Recent studies show that ubiquitination play a critical role in spatial and functional regulation as well as in the turnover of target proteins in the cell. WWP domain-containing protein (WWP) subfamily belongs to the HECT-type E3 ubiquitin ligase family. The members of this subfamily (WWP1, WWP2 and Itch) are evolutionary conserved in all eukaryotes. Despite their abundant expression and pre- and post-synaptic localizations in the mammalian neuron, the functions of the WWP subfamily members in the neurons have not been explored. In the present study, I identified one of the neuronal SNARE proteins Syntaxin-1A and a small GTPase activating protein RhoGAP33 as binding partners of WWP2. Although recombinant Synaptobrevin-2 and SNAP-25 did not directly interact with WWP2, this E3 ligase has a potential to form a multimeric protein complex with neuronal SNARE proteins. It is possible that WWP subfamily members are involved in the turnover or sorting of Syntaxin-1A or the SNARE complex. In addition, WWP1/2 deficient neurons shows enhanced dendritic branching and outgrowth in the developing neuron. WWP2 might have another function in regulation of dendritic growth and branching by inactivating RhoGAP33. Together, my findings suggest that WWP subfamily E3 ligases play divers roles in mature and developing neurons.