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Health workers' attitudes, perceptions and knowledge of influenza immunization in Lima, Peru: A mixed methods study

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ABSTRACT

Background: Vaccination against seasonal influenza in health workers is recommended but coverage is variable. This study aimed to determine coverage of influenza vaccination among health workers in Lima, Peru in 2010; explore barriers and enabling elements for vaccination; and suggest strategies to improve coverage.
Methods: Qualitative interviews informed the development of a survey instrument that consisted of open and close-ended questions. Sub-analyses were done by occupational group and results were calculated as percentages for each possible response with confidence intervals of 95%.
Results: Coverage of the influenza vaccination was 77.2%. Vaccinated staff were less likely to have permanent contracts ($p = 0.0150$) and vaccination coverage was lower in physicians ($p = 0.0001$). Over 90% cited protection of themselves, families and patients as reasons for vaccination and 48% mentioned peer encouragement. Fear of adverse events (47%) and organizational barriers (>30%) were reasons for non-vaccination. To improve coverage, highest priority was given to strategies providing more information.
Conclusions: Key factors in driving health worker vaccination include desire for protection and peer encouragement. Perceptual barriers based on a misunderstanding of the epidemiology of influenza and vaccination could be overcome by targeted education and information. Organizational barriers require attention to how vaccination is implemented within health facilities.

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1. Introduction

Seasonal influenza places a major burden on public health. The most effective way to prevent the disease and/or severe outcomes is vaccination. The World Health Organization recommends vaccination of at-risk groups, including people with chronic diseases, older adults (≥65 years) and pregnant women, children 6–59 months of age and health workers [1].

Health workers have an additional risk of becoming infected with influenza compared with the general population. Vaccinating this group not only protects the individual but also vulnerable patients [2]. Vaccination programs for health workers exist in many countries but coverage is variable. For example, Canada reported an average vaccination rate among health workers of 35%, the United States 40%, and in Europe vaccination uptake ranged from 14% to 48% [3]. Although these studies were done before the H1N1 pandemic in 2009, evidence shows that the pandemic did not necessarily increase coverage of vaccination for seasonal influenza in subsequent years [4,5]. In Peru, seasonal influenza vaccination was introduced for health workers in 2008 [6] with a 97% coverage rate reported in 2014 [7].

The objectives of this study were to determine the coverage of influenza vaccination among health workers in the eastern part of Lima, Peru in 2010; explore barriers and enabling elements for the acceptability or rejection of the influenza vaccine among health personnel; and suggest potential strategies to improve vaccination coverage. This article outlines results from a mixed methods study.

2. Methods

Qualitative and quantitative methods were used to comprehensively understand the status of influenza vaccination among health workers in Lima. It included physicians, nurses, midwives, nursing technicians, and administrative/cleaning staff. The study was conducted in government-run health establishments, including hospitals in the health district of Eastern Lima during 2010–2012.

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2.1. Qualitative study

The qualitative study was used to explore and identify the different factors or conditions involved in health workers' decision-making regarding the influenza vaccination. Semi-structured interview guides were developed, discussed and agreed with the research team. A pilot test was carried out to validate the guides and the 5 field researchers were trained in qualitative data collection. Based on a review of immunization records provided by the Ministry of Health, the qualitative study was conducted in three hospitals (one with high and one with low coverage, and one larger general hospital), and two health centers with high and low coverage respectively. In each facility the staff member responsible for immunizations was interviewed first and asked to provide a list of vaccinated staff. Based on this information current staff was divided into three groups: vaccinated every year (2010–2012), never vaccinated, and vaccinated only 1 or 2 years (intermittent vaccination). In each of these groups a convenience sample was selected from those present and willing to be interviewed on the day of the visit to the health facility. Over two months of fieldwork, 70 in-depth interviews took place in 5 health establishments, including 39 physicians, nurses and midwives, and 31 technicians and support staff.

