जा रहा है। तेजी से परिवर्तित होने वाले विज्ञान एवं तकनीकी के इस युग में प्रायः प्रत्येक क्षेत्र में नई एवं आधुनिकतम चीजें एकीकृत की जा रही हैं। इस कारण पैड़ागोजी लेग्ज हिन्दी को भी चारो तरफ से होने वाले विकास के प्रकाश से अद्यतन बनाया जाना आवश्यक है। इसके लिए सूचना प्रौद्योगिकी, (Information Technology) संवाद प्रक्रिया, (Communication Technology) सूचना तथा संचार तकनीकी, (Information and Communication Technology) दूर संचार की धारणा, (Concept of Telecommunication) सैटेलाई संचार, (Satellite Communication) शिक्षा प्रणाली उपागम, (System Approach to education) कम्प्यूटर अवधारणा, संरचना, कार्यप्रणाली, इनपुट एवं आउटपुट, डिवाइस, (Computer, Concept, Structure, Functioning, Input and output devices) सिस्टम एवं एप्लीकेशन सॉफ्टवेयर (System and application software) विभिन्न प्रकार के नेटवर्क, लैन, मैन, वैन, (Different types of Networks LAN, MAN, WAN) ई-विद्यालय, (E-School) ई-अधिगम, (E-Learning) शिक्षण अधिगम में बहु माध्यम उपागम, (Multi media approach to teaching learning) सूचना प्रौद्योगिकी विभिन्न साधन, (Different media of Information Technology) शिक्षण के प्रतिमान, (Models of teaching) शैक्षिक तकनीकी, (Educational technology) निर्देशात्मक प्रणाली का विकास, (Development of Instructional system) अभिक्रमित अधिगम, (Programmed learning) अनुरूपण, (Simulation) मानसिक उद्वेलन, (Brainstroming) सूक्ष्म शिक्षण, (Micro teaching) विचार करना, (Thinking) रेडियो टेलीविजन और कम्प्यूटर के शैक्षणिक कार्यक्रमों का आलोचनात्मक विश्लेषण (Critical analysis of education programmes of radio, television and computers) के साथ ही साथ श्रव्य, श्रव्य दृश्य और बहु साधन, सामग्री का तुलनात्मक विश्लेषण (Comparative analysis of audi, audio-visual or multimedia material) हिन्दी में अनिवार्य है।

### 2. विद्यार्थी

हिन्दी में तकनीकी प्रवृत्तियों के साथ ही हिन्दी शिक्षण की आधुनिक पद्धतियों को निम्न प्रकार से परिभाषित कर उपयोग में लाया जाना सुनिश्चित योग्य है। वर्तमान युग को शिक्षा की क्रांति का युग कहा जा सकता है। आज शिक्षण से सम्बंधित प्रायः प्रचलित पुरानी धारणाओं में निरंतर बदलाव आ रहा है। भारतीय विद्यालयों में वैज्ञानिक तथा मनोवैज्ञानिक खोजों के परिणामस्वरूप शिक्षा के क्षेत्र में अनेकों उथल-पुथल देखने को मिल रहे हैं। आज शिक्षा को सुधारने हेतु शिक्षा की पद्धतियों के अनेक नवीन परिवर्तन किए जा रहे हैं। यद्यपि शिक्षण में प्रयुक्त होने वाली यह विभिन्न पद्धतियां एक-दूसरे से भिन्न हैं, परन्तु इन सबका शिक्षण में सुधारात्मक प्रयोग किया जा रहा है। हिन्दी शिक्षण पद्धतियों को निम्न रूप निम्नानुसार है :-

### 1. शिक्षण प्रणाली

पर्यवेक्षित अध्ययन पद्धति को सर्वप्रथम मोरिसन ने प्रस्तुत किया थी। किसी भी समस्या के समाधान हेतु इस पद्धति के अन्तर्गत विद्यार्थी स्वयं अध्ययन करते हैं। इस पद्धति में शिक्षक का कार्य केवल एक पथ-प्रदर्शक के रूप में ही होता है, वह समय-समय पर समस्या से सम्बंधित विषयों के समाधान हेतु विद्यार्थियों का मार्गदर्शन करता है। इस प्रकार इस पद्धति का प्रयोग उन विषयों में अधिक लाभकारी सिद्ध होता है जिन विषयों का अध्ययन विद्यार्थी स्वयं करने में सक्षम होते हैं।

### 2. विद्यार्थी

इस पद्धति में विद्यार्थियों के वह कार्य दिया जाता है जो कि उनकी क्षमता, बुद्धि के अनुसार अनुकूल होता है। इस पद्धति से छात्रों में मौन धारण करने की प्रवृत्ति का विकास होता है। छात्र इस पद्धति के द्वारा अपने अध्यापकों द्वारा दिए गए पाठ्य-वस्तु को गहनता से पढ़ते हैं। इस पद्धति से छात्र पाठ्य वस्तु पर अपना स्वयं का स्वामित्व विकसित करना सीख जाते हैं।

### 3. शिक्षण प्रणाली

क्षेत्रीय भ्रमण का अर्थ है विभिन्न क्षेत्रों की यात्राएं करना। यह यात्राएं अपने मित्रों के साथ आमोद-प्रमोद की दृष्टि से की जाती है। इस प्रकार के भ्रमण का समयकाल बहुत थोड़ा होता है। इस भ्रमण की एक विशेषता यह होती है कि भ्रमण शिक्षा के क्षेत्र से जुड़ा होता है। इस प्रकार इस पद्धति में पर्यटन का शिक्षा के लिए किया जाता है। पाठ्यक्रम से सम्बंधित किसी विषय के अध्ययन के लिए किया गया प्राकृतिक भ्रमण क्षेत्रीय भ्रमण पद्धति के अन्तर्गत गिना जाता है।

### 4. शिक्षण प्रणाली

शैक्षिक पर्यटन के द्वारा विद्यार्थियों के सामाजिक स्तर का विकास किया जाता है। शैक्षिक पर्यटन के द्वारा विद्यार्थियों में सहयोग, परस्पर सद्भाव आदि का विकास होता है। शैक्षिक पर्यटन व्यक्तिगत विभिन्नताओं के अनुरूप होता हो। यह बालकों की रुचियों, आदतों के



अनुरूप होता है। शैक्षिक पर्यटन अन्वेषण पर आधारित अधिगम होता है। यह पद्धति वास्तविक अनुभव प्रदान करती है। शैक्षिक पर्यटन पद्धति क्रियाशील के सिद्धांत पर आधारित होता है।

## 5- ikt DV ; kizkt u i) fr

प्रायोजन विधि का प्रतिपादन प्रो. डब्लू. किलपैट्रिक ने किया। तत्पश्चात् प्रायोजना विधि के मूलाधार के रूप में ड्यूवी ने इस विधि को शिक्षण में प्रयोगात्मक रूप से अपनाए जाने पर बल दिया। इस विधि के अन्तर्गत विद्यार्थी स्वयं समस्यात्मक कार्यों का चुनाव करते हैं तथा क्रिया के द्वारा उनका हल ढूँढते हैं। शिक्षण का कार्य विद्यार्थियों को संरक्षण प्रदान करना होता है। यह प्रोजेक्ट विद्यार्थियों की रुचि, अवस्था तथा बौद्धिक स्तर के अनुकूल होत है।

## 6- vfhclfer vupsk u i) fr

अभिक्रमित पद्धति को अभिक्रमित अध्ययन कहा जाता है। इस पद्धति का प्रयोग प्राचीन काल में भी किया जाता था। परन्तु यह शिक्षण की आधुनिक तकनीकी कहलाती है। इस पद्धति का प्रयोग सर्वप्रथम सुकरात ने अपनी प्रश्नोत्तर प्रणाली में किया था। तत्पश्चात् इस पद्धति के प्रणेता वी.एफ. रिकनर ने इस पद्धति के रूप में प्रस्तुत किया। इस पद्धति के अनुसार यदि विद्यार्थियों को यह बता दिया जाए कि वर्णित प्रश्न का उत्तर सही है अथवा गलत तो विद्यार्थी जल्दी अध्ययन सीखता है, और उसमें मूल्यांकन गुण का विकास होता है।

## 7- Hk'lk iz lsk' llyk i) fr

यह पद्धति दृश्य-श्रव्य उपकरणों की भांति शिक्षण में एक सहायक पद्धति के रूप में प्रयुक्त की जाती है इसलिए इस पद्धति को अध्यापक की प्रतिस्थापना नहीं कहा जा सकता है। भाषा-प्रयोग शाला एक विशेष कक्ष होता है, जो विविध दृश्य, श्रव्य उपकरणों से युक्त होता है। सामान्यः एक भाषा- प्रयोगशाला चार-छह-आठ, बत्तीस टेप रिकार्डों एक एक कमिक व्यवस्थित संयोजन होता है जिसके माध्यम से शिक्षार्थी विविध प्रकार के अभ्यास करते हुए भाषा सीखते हैं। संकुचित अर्थ में एक ऐसा कमरा भी भाषा प्रयोगशाला का किया जा सका है जिसमें केवल एक टेपरिकार्ड हो और जिसके माध्यम से शिक्षार्थी भाषा अभ्यास कार्य करते हो, किन्तु वास्तव में भाषा प्रयोगशाला एक सामान्य कक्षा का पूरक रूप है, जहां शिक्षार्थी सामान्य कक्षा के अध्ययन के अतिरिक्त समय के टेपित पाठों का श्रवण करते हुए अनुकरण आदि के द्वारा भाषा को व्यवहार के स्तर पर सीखते हैं।

## 8- dE; Wj rFlk f' kkk i f d z k i) fr

वर्तमान में कम्प्यूटर शिक्षा का शिक्षण के क्षेत्र में बहुत भारी योगदान है। इस प्रतिमान का विकास लोरंस स्टोलुरो तथा डेनियल डेविज ने शिक्षण किया। इस पद्धति का प्रायः दो भागों में विभक्त किया जा सकता है :-

(क) अनुवर्ग शिक्षण तथा (ख) पूर्व अनुवर्ग शिक्षण अवस्था। प्रथम पक्ष में कम्प्यूटर अनुदेशन, विशिष्ट उद्देश्यों को प्राप्त करने के लिए विशिष्ट छात्र को उसके पूर्व ज्ञान के आधार पर किया जाता है। द्वितीय प्रकार की अवस्था में कम्प्यूटर उसके अनुरूप सामग्री को प्रस्तुत करता है, जिसका छात्र अध्ययन करता है।

## 9- njm' lzi i j f' kkk i) fr

वर्तमान में दूरदर्शन ने शिक्षण के क्षेत्र में अपना महत्वपूर्ण योगदान दिया है। इसका स्वरूप व्यापक हो गया है। शिक्षण के क्षेत्र में दूरदर्शन का प्रयोग सामान्यतः दो रूपों में किया जा रहा है। प्रथम रूप में विभिन्न कक्षाओं का अलग-अलग रूप से अध्ययन इस विधि के द्वारा कराया जा सकता है। दूसरे इस विधि के द्वारा उन बड़े एवं

आर्थिक रूप से सम्पन्न विद्यालयों में देखने को मिलता है जहां एक ही विषय की कई कक्षाएं एक साथ पढ़ाई जाती है। इस प्रकार दूरदर्शन के दूसरे रूप में देश के दूरदर्शन केन्द्र, विद्वान एवं कुशल अध्यापकों से पाठ तैयार कराकर यह उनके वास्तविक शिक्षण को ही एक निश्चित समय पर दूरदर्शन पर प्रसारित करते हैं, जिसे राष्ट्र या प्रदेश के विद्यालयों में प्रदर्शित किया जाता है। इस प्रकार की व्यवस्था में अपेक्षाकृत बहुत ही कम आर्थिक साधनों की आवश्यकता पड़ती है। कार्यक्रमों का दूरदर्शन पर प्रसारण करने में जो भी व्यय होता है, यह दूरदर्शन विभाग वहन करता है। विद्यालयों को केवल दूरदर्शन कय करने तथा बिजली आदि पर सामान्य व्यय करना पड़ता है। उस के बहु-आयामी उद्देश्यों को अपने सामने रखना होता है। उन्हें विद्यार्थियों को हिन्दी बोलने, पढ़ने, समझने तथा लिखने की शिक्षा तो देनी ही होती है, साथ में साहित्य की विभिन्न विधाएं-कविता, कहानी, नाटक, निबंध आदि-पढ़ाते समय कुछ विशिष्ट उद्देश्यों को भी सम्मुख रखना होता है। इस बहुमुखी कार्य को कुशलता पूर्वक सम्पन्न करने के लिए शिक्षक को अपने विषय का पर्याप्त ज्ञान होना चाहिए। ज्ञान की न कोई थाह है, न कोई सीमा। इस लिए शिक्षा-शास्त्री हमेशा इस बात पर जोर देते आ रहे हैं कि शिक्षक को निरंतर ज्ञान ग्रहण करते रहना चाहिए।

