Study of Physicochemical Parameters of Lakes in India: A Review

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A B S T R A C T

From the origin of life on the earth, water is having great importance. The first life originates in the hydrosphere of earth. From the Archeozoic era the life requires water for the survival and development of the living organisms. Therefore, it is necessary to know the quality of water. In the present study a review has done on the work done by various researchers in this field from India.

Keywords: , Physicochemical parameters, lakes, hydrochemistry

Introduction

Water is very necessary for a number of activities in the world. It is very useful for the industries, agriculture, drinking and for various domestic use. Our nation India is having agrobased economy as agriculture is the major employment generation sector. It is very necessary to know the water quality of the lake water as lakes are also providing water for agriculture, livestock rearing, Pisciculture along with poultry farming. Due to importance of knowledge of physicochemical parameters, to know the water quality this review has carried out to study the work done by various researchers in India.

Review of Literature/ Material and Methods

The present review of the study of physicochemical parameters, hydrochemistry is based on the research papers published in various online research journals during 2020 to 2024.

In India number of researchers has carried the study of physicochemical parameters of lake water in India.

Studies of physicochemical parameters on Ramanthapur lake near Hyderabad in Telangana is carried out by Padala et al (2020) They found that due to increased urbanization and population, particularly industries and sewage the lake is converted into waste dumping site.

Rohini and Reddy (2021) carried out physicochemical studies on Safilguda lake in Hyderabad. The study indicates that the direct release of untreated sewage, garbage and immersion of idols from nearby colonies the water quality of the lake is poor and not suitable for drinking, domestic and recreational purpose. Therefore, it is suggested that the government authorities has to restore the lakes by allowing only treated sewage and by proper functioning and increasing the capacity of sewage treatment plant. Water quality assessment of physicochemical parameters of Wardhannapet freshwater lake of Warangal district in Telangana state is done by Rajani (2020) observations from the present study suggests that the fish culture in this freshwater lake can be taken up as the quality of the water is within tolerable range and suitable for it.

Behera and Bhatta assessed the water quality index of various physicochemical parameters of Ansupa lake in Odisha (India) (2021). They found that WQI value was good in monsoon and summer but it is poor in winter. All the water quality parameters were measured within the standard permissible limit by WHO, ICMR and BIS except DO. Hence the water quality decline from monsoon to winter due to microbial activity. Physicochemical characteristics of Vadape lake of Bhiwandi city at Thane district of Maharashtra, India is studied by Amte et al (2021). Their study showed the remarkable seasonal changes in the water quality In their study they found that some parameters were beyond the permissible limit. Hence, they concluded that the water quality is not suitable for drinking and domestic purpose.

Chakraborty (2022) has analyzed the different limnological parameters and cultural eutrophication of Kalyani Lake in West Bengal, Nadia. The parameters showed distinct temporal and seasonal variation. The low DO level and high level of nutrient values indicate the poor water quality of the lake for human consumption and fish culture. Bathing of human, cattle washing of cloths and utensils and dumping of solid wastes etc. were observed. The study showed that the Kalyani Lake water is highly polluted. Saini et al (2022) have studied physicochemical parameters of Jal mahal lake, Amer lake and Galta lake of Jaipur in Rajasthan, India. After assessment of the water samples they found that the water of Jal mahal lake is highly polluted and unfit for drinking, fishing and propagation of wildlife. Amer lake was second most polluted and Galta lake was least polluted. Physicochemical activity of Jal mahal lake is studied by Dadupanthi (2023). Eater pollution problem presides in the lake with severe contamination. Alteration in various physicochemical parameters of the water body as well as accumulation of the heavy metals causing eutrophication of the water body is observed. Significant variations were observed during different seasons in various physicochemical characteristics of Kodamdesar lake in the arid region of Rajasthan while studying it Panchariya (2023). A study of water in Nyalkal lake in Nizamabad of Telangana is done by Varma and Shailaja (2023). They have studied the physicochemical parameters of the lake and concluded that the lake water has not undergone eutrophication and the impact of urbanization is not observed. The water quality is good and all the physicochemical factors that were studied are within the permissible limit; Hence it is suitable for flora and fauna of the lake. The water can be used for the agriculture and aqua culture. In Karnataka state of India environmental status of Hosakate lake at Bengaluru is studied by Veena (2022) et al. They observed that the water was heavily contaminated by the pollutants and severe conservation strategies are most essential for sustainable development of the lake.

Assessment of water quality of Bellandur lake in Bengaluru Karnataka is done by Rajanna et al. (2023). The study found that the most of the physicochemical and biological parameters were beyond the optimal range for surface waters and were not in the desirable limits. The high BOD concentration indicates organic load which utilizes dissolved oxygen for decomposition. By stopping all illegal entry of pollutants there is urgent need to initiate proper management measure to rejuvenate this water body. Yadav et al. (2023) has carried out study on physicochemical parameters of Bilpan pond in Dungarpur district of Rajasthan. This study deals with the changes in physicochemical parameters. Analysis of physicochemical parameters in Dashaudh lake Rampur Nankin in Sidhi district, Madhya Pradesh is done by Kushwaha and Kashyap (2023). The study concluded that the pond water was unsafe for drinking purpose. Therefore, some efficient measures are required to increase the drinking water quality by conservation of water bodies and making water quality management plan for this region. Laishram et al 2023 have studied seasonal variation in water quality of Shantigrama lake in Hassan district of Karnataka. They concluded that the water quality of the Shantigrama lake is good and with some primary water treatment it can be utilized for consumptive use as well.

Poornima and Alavandi (2023) have analysed physicochemical parameters of water of ponds/lakes in and around Arsikere taluka of Hassan district in Karnataka state of India. They have observed seasonal fluctuation in the physicochemical parameters among these ponds. The water quality alters according to different seasons and have considerable implications on local flora, fauna and biodiversity.

Kapani et.al (2024) have assessed the water quality of Vatadahosahalli lake in Chikkaballapura district in Karnataka state of India. Their study emphasizes the importance of monitoring, implementing strategic measures for the prevention and sustainable management of the lake.In Rajasthan water quality parameters of Mansagar lake near Jaipur is studied by Singh and Gupta (2024). They observed that the inflow of partially treated and untreated waste water from Nagtalai and Bramhapuri sewage treatment plant is causing the contamination of the lake.

Assessment of physicochemical parameters of the Vanivilasa sagara reservoir in Chitradurgh district of Karnataka State is done by Keerthi and Ashashree 2024. They found that the physicochemical parameters were within the permissible limit. Therefore, the reservoir water is considered non polluted and suggests that it is suitable for irrigation, pisciculture and other purposes. Vasistha and Ganguli 2024 have carried out the water quality characterization for two lakes in Panchakula district of Haryana state. They found that the overall water quality in both the lakes was deemed good across their entire expanse suggesting they can be used directly for activity such as bathing, boating and irrigation. However, for drinking purposes some treatment was still necessary.

Conclusion

This review has covered information results, suggestions, and conclusions from some published research papers in online research journals about the study of water quality and study of physicochemical parameters, characteristics of lake water. It is observed and can be concluded that the lake water from the lakes near towns and megacities are mostly polluted. Due to anthropogenic activities and human innervations the water is not of good quality and cannot be recommended for use without proper treatment. The situation is alarming, local and government authorities have to increase the awareness among the people for sustainable use of water. The proper sanitation management is necessary due to increasing population.

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