Note on the oscillation of certain difference equations

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Abstract: The nonlinear difference equation of the form $\Delta^m u(n) + a(n)f(u(r(n))) = 0, \ \ m \geq 2, \ \ n \in \mathbf{N}$ is considered, where Δ^m is the m-th order forward difference operator, $a : \mathbf{N} \to [0, \infty)$, $r : \mathbf{N} \to \mathbf{Z}$, $f : \mathbf{R} \to \mathbf{R}$ and $uf(u) > 0$ for $u \neq 0$. Some new criteria for the oscillatory and asymptotic behavior of solutions of the above equation are given.