भारत वर्ष में हिन्दी भाषा का व्यापक प्रचार एवं प्रसार हो रहा है। हिन्दी के महत्व को दर्शाते हुए हिन्दी के सुविख्यात कवि भारतेन्दु हरिश्चन्द्र ने हिन्दी भाषा के महत्व के संबंध में अपने उद्गार प्रकट करते हुए कहा था :-

“निज भाषा उन्नति अहे, सब उन्नति का मूल।

बिन निज भाषा ज्ञान के, मिटे न हिय का मूल

।।”

यह एक कवि के केवल उद्गार ही नहीं बल्कि मानव जीवन का एक शाश्वत सत्य है। इसी प्रकार मातृ भाषा का महत्व महात्मा गांधी के इस कथन से स्पष्ट प्रतीत होता है कि :-

“ बच्चे के मानसिक विकास के लिए मातृ भाषा उतनी ही आवश्यक है जितना कि बच्चे के शारीरिक विकास के लिए माता का दूध।”

इस प्रकार मनुष्य की विकास प्रक्रिया में मातृ भाषा का महत्वपूर्ण स्थान है। इसके महत्व को निम्नलिखित तथ्यों से आंका जा सकता है। अभिव्यक्ति का महत्वपूर्ण साधन, मानसिक एवं बौद्धिक विकास में सहायक, ज्ञानार्जन का सशक्त साधन। भावनात्मक विकास में सहायक, सांस्कृतिक विकास में सहायक, शारीरिक विकास में सहायक, समाजीकरण का सशक्त साधन, रचनात्मक विकास में सहायक, व्यावहारिक कार्यों में सहायक, व्यक्तित्व के विकास में सहायक। अतः उपरोक्त तथ्यों से हम निष्कर्ष पर पहुंचते हैं कि मातृ भाषा मनुष्य के सर्वांगीण विकास में महत्वपूर्ण भूमिका निभाती है। व्यक्ति के सभी तत्व-शारीरिक, मानसिक, बौद्धिक, सामाजिक, सांस्कृतिक आदि- इसी से प्रभावित होते हैं। बच्चे के व्यक्तित्व को रचनात्मक विकास की ओर अग्रसर करने के लिए आवश्यक है कि उसकी शिक्षा में मातृ-भाषा को उचित स्थान दिया जाये। मातृ भाषा के बिना बच्चे की शिक्षा सम्भव ही नहीं और न ही बच्चे के व्यक्तित्व का उचित विकास सम्भव है।

पैदागोजी लेग्वेज हिन्दी के द्वारा विद्यार्थियों को केवल विषय वस्तु का ही ज्ञान नहीं दिया जाता, बल्कि शुद्ध उच्चारण, शुद्ध अक्षर विन्यास, भाषा का शुद्ध प्रयोग अभिव्यक्त कौशल भी सिखाये जाते हैं। इसके लिए हिन्दी की विभिन्न विधाओं- कविता, कहानी, एकांकी, संवाद आदि को सम्मिलित किया जाता है। हिन्दी के विभिन्न कौशलों ज्ञान तथा सौन्दर्य बोध की परीक्षा के लिए निम्न प्रकार से व्यवस्था की

जा सकती है। उच्चारण कौशल का मूल्यांकन, वाचन-कौशल का मूल्यांकन, शब्दावली ज्ञान का मूल्यांकन, बोध क्षमता मूल्यांकन, पाठ्य सामग्री के ज्ञान का मूल्यांकन, व्याकरण के ज्ञान का मूल्यांकन, रचना कौशल का मूल्यांकन, एवं सौन्दर्य बोध का मूल्यांकन आदि प्रमुख हैं।

हिन्दी के विभिन्न कौशलों, ज्ञान तथा सौन्दर्य-बोध के लिए विभिन्न प्रकार की परीक्षाओं का प्रयोग किया जाना चाहिए। इनमें से किसी एक परीक्षा-पद्धति (निबन्धात्मक, वस्तुनिष्ठ, लघुत्तर, मौखिक) का प्रयोग करने से विद्यार्थियों की सभी योग्यताओं एवं उपलब्धियों का मूल्यांकन सम्भव नहीं। इसलिए इन सभी परीक्षा-पद्धतियों का मिश्रित प्रयोग किया जाना चाहिए। आज से कुछ समय पहले केवल निबन्धात्मक परीक्षा का प्रयोग होता था। अब इसके साथ-साथ वस्तुनिष्ठ एवं लघुत्तर परीक्षा का भी प्रयोग होने लगा है, परन्तु अभी मौखिक परीक्षा का प्रचलन नहीं हुआ। प्राइमरी स्तर पर विद्यार्थियों का मौखिक परीक्षण किया तो जाता है, परन्तु बहुत कम इतना पर्याप्त नहीं। मिडिल और हाई स्तर पर विद्यार्थियों का मौखिक परीक्षण होना चाहिए। इसके अभाव के कारण विद्यार्थी उचित सम्भाषण, शुद्ध उच्चारण तथा शुद्ध वाचन की ओर ध्यान नहीं देते। अध्यापक भी इनका शिक्षण प्रदान नहीं करते। परिणामस्वरूप मैट्रिक पास कर लेने के पश्चात् भी विद्यार्थी न तो शुद्ध हिन्दी बोल सकते हैं और न ही पढ़ सकते हैं। अतः मिडिल तथा हाई स्तर पर भी मौखिक परीक्षा को सम्मिलित किया जाना चाहिए। सभी परीक्षण विधियों के समुचित मिश्रण से हिन्दी-शिक्षा में मूल्यांकन के कार्य को उपयोगी, सार्थक एवं उद्देश्यपूर्ण बनाया जा सकता है।

ग्यारहवीं शताब्दी से लेकर आज तक हिन्दी साहित्य की धारा विभिन्न रूपों में निरंतर आगे बढ़ती है। समय और परिस्थितियों के अनुसार इसमें कई परिवर्तन होते रहे। इसके व्यापक प्रकार को देख कर कई विद्वानों तथा आलोचकों ने इसे चार कालों में विभाजित किया है। प्रायः आरम्भिक काल की 'आदिकाल' या 'वीरगाथा काल' कहा जाता है। इस काल का अधिकांश साहित्य या तो राजपूत राजाओं के दरबारों में लिखा गया या जैन मंदिरों के आश्रम में लिखा गया। दूसरे काल को 'भक्ति-काल' कहा जाता है। इस काल के काव्य में भक्ति-भावना की प्रमुखता है। कबीर, नानक, रैदास, तुलसीदास, मीरा जैसे भक्त कवियों ने कविता को भक्ति-भावना से संवारा। तीसरे काल को 'रीतिकाल' कहते हैं। इस काल का अधिकांश काव्य, काव्य-शास्त्र के सिद्धांतों के आधार पर रचा गया। बिहारी, वेद, पद्माकर, मतिराम जैसे कवियों ने नारी-सौन्दर्य, प्रेम, विरह, नीति आदि विषयों पर सुन्दर काव्य की रचना की। भूषण कवि की वीर-रस-पूर्ण कविता भी इसी काल में हुई। चौथे काल को 'आधुनिक काल' कहते हैं। इस का आरम्भ सन 1857 से माना जाता है। इसके प्रवर्तक भारतेन्दु हरिश्चन्द्र माने जाते हैं। उन्हीं के नाम पर आधुनिक काल के प्रथम खण्ड (1857 से 1900 तक) को 'भारतेन्दु युग' की संज्ञा दी जाती है। इस युग के कवियों ने राजाओं-महाराजाओं या अपने आश्रयदाताओं को संतुष्ट करने के लिए काव्य की रचना की बल्कि अपने हृदय की प्रेरणा से जनता तक अपनी भावना पहुंचाने के लिए काव्य रचना की। इस युग के कवियों ने एक ओर हिन्दी काव्य की पुरानी परम्परा से सुंदर रूप को अपनाया तो दूसरी ओर नई परम्परा की स्थापना की, अर्थात् इनके काव्य में एक ओर भक्ति-भावना और श्रृंगार इस (पुरानी परम्परा) की प्रवृत्तियाँ मिलती हैं और दूसरी ओर देख-प्रेम, समाज-सुधार तथा हास्य-व्यंग्य (नई परम्परा) की प्रवृत्तियाँ मिलती हैं। वास्तव में भारतेन्दु-युग हिन्दी साहित्य के नव-जागरण का युग था। भारतेन्दु हरिश्चन्द्र के पश्चात् आचार्य द्विवेदी प्रसाद द्विवेदी ने हिन्दी साहित्य का नेतृत्व सम्भाला। इन्होंने रीतिकाल में चली आने वाली श्रृंगारी कविता का विरोध किया और कवियों को समाज और राष्ट्र की ओर ध्यान देने की प्रेरणा दी। इन्हीं के नाम पर आधुनिक

काल के दूसरे खण्ड (1900 से 1920) की 'द्विवेदी युग' की संज्ञा दी जाती है। द्विवेदी युग के पश्चात् हिन्दी साहित्य की जो प्रवृत्तियाँ उजागर हुईं उन्हें प्रायः आधुनिकतम प्रवृत्तियों की संज्ञा दी जाती है। वे प्रवृत्तियाँ इस प्रकार हैं :-

(1) छायावाद- सन् 1918 के लगभग हिन्दी कविता में एक नई प्रवृत्ति उभरने लगी जिसे 'छायावाद' की संज्ञा दी गई। इस प्रवृत्ति के उभरने का मुख्य कारण द्विवेदी युग की उपदेशात्मकता तथा इतिवृत्तात्मकता का विरोध था। हिन्दी के नव युवक कवि द्विवेदी युग के कवियों की सुधारवादी एवं उपदेशात्मक कविता में सौन्दर्य एवं प्रेम की उपेक्षा से उबने लगे थे। एक ओर यह उब और दूसरी ओर अंग्रेजी के रोमांटिक कवियों का अध्ययन। नव-युवक कवियों की भावनायें तथा अभिव्यक्ति विद्रोह कर उठी जिसके परिणामस्वरूप 'छायावाद' का जन्म हुआ। अतः द्विवेदी-युग की प्रतिक्रिया स्वरूप छायावाद का जन्म हुआ।

रहस्यवाद - प्रायः सभी छायावादी कवियों ने रहस्यवादी कविताएं भी लिखी हैं। छायावाद और रहस्यवाद में अन्तर केवल इतना है कि छायावाद प्रकृति में मानवीय चेतना के दर्शन करता है जबकि रहस्यवाद प्रकृति में इश्वरीय चेतना के दर्शन करने का प्रयास करता है। रहस्यवाद प्रकृति के माध्यम से उस अज्ञात अनन्त शक्ति के साथ सम्बन्ध स्थापित करने का प्रयास करता है जो सहज रूप से प्राप्य नहीं है। दर्शन शास्त्र में भी परमात्मा और आत्मा के सम्बन्ध की चर्चा होती रही है, परन्तु वहां विचारों की प्रधानता रही है। रहस्यवाद में भावना की प्रमुखता है। रहस्यवाद को परिभाषित करते हुए आश्चर्य रामचन्द्र शुक्ल ने कहा है :-

“साधन के क्षेत्र में जो उद्वेगवाद है, वही साहित्य के क्षेत्र में चिन्तन की भूमि पर रहस्यवाद है।”

आधुनिक हिन्दी काव्य के लिए रहस्यवाद नया नहीं है। भारतीय संस्कृति और साहित्य में इस की सशक्त परम्परा है। वेदों और उपनिषदों में, शंकराचार्य के अद्वैतवाद में, तथा सिद्धों की रचनाओं में रहस्यवादी प्रवृत्ति के विशेष दर्शन होते हैं। कबीर की रचनाओं में आत्मा-परमात्मा के मिलन की अनुभूति का चित्रण 'रहस्यवादी काव्य' का सशक्त प्रमाण है। जायसी ने भी रहस्यवादी भावना का अत्यन्त सुन्दर चित्रण है। इसी प्रकार आधुनिक युग के छायावादी कवियों को युगों से चली आ रही रहस्यात्मक प्रवृत्ति हुई जो उन की अनुभूतियों के सहयोग से काव्य की उत्कृष्ट सीमाओं को स्पर्श करती प्रतीत होती है।

