

ABSTRACT

Traffic calming measures helps in reducing the negative effect of speeding motor vehicles, alter driver behavior and improve safety for non-motorized vehicle users. Speed humps are most effective and economical traffic calming measure used globally. They induce shocks and vibrations to the passengers in the vehicle passing over it. Speed humps aim to force the driver to reduce the vehicle speed to an optimum speed where the discomfort is minimum. The human body is exposed to whole-body vibrations while passing over a speed hump. Therefore the geometric design of speed humps, vehicle speed and postures of the users determines the level of discomfort. The speed humps are generally designed for motorized vehicles. However in developing countries, several non-motorized vehicles also share roads. The impact of these speed humps on non-motorized vehicles users have not been studied yet. Since most of the popular non-motorized vehicles in developing countries do not have proper suspension system or any other shock absorbers, it is expected that the discomfort caused by its user would be worse than that by those of motorized vehicle. This study is aimed at determining the effect of geometry of the hump, speed of the vehicle and riding posture of the driver on discomfort levels. The study also compares the difference in discomfort caused to motorized and non-motorized vehicle users that can be used to design optimum speed hump geometries taking discomfort to non-motorized vehicle users also into account.

Keywords: Speed hump, Vibration Dose Value, Discomfort, Whole-body vibration, Critical speed, weighted rms acceleration, frequency weightings, neck vibrations, non-motorized vehicle.