



# DEVELOPMENT OF HEAD LOAD CARRYING DEVICE

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## ABSTRACT

The population of daily wage labourers in India is steadily increasing due to poverty. These labourers often carry heavy loads at construction and industrial sites, which poses significant safety risks. Additionally, the necessity to move from one location to another exacerbates health concerns for these workers, who sometimes experience physical stress and strain during their tasks. Recognizing the problems associated with carrying heavy loads on their heads, an improved design is crucial for enhancing safety at construction and industrial sites. This paper presents a proposed design for carrying heavy head loads more safely, offering significant support to labourers in their work environments.

**Keyword:** Efficiency improvement of daily wage based labors.

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## Background of this article

Heavy load carrying has been a longstanding practice among daily laborers. As industries in various sectors have developed, this issue has become increasingly critical. Addressing this problem could be achieved through the introduction of a new design, which would make it easier for workers to manage these challenges. Workers experience significant neck and back pain, which is detrimental to their health, due to the concentration of load on their heads. The

resulting stress is extremely high. Therefore, I have attempted to address this issue with a new design or device. A majority of the laborers, about 74%, who carried loads on their heads were women, with the next largest groups engaged in brick breaking (14%) and cleaning tasks (12%). Most commonly, these workers carried items like concrete and cement mixers. Approximately two-thirds of these laborers adopted a posture of bending their backs to lift loads, while only 28% lifted by bending their knees.

Activity	Posture	Percentage (%)
Lifting	Knees bent	28
	Back bent	72
Carrying	Using one hand	21
	Using both hand	64
	Hands free	15

Accident spot to any construction site

1. During construction of home
2. During construction of apartment
3. During construction of apartment
4. During construction of roads



Health risks are particularly acute in developing and underdeveloped countries where workers often operate without adequate safety measures. In these nations, the welfare of 2labourers is frequently overlooked by both companies and labor contractors. From a total of 68,484 recorded industrial injuries (excluding those in the service sector, private sector, and agriculture), 9,283 were due to handling various objects. The most common injuries occurred in areas where 2labourers were required to manually handle

heavy weights. In India, 2 labourers in construction frequently manage materials and equipment manually, often in ergonomically unsafe positions. The safe load limit for an adult female worker is defined as 30kg, yet the recommended weight limit (RWL) suggested by the NIOSH committee is only 23kg. Despite loads being within permissible limits, the strenuous work schedules of these workers contribute to a high rate of work-related musculoskeletal disorders.

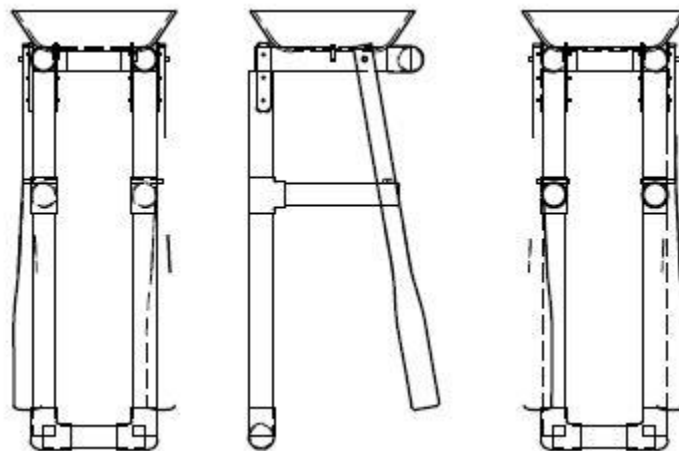
Various activities are performed at construction sites. The data are shown in tabulated form

Type of activity	Percentage (%)
Breaking bricks	14
Carrying heavy loads	74
cleaning	12

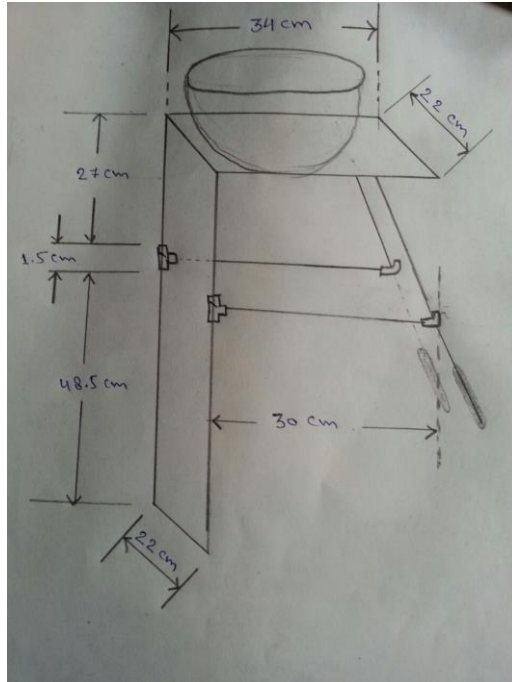
Various material carried by the labour at construction sites

Variables	Categories	Percentage (%)
Type of material	Water	9
	Bricks	27
	Cements	24
	Concrete mixture	30
	Any other	10
Weight of material	< 10 Kg	9
	10-20 Kg	32
	>20 Kg	59

**Design of Model:-**



**Free Hand Sketching**



**Final Model prepared:-**



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