प्रतिवाद- आधुनिक काव्य की प्रत्येक प्रवृत्ति पिछली प्रवृत्ति की प्रति क्रिया-स्वरूप उत्पन्न हुई। द्विवेदी युग की इतिवृत्तात्मकता और उपदेशात्मकता की प्रतिक्रिया के छायावाद का जन्म हुआ। इसी प्रकार छायावाद की अति-कल्पना तथा पलायनवादिता से जिस काव्य में मुख्यतः कार्य-मार्क्स के विचारों का प्रतिपादन एवं प्रचार किया गया है।

हिन्दी के प्रगतिवादी कवियों में कंदारनाथ अग्रवाल, नागार्जुन, डॉ. राम विलास शर्मा, शिव मंगल सिंह, 'सुमन' त्रिलोचन शास्त्री आदि के नाम प्रमुख हैं। प्रगतिवाद के प्रभाव से कई छायावादी कवियों ने भी शोषित-वर्ग के प्रति सहानुभूति प्रकट की है। इन में 'निराला' और 'पन्त' का नाम विशेष उल्लेखनीय है, आधुनिक युग में कुछ ऐसे कवि भी हुए हैं जिन्होंने समाज की प्रगति तथा निर्धनों के उत्थान के प्रति अपना विश्वास प्रकट किया है परन्तु वे मार्क्स का अन्धाधुन्ध अनुसरण नहीं करते हैं। ऐसे कवियों को 'प्रगतिशील' कवि का जाता है। इनमें रामधारी सिंह 'दिनकर' भगवती चरण वर्मा, रामेश्वर शुक्ल 'अंचल' नरेन्द्र शर्मा, मोहन लाल द्विवेदी कंदारनाथ मित्र 'प्रभात' आदि के नाम प्रसिद्ध हैं।

प्रयोगवाद— प्रगतिवादी कविताओं में समाज का इतना अधिक चित्रण हो रहा था कि एक बार फिर व्यक्ति की ओर उन्मुख होने लगा। परन्तु यह व्यक्तिपरकता छायावाद की भावुकता लेकर उत्पन्न नहीं हुई। बल्कि बौद्धिकता लेकर उत्पन्न हुई। इस में नये-नये प्रयोगों पर अधिक बल दिया गया। इसलिए इसे 'प्रयोगवाद' कहा जाता है। दूसरे महायुद्ध की समाप्ति के पश्चात इसी प्रकार की कविता लिखी जाने लगी। प्रयोगवादी कवियों ने सभी परम्पराओं, व्यक्तियों तथा रुढ़ियों का त्याग कर के नए तत्वों को खोजने और उनके प्रयोग पर बल दिया है। कविता के इस नये आन्दोलन के नेता श्री सच्चिदानन्द हीरालाल वात्स्यायन 'अज्ञेय' थे। इन्होंने सन् 1943 में 'तार सप्तक' के नाम से सात प्रयोगवादी कवियों की कविताओं का संग्रह प्रकाशित किया। दूसरा 'सप्तक' 1951 में और तीसरा सप्तक 1959 में निकाला गया। इन दोनों सप्तकों में भी सात अति कवियों की कविताओं का संग्रह है। प्रयोगवादी कविता को आगे चल कर 'नयी कविता' का नाम दिया। 'प्रयोगवादी' अथवा 'नयी कविता' के कवियों में अज्ञेय, गजान माधव, 'मुक्तिबोध', गिरिजा कुमार माथुर, भवानी प्रसाद मिश्र, प्रभाकर माचवे, नेमिचन्द्र जैन, धर्मवीर भारतीय, रघुवीर सहाय, कुंवर नारायण, कीर्ति चौधरी आदि के नाम प्रसिद्ध हैं।

1. **अज्ञेय**

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## Effect of cadmium chloride on biochemical parameters of a freshwater catfish, *Channa punctatus*

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### ABSTRACT

The present study was conducted to investigate the effects of cadmium chloride on biochemical parameters a freshwater catfish, *Channa punctatus*. The fishes were exposed to 3mg/l ( 96 h LC50) and 5mg/l ( 96 h LC50) of cadmium chloride for 30 days. The most common changes observed were that the blood level activities of ALT and AST significantly increased, as well as glucose, creatinine, urea, potassium and uric acid, while as the protein albumin and sodium were significantly deceased at 3, 5 mg/l of cadmium exposed fish.

### INTRODUCTION

The rapid increase in population and the development in industrial and agricultural sectors have created a serious threat to all kinds of life in the form of pollution which has now become a global problem. Growth in industrialization is one of the most serious threats to mankind, domestic animals, fishes and wild life through its litters. While on one hand technological development has improved the quality of life. On the other hand it has created a number of health hazards. The toxic chemicals discharged into air, water and soil get into food chain from the environment. By entering into the biological system they disturb the biochemical processes leading to health abnormalities. To measure the toxic effects of different pollutants in the aqueous environment, fish could be very important organism. Blood parameters are considered pathophysiological indicators of whole body and therefore are important in diagnosing the structural and functional status of fish exposed to toxicants. The major pollutants are heavy metals. Various organizations listed 24 extremely hazardous substances. These include heavy metals and one such heavy metal is cadmium. Cadmium, a non-essential heavy metal has been listed in the “Black list” of European community. It has also been classified as b-class (soft) metal. It is a non-

biodegradable element with no known biological function and is reported to be a major contaminant of aquatic ecosystems causing adverse effects on aquatic organisms. The major sources of adulteration include gilding, paper, PVC plastic, pigments and ceramic industries, battery, mining and smoldering units and many other modern industries. It also enters into aquatic bodies through sewage sludge and with the runoff from agricultural lands as it is one of the major components of the phosphate fertilizers, where it produces deleterious effects on aquatic flora and fauna by affecting various physiological, biochemical and cellular processes. Walking catfish can be found in a variety of habitats, but they are most frequently encountered in muddy or swampy water of high turbidity. The catfish *Channa punctatus* is widely distributed fish in Asia and Africa. The fish in these areas is extremely popular due to its tasty.

### Material and methods

Indian catfish, *Channa punctatus* was selected for the purpose of present study as it is hardy and bottom feeder. Specimens of this fish were collected from the fish markets of Bhopal. Disease free and healthy fishes were selected for experimentation. Immediately after bringing into laboratory, they were treated with 0.01% KMnO<sub>4</sub>



solution for 15 minutes and then transferred to plastic pools of 500 l capacity containing non-chlorinated water where they were kept for fifteen days for acclimatization with the pH range of 6.95 to 7.60 and temperature ranging from 16 to 25 °C.

## Experimental design

Three groups of fishes were maintained for a maximum period of 30 days. Group (I) was kept as unexposed control and the group (II) was exposed to 3mg CdCl<sub>2</sub>/l ( 96 h LC<sub>50</sub>) and group (III) was exposed to 5mg CdCl<sub>2</sub>/l ( 96 h LC<sub>50</sub>) cadmium chloride, (CdCl<sub>2</sub> MERCK, Mumbai, India; Purity 99%). Exposure concentrations were decided on the basis of 96 h LC<sub>50</sub> value of CdCl<sub>2</sub> which was determined to be 30 mg/l. The exposure medium was changed every alternate day to maintain the desired concentration of CdCl<sub>2</sub>. The water in control group was also changed at the same time. On completion of 30 days of exposure, three fishes were randomly selected from control and 3 from exposed groups and blood was collected.

## RESULTS

It is evident from the results that the sub-lethal concentrations of Cadmium Chloride has influenced the total serum protein albumin, globulin, glucose, and cholesterol of *Channa punctatus* exposed to various durations and concentrations.

Serum biochemical parameters in our study showed a significant increase in ALT and AST activities in group Cd2 and Cd3 than control group with a non significant change between the both groups. Total protein, albumin and sodium results revealed a significant decrease in group Cd3 when compared to control group and non significant changes in other groups. Urea, creatinine, uric acid and potassium results revealed a significant increase in group Cd3 when compared to control group and non significant changes in other groups. Glucose value clarifies a significant increase in all cadmium groups than control group with higher elevation in group Cd2 and Cd3 than group Cd1 with a non significant variance between Cd2 and Cd3 groups (Table 3).

**Table 3**

Biochemical parameters (mean±SE) in catfish (*Channa punctatus*) exposed to cadmium

Groups	ALT U/ml	AST U/ml	TP g/dl	Albumin g/dl	Glucose mg/dl	Urea mg/dl	Creatinine mg/dl	Uric acid mg/dl	Sodium mEq/L	Potassium mEq/L
Control	37.0±3.21	107±6.14	3.37±0.28	1.33±0.10	63.8±4.3	9.79±1.02	0.95±0.10	1.81±0.20	135.8±6.40	3.41±0.20
Cd1	45.2±5.14	120±9.15	3.50±0.32	1.27±0.12	95.4±5.3	10.40±0.84	0.87±0.11	1.76±0.18	130.8±5.38	3.47±0.31
Cd2	63.2±4.48	151±8.41	2.01±0.28	1.12±0.15	133.0±9.42	12.02±1.10	0.99±0.09	1.97±0.16	123±6.20	3.58±0.92
Cd3	70.2±6.14	167±9.84	2.73±0.21	0.81±0.11	127.0±7.10	14.60±1.12	1.26±0.12	2.45±0.28	101.0±5.14	3.96±0.18

## DISCUSSION

The present study revealed that Liver transaminase enzymes (ALT and AST) were elevated in both groups Cd2 and Cd3 in compared to control group. This elevation could be attributed to liver damage. Liver damage included swollen and ruptured parenchymal cells, loss of cord structure, vacuoles filled with cellular debris, focal necrosis, and a significant increase in Kupffer cells as a result of cadmium intoxication reported by [27] in *Chondrostoma nasus*. Oner et al [8] observed increase serum ALT and AST in *O. niloticus* long term exposed to cadmium. In the same aspect ALT plasma level significantly increased in *C. carpio* exposed to cadmium [28]. Meanwhile

Teles et al [29] reported insignificant increase ALT in *Anguilla Anguilla* caged in heavy metals polluted sites. Hypoproteinemia and hypoalbuminemia observed in group Cd3 only and could be due to liver and kidney damage.

Hypoproteinemia and hypoalbuminemia observed in group Cd3 only and could be due to liver and kidney damage. Oronsaye [30], documented kidney damage in *Gasterosteus aculeatus* exposed to cadmium. In contrast to our result Oner et al [8] observed insignificant change in total plasma protein in *O. niloticus* intoxicated with cadmium.

Hyperglycemia recorded in all cadmium exposed groups. Stress in fish accompanied with

hyperglycemia due to increase glycogenolysis[13]. Teles et al [29] observed increase cortisol blood level in *Anguilla anguilla* caged in heavy metals polluted sites. Hyperglycemia reported by [8] in *O. niloticus* exposed to cadmium, as well as by[31,32] in *Coregonus clupeaformis* and *C. carpio* were exposed to heavy metals. The elevation of urea in group Cd3 was reported in this study. Urea in fish is produced by liver, it is excreted primarily by the gills rather more the kidney [13]. The elevation of urea in our work may be attributed to gill dysfunction. Gill damage as a result of cadmium intoxication reported in *Gasterosteus aculeatus* by [30]. In the same aspect, Oner et al [8] reported increased blood urea in cadmium exposed fish (*O. niloticus*). Regarding to kidney function test, creatinine significant increased in group Cd3 only. Renal damage of the sea bass *Dicentrarchus labrax* and marine bony fishes exposed recorded elevation creatinine blood level in *C. carpio* exposed to gallium. Uric acid is formed by fish from exogenous and endogenous purines. It is converted in the liver to urea for excretion by the gills [13]. Elevation of uric acid levels in higher dose cadmium treated group Cd3 could be attributed to liver damage induced by cadmium. Shi et al. documented liver damage in *Carassius auratus* exposed to cadmium[35]. Hyponatremia and hyperkalemia in high dose cadmium exposed group Cd3 could be attributed to gill dysfunction[13]. Gill damage has been reported in *Puntius gonionotus*, *Sparus aurata* and by[36,37]. In the same line, sodium and chloride levels as well as plasma osmolality were significantly reduced in *C. carpio* exposed to cadmium [28].

## CONCLUSION

Exposure to sublethal concentrations of Cadmium chloride, thus, resulted in change to different biochemical parameters of *Channa punctatus* which directly affects the main organs of fishes i.e liver and kidney as depicted from our results.

The lesions in these vital organs will result in physiologic and metabolic deregulations, which further led to behavioral alterations and growth impairment. In the long-run, therefore, cadmium chloride exposures to even sub lethal concentrations

may pose serious threat to fish health and affect their population.

