

Influenza a Virus Infections at Several Stages of *In Vitro* and *Ex Vivo* Infection are Significantly Decreased by Rtk/Raf Signaling Inhibitors Approved by the Fda

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Abstract

In this paper, community HCWs in the southwest Chinese city of Chongqing are evaluated with regard to their seasonal influenza vaccine hesitancy (IVH) and its causes. Methods: Using a self-administered computerised questionnaire, a cross-sectional survey of 1030 community HCWs with direct or indirect patient contact was carried out from July to September 2021. Multivariable logistic regression was used to examine potential risk variables for IVH in community HCWs and produce adjusted odds ratios (ORs) and 95% confidence intervals (CIs). Results: In the 2020–2021 season, 65.8% of community HCWs had IVH, whereas 46.2% of community HCWs received vaccinations. IVH was positively correlated with "don't know the coverage in China" (OR: 1.46, 95% CI: 1.01-2.11; 40-year-old group OR: 3.02, 1.92-4.76), and "complacency" (OR: 4.55, 95% CI: 3.14-6.60). The locality HCWs with a history of influenza vaccination had a higher likelihood of fully accepting vaccination (OR: 0.67, 95% CI: 0.48-0.95), as did those with greater confidence and convenience (OR: 0.08, 95% CI: 0.06-0.12; OR: 0.34, 95% CI: 0.23-0.52, respectively). Conclusions: Increasing the seasonal influenza vaccine-coverage among community HCWs in Chongqing will be made possible by actions such as raising public awareness of influenza and vaccination, extending the free vaccination policy, and enhancing the convenience of the vaccination service.

Keywords: Vaccine hesitancy • influenza • community healthcare workers • determinants • Chongqing

Introduction

Flu season annually results in 290,000 to 650,000 respiratory fatalities, 3 to 5 million episodes of severe illness, and a large burden of morbidity and mortality worldwide. Due to their regular contact with sick patients and virus-contaminated surfaces, healthcare workers (HCWs) are at a significant risk of getting influenza. According to a meta-analysis of 29 international research, unvaccinated HCWs are 3.4 times more likely to contract influenza than healthy individuals. Additionally, HCWs are constantly at danger of contracting influenza viruses while working, which could further spread the illness to vulnerable patients. An essential method of preventing influenza is annual vaccination, particularly in light of the COVID-19 pandemic. According to a comprehensive review and meta-analysis, the influenza vaccine's effectiveness for preventing hospitalisation and death in older persons is only about 50% [1].

However, vaccine effectiveness for HCWs approached 90% when the strains of influenza used in the seasonal vaccine and the epidemic viruses currently circulating in the population were well matched. HCWs are one of the target populations that the World Health Organization (WHO) suggests getting the seasonal influenza

vaccine for Influenza immunisation is advised for health care workers globally by more than 90 health bodies. HCWs are advised to be the primary target group for influenza vaccination during the COVID-19 pandemic, according to the technical guidelines for seasonal influenza vaccination in China, which are published annually by the Chinese Center for Disease Control and Prevention [2]. Despite the severity of the condition Low vaccination rates among HCWs for influenza and the availability of effective vaccines provide a global public health challenge. In the 2017–2018 season, vaccination rates among HCWs in the United States exceeded 75%, and up to 95% of HCWs must comply with workplace vaccine mandates from their employers. However, such immunisation rates are still below 30% in several European nations. According to a comprehensive review, among health care professionals in China, the highest vaccine coverage rate for the five epidemic seasons since 2010 was no higher than 15% [3].

Survey Instrument

The definition and variables that make up the matrix of VH were created by the WHO Strategic Advisory Group of Experts (SAGE). We characterised IVH as the inability to decide whether to vaccinate or the continued presence of anxiety after vaccinating, despite the availability of influenza vaccinations and vaccination services. There were five possible responses: absolutely reject, reject but still think about it, haven't decided or never thought about it, accept but still think about it, and completely accept. Respondents with IVH were those who selected options 2, 3, or 4 [4].

A 9-item portion on the 3Cs model determinants of influenza vaccination (confidence, complacency, and convenience), evaluated using a 5-point Likert scale, was included in the IVH scales for

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community HCWs (strongly disagree, disagree, neutral, agree, and strongly agree). The study's reliability and validity tests for IVH scales were successful. Complacency dimension, with a score of 5-1, ranges from "strongly agree" to "strongly disagree" [5]. The scores for the other two dimensions range from "strongly agree" to "strongly disagree," with a range of 1 to 5. The flu shot is effective, the flu shot is safe, and as for vaccination, I'm concerned about flu shot incidents. These were the elements that rated confidence. I have a high chance of getting the flu; the illness poses a serious threat to my health; and the flu vaccine is important to protect me from having the flu were among the items used to gauge complacency. The following factors were used to evaluate convenience: the traffic from my residence to the clinic, the flu shot is affordable, I can easily make time to visit the immunisation clinic and the clinic is convenient [6].

Study Measures

It is necessary to receive an influenza vaccination against influenza. Responses were dichotomized as strongly agree, indicating completely accepted, vs. hesitancy (varying degrees of hesitancy included neutral, indicating have not decided yet or never thought about it; agree to some extent, indicating accept but still considering; disagree to some extent, indicating reject but still considering) vs. strongly disagree, indicating completely rejected [7]. The use of the influenza vaccine during the most recent influenza season (yes vs. no) The willingness to receive the vaccine during the upcoming influenza season (yes vs. no/maybe); and The willingness to offer the vaccine to patients (yes vs. no/maybe). Based on the mean value of each subscale variable, the potential correlated factors (each 3Cs subscale) were dichotomized as follows: Convenience subscale: 12.0 vs. 12.0; confidence subscale: 10.5 vs. 10.5; complacency subscale: 11.5 vs. 11.5; and In the analysis, the participants with IVH were divided into two groups based on the median score of the 3Cs scale: mild hesitancy and severe hesitancy (34.0 vs. 34) [8]. The covariates included gender, age (30 years, 30-40 years, and 40 years), place of residence (urban vs. rural), educational level (high/secondary school or lower, junior college, bachelor degree or above), professional category (clinical, traditional Chinese medicine, integrative medicine, nursing, preventive medicine/public health and other), number of years in the medical field [9].

Discussion

However, our study had several limitations. First, the cross-sectional research limited our exploration of the causal relationship between IVH and determinants, and the small sample size in the analysis may lead to the weak power of IVH and, thus, the generality may be hindered. Second, the results were self-reported, and vaccination records were not verified further. However, we think community HCWs are mostly professional, so the possibility of false reports was relatively low. Third, the participants in the current study were from one province in the southwest region of China, and, thus, the conclusions for IVH may not be generalized to other areas in the country. Fourth, potential selection bias may also arise. Since the two community health service centers that implemented the free policy

also provided centralized vaccination services, the impact of the free policy and vaccination service could not be evaluated separately [10].

Conclusion

It is essential to boost community HCWs' personal confidence, awareness of influenza and vaccination, and accurate knowledge of influenza vaccines in order to engage them in activities aimed at reducing patient vaccine hesitancy. This will increase the seasonal influenza vaccination coverage among community HCWs. Additionally, it is essential to increase the availability of immunisation services and the free vaccination policy. Furthermore, in order to support the general population's immunisation at the individual and social levels, we need keep researching efficient treatments to raise the coverage rate of community HCWs.

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None

Conflict of Interest

None.

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