

Short Communication

Vaccination against influenza in elderly people: factors associated with acceptance and refusal of the vaccine

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Abstract

Introduction: Immunization is the primary method of preventing influenza. The objective of this study was to describe reasons and determine causes of acceptance or refusal of the influenza vaccine by elderly people. **Methods:** This cross-sectional and descriptive study included elderly patients (aged >60 years) from the City of Jundiaí, São Paulo, Brazil. **Results:** The sample comprised 185 people; 71.9% reported receiving the vaccine and 21% claimed to have experienced complications. **Conclusions:** The vaccination coverage was below the national goal; the reasons for not being vaccinated was “did not want to receive the vaccine”, in addition to “forgot”.

Keywords: Aged. Immunization. Influenza vaccines.

Influenza is a contagious disease that affects the respiratory system; the incidence increases in autumn and winter when temperatures drop. Even with the improvement of prevention and control measures, mortality due to influenza is still elevated¹.

The contagious disease spreads rapidly and causes high morbid-mortality in vulnerable groups. Elderly people are especially at risk of complications like pneumonia caused by viral influenza, bacterial pneumonia, and aggravation of pulmonary or cardiac diseases¹.

Immunization is the primary method of preventing influenza. The vaccine is composed of different strains of the influenza virus, and it is possible to detect relevant antibodies in immunized individuals two weeks after vaccination; immune protection lasts for about one year¹.

However, the effectiveness of immunization depends on adherence to an annual vaccination campaign, and the adherence of elderly people to such campaigns has been shown

to be unsatisfactory². Although the vaccination is offered free of charge as part of public services, many counties are not able to reach the immunization goal required by the Health Ministry, which specifies at least 80% coverage in the elderly population. In Brazil, since 2017, the goal is to vaccinate 90% of this group³, and different factors have contributed to the low acceptance rate^{2,4}.

National and international studies corroborate that vaccination against influenza among elderly people is a cost-effective preventive method to reduce hospitalization and morbidity related to influenza infections⁵.

Therefore, the objective of this study was to describe the reasons and determine causes of acceptance or refusal of the influenza vaccine by elderly people.

The subjects of the study were elderly individuals over 60 years of age, residing in the Novo Horizonte district in the city of Jundiaí in São Paulo State. According to the 2010 census of the Instituto Brasileiro de Geografia e Estatística (IBGE), the city had 370,126 residents. This city ranked 0.822 in the Human Development Index (HDI), which is superior to that of the state of São Paulo average of 0.805 and that of the national average of 0.699⁶.

The subjects of the study were enrolled at a Family Health Unity (ESF) from the Novo Horizonte district, with a total of 543 elderly people assisted by this health unit.

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The inclusion criteria in the study were individuals 60 years of age or older, of either sex, and enrolled at the ESF unit where the study was performed. For elderly people who were unable to respond to the questionnaire, the caregiver (key informant) was allowed to participate.

Institutionalized elderly people and those who did not accept the invitation to be part of the research study were excluded.

This cross-sectional, exploratory, and descriptive study was conducted in June and July 2016. The questionnaire was developed and validated by Neves² as part of her master degree research, performed in the city of Pelotas, Rio Grande do Sul (RS), Brazil. Its use was authorized by the researcher and the methodology used in the study conducted by Pelotas-RS² was adopted in the current study.

An interview-based questionnaire was administered by the researchers. The residential addresses of the elderly people were acquired from the electronic records of the ESF Unit where the study was formulated. At each subject's house, the proposal and goal of the study were presented to the subject and to the caregiver, and two copies of a consent form were signed by the participants.

This cross-sectional study analyzed the rate of vaccination within the target population and the factors associated with refusal or acceptance of vaccination. Random sampling of elderly individuals was performed using the record numbers from the health unit. The sample size was calculated using a proportion of 80% with an error rate of 10% and a variability of 4 percentage points. According to this calculation, a minimum of 181 subjects were required to perform the study⁷.

Aided by a table of random numbers⁸ and by using a systematic sampling method¹⁰, 250 eligible elderly individuals were selected out of the 543 individuals registered at the health unit. Data were tabulated and analyzed using the EpiInfo 2000 statistical software (Centers for Disease Control and Prevention).

The study was approved by the Research Ethics Committee of the Centro Universitario Padre Anchieta (opinion 1.616.782). Procedures followed were in accordance with the ethical standards of the responsible committee on human experimentation (institutional, regional, or national) and in keeping with the Helsinki Declaration of 1964, as revised in 1975, 1983, 1989, 1996, and 2000.

The sample comprised 185 subjects, and the questionnaire was answered by the elderly subjects in 84.9% of cases, and by the caregiver in 15.1% of cases. The age varied between 60 and 101 years, with an average of 71.0 (± 8.4) years

Figure 1 illustrates the process of inclusion of study subjects. From the total sample of 543 eligible elderly individuals, 250 subjects were approached, 185 were interviewed, 65 were losses or refuses, 11 (4.4%) refused to participate and 54 (21.6%) were either deceased or had changed residence.

Figure 2 shows the prevalence and characteristics of vaccination among the 185 study subjects; 71.9% reported to have received the vaccine and 21.1% claimed to have had complications within 48 hours after vaccination.