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## भारत–पाक सम्बन्धों में आतंकवाद

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### सार संक्षेप

सम्प्रति, यह एक भ्रान्तिपूर्ण धारणा है कि कश्मीर समस्या भारत–पाक के मध्य विवाद का मुख्य कारक है। यथार्थ में, कश्मीर समस्या दोनों के मध्य घृणा जनित विवादों की उपज है। विभाजन का प्रमुख आधार, द्विराष्ट्र सिद्धान्त से उपजे वैचारिक मतभेद, समय–समय पर दोनों के मध्य घृणा, भय एवं अविश्वास के रूप में दृष्टिगोचर होते रहते हैं। विभाजन के उपरान्त, सन् 1947 में 'ऑपरेशन गुलमर्ग' और सन् 1965 में 'ऑपरेशन जिब्राल्टर' नामक गुप्त सैनिक अभियानों द्वारा पाकिस्तान ने प्रशिक्षित घुसपैठियों के माध्यम से भारत से पहले प्रच्छन्न–युद्ध किया, तत्पश्चात्, प्रत्यक्ष युद्ध कर पराजित हुआ। सन् 1971 की शर्मनाक पराजय के बाद पाकिस्तान की भारत सम्बन्धी नीतियों में परिवर्तन परिलक्षित हुआ। 'रक्तरंजित भारत, खण्डित भारत' की अवधारणा के आधार पर उसने 'आपरेशन टोपक' नामक गुप्त सैनिक अभियान के द्वारा एक दीर्घकालिक छद्म–युद्ध की शुरुवात की। इसमें स्थानीय कश्मीरियों को भी उसने छाया–योद्धाओं के रूप में प्रयुक्त किया। 'कथित इस्लाम' को साध्य और आतंकवाद को साधन बनाकर पाकिस्तान अपनी भारत सम्बन्धी नीतियों को निर्धारित करता रहा है। दोनों देशों के बीच सम्बन्धों को असहज बनाने में धर्म मिश्रित आतंकवाद की केन्द्रीय भूमिका रही है। प्रस्तुत आलेख में भारत–पाक के बनते–बिगड़ते सम्बन्धों में आतंकवाद की भूमिका और उससे भारत की राष्ट्रीय सुरक्षा पर पड़ने वाले प्रभावों की पड़ताल की गयी है। पाकिस्तान प्रायोजित सीमा–पार आतंकवाद से प्रतिकार के उपाय भी सुझाये गये हैं।

### भूमिका:

भारत और पाकिस्तान के सम्बन्ध सदैव घृणा, भय और अविश्वास पर आधारित रहे हैं। विभाजन के पूर्व की घृणा और वैमनस्व आज भी दोनों के सम्बन्धों में विद्यमान है। दोनों राष्ट्र कभी अन्तर्राष्ट्रीय दबाव में वार्ता की मेजों पर शान्ति की तलाश करते हैं तो कभी सीमा पर गोला–बारूदों के विनाशकारी धमाकों के साथ खून की होली खेलते हैं। अब तक दोनों के मध्य चार प्रत्यक्ष युद्ध हो चुके हैं जिसमें हर बार पाकिस्तान को पराजय का मुँह देखना पड़ा है। सन् 1971 में बुरी तरह पराजित होने के बाद पाकिस्तान ने भारत के विरुद्ध अनवरत प्रच्छन्न–युद्ध छेड़ रखा है। आज आतंकवाद पाकिस्तान की विदेश नीति का प्रमुख अंग बन गया है। पाक प्रायोजित सीमा–पार आतंकवाद भारतीय सुरक्षा के लिये गम्भीर खतरा बना हुआ है। भारत को इस चुनौती से निपटने के लिये बहुआयामी कूटनीतिक प्रयास करने होंगे।

### भारत–पाक सम्बन्ध (*Op Gulmarg to Op Topac*):

धर्म आधारित द्विराष्ट्रवादी विचारधारा से उपजे पाकिस्तान की मानसिकता में धार्मिक कट्टरता के तत्व प्रारम्भ से ही विद्यमान रहे हैं। इसी धार्मिक कट्टरता के

कारण पाकिस्तान अपने साथ–साथ अपने पड़ोसियों के लिये भी अशान्ति का कारक बना हुआ है। भारत–पाकिस्तान के मध्य सम्बन्धों में असहजता इसी की देन है। सन् 1947 में, कश्मीर में 'ऑपरेशन गुलमर्ग' नामक गुप्त पाकिस्तानी सैन्य अभियान का आधार भी यही विचारधारा थी। ऑपरेशन गुलमर्ग का संचालन रावलपिंडी से पाकिस्तानी सेना के नियमित मेजर जनरल अकबर खान ने जनरल जावेल के छद्म नाम से किया था।<sup>1</sup> इस ऑपरेशन का मुख्य उद्देश्य महाराजा हरीसिंह पर यथासंभव मनोवैज्ञानिक दबाव बनाकर उन्हें कश्मीर को पाकिस्तान में विलय करने हेतु विवश करना था। अन्यथा की स्थिति में सैनिक हस्तक्षेप कर कश्मीर को पाकिस्तानी नियंत्रण में लेने का विकल्प रखा गया था। कश्मीर की आर्थिक नाकेबन्दी करके पाकिस्तान ने इस आप्रेशन की शुरुवात की थी। नाकेबन्दी जनित प्रभावों से राज्य की विषम होती स्थितियों के लिये उसने महाराजा और उनकी नीतियों को ही उत्तरदायी ठहराया।<sup>2</sup> कश्मीर में धार्मिक उन्माद को बढ़ावा देते हुये पाकिस्तान ने साम्प्रदायिक सौहार्द को दूषित करने की नीति अपनायी।<sup>3</sup> इस्लाम रक्षा के जुनून से ओत–प्रोत, सीमावर्ती कबाइलियों को कश्मीर पर आक्रमण करने के

लिये प्रेरित किया। प्रशिक्षण और हथियार उपलब्ध कराकर उन्हें अपने कबाइली वेशधारी सैनिकों के साथ कश्मीर में घुसपैठ कराकर, पाकिस्तान ने कश्मीर पर आक्रमण कर दिया। कबाइली वेश में पाकिस्तानी सेना ने अपनी वीभत्सकारी कार्यवाहियों से कश्मीर में विकट स्थिति पैदा कर दी। इस्लाम के नाम पर हथियार उठाने वालों ने इस्लाम का पैशाचिक चेहरा प्रस्तुत किया। कश्मीर में गाँव के गाँव जला दिये, ग्रामीणों की निर्मम हत्याएं की, उनकी सम्पत्तियों को लूटने के साथ-साथ उनकी माँ-बहनों की क्रूरतापूर्वक इज्जत लूटी।<sup>4</sup> बच्चों को पैरों के नीचे रौंद कर मारा गया। स्थानीय मुस्लिम जनता और कश्मीर सेना के मुस्लिम सैनिकों ने कबाइली घुसपैठियों का साथ देकर उनकी अग्रिम टुकड़ी के रूप में कार्य किया।<sup>5</sup> कश्मीर के भारत में विलय होने के बाद भारतीय सेना ने अविलम्ब मोर्चा सम्भाला। भारतीय सेना की उपस्थिति से बौखलाए पाकिस्तान ने उत्तेजना में प्रत्यक्ष युद्ध का बिगुल फूँक दिया। इस प्रकार त्वरित योजना आधारित पाकिस्तानी प्रच्छन्न-युद्ध, प्रत्यक्ष युद्ध में बदल गया। इसके उपरान्त वैश्विक समुदाय की सक्रियता से भारत व पाकिस्तान के बीच संघर्ष विराम हुआ। वैश्विक समुदाय ने कश्मीर में सेना भेजने के पाकिस्तानी तर्कों को तर्कसंगत नहीं माना और कश्मीर में कबाइली घुसपैठ को पाकिस्तान की सोची-समझी रणनीति बताया।<sup>6</sup>

वैश्विक हस्तक्षेप से युद्धविराम प्रस्ताव लागू होने के बाद, एक तरफ अन्तर्राष्ट्रीय स्तर पर कश्मीर समस्या के शान्तिपूर्ण समाधान के प्रयास हो रहे थे तो दूसरी तरफ संयुक्त राष्ट्र प्रस्तावों की अवहेलना करते हुये, पाकिस्तान, कश्मीर में भारत विरोधी वातावरण निर्मित करने हेतु सतत प्रयत्नशील रहा। सन् 1950 के दशक में, भारत के साथ शक्ति-संतुलन स्थापित करने की महत्वाकांक्षा से, पाकिस्तान ने अमेरिकी छतरी वाले विविध सैन्य संगठनों की सदस्यता ग्रहण की। सन् 1962 में चीन के हाथों भारत की पराजय के उपरान्त पाकिस्तान ने चीन से सीमा समझौता कर भारत पर मनोवैज्ञानिक दबाव बनाने का प्रयास किया। सन् 1963 में हजरतबल मस्जिद से “बाल” चोरी की घटना को लेकर पाकिस्तान ने कश्मीर में धार्मिक उन्माद को सप्रयास भड़काया।<sup>7</sup> पंडित जवाहरलाल नेहरू की मृत्यु के पश्चात भारत में नेतृत्वहीनता के तर्कों के आधार पर पाकिस्तान का शासक वर्ग कश्मीर पर निर्णायक हस्तक्षेप

करने का आधार निर्मित करने लगा। अपने समर्थक तत्वों के माध्यम से पाकिस्तान ने कश्मीर की छोटी-छोटी घटनाओं को भी धार्मिक रंग देकर कश्मीरी वातावरण में उन्माद का विष घोला।<sup>8</sup> तत्कालीन पाकिस्तानी सेना प्रमुख जुल्फिकार अली भुट्टो, विदेश विभाग के वरिष्ठ अधिकारीगण तथा आई.एस.आई. के अधिकारियों के तर्कपूर्ण आग्रह पर राष्ट्रपति अयूब खान ने कश्मीर में निर्णायक हस्तक्षेप करने सम्बन्धी योजना बनाने के लिये पाकिस्तानी विदेश विभाग को अधिकृत किया। इसके उपरान्त विदेश सचिव, रक्षा सचिव, आसूचना ब्यूरो, चीफ आफ जनरल स्टाफ तथा सैन्य कार्यवाहियों के निदेशक को मिलाकर एक गोपनीय सेल (कश्मीर सेल) गठित किया गया। परस्पर मंत्रणा के उपरान्त निर्मित योजना को आई.एस.आई. ने 13 मई 1965 को राष्ट्रपति अयूब खान के समक्ष रखा, जिसे स्वीकृत करते हुए अयूब खान ने इस योजना को “Operation Gibraltar” गुप्त नाम दिया। इस त्रिचरणीय योजना में पाक-अधिकृत कश्मीर में उग्र भारत विरोधी वातावरण सृजित कर सीमावर्ती कबाइलियों को हथियार उठाने हेतु प्रेरित करना, उन्हें प्रशिक्षण व सुविधाएं प्रदान कर जम्मू-कश्मीर में गुरिल्ला संघर्ष के संचालन योग्य आधार निर्मित करना और कश्मीर में ऐसी परिस्थितियाँ पैदा करना था जिससे कि अन्त में सैनिक हस्तक्षेप कर कश्मीर को पाक संघशासित क्षेत्र घोषित किया जा सके।

सीमा पर सघन गोलाबारी की आड़ में 6000 गुरिल्लाओं को कश्मीर में घुसपैठ कराकर पाकिस्तान ने ऑपरेशन जिब्राल्टर की शुरुवात की थी,<sup>9</sup> जिसमें चीन के सहयोग से छापामार शैली में संघर्ष करने हेतु प्रशिक्षित पाकिस्तानी सैनिक भी सम्मिलित थे।<sup>10</sup> इन घुसपैठी गुरिल्लाओं ने 5 अगस्त 1965 को बड़े स्तर पर तोड़-फोड़ की घटनाओं को अंजाम देकर कश्मीर में अपनी उपस्थिति दर्ज करायी।<sup>11</sup> योजना-अनुरूप घुसपैठियों ने सैनिक लक्ष्यों एवं संचार तंत्रों को अपना निशाना बनाया। विविध संचार माध्यमों एवं प्रशासनिक केन्द्रों पर स्वाधिपत्य करते हुये एक तरफ घुसपैठियों ने कश्मीर में भारत सरकार के विरुद्ध ‘राजद्रोह’ की स्थिति निर्मित की तो दूसरी तरफ पाकिस्तानी प्रचार तंत्र विविध मंचों से भारत विरोधी अफवाहें फैलाने में लगा हुआ था।<sup>12</sup> कश्मीर की गतिविधियों में पाकिस्तानी संलिप्तता के अभिलेखीय साक्ष्यों के साथ भारतीय आपत्ति पर पाकिस्तान ने कश्मीर की घटनाओं को कश्मीरियों के

