This paper presents a numerical and experimental study of the effect of corrugation pattern on the stiffness of thin plates. A two-dimensionally symmetric pattern of corrugation has been proposed and various parameters affecting the stiffness of corrugated plate were optimized. The numerical analysis was performed using a three-dimensional mechanical software design program SOLID WORKS and the finite element program ABAQUS /standard 6.14 software. The trapezoidal pattern of corrugation was selected for this purpose. Having numerically optimized, the proposed pattern was fabricated and tested for further examination of applicability. Numerical analysis was performed on a [360] mm square steel thin plate of which the number of corrugation cells and its geometric parameters (like height and angle of inclination) were optimized; the results have recommended a (9) cells-[32 mm] height-[70^{o}] angle combination to have the maximum stiffness. The spacing between cells was then examined for its effect on the stiffness of the proposed pattern. When compared with the existing commercial plates of different patterns of corrugation, the proposed design has been found superior. The manufacture of the proposed corrugated plate has shown some difficulties; A punch and die, 3D printer, and folding techniques were attempted. Close results have been found between the numerical and experimental versions of the design.