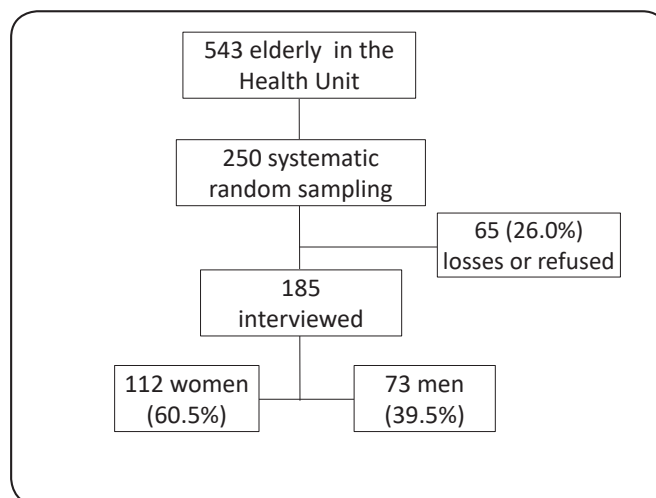


FIGURE 1: Description of the subjects' inclusion process for the study conducted in the city of Jundiá, São Paulo, 2016.

It should be emphasized that the prevalence of vaccination in the year 2015 and problems related to the vaccine in this year and previous years were the object of this study, since the data collection was performed in the middle of 2016 and the vaccination campaign for that year was still happening.

Though 133 of participants claimed to have been vaccinated in 2015, there was no document of recorded information about the influenza vaccine, the confirmation of immunization was possible in 88 (48.6%) of cases.

All (100%) elderly participants who were vaccinated in 2015 received the influenza vaccine at public health service units, as part of a national campaign conducted during the months of April and May 2015.

Figure 3 shows details of adverse events recorded. Of the 133 vaccinated participants in the research, 28 (21.1%) reported one or more complaint, within 48 hours of vaccination.

The reasons for non-adherence to influenza vaccination schedules according to 26 elderly participants who did not receive the vaccine included "did not want to receive the vaccine" (most common; 42.3%), "forgot" (19.2%), "had a cold after vaccination in the previous year" (15.4%), and "I was sick" (11.5%).

The prevalence of influenza immunization in this sample was 71.9% (**Figure 2**), which was below the rate of vaccination coverage as reported by the Health Ministry at the end of the 2015 campaign; according to the technical report, in that year, the vaccination coverage exceeded the goal of 80% in Brazilian territory³.

National studies¹⁰⁻¹¹ have found prevalence rates higher than that reported from the current study (71.9%).

In this present research, 21.1% of the vaccinated participants reported an adverse event within two days of immunization, in close agreement with the findings from two other similar studies. In the city of Tubarão¹², Santa Catarina, Brazil, 22.5% of elderly vaccinated individuals reported an adverse event, and similar

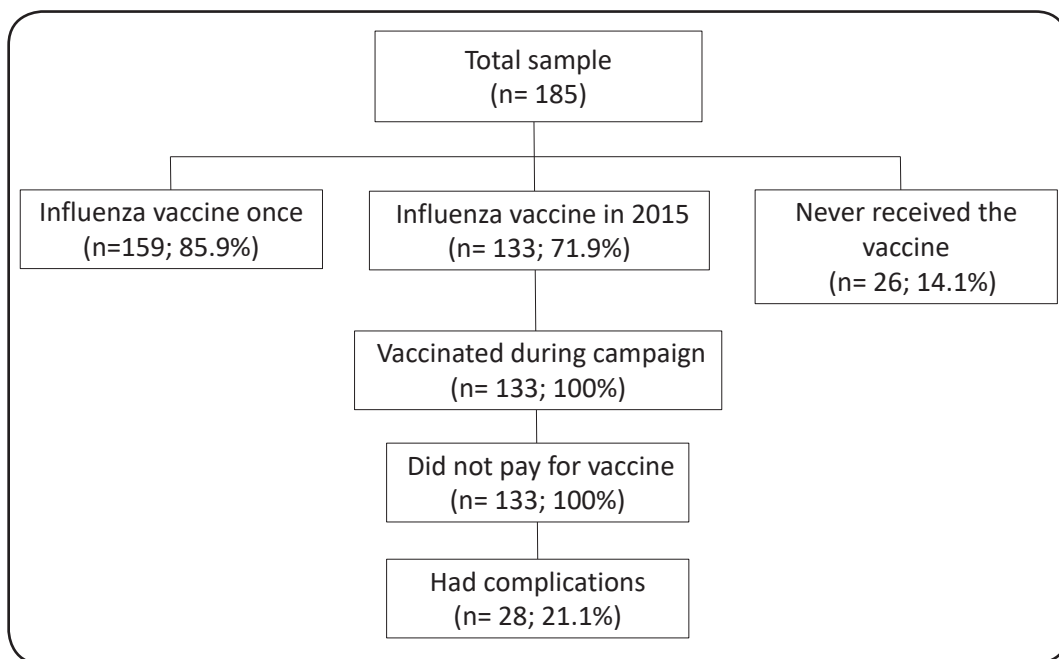


FIGURE 2: Prevalence and characteristics of vaccination