स्वतंत्रता संघर्ष के रूप में व्याख्यायित करते हुए उसमें अपनी किसी भूमिका से इन्कार कर दिया।<sup>13</sup> भारतीय सूचना तंत्र की सक्रियता से पाकिस्तानी योजना का स्पष्ट पता लगने के बाद भारत सरकार के निर्देश पर भारतीय सेना ने घुसपैठियों के विरुद्ध 'ऑपरेशन बख्शी' एवं 'ऑपरेशन फौलाद' के द्वारा सैनिक कार्यवाही सम्पादित की। इस कार्यवाही में बड़ी संख्या में घुसपैठी गुरिल्ले मारे गये अथवा भारतीय सैनिकों द्वारा बन्दी बनाए गये। दयनीय स्थिति में वे कश्मीर छोड़कर भागने लगे। स्थितियों पर नजर रख रही पाकिस्तानी सेना ने आप्रेशन जिब्राल्टर के सुचारु संचालन और हताश घुसपैठियों को पुनर्संगठित करने हेतु पाकिस्तानी सेना के चुनिन्दा अनुभवी सैनिकों और नवप्रशिक्षित रंगरूटों को कबायली वेश में घाटी में घुसपैठ कराया। परन्तु भारतीय सेना की प्रतिकारात्मक सक्रियता ने पाकिस्तानी घुसपैठियों के लिये जटिल स्थिति पैदा की। शीघ्र परिणाम पा लेने की ललक में अयूब खान ने यह कहते हुए कि, "कश्मीर पर आधिपत्य करने का यह उनका अन्तिम प्रयास है" कश्मीर में प्रत्यक्ष पाकिस्तानी सैनिक कार्यवाही का पथ प्रशस्त कर दिया।<sup>14</sup> छः सितम्बर 1965 को पाकिस्तानी सेना ने कश्मीर में भारतीय सेना के विरुद्ध प्रत्यक्ष युद्ध का मोर्चा खोल दिया।<sup>15</sup> परन्तु संतुलित भारतीय सैनिक तंत्र के समक्ष पाकिस्तानी सेना स्वयं को संभाल नहीं पायी। भारतीय सेना ने कई पाकिस्तानी शहरों पर अधिकार कर लिया। तत्समय, यथार्थ भारतीय कूटनीति ने पाकिस्तान के सामरिक सहयोगियों को पाकिस्तान से दूरी बनाये रखने को विवश कर दिया था।<sup>16</sup> भारत को युद्ध अपराधी सिद्ध करने के पाकिस्तानी तर्कों को वैश्विक समुदाय ने गम्भीरता से नहीं लिया। अन्ततः 22 सितम्बर को युद्ध विराम की घोषणा के साथ युद्ध का समापन हुआ।

सन 1971 के युद्ध में भारत के हाथों मिली शर्मनाक पराजय के बाद पाकिस्तानी रणनीतिकारों का इस निष्कर्ष पर पहुंचना स्वाभाविक था कि वे भारत को प्रत्यक्ष युद्ध में परास्त नहीं कर सकते। ऐसे में, "हजार घावों से युक्त रक्तंजित भारत" की अवधारणा के आधार पर भारत को अस्थिर और कमजोर करने के लिए पाकिस्तान ने, प्रत्यक्ष युद्ध का विकल्प त्याग कर, परोक्ष उपायों का रणनीतिक प्रयोग किया। इसी दशक में, हरित क्रान्ति जनित समृद्धि से समृद्ध पंजाब में हिन्दुओं के कथित शोषण का हौवा खड़ाकर सिख समुदाय के

जनमानस में सप्रयास विकृति पैदा की गयी। अलग सिख राष्ट्र 'खलिस्तान' के सपने से अभिभूत कर पाकिस्तान ने अलगाववादी सिख समूहों को प्रश्रय और प्रशिक्षण उपलब्ध कराया।<sup>17</sup> इन अलगाववादियों ने हिंसा और लूट के कृत्यों से पंजाब में आतंक का वातावरण सृजित किया। इस आतंकवादी आन्दोलन के प्रमुख नेतृत्वकर्ता संत जرنैल सिंह भिन्डरवाले थे।<sup>18</sup> नित्य हत्या, लूट व अपहरण की बढ़ती घटनाओं से पंजाब आतंकवाद की आग में जल उठा। पंजाब में कानून व्यवस्था की स्थिति को नियंत्रित करने के लिये प्रधानमंत्री श्रीमती इन्दिरा गांधी ने सैन्य कार्यवाही "ऑपरेशन ब्लूस्टार" के द्वारा आतंकवादी गतिविधियों का केन्द्र बने स्वर्ण मन्दिर पर निर्णायक प्रहार किया। इसमें भिन्डरवाले सहित 493 आतंकवादियों और 83 जवानों की मृत्यु हुई थी एवं 86 आतंकवादी और 249 जवान घायल हुए थे।<sup>19</sup> इसी घटना के प्रतिशोध स्वरूप श्रीमती गांधी की उनके दो सिख अंगरक्षकों द्वारा हत्या कर दी गयी थी जिसके बाद भारत में व्यापक स्तर पर सिख विरोधी दंगे हुए। सिख विरोधी दंगों की आड़ में पाकिस्तान ने पंजाब में अपना प्रच्छन्न-युद्ध जारी रखा। पंजाब के सिख आतंकवादियों को समर्थन देने के पीछे पाकिस्तान की सोच पंजाब को भारत-पाक के मध्य एक मध्यवर्ती राज्य के रूप में स्थापित करना और सन् 1971 के अंग-भंग का प्रतिशोध लेना था। उसने भारत के धर्मनिरपेक्ष ढांचे को क्षत-विक्षत करने के उद्देश्य से पुनः धार्मिक (सिख) कार्ड का प्रयोग किया था परन्तु पंजाब के दो पुलिस प्रमुखों जूलियो रोबेरो और के.पी.एस. गिल की प्रशासनिक सूझ-बूझ ने पाकिस्तानी योजना को असफल कर दिया था।

अफगानिस्तान में, सोवियत संघ के विरुद्ध अमेरिकी अभियान को संचालित करने हेतु मिले सैन्य संसाधनों, प्रशिक्षण एवं अनुभवों<sup>20</sup> के आधार पर पाकिस्तान ने भारतीय कश्मीर में अमेरिकी सिद्धान्त को योजनाबद्ध ढंग से प्रयुक्त किया। सन 1978-88 के मध्य जनरल जियाउल हक ने अफगानिस्तान में रूसी सेनाओं के विरुद्ध जेहाद करने के नाम पर पाकिस्तान में मुजाहिद पैदा किए जिनका वास्तविक उद्देश्य कश्मीर में अलगाववाद पैदा करना एवं आतंकवाद के बीज बोना था।<sup>21</sup> इस धारणा के आधार पर कि एक मध्यवर्ती राज्य के रूप में अलग सिख राष्ट्र की सृष्टि से वे जम्मू-कश्मीर को भारत से पृथक करने में सफल हो

जाएंगे,<sup>22</sup> जिया ने ब्रिटेन, कनाडा और अमेरिका स्थित खलिस्तान समर्थक आतंकवादी संगठनों को प्रोत्साहन और वित्तीय सहायताएं दी थी।<sup>23</sup> जनरल जिया के इच्छानुकूल आई.एस.आई. ने असंतुष्ट युयुत्सुओं (militents) को आतंकवादी कार्यविधियों का प्रशिक्षण देने के लिए प्रशिक्षण शिविरों की स्थापना की और पंजाब तथा जम्मू-कश्मीर के असंतुष्ट कट्टरपंथियों के मध्य सक्रिय सहयोग भावना को प्रोत्साहन दिया।<sup>24</sup> अट्टारह अप्रैल 1988 में, जनरल जियाउल हक ने सेना के कोर कमान्डरों तथा आई.एस.आई. के अधिकारियों के साथ एक अतिगोपनीय बैठक में, जिसमें जे. के. एल. एफ. के अध्यक्ष अमानुल्लाह खान तथा अफगानी नेता गुलबुद्दीन हिकमतयार ने भी भाग लिया था,<sup>25</sup> अपनी 'Op Topac' नामक अवधारणा पर विस्तृत व्याख्यान दिया<sup>26</sup> जो कि भारत के विरुद्ध पाकिस्तानी प्रच्छन्न-युद्ध का आधार स्तम्भ बनी। आज भी पाकिस्तान इसी अवधारणा को मूल में रखकर अपनी भारत सम्बंधी नीतियों का निर्धारण करता है।

ऑपरेशन टोपक के अन्तर्गत कश्मीर के विद्रोही तत्वों को भारतीय भू-भाग में अस्थिरता उत्पन्न करने हेतु प्रेरित व प्रशिक्षित करना, सिख आतंकवादियों के सहयोग से निर्मित आतंकपूर्ण परिवेश में अनिश्चितता की परिस्थिति बनाते हुए कम दबाव के क्षेत्रों पर नियंत्रण स्थापित करना, तत्पश्चात भारतीय सेना को भ्रमित करने वाली गतिविधियों से अधिक दबाव वाले क्षेत्रों से उनका ध्यान भटकाकर सामान्य सैन्य हस्तक्षेप के द्वारा कश्मीर को पाकिस्तान में मिलाने की कार्यवाही सम्पादित होनी थी। इस अभियान में पाकिस्तानी सेना के सेवानिवृत्त अधिकारी और आई.एस.आई. को, स्थानीय अलगाववादी तत्वों और घुसपैठिए अफगानी मुजाहिद्दीनों की हर संभव मदद करना था। दूसरी ओर पाकिस्तानी प्रशासन को चीन और अमेरिका से अपने सम्बंधों को प्रगाढ़ कर भारत को अलग-थलग करने का प्रयास करना था जिससे कि भारतीय उपमहाद्वीप का शक्ति-संतुलन पाकिस्तान के पक्ष में हो सके। ऐसी परिस्थिति में पाकिस्तानी परमाणु क्षमता भारत को पारम्परिक संघर्ष से रोकेगी<sup>27</sup> और पाकिस्तान परिस्थितियों का लाभ लेते हुए कश्मीर को अपने नियंत्रण में आसानी से ले सकेगा। इस प्रकार, पाकिस्तान ने भारतीय धरातल पर, भारतीयों के विरुद्ध, भारतीयों द्वारा ही पाकिस्तानी हितों के अनुकूल छापामार शैली में एक दीर्घकालिक युद्ध-शृंखला प्रारम्भ

करने की रणनीति गढ़ी थी। यथार्थ में ऑपरेशन टोपक को भारत के विरुद्ध पाकिस्तानी प्रच्छन्न-युद्ध का 'blue print' कहा जा सकता है, जो मूलतः चीनी प्रधानमंत्री चाऊ-एन-लाई (Chou-En-Lie), के सुझावों के अनुरूप, 'ऑपरेशन जिब्राल्टर' का परिष्कृत स्वरूप है।<sup>28</sup> 'ऑपरेशन जिब्राल्टर' के अन्तर्गत पाकिस्तानी नागरिकों ने कश्मीर में घुसपैठ कर हिंसा, विध्वंस और विद्रोह की गतिविधियाँ की थी जबकि 'ऑपरेशन टोपक' में हिंसक गतिविधियों में लिप्त युवा पाकिस्तानी नहीं अपितु भारत में जन्में कश्मीरी ही हैं।

## पाकिस्तान प्रायोजित आतंकवाद और भारत:

बंग-मुक्ति संग्राम में शर्मनाक पराजय के उपरान्त, बदली हुई वैश्विक परिस्थितियों में पाकिस्तानी शासकों ने यह महसूस किया कि वे प्रत्यक्ष युद्ध के द्वारा कश्मीर को भारत से नहीं छीन सकते। भारत की भौगोलिक एवं सैन्य स्थितियों के आलोक में उन्होंने अपनी यौद्धिक रणनीति में परिवर्तन किया और अप्रत्यक्ष उपायों के द्वारा भारत को अस्थिर करने एवं थकाकर परास्त करने की दीर्घकालिक संघर्ष की रणनीति सृजित की। कश्मीर में एक सुनियोजित अभियान के रूप में आतंकवादी साधनों से प्रच्छन्न-युद्ध की शुरुवात करते हुए पाकिस्तानी गुप्तचर संस्था आई.एस.आई. ने पुलिस, इंजीनियरिंग विभाग, बैंकों, प्रशासनिक कार्यालयों, अस्पतालों, न्यायालयों एवं समाचार माध्यमों में अपनी गोपनीय पैठ बनाते हुए एक वृहद संजाल स्थापित किया<sup>29</sup> एवं युवा-शक्ति को विविध प्रलोभनों के चक्रव्यूह में फंसाकर उन्हें अलगाववाद के लिए प्रोत्साहित किया। पाकिस्तानी प्रतिनिधि श्रीनगर, कुपवाड़ा और बारामूला जिले में बेरोजगार युवकों को कश्मीर की स्वतंत्रता और इस्लाम की रक्षा के नाम पर पाकिस्तानी प्रशिक्षण शिविरों में पहुँचाने में संलग्न थे। प्रशिक्षण प्राप्त युवक भी सीमा-पार जाने के लिए लोगों को प्रोत्साहित करते थे।<sup>30</sup> कश्मीर में विविध अलगाववादी संगठनों को संस्थापित कर उन्हें विध्वंसकारी गतिविधियों को सम्पादित करने हेतु प्रेरित किया। दिग्भ्रमित युवकों को प्रशिक्षण देने के लिए पाक-अधिकृत कश्मीर में प्रशिक्षण शिविरों की स्थापना की गई जिनके संचालन का दायित्व पाकिस्तानी सेना के सेवानिवृत्त अधिकारियों को सौंपा गया था। शनैः-शनैः बड़ी संख्या में दिग्भ्रमित कश्मीरी युवा पाकिस्तानी प्रशिक्षण शिविरों में प्रशिक्षण प्राप्त करने हेतु गए और वहाँ से प्रच्छन्न-योद्धा के रूप में प्रशिक्षित होकर

