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Identifying ways to increase seasonal influenza vaccine uptake among pregnant women in China: A qualitative investigation of pregnant women and their obstetricians

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ABSTRACT

Background: Pregnant women are at higher risk for complications from influenza infection. Nevertheless, seasonal influenza vaccination among pregnant women in China is low. A better understanding of perceptions of pregnant women and their physicians, and factors influencing decisions about receiving seasonal influenza vaccine could be used to develop effective strategies for improving seasonal influenza vaccine uptake during pregnancy.

Methods: We recruited pregnant women from 9 hospitals located in 5 cities across China to participate in focus group interviews. Obstetricians from the same hospitals were recruited for one on one in-depth interviews. We collected information about perceptions of barriers and motivating factors for utilizing seasonal influenza vaccine during pregnancy. We systematically analyzed the information using qualitative methods.

Results: We conducted 18 focus groups with 108 pregnant women and interviewed 18 obstetricians. Awareness about the use of influenza vaccine during pregnancy was minimal in both subject groups. None of the pregnant women had received influenza vaccine during pregnancy and none of the obstetricians had recommended influenza vaccine for their patients. Both groups noted insufficient knowledge about influenza infection and benefits of the vaccine, concerns about vaccine safety, and lack of local data related to vaccine use in Chinese pregnant women. Obstetricians cited the lack of a national policy as a major barrier to recommending seasonal influenza vaccine to pregnant women. Pregnant women cited not receiving a recommendation for vaccination from healthcare workers as an additional barrier.

Conclusion: Our findings highlight the immediate need to increase awareness and knowledge about the risks of influenza infection and the benefits and safety of seasonal influenza vaccination among both pregnant women and obstetricians in China. Obstetricians interviewed stated that the development and implementation of a national policy prioritizing pregnant women for seasonal influenza vaccination would facilitate their willingness to recommend seasonal influenza vaccine to pregnant women.

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1. Introduction

Pregnant women are at increased risk for severe illness and hospitalization from influenza infection [1–3]. Infection during pregnancy may also cause miscarriage [4] and pre-term birth [5]. Trivalent inactivated seasonal influenza vaccines (TIV) are safe for administration during pregnancy [3,6,7] and can be effective in preventing influenza and related risks for both pregnant women and newborns [8,9]. In 2012, the World Health Organization (WHO) recommended that pregnant women should be prioritized among all high-risk groups for receiving TIV [10].

Seasonal influenza vaccines were first introduced in China in 1998, but are not yet included in the national immunization program; costs of receiving the vaccine are often covered by "out-of-pocket" payment [11]. Overall influenza vaccination coverage among the Chinese population is estimated to be less than 2% [11,12]. Although the National Health and Family Planning Commission (NHFPC) has not issued any national policy related to

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influenza vaccination among pregnant women, the Chinese Center for Disease Control and Prevention (China CDC) developed technical guidelines for the application of seasonal influenza vaccine in China (2014–2015) which recommended pregnant women as one of the high priority groups to receive TIV [13], consistent with WHO's recommendation. However, seasonal influenza vaccine coverage among Chinese pregnant women remains low. In one study, 0.2% of pregnant women reported influenza vaccination within the last 12 months, and none during pregnancy [14]. Most reports suggest that seasonal influenza vaccine coverage among pregnant women remains suboptimal globally [15], and lower than in other risk groups or the general population [6,16]. Despite recent studies assessing knowledge and attitudes of pregnant women towards influenza vaccine in western countries [15], little information is available about barriers Chinese pregnant women encounter with respect to seasonal influenza vaccination, and most prior studies were cross-sectional surveys [15]. Qualitative methods may capture more complex barriers that are impacted by cultural contexts and social norms [17].

We conducted focus group interviews of Chinese pregnant women to assess their perceptions and decision-making determinants for receiving influenza vaccine during pregnancy. Since healthcare workers (HCW) play an important role in improving uptake of influenza vaccine among pregnant women [15,17–22], we also conducted in-depth interviews of obstetricians to understand their perceptions and attitudes related to promoting the use of influenza vaccination during pregnancy. Findings from this project can be used to help inform policy decisions and communication strategies to increase uptake of seasonal influenza vaccine among pregnant women in China.

