



# REVIEW OF RESEARCH

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## A COMPARATIVE STUDY OF GEOMORPHOLOGICAL FEATURE OF NARMADA BASIN IN VIEW OF EARLY HUMAN ADAPTATION

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### ABSTRACT

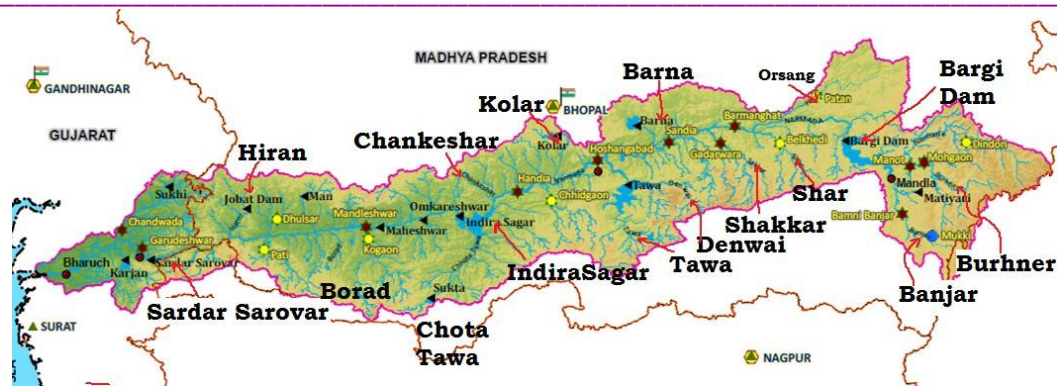
*The development of Early man has always been associated with the nature of Geomorphological features of that particular region. In India there are several specific geomorphic regions that attracted the early man for their colonization. The Narmada basin has also been an area of attraction for early man, but the available evidence suggests that the entire basin was not favorable for their habitation. Hence, in this paper an attempt has been made to find out the role and nature of geomorphologic features of Narmada basin as the favorable place for the early man.*



**KEYWORDS:** *College students, Career Decision Making Self-Efficacy, Internet Addiction, Chennai City .*

### INTRODUCTION

River Narmada, one of the largest and holiest river in India originates from the Amarkantak Plateau on Maikal range of eastern Madhya Pradesh on the border with Chhattisgarh. The river flows as east-west direction through a rift known as Narmada rift formed with the natural alignment between Vindhyan and Satpura ranges as tectonic valley in which the Satpura range forms the southern divide while the Vindhyan act as the northern boundary (Khan, A.A. 2017). Due to this alignment the Narmada River flows as almost straight course and completes the distance of about 1312 km with 41 tributaries in which 22 lies from Satpura side while 19 from Vindhyan range. The natural alignment of these two ranges also forming the catchment area of the river stretches in an area of about 98,796 km<sup>2</sup> including the regions of Madhya Pradesh, Maharashtra and Gujarat (Khan, A.A. & Maria Aziz 2016:2016). The maximum width (north-south) of the basin is 234km. (Sharma,J.R. and Y.Paithanker.214:1). During the journey the river passed through different geological formation i.e. Cretaceous, Deccan Trap, Crystalline, Dolomite, limestone of Dharwar system, fluvial tract etc. Besides, the Narmada basin may broadly be divided into following distinct physiographic regions (Sharma,J.R. and Y.Paithanker.214:1).



### Physiographical division of Narmada-

(a) The hilly area of eastern part (lying between the altitudes of 1060 to....msl) mainly comprising the districts of Anuppur, Shahdol, and Mandla. In this area the river flows in rift valley formed due to faulting. In this area the river covers the distance about 300 km.

(b) Combination of ravine stretch and plain area which may further be divided as upper plain, middle plain and lower plain stretched mainly in the districts of Jabalpur, Narsinghpur, Raisen, Harda. Through the Marble Rocks/Dhuandhar falls of Jabalpur the river enters in plain where it runs about 750 km

(c) The western area characterized by small hillocks and coastal plains lying mostly in the districts of Khargon, Khandwa, Bharuch. In this area the Vindhyan and Satpura come close to the bank of the river and forming a narrow gorge which extends about 90-100km. After that the river flows in plain at a distance of about 150 km before joining the sea at bay of Khambhat. These three divisions roughly correspond with Upper Narmada, Middle Narmada and Lower Narmada. The potential of these regions has attracted the geologist as well as archaeologist to analyze the geomorphic features with various objectives. However, such studies started about hundred years ago but the systematic publication came in light only few decades ago. The relevant data for the present study is taken from these publications; however limited field work has also been carried out particularly in the Upper Narmada Valley.

### Geomorphic Features-

River Narmada has a narrow elongated basin which consists of an alluvial valley flat about 20-70 km in width between Vindhyan and Satpura ranges. Although, the Vindhyan ranges are smaller in comparison to the Satpura ranges but its slopes are steeper as the river is located closer to Vindhyan ranges. Alluvial valley appears to be flat that built mostly of riverine sediment.