भारत आए<sup>31</sup> एवं आई.एस.आई. के कई हाथों के रूप में कार्य करते हुए पाकिस्तानी योजना को गति प्रदान की। पाक समर्थक संगठनों ने अफगानी घुसपैठियों के साथ मिलकर कश्मीर में अराजक स्थितियों का निर्माण किया। विध्वंसकारी गतिविधियों के द्वारा कश्मीरियों में यह भावना पैदा करने का पूर्ण प्रयत्न किया गया कि भारत सरकार के संरक्षण में वे सुरक्षित नहीं हैं। उन्हें पाकिस्तानी मरीचिका के सुखद अहसास कराए गए। किसी भी गतिविधि को सम्पादित करते समय इस बात का विशेष ध्यान रखा गया कि हर पल आई.एस.आई. और प्रच्छन्न-योद्धाओं के मध्य सम्बंधों का खण्डन किया जा सके।

अन्तर्राष्ट्रीय मंचों पर कश्मीर की आतंकी गतिविधियों में अपनी संलिप्तता को नकारते हुए पाकिस्तान ने बड़ी चतुराई से, भारत के विरुद्ध सुनियोजित दुष्प्रचार अभियान संचालित किया। कश्मीर के प्रच्छन्न-संघर्ष को स्थानीय लोगों का *क्रान्तिकारी संघर्ष* एवं *कश्मीर-मुक्ति-आन्दोलन* कह कर प्रचारित किया गया। पाकिस्तान द्वारा समय-समय पर दिये गए आधिकारिक वक्तव्यों में कश्मीर को भारत से अलग राज्य मानते हुए वहाँ भारत द्वारा षडयंत्र रचने एवं कश्मीरी मुसलमानों पर अत्याचार किए जाने का आरोप लगाया गया। तथाकथित क्रान्तिकारियों को नैतिक समर्थन देने की घोषणा कर उपद्रवियों का उत्साहवर्धन किया गया। कश्मीर के जनसांख्यिकीय संतुलन को पाकिस्तानी परिवेश में ढालने के लिए वर्ग-विशेष की आबादी को लक्षित कर हिंसक गतिविधियाँ करायी गयीं। वैश्विक पटल पर कश्मीरियों के आत्म-निर्णय के अधिकार को मुद्दा बनाकर समस्या का अन्तर्राष्ट्रीयकरण करने का पूर्ण प्रयास किया गया। अपने दुष्प्रचारों को बल प्रदान करने के लिए पाकिस्तान, भारत के तथाकथित धर्मनिरपेक्षतावादियों एवं मानवाधिकारवादियों के आलेखों और वक्तव्यों को प्रयुक्त करता था। पाकिस्तान एक तरफ अप्रत्यक्ष उपायों के साथ भारत के विरुद्ध प्रच्छन्न-युद्ध लड़ रहा था तो दूसरी तरफ स्वयं पर भारत को किसी दण्डात्मक कार्यवाही करने से रोकने हेतु नाभिकीय भयादोहन की स्त्रातजी अपनाए हुए था।<sup>32</sup> अपने नाभिकीय कार्यक्रम को 'इस्लामी बम' के रूप में प्रचारित कर पाकिस्तान ने इस्लामी जगत का आर्थिक एवं कूटनीतिक समर्थन प्राप्त करने का भी प्रयास किया।<sup>33</sup>

पाकिस्तानी नेताओं की "कश्मीर के बिना पाकिस्तान अधूरा है"<sup>34</sup> जैसी उद्घोषणाएं एवं पाकिस्तानी योजनाबद्ध षडयंत्रों के शीघ्र निहितार्थ तलाशने में विफल भारत की तत्कालीन कमजोर सरकारों की दुलमुल कार्य प्रणाली ने पाकिस्तान को कश्मीर में अपने उद्देश्यों को प्राप्त करने में सहायता की। भारत की सामयिक शिथिलता ने पाकिस्तान को और प्रोत्साहित किया। कश्मीर की अराजक गतिविधियों में पाकिस्तानी संलिप्तता के पुष्ट प्रमाण<sup>35</sup> मिलने के बाद भी भारत की शिथिल कार्य प्रणाली ने कश्मीर की स्थिति को और जटिल बनाया। प्रारम्भ में, पाकिस्तानी प्रच्छन्न-युद्ध की कमान जब तक जे.के.एल.एफ. के हाथों में थी,<sup>36</sup> कश्मीर में आतंकी गतिविधियों की तीव्रता अधिक नहीं थी परन्तु हिजबुल मुजाहिद्दीन जैसे संगठनों के प्रादुर्भाव के उपरान्त, वर्ष 1989 के उत्तरार्द्ध से कश्मीर में प्रच्छन्न-युद्ध की तीव्रता में उत्तरोत्तर वृद्धि देखने को मिलती है। उपलब्ध आंकड़ों के अवलोकन से<sup>37</sup> स्पष्ट है कि वर्ष 1996 तक आतंकवादी घटनाओं एवं हताहतों की संख्या में निरन्तर वृद्धि हुई है। वर्ष 1997 में, इस तरह की घटनाओं में थोड़ी गिरावट आयी और अगले वर्षों में इनमें स्थिरता भी बनी रही। वर्ष 2001 में कुल हताहतों की संख्या अपने उच्चतम स्तर पर थी। इस वर्ष आतंकवादी गतिविधियों में संलिप्त लोग सर्वाधिक संख्या में हताहत हुए। इसके बाद के वर्षों में लगातार गिरावट देखने को मिलती है। पिछले पाँच वर्षों में, सर्वाधिक घटनाएं जून से सितम्बर माह में घटित हुईं और इसी दौरान सर्वाधिक मौतें भी हुईं। सन 1984 से अब तक भारत में लगभग ग्यारह हजार बम बिस्फोट किए गए एवं दो हजार करोड़ रुपये से अधिक मूल्य की भारतीय सम्पत्ति की क्षति हुई है। एक सरकारी रिपोर्ट के अनुसार 5000 से अधिक सुरक्षाबल तथा दस हजार नागरिक मारे जा चुके हैं।<sup>38</sup> भारत एवं पाकिस्तान के मध्य प्रत्यक्ष एवं अप्रत्यक्ष युद्धों के तुलनात्मक अध्ययन से स्पष्ट है कि आतंकवादी गतिविधियों में मृतकों की संख्या, सैनिकों द्वारा लड़े गए किसी भी युद्ध में मृतकों की संख्या से कहीं अधिक है।<sup>39</sup>

अस्सी के दशक तक, अन्तर्राष्ट्रीय आतंकवाद, अलगाववादी विद्रोह एवं इन्सर्जेन्सी का प्रयोग करना पाकिस्तानी नीति का अंग बन चुका था। भुट्टो की यह नीति *Forward Strategic Depth* का अंश थी<sup>40</sup> जिसे विस्तारित करते हुए *bleeding India through*



*thousand cuts* का रूप प्रदान किया गया।<sup>41</sup> इसके अन्तर्गत कश्मीर सहित भारत के अन्य क्षेत्रों में साम्प्रदायिक परिवेश को छिन्न-भिन्न कर, हिंसा एवं आतंकवाद फैलाकर, अराजकता एवं अस्थिरता उत्पन्न करने की रणनीति अपनायी गयी। हथियारों एवं मादक पदार्थों, विस्फोटकों की तस्करी, जाली मुद्रा का प्रचलन, सीमा पर रहने वाले लोगों के भयादोहन सहित पूर्व तस्करी और अपराधियों को शासन के विरुद्ध फिर से उपयोग करना इस नीति के विशेष अंग थे। इसके साथ ही पारम्परिक मुस्लिम संस्थानों जैसे मदरसे, तब्लीगी जमात आदि का शासन के विरुद्ध विद्रोह फैलाने में उपयोग किया गया। वर्तमान समय में, पाक-चीन प्रायोजित प्रच्छन्न-युद्ध के निशाने पर सम्पूर्ण भारत है।<sup>42</sup> विभिन्न उग्रपंथी एवं साम्प्रदायिक संगठनों के माध्यम से पाकिस्तान भारत की आन्तरिक सुरक्षा का ताना-बाना विध्वंस करने हेतु सतत् प्रयत्नशील है। वर्तमान में, भारत में सक्रिय विभिन्न उग्रवादी समूहों, माओवादियों, जम्मू-कश्मीर के अलगाववादियों एवं पाकिस्तान पोषित विभिन्न आतंकी समूहों, जिनका साझा उद्देश्य भारतीय राज्यों को ध्वंस करना है, के मध्य एक आश्चर्यजनक सहयोगात्मक संबंध विकसित हुए हैं।<sup>43</sup> वे परस्पर सहप्रशिक्षण, हथियारों की आपूर्ति, वाह्य सहलग्नता स्थापित करने के साथ एक-दूसरे को सुरक्षित आश्रय-स्थल उपलब्ध कराने हेतु अपनी सामर्थ्य एवं क्षमता का लाभ साझा कर रहे हैं। यथार्थ में, भारत के हृदय-स्थल को रौंदते माओवादियों एवं भारत को अंग-भंग करने के प्रयत्नों में लिप्त विभिन्न अलगाववादी समूहों तथा पाकिस्तान-चीन पोषित एवं प्रायोजित<sup>44</sup> आतंकी समूहों के मध्य स्थापित समन्वय भारत की आन्तरिक सुरक्षा पर खतरे का संकेत है। विरोधी राज्य भारत की सैन्य क्षमता और पारम्परिक क्षमता को खोखला करने में लगे हैं। विभिन्न प्रकार के वैचारिक, आर्थिक अथवा दोनों तरह के प्रलोभनों से प्रभावित कर भारतीयों को, भारतीयों के विरुद्ध हथियार के रूप में प्रयुक्त कर रहा पाकिस्तान, भारत के विरुद्ध निरंतर एक अघोषित युद्ध की स्थिति में है।

### निष्कर्ष:

सामान्यतः यह मान लिया गया है कि भारत-पाकिस्तान के मध्य कश्मीर ही विवाद का मुख्य कारण है। यथार्थ में, दोनों देशों के मध्य विवाद का मुख्य कारण 'मुसलमान एक अलग राष्ट्र हैं' की अवधारणा है