2.2. Survey

2.2.1. Sample

The survey was carried out in all 6 hospitals and health centers in the Eastern Lima health authority. The sample size was calculated to be representative of all registered health service employees according to occupation group (physicians, nurses and midwives, technicians and orderlies, and support staff) and assuming p = 10% coverage of influenza vaccination [8], with a power of 80% and confidence interval of 0.05, using the following formula:

$$N = \frac{1.96^2 \times p(1-p)}{d^2} \qquad p = 0.1, \quad d = 0.05$$

$$N = 1 \times \frac{1.96^2 \times 0.1(1-0.9)}{0.05^2} \qquad N = 138$$

This result was rounded up to 150 per occupation group or at least 600 people. In order to identify the individuals to be surveyed a simple randomization was used based on publically available lists of health service personnel that include name, title, profession and place of employment. Thus, individuals who had been working in the health facility in 2010 and were still in the same job were randomly selected. The generated list included an additional 30% to account for people that could not be located, refused to participate or could not spare the time.

2.2.2. Survey questions

Following review of the responses given in the in-depth interviews, a survey instrument that included close and open-ended questions was developed and tested. Close-ended questions could be answered as 'yes', 'no' or 'don't know', whereas open-ended questions allowed the respondent to elaborate and provide more information if desired. Both types of questions were used to explore reasons for accepting or rejecting the vaccine. The survey consisted of an initial part to confirm eligibility and vaccination status after which a different survey was used depending on vaccination status (see Fig. 1). Vaccinated participants answered verifying questions that were designed to understand reasons for their acceptance. The survey was used to establish the coverage of influenza vaccine in health workers in 2010.

2.3. Analysis

2.3.1. Qualitative interview

The recorded in-depth interviews were transcribed, ordered by vaccination status (vaccinated, unvaccinated and intermittent). Reasoning involved in the vaccination process was rebuilt by comparing similarities and differences between what was said by the members of each vaccination status group. The responses were organized in themes, providing an overall picture of the reasons and conditions surrounding vaccination in these participants. This information was discussed among the team members and was used to develop questions and their alternatives to be included in the survey.

2.3.2. Survey

In the survey, coverage was defined as the number of people who reported having been vaccinated against influenza in a Ministry of Health facility in 2010, out of the number of eligible respondents (those working in a government health establishment in 2010), excluding those who could not remember if they were vaccinated or not. For purposes of coverage and eligibility people who received the vaccine at another facility (e.g. via the private health care system) were excluded from the denominator, but they were included in the analysis of reasons to get vaccinated. Student t-tests were used to compare the characteristics of the vaccinated and non-vaccinated groups.

Sub-analyses were done by occupational group based on the payroll and verified by the respondent. The results were calculated as percentages for each possible response with confidence intervals of 95%. Responses to open-ended questions were grouped by content and assigned to existing (based on the qualitative interviews) or new "reasons". Up to 4 possible reasons were included for each subject, as this was found to be the usual maximum number of reasons provided in the qualitative study and to limit the time used to administer the survey. The closed-ended questions were asked after the open-ended questions and were coded as yes, no or don't know. Results are presented as percentage of respondents, excluding "don't know". The responses to the spontaneous questions were grouped into the same categories as those used by the direct questions as far as possible and new categories created if necessary, to facilitate analysis/presentation of results. Data on the perceptions about strategies for improving coverage were analyzed descriptively using the percentage of people ranking each item as a priority.

3. Results

3.1. Qualitative interview

The results from the in-depth interviews were organized according to vaccination status. For vaccinated participants, the main drivers were **self-protection**, as respondents considered their risk and exposure to infection to be high, which was related to a perception of the disease as a **serious illness** given its possible complications and the implications associated with contracting it (e.g. absenteeism and transmission to family members). **Protection of family and patients** was another driver highlighted particularly among physicians, nurses and technical personnel, while the **recognition of the effectiveness of the vaccine** was a reason among all occupational groups except physicians. In addition to these principal drivers, two other less prominent but still important reasons emerged, these include the importance of **health personnel setting an example** to each other and the population at large, and the **example of peers and colleagues** as a motivation to get vaccinated. As a group, all of these drivers are associated