The Narmada basin is primarily influenced by three geomorphic processes (Gupta, Avijit *et al.* 1999) – (a) high magnitude floods which fill the entire channel and control the rocky and alluvial reaches, bed shear stress and unit. Stream power is much higher in the bedrock section which resulted in the erosion of these bed rocks during such large floods. (b) High flows of the wet monsoon which constitute the dominant channel process for the river and (c) regional tectonics which determined the location of the course of the Narmada. River Narmada is the narrow elongated basin which consists of an alluvial valley flat (20-70 km in width) between two mountain ranges viz. Vindhyan to the north and the Satpura to the south. The Vindhyan ranges are smaller than Satpuras but northern slopes are steeper as the river is located closer to Vindhyan ranges. Alluvial valley appears to be flat which built mostly of riverine sediment in this reason cannot identify the deposition at the depth near the two mountain mass moment deposits occurs. (Gupta, Avijit, S.Kale, S.N. Rajguru *et al.* 1999).

In the Maikal range, Narmada head water is located at an elevation of 1057m and a well established concentration of drainage network occurs here. Here Narmada river channel is mostly in bedrock, relatively narrow (230-320 wide), about 20 m deep and widely with several hairpin turns when it enters in Jabalpur it downstream from here and made three bedrock sections with gorges alternate with alluvial reaches around Jabalpur, Narmada enters into 30 m narrow deep marble canyon which is cut into dolomite limestone of Archean age. After crossing Jabalpur, Narmada downstream from

Hosangabad and turn abruptly and enters the second rocky section which includes Punasa gorge in Vindhyan quartzite and Deccan trap basalt. Narmada and two waterfalls (Punasa and Dardi) are located in the gorge with low hill approach punasa gorge is downstream by the second alluvial reach extended upto Rajghat. Finally Narmada enters in Dhadgaon gorge in Deccan Trap basalts which has a uniform width of nearly 700m where the valley is narrowest and Narmada flows through a long bedrock gorge which is directly separates the hill of north and south divides. Nearby Rajpipla Narmada emerges from this gorge in to the coastal plain of Gujarat and enters the sea near Bharaouch in a series of wide meanders. In this way we can conclude from Jabalpur to Rajghat Narmada includes to bedrock and two reaches (gupta, avijit, S. kale and S.N.rajguru).if we look at the alluvial section, river Narmada width increases downstream from about 350m near Jabalpur to about twice that width, where river is bounded on both side by steep cliff in quaternary sand and sandy silt. Some major channel feature of the alluvial Narmada are depositional and are found within its high banks in which include a smaller channel bounded by a point bar on one side and high cliff or an inset floodplain on the other. Some sandy bar and fine grounded floodplains (gupta, avijit, S.kale and S.N.Rajguru).the river has a channel – in- channel physiographic with the inner channel carrying the flow most of the time and entire channel bounded by the steep high banks operating as a high magnitude flood discharge conduct on rare occasion. In alluvial geomorphic processes three sets of information help to conceptualize, there is a hierarchical pattern of channel processes which include high magnitude floods, the high flows of the wet monsoon and the low flows of the dry monsoon. The efficiency of this process varies between the bedrock and alluvial reaches; the Narmada is the cumulative result of both types of reaches and the processes operating therein. Both the location of the channel and deviation from the general pattern (waterfalls, extremely wide, multi branch reaches, rock bands forming rapids across the entire channel) are related to tectonic disturbance.

### Geological feature –

The Narmada basin comprises rock ranging in age from Proterozoic. In geological stratigraphy, sediments and rock are noticed of different time zone. The oldest rock are directly from Precambrian (Proterozoic), in which include metamorphic rocks and Granitoid and Meta sediments also known as Archean group. Deep red and purplish sand stone dyke consider in Vindhyan group of Cuddappah rock while conglomerate, sandstone and shale are include in Gondwana group. The cretaceous rock comprising in Bagh and Lameta formation which include fossiliferous marine and continental sediments (conglomerate sandstone and limestone), the Deccan trap belongs to upper Cretaceous showing horizontal basalt flow with dyke sills and inter trap beds, alluvium of Gujarat buried below in tertiary rock where fills river valley, finds alluvial fans, Pleistocene valley fills.

### General Stratigraphic succession -

Formation,etc.	Description
1.Alluvial	River valley fills, alluvial fans, Pleistocene valley fills
2. Deccan trap	Horizontal basalt flow with dikes, sills and Inter trap beds.
3.Bagh and Lameta beds	Fossiliferous marine and continental sediments
4. Gondwana	Conglomerate, sandstone and shale
5.Vindhyan	Deep red or purplish sand stone dyke
6. Archean Group	Metamorphic rock and Granitoid and Meta sediments

## CONCLUSION-

In this way, we can conclude that different branch divided Narmda in different zone such as physiographic feature divided Narmda in Upper, Central and Lower zone, in other way geomorphic feature divided into high magnitude flood, high flows of the wet Monsoon, regional tectonics. The geological formation divided according to geological time scale like; Upper Narmda from pre- Cambrian to tertiary, central and lower Narmda from Proterozoic to recent. The physiographic and geomorphic feature of Narmda can assign that those feature might be responsible for evolution of human in Narmda which species recovered from Hathnora. Upper Narmda is situated on high hilly region, there is lacking of tributary, fresh water resources not much available, because of this human species might not evolved on the upper region. When Narmda comes from the upland to the central region river became broader and there joins lots of tributary because of that source of water easily available, land are fertile, availability of vegetation is the reason of growth survival. Some human species has collected from central region of Narmda. In other way, lower Narmda contains high flooded area, by the erosion of bedrock, scablands, gorges etc. alluvium soil much shows in lower Narmda, in high flood it could find difficult to survival. We can precisely say that human habits and rich of floral and faunal remains was very much visible in central zone of Narmda basin due to Physiographical and Geomorphologic boundaries.

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