न कि कश्मीर। इसी अवधारणा के दृष्टिगत पाकिस्तान कश्मीर पर अपना दावा करता है। विभाजन के इस तर्क का औचित्य सिद्ध करने के लिए ही पाकिस्तान ने पंजाब के खलिस्तान समर्थक आतंकवादियों को प्रश्रय, प्रशिक्षण व पैसा उपलब्ध कराया था और आज कश्मीर सहित सम्पूर्ण भारत में वह अपने इस कुतर्क को प्रमाणित करने के लिए प्रयत्नशील है। भारत का बहुधर्मी, सेकुलर एवं लोकतांत्रिक राष्ट्र के रूप में अस्तित्ववान रहना पाकिस्तानी द्विराष्ट्रीय सिद्धान्त, धार्मिक राजनीति एवं सैनिक वर्चस्व के लिए चुनौती है। आज जब भी भारत-पाकिस्तान शान्ति-प्रक्रिया पर आगे बढ़ने का प्रयास करते हैं, आतंकवाद की घटनाएं उन्हें बे-पटरी कर देती हैं। पाकिस्तान की विविध शासन पद्धतियों (जनतांत्रिक, सैन्य शासित एवं राष्ट्रपति शासित) में शासकों ने अमन-चैन की दिशा में दगाबाजी व छल-कपट को ही अपनाया है। पूर्वाग्रह प्रेरित पाकिस्तानी शासकों ने सदैव भारत को अशान्त व अस्थिर करने में ही अपना पूरा ध्यान लगाया है। प्रत्यक्ष युद्धों में बार-बार पराजित होने के बाद पाकिस्तान ने भारत को थकाकर खण्डित करने की नीति अपना रखी है। आज कश्मीर के साथ-साथ पूरा भारत, पाकिस्तानी प्रच्छन्न-युद्ध के निशाने पर है। सीमा-पार आतंकवाद के माध्यम से पाकिस्तान भारत के धर्मनिरपेक्ष मूल्यों को क्षति पहुंचाने हेतु प्रयत्नशील है। इसके लिए उसने आतंकवाद को धर्म से मिश्रित कर भारत के धर्मनिरपेक्ष ढांचे पर सतत् चोट की है। भारत की आन्तरिक राजनीति में साम्प्रदायिक तत्वों की विद्यमानता भी पाकिस्तान को अनुकूल अवसर उपलब्ध कराती रही है। भारत व पाकिस्तान के चुनौतीपूर्ण सम्बन्धों को सीमा-पार आतंकवाद की प्रक्रिया ने और अधिक चुनौतीपूर्ण बनाया है। अब तक पाक प्रायोजित आतंकवाद के कारण भारत को जान-माल की जो क्षति उठानी पड़ी है, उसका आंकड़ा प्रत्यक्ष युद्धों में हुई क्षति से अधिक है। यह सर्वविदित तथ्य है कि पाकिस्तान की भारत सम्बन्धी विदेश नीति के निर्धारण का प्रमुख आधार आतंकवाद है। भौगोलिक, राजनैतिक एवं आर्थिक वास्तविकताओं को स्वीकार करने में वे सक्षम नहीं लगते। कश्मीर, पाकिस्तानी शासकों के लिए सत्ता-सुख की कुन्जी और द्विराष्ट्र सिद्धान्त का विस्तार मात्र है। सम्बन्धों को सहज बनाने के लिए 'विश्वास निर्माण' के विविध उपायों के समानान्तर आतंकवादी अभियानों का संचालन पाकिस्तान

की नियति बन चुकी है। समस्याओं के समाधान के लिए दोनों के मूलभूत विचारों में ही अन्तर दृष्टिगोचर होता है। भारत के शिखरोन्मुखी दृष्टिकोण (सतह से शिखर की ओर) को हास्यास्पद बताते हुए पाकिस्तान कश्मीर को केन्द्रीय मुद्दा मानता है। यथार्थ में, दोनों देशों के सम्बन्धों को सहज बनाने में आतंकवाद मूल अवरोधक है। कश्मीर की आड़ में पाकिस्तान भारत को अशान्त और अस्थिर बनाये रखना चाहता है। पाकिस्तान की महत्वाकांक्षाओं के दृष्टिगत, भारत को अपने सुरक्षा मूल्यों के रक्षार्थ सजग रहना होगा। सैन्य व कूटनीतिक स्तर पर आतंकवाद के विरुद्ध लड़ते हुए भारत को वैचारिक स्तर पर भी ठोस कार्यवाही करनी होगी। भारत को “शून्य सहनशीलता” की नीति पर दृढ़तापूर्वक चलते हुए यथार्थ कूटनीति का पथ अपनाना होगा।

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## Acculturation and Assimilation in the Works of Bharati Mukherjee

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### ABSTRACT

Bharati Mukherjee is a versatile writer who made a deep impression on the literary canvass. She authored many novels, short stories and essays. Her novels are an honest depiction of her own cultural location in India, her displacement from India to Canada and her relocation to the United States of America as a naturalized citizen. As a postmodern writer the foremost concern of her writing has been the South Indian expatriate and their life. She depicts the cultural clash between the East and the West. Her writings express the issues concerning the expatriates and their movement from their homeland to the hostland, where they assimilate into a new culture to attain a stability of their identity as well as culture. She narrates the experience of the female immigrants who find it difficult to integrate and adjust entirely into the dominant culture. This paper attempts to explore acculturation and assimilation in the writings of Bharati Mukherjee.

### INTRODUCTION

The advent of globalization, development of technology and faster modes of communication lead to increase in migration of people to a large extent. Along with migration, accultural studies have acquired importance and the diaspora has gained considerable academic and disciplinary recognition and emerged as a distant literary genre. Migrants face a sense of belongingness of home and they are left with a feeling of being lost and alien in the new dominant society. It is very difficult and painful for all the immigrants to acculturate and assimilate culturally, geographically, socially and psychologically in a new land and very few of them succeed in doing so. Most of the immigrants experience a loss of identity, anxiety, displacement and dislocation along with a sense of alienation. It is not an easy task to get acclimatized to the dominant culture. Immigrants face the challenge to get assimilated in the new social, economical and political pattern and it causes emotional and psychological changes in them. Acculturation is the process of change in customs, beliefs and artifacts that takes place when two cultures come in contact with each other. There are

two major types of acculturation, i.e. incorporation and directed change, depending on the basis of conditions under which the two cultures contact and changes take place. Incorporation occurs when contact as well as social self determination is maintained between people of different cultures, while directed change occurs when dominance is established by one group over another either by political or military conquest. The most common pressure of directed change is imperialism. Directed change includes forced assimilation, where one culture is completely replaced by the other and there exists resistance against aspects of dominant culture as directed change is not willingly acquired but, is forced upon the members of the recipient culture, which are often very harsh. Thus, these engendered changes last for a very short term period. According to the Gordon's theory:

Cultural assimilation and acculturation is the first step of the absorption process that would take place and that would continue indefinitely even when no other type of assimilation occurred. Once cultural

assimilation has occurred either simultaneously with or subsequent to acculturation, all of the other types of assimilation will naturally flow (Assimilation 80-81)

Assimilation can be classified into several categories such as cultural assimilation, acculturation, structural assimilation, marital assimilation, amalgamation, identificational assimilation, etc. Besides assimilation, Mukherjee's novel includes the theme of acculturation, whose basis is culture. It is the transition of individual groups of people having a culture and lifestyle of their own moving into the lifestyle of another culture, where they adapt the new culture's language, customs, value and behaviour. Language is considered as the most important part of the acculturation process. Acculturation can prove challenging and stressful, particularly the immersion phase. As people only know, whatever they learned being in their original place and culture, it is easy for them to live and grow in their own culture. However, one can hesitate and even get confused if he or she needs to set aside her own cultural background and beliefs to learn and acquire a new one. Gibson says, "the concept of acculturation is related to interethnic contacts and describes the psychological and cultural changes that occurs as a result of continuous contacts among people belonging to different cultural or ethnic groups" (Immigrant Adaptation 19-23). Mukherjee through her novels highlights the life of Indian immigrants living abroad in America who faces the trauma of self transformation. Some immigrants willingly wish to acculturate themselves and enter the phase of a permanent resident in America. The female protagonists of Mukherjee undergo the process of migration. The difference in their cultural heritage, lifestyle, and language puts them to pass through the harsh test of acculturation and assimilation where they need to get adjusted to the new culture they came in contact. Not all the immigrants are able to stand the new lifestyle and culture. Some of them fails to accept the new land with its new culture. Varied results can be seen when the migrants come in contact with two different cultures. They even surpass the male migrants in the

process of assimilation and self transformation and in this process they get trained and turns into adaptable wives and daughters which proves advantageous for them when they migrate to the United States.

## DISCUSSION

Assimilation and acculturation have different effects on different individuals. Some of them welcomes the new culture and get adapted to it. While some immigrants swing between the two ends of land masses, that is the old and the new acquired world. The immigrants find themselves nowhere. Assimilation and acculturation prove a great failure to those immigrants, who are very confused and their effort to acculturation and assimilation leaves them with a new quest, where they find them incomplete, unsatisfied and terribly confused concerning their identity, that matters them 'the most'.

Acculturation and assimilation process creates a conflict within them concerning the acquisition of the old or the new world with its lifestyle and culture. Although they acculturate and assimilate physically to the culture and tradition as well as the lifestyle of the new world, but the psychology does not allow them to do so. Thus, there always exists an inner situation of war within their mind which prevents them to acculturate or assimilate them in the true sense. The presence of two cultures in the mind of expatriate forms a wider and palpable basis, which ignites the quest of identity. Mukherjee's expatriate basically belongs to India or Asia and carries the Indian cultural values. It becomes difficult for them to translate the Indian values in terms of a foreign unknown culture. Mukherjee's most of the novels picturise the Indian immigrants leaving their homeland, India and settle down in America. Here they undergo the unsuccessful attempt to assimilate to the new western culture of America. As Mukherjee's women expatriate have shown different reaction towards assimilation and acculturation, some of the immigrants failed to acculturate and attain the new culture. While others took it as a positive move in their life which prompted them to a different level of satisfaction and helped in flexible



existence of a new culture by them, as well as being accepted by an alien land. The dynamic heroines of Mukherjee, who immigrated from India and possess different ethical, traditional background, boldly accepted the new culture in the new nation, America, which led to an effort to their betterment, development and survival in a new land of dreams. The immigrants forget their past in order to get assimilated into the new culture. Rani says, "assimilation and acceptance in the new culture appears impossible if the past is not forgotten." (*psycho Dynamics* 83) Thus, the picturization of acculturation and assimilation in the novels not only express the negative phase of migration, but it is also considered as an important positive move towards self development and identity formation by flexible analysis and immersion of one culture into another. For the immigrants with flexible attitude, identity is not a fixed point. They look towards their new homeland with hope, and desire and willingly assimilate in it.

Mukherjee's novels deal with the female immigrants like Tara, Dimple, Jasmine, Hannah etc. who have crossed the borders, acclimatized themselves to get adapted to the new adopted land. Some immigrants like Hannah turns into a fighter and adapt the new culture through assimilation. Hannah, in *The Holder of the world*, is a transnational with no desire to return back home like other expatriates of Mukherjee, who failed to assimilate in the new culture and returned to their native places. She gets connected to both the nation, that is a nation of her birth and the new acquired land.

The characters like Hannah are posed as healer of the world and a peacemaker. Beigh Master, the narrator of the story expresses the objective of the novel, "I live in three time zones simultaneously, and I don't mean eastern, central and pacific. I mean the past, present and the future." (Mukherjee, *Holder of the world* 5) Mukherjee and her characters move from alienation to acculturation and some of her expatriate reach transnationalism, while others reach their destination of assimilation. Thus, the female immigrants of Mukherjee's novels and stories experience different degrees of acculturation as they

put themselves to test and try different models of construction of the migrant identity in the alien society like America. Mukherjee's novels such as the *Tigers Daughter*, *Jasmine*, *Desirable Daughters* all shows the effort of their immigrant protagonist to adapt to the new American society where the consequences are presented in the form of rootlessness. *Desirable Daughters* is evident and shows the assimilation of immigrants. The protagonist Tara is comfortable with both Indian as well as American culture. Here Mukherjee seems to suggest that acculturation provides immigrants an opportunity to involve beyond their restricted identity of homeland and reinvent themselves in a new land specially the Asian immigrants who leave India to settle in America. The protagonists are able to discard the expatriate stance that keeps them emotionally attracted for ever to their distant homeland and favored the approach of immigrants to seek successful rehousement in the new culture. Thus, assimilation proves to be a positive turn in the life of immigrants. In the *Tiger's Daughter* Tara's adaptation to the American society causes her rejection and revulsion of Indian modes of life.

In *Tiger's Daughter*, Mukherjee shows the negative phase of acculturation and assimilation, where the protagonist Tara, fails to get absorbed into the new culture. She is not able to balance her life between the new and the old nation. She goes back to her homeland, India to discover her place, her roots in the society where she spent her childhood, but she gets trapped between her own fragile Indian identity and the expatriate aloofness. She develops a confused image as she looks at her homeland Calcutta through her American outlook, which gives her a wrong image of Calcutta. She dwells in uncertainty, where she is not capable to choose either her homeland or the host country America. She tries to acculturate and finally assimilate in the new culture of the new land, but the friction of her homeland and old memories pulls her apart from the culture of America and at the same time the present society prevents her to get assimilated. She is messed between both the cultures and becomes a marginal woman.