2. Methods

We selected five cities as our study sites, Beijing, Changchun (capital city of Jilin Province) and Lanzhou (capital city of Gansu Province) to represent the northern region of China, Suzhou (second largest city in Jiangsu Province) to represent the central region, and Haikou (capital city of Hainan Province) to represent the southernmost region. We selected a convenience sample of 9 hospitals (1 in Beijing and 2 in each of the other four cities) from the two major types of hospital that provide healthcare to pregnant women: four specialty hospitals providing obstetric and maternal and child health care service, and five general hospitals with obstetric departments.

At each hospital, we announced our focus group interview activity during regular prenatal training classes offered to pregnant women. We then distributed one-page recruitment leaflets to pregnant women who expressed interest in learning more about the activity. The leaflet described the topic, participant eligibility criteria, and time and location for the focus group interviews. Pregnant women at least 18 years of age whose current pregnancy overlapped with the latest regional influenza peak season were eligible to participate. There were no exclusion criteria. Following approval from each hospital's chief obstetrician, two obstetricians per hospital were recruited according to availability and willingness to participate.

2.1. Data collection

We conducted 18 focus groups (two per hospital) from May 29, 2015 to February 25, 2016. After briefly describing the study, we obtained written consent from participants prior to interview. We also asked participants to complete a short self-administered questionnaire on basic demographic information and participants' previous experience with influenza vaccine. A pre-tested guide with seven open-ended questions regarding participants' perceptions and attitudes towards influenza infection and vaccination during pregnancy was used to lead discussions, lasting 30–45 min. We welcomed differing opinions and asked probing questions to stimulate more feedback. All focus groups were audiotaped. Participants were informed that they could leave at any time during the focus groups. After completing the focus group, participants received an incentive gift (value $12).

Prior to each obstetrician interview, we obtained oral consent. Interviews were conducted in hospital offices, included six questions, lasted 25–35 min, and were audiotaped.

2.2. Data analysis

We used SPSS to analyze data collected from self-administered questionnaires (New York, USA, version 17.0.1). After each focus group discussion, the study team briefly discussed major findings. Focus group and in-depth interview audiotaped files were transcribed verbatim. Three authors (Li, Xie and Yang) reviewed and coded the transcripts independently by using the constant comparative method [23]. Authors reached consensus about emerging themes after three rounds of discussion.

2.3. Ethics

The protocol for this project was approved by the Center for Global Health (CGH) of Centers for Disease Control and Prevention Office of the Associate Director of Science as routine public health program evaluation not involving human subjects research (CGH #2015-119).

3. Results

3.1. Participant characteristics

Across the nine hospitals, 190 pregnant women received focus group recruitment leaflets. Of these, 108 (57%) agreed to participate and completed the short questionnaire, including four participants who departed prior to the end of the focus group discussion. Of the 108 participants, 57 (53%) were recruited from hospitals in the northern region, 81 (75%) were aged between 25 and 35 years, and 79 (73%) were in the 3rd trimester of pregnancy at the time of the focus group interviews. Only 14 (13%) reported ever having received the influenza vaccine, and none had received influenza vaccine during pregnancy (Table 1).

All participating obstetricians were female. Eight had 3–10 years of work experience and ten had more than 10 years of experience, including four with more than 20 years of experience.

3.2. Focus group findings

3.2.1. Barriers to accepting influenza vaccine during pregnancy

Major barriers identified included (1) lack of knowledge about influenza infection, including perceived low susceptibility to influenza and perceived low severity of influenza illness; (2) lack of knowledge about influenza vaccine; (3) lack of awareness about the importance of receiving influenza vaccine during pregnancy, which was attributed to receiving no recommendation from healthcare workers and no information from other sources; (4) unfavorable attitudes towards influenza vaccine.

Although a few participants mentioned that a *"new type of virus such as H1N1 flu"* might be *"very harmful"*, most of the participants had a low level of perceived severity for influenza illness, which was regarded as a *"common cold"*, a mild disease commonly experienced by *"almost everyone"*; with pregnant women rarely experi-

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