Health professionals trained in occupational health are essential to reduce the burden of occupational accidents and diseases. However, training resources are limited globally. We aimed to promote occupational health and safety (OHS) using virtual patients (VPs) in Brazil, Chile, and Germany. Virtual patients were created in three Latin-American health centers. So-called "partner VPs" comparing the distinct health care systems were designed. Translation, adaptation to different medical and legal systems, expert review, implementation into under- and postgraduate teaching, and user evaluation were performed. Twelve VPs covering traditional and contemporary OHS issues are available in Spanish, Portuguese, and English. Overall, 2371 students used the VPs. The number of Latin American users who evaluated VP content and relevance for their professional career was statistically significantly higher than the number of German students. VPs are a feasible learning method for OHS in middle-incom