Like Tara, Dimple the protagonist of *Wife* undergoes the similar situation of cultural dislocation. She is confused, alienated and torn between the two worlds. There arises a double consciousness in her which do not let her establish solidarity in either her own cultural society or the newly adopted one. In the novel immigration has been considered as a gain rather than loss and dissolution of native culture. It shows the journey of Dimple from expatriation to immigration, and then from alienation to adaptation and lastly to assimilation. The character sketch of Dimple and Tara shows that, it is not easy for any immigrant to get acculturated or assimilated completely in a new culture or land. As the process of acculturation demands adjustment of the immigrants as well as the new host society, the immigrants not only make an effort to acculturate or assimilate in the new land, but it is also necessary for the new land and its people to accept the immigrants to get merged in the new trend of culture. If the immigrant is not able to accept the culture or she herself is not accepted by the host society, both the situation leads to heightened nostalgia. Mukherjee not only present the negative side of acculturation and assimilation in her novels, but her novels also pose some of the women protagonists who wish to acculturate themselves and at last succeed in doing so. Mukherjee's immigrant also faces the trauma of identity crises and double consciousness, but they try to resolve this dilemma and their migrants do not remain too long as expatriates and becomes permanent residence of the new nation America. *The Middleman and other Stories* and *Jasmine* shows the character assimilating into the new land by forgetting the values of homeland, so that they can survive in the newly adopted nation, America. They gain the immigrant identity of America by embedding their past into their conscious mind.

Assimilation into a new culture can be succeeded, by the willingness of immigrants to pull themselves away from the old world to live in the present. The protagonist of *Jasmine* is estranged by the uncertainty of her life in an alien land, "what country? what continent? we pass through wars, through plagues. I am hungry for news, but the

discarded papers are in characters or languages I cannot read." (Mukherjee, *Jasmine* 101). Jasmine, deserts Bud and chooses Taylor, in her act of doing so, she not only changes her life partner, but she changes her whole world. As she herself confines, "I am not choosing between men, I am caught between the promise of America and old world dutifulness." (240) The characters like Hannah of *The Holder of the world*, Panna of *A Wife's Story*, Shaila Bhava of *Management of Grief* forms a new identity by managing their American life with Indian culture and its value.

The heroines of Mukherjee are caught between the native and foreign culture. The protagonist in the novel grapples with the challenge to accommodate American culture into her traditional Indian culture which is quite difficult. The cultures are different in every context. American society provides and receives opportunity to do everything, she was denied to do in India. Tara, the protagonist is compelled by her husband to search for her cultural identity which she does by analyzing her past and making a self assessment of her life. Tara is a modern educated woman, who migrates to San Francisco and accepts the challenge of the host land without looking back and she is ready to adjust and survive instead of being nostalgic. Tara's congested Indian background stimulates her to set herself free from the strangulating culture and enjoy the free culture and liberal atmosphere of America. Tara, the protagonist, acquires the American culture happily and starts wearing jeans and T-shirts instead of sarees, she drives a car, she lives and enjoys an American way of life and indulges in the process of adaptation and assimilation just like Mukherjee. In the process of transformation, Tara tries to get rid of past identity completely, but she fails in doing so and her identity oscillates between the American value system and Indian ethos. She faces the reality of inbetweenness and realizes that she is neither an Indian nor an American. Her identity breaks into fragments and gets binded in multiple selves. She accepts and rejects certain aspects of both Indian and American culture and feels that she can never have a single identity and will always remain dispersed between Indian and American identity.

She stops struggling with her multiplicity and accept them as a part of her development and keeps on changing without losing her former identity completely, which represents Tara's segmented assimilation in the novel. Thus, Tara undergoes transformation while undergoing the process of assimilation.

Mukherjee, through her presentation of acculturation, shows her consciousness towards trauma that involves the immigrants, who get uprooted from their native culture, traditions and values. In her novels acculturation give rise to pain, anger, bitterness, fear, confusion among her characters. Acculturation brings Mukherjee's heroine on an undefined median that is, between the preservation of the old world and its culture and their assimilation into the new one. Acculturation and assimilation are something which divides them into two parts and it becomes difficult for the immigrant to choose one of them and attain it. Most of the immigrants do not remain in the expatriate phase for a long time.

## CONCLUSION

Mukherjee's women characters strongly wish to settle down permanently in the alien land and become a part of it. They enter the phase of immigrant identity with a strong will power to bond with the new culture. The effect of acculturation and assimilation can be distinctly seen as it is visible in the personality and identity of the immigrants. Several immigrants after acquiring transnational hybrid identity pose different kinds of dilemma. Mukherjee highlights this in her protagonist due to acquisition and lost of several identities by her heroines. Her novels are the acculturation of confusion and struggle of women migrants who seek to redefine themselves in both the new and the old worlds for which they pursue acculturation and simultaneously assimilation. The effects of acculturation and assimilation are clearly visible in Mukherjee's writings, as her female character grows and shows an ever changing attitude with the change of their nation and citizenship.

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## हजरत जगत उर्फ राजा राजाधरजी महाराज बज्र

शास. होमसाई कॉलेज,  
होशंगाबाद

भारत में राजत्व और राजदर्शन की सदैव ही गौरवशाली परम्परा रही है राजशास्त्र, नीतिशास्त्र, दण्डनीति और अर्थशास्त्र के नाम से सदैव प्रचलन में रही है प्राचीन भारत में राजनीति विषयक ज्ञान को सर्वोपरीज्ञान माना जाता था बौद्ध ग्रन्थ, जैन साहित्य, पुराण, मनुस्मृति, रामायण, महाभारत कौटिल्यीय अर्थशास्त्र सभी में राजस्व के जन कल्याणकारी स्वरूपों का हमें विवरण मिलता है।

कौटिल्य के अनुसार प्रजा के सुख में ही राजा का सुख है, उसके कल्याण में ही राजा का कल्याण है जो कुछ राजा को अच्छा लगे उसे अच्छा नहीं समझा जाना चाहिये परन्तु जो कुछ उसकी प्रजा को अच्छा लगे और जो प्रजा को आनन्द दे, राजा के द्वारा उसे ही अच्छा समझा जाना चाहिये।

कौटिल्य ने राजत्व की विशेषताओं की विवेचना करते हुए आन्वीक्षिकी, त्रयी, वार्ता और दण्ड नीति की चार विधाओं द्वारा जनकल्याणकारी राज्य के सफल संचालन की विवेचना की है।

महाभारत में राजा के कर्तव्य एवं जन कल्याणकारी स्वरूप का स्पष्ट विवेचन हमें यह उल्लेख करता है कि राजा व्यक्तियों से उनके कर्तव्यों का पालन करवाये एवं व्यक्ति का स्वधर्म, वर्णाश्रम धर्म और आश्रमधर्म का सभी से पालन करवाये, राजा का यह कर्तव्य है कि व्यक्तियों को धर्म विरुद्ध आचरण करने से रोके क्योंकि स्वधर्म का पालन स्वर्ग और मोक्ष देने वाला होता है व्यक्तियों का सर्वांगीण विकास करना राज्य का लक्ष्य था।

भारतीय राजत्व की अनूठी विशेषता उसकी समन्वयकारी प्रवृत्ति है राज्य का लक्ष्य-धर्म, अर्थ, काम और मोक्ष की प्राप्ति करवाना है।

दण्ड को भारतीय राजत्व में अत्यधिक महत्व दिया गया है, मनुस्मृति के अनुसार मनुष्यों के आचरण को शुद्ध बनाए रखने और उन्हें स्वधर्म के मार्ग पर बनाए रखने के लिये दण्ड शक्ति

की आवश्यकता होती है कौटिल्य में अर्थशास्त्र में दण्ड की विवेचना की है उन्होंने यह स्पष्ट किया कि राजा को इस बात का ध्यान रखना चाहिये कि दण्ड न तो आवश्यकता से कम हो और न औचित्य से अधिक हो और नहीं कम होना चाहिये राज्य का उद्देश्य व्यक्तियों की केवल भौतिक आवश्यकताओं की पूर्ति करना नहीं था वरन् ऐसी श्रेष्ठ परिस्थितियों का निर्माण करना या जिसमें व्यक्ति अपनी आत्मा के उत्थान एवं कल्याण के लिये निरन्तर प्रयास कर सके। श्री भगवद्गीता में भगवान श्रीकृष्ण ने अर्जुन से भी कहा है

परित्राणाय साधूनां विनाशाय च दुष्कृताम्।

धर्म संस्थानापनार्थाय सम्भवामि युगे-युगे।।

(साधु पुरुषों का उद्धार करने के लिए पाप कर्म करने वालों का विनाश करने के लिये और धर्म की अच्छी तरह स्थापना करने के लिए अर्जुन मैं युग-युग में प्रकट हुआ करता हूँ।

राजत्व भारतीय राजदर्शन यथार्थवादी है इसमें राजनीति एवं राजव्यवस्था का व्यावहारिक मिश्रण है लोकहितकारी संभावनाएँ जीवन्त हैं एक ओर मानव की असुरी प्रवृत्तियों एवं राजा की निरंकुशता पर लगाम लगायी हुई है, तो दूसरी ओर जनकल्याणकारी जनोन्मुखी प्रशासन का उल्लेख किया गया है तथा राज्य में अंगों का विवेचन भी व्यावहारिक तरीके से किया गया है सेना, कोष व मित्र को भी राज्य का अंग माना गया है, साथ ही विभिन्न राज्यों में पारस्परिक संबंधों के विषय में मण्डल सिद्धांत तथा षाड़गुण्य सिद्धांत व्यवहार में वर्तमान में भी उपयोगी रूप में अपनाये जाने योग्य है।

वर्तमान में भी भारतीय राजत्व वसुदेव कुटुम्बकम् का आदर्श साकार कर रहा है भारत की अनूठी राजनीतिक एकता आज समूचे विश्व में प्रसिद्ध है। भारत में भारतीय नागरिकों के जीवन स्तर को ऊँठाने, लोकतंत्र को बचाने, जनताजनार्दन

के लिये पुष्टि कर भोजन, वस्त्र, निवास, शिक्षा व रोजगार स्वास्थ्य के बेहतर अवसर उपलब्ध करवाने हेतु केन्द्र व राज्य सरकार प्रयत्नशील है तथा अन्तर्राष्ट्रीय जगत में भी युद्ध व आतंकवार के प्रतिकार, पर्यावरण की सुरक्षा अन्तर्राष्ट्रीय शान्ति, सहयोग, समन्वय द्वारा विश्वशान्ति निर्माण के लिये भारत सतत प्रयत्नशील है भारत का लोकतंत्र धर्म निरपेक्षता विश्वप्रसिद्ध है भारतीय राजस्व की विशेषता गुटनिरपेक्षता वर्तमान में वैश्वीकरण के भौतिकतावादी दौर में भी समूचे विश्व के लिये एक आदर्श प्रतिमान है आज समूचा विश्व भारत की शान्ति, एकता, अखण्डता, लोकतंत्र, गांधी व त्याग, न्याय बुद्ध तथा जैन धर्म एवं योग की अनूठी गरिमा का कायल हो रहा है यही भारतीय राजत्व की अनुपम उपलब्धि है।

भारत अन्तर्राष्ट्रीय शान्ति सुरक्षा व मानव जाति व जीवन रक्षा हेतु सजग सतत प्रयत्नशील है। उपरोक्त विवेचन से यह स्पष्ट होता है कि प्राचीन काल से ही भारतीय राजस्व व राजनीति का केन्द्र बिन्दु मानव जाति का कल्याण किस प्रकार किया जा रहा है, भारतीय राजत्व उत्कृष्ट वास्तविकताओं से भरापड़ा है सौहार्द व सबका विकास व कल्याण हो ऐसे गूढ़ गम्भीर प्रयासों को किस प्रकार से किया जाय कि मानव जीवन का उत्थान व विकास हो सके रही है मानव प्रजाति सुरक्षित समृद्ध हो एके, अनेकता में एकता लिये हुए सभी स्थितियों धर्मों, विचारधाराओं का समिश्रण लिये हुए मन, वाणि और कर्म से अहिंसा शान्ति व न्याय के प्रचार प्रसार की अद्भुतता लिये हुए है अनेकता में एकता लोकतंत्र व शान्ति हमारी विशेषता रही है।

कौटिल्य के अनुसार –

प्रजा सुखे सुखं राज्ञः प्रजा नाम हिते हितम्  
नात्मप्रियं हितं यज्ञः प्रजानां तु प्रियं हितम्

प्रजा के सुख में ही राजा का सुख है प्रजा के कल्याण में ही राजा का कल्याण है जो कुछ राजा को स्वयं अच्छा लगे उसे अच्छा नहीं समझा जाना चाहिये परंतु जो कुछ उसकी प्रजा को आनंद दे राजा के द्वारा उसे ही अच्छा समझा जाना चाहिये।

सभी व्यक्तियों को न्यूनतम जीवन स्तर प्रदान करना तथा धनी व निर्धन के बीच की खाई को पाटना वर्तमान में अत्यंत आवश्यक हो गया है आज की परिस्थितियों में लोकतंत्र की रक्षा के

लिये लोक कल्याण की प्रवृत्ति को लोकहितकारी कार्यों को अपनाना नितान्त आवश्यक भी हो गया है।

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