

Table 2 Studies on the vaccine hesitancy among the healthcare workers in the GCC Countries up to March 2021

Year of study (reference)	Country	Study design	Vaccine	Study setting/ population	Data collection tool	Main results
2009 (19)	Saudi Arabia	Prospective cohort	H1N1	126 participants National Guard employees during 2009 Hajj season, Saudi Arabia	Survey was used as the primary method for data collection	Less than half the respondents (46.8%) accepted the vaccination. The vaccination acceptance rate was higher among non-HCWs, 71.4%; only 34.5% of HCWs accepted (OR = 1.103, 95% CI: 0.488–2.496) The most common reason for vaccine refusal was the impression that the disease was not fatal (25.4%)
2015-2016 winter season (21)	Saudi Arabia	Cross-sectional study	Influenza	300 participants HCWs at King Abdulaziz Medical City, a tertiary care hospital in Riyadh, Saudi Arabia	Participants anonymously completed a validated questionnaire on influenza vaccine hesitancy	17% expressed vaccine hesitancy The most common reason given for vaccine refusal was: "It doesn't have any positive effect or benefit" (21%) There was no significant relationship between education level and receiving influenza vaccination. The most common sources of information about the vaccine were awareness campaigns (36%) and HCWs (36%)
2020 (22)	United Arab Emirates	Qualitative study	Influenza	33 participants HCWs at ambulatory health care services in the Al Ain region, United Arab Emirates	Face-to-face interviews; an inductive thematic framework was developed based on the European Centre for Disease Prevention and Control guide for vaccine hesitancy among HCWs	Many participants were hesitant to receive the mandatory influenza vaccination Misinformation regarding vaccines on social media was a major concern Most participants reported never receiving any training on how to address vaccine hesitancy among patients
2019 (23)	Oman	Cross sectional study	Influenza	390 participants HCWs at South al Batinah governorate in Oman	Self-administered questionnaire	60% of HCWs were vaccinated in the 2018/2019 influenza season; vaccine uptake among nurses was 52%, uptake was higher among women. Self-protection and protection of the community were the most cited reasons for vaccine acceptance, with side-effects being the main reason for hesitancy Vaccinated respondents had a higher mean knowledge score (7.18; SD = 2.14) than unvaccinated respondents (6.30; SD = 2.2). Odds of having the vaccination were highest among respondents who believed that influenza vaccine should be mandatory for HCWs (OR = 2.04, 95% CI: 1.30–3.18)
2016 (24)	Saudi Arabia	Cross sectional study	Influenza	633 participants HCWs at multi medical facilities in Saudi Arabia	Online survey	The top reason for vaccination was protection of self and family, while the top reason for refusal was not considering the vaccine to be necessary. Education level had no significant effect on the likelihood of being vaccinated
2009 (20)	Saudi Arabia	Cross sectional study	H1N1	161 participants HCPs at Saudi Aramco Medical Services Organization, Dhahran, Saudi Arabia	Self-administered questionnaire	36.6% of respondents stated that they received the seasonal influenza vaccination in 2008–2009, 31.1% expressed their willingness to take the 2009 H1N1 vaccine. 10.6% thought the vaccine caused infertility, and 18% thought the vaccine caused Guillain-Barré syndrome. H1N1 vaccine acceptance was significantly associated with profession (OR = 3.4, 95% CI: 1.45–8.07) and influenza vaccine acceptance (OR = 7.9, 95% CI: 3.5–17.6).

OR = odds ratio; CI = confidence interval; SD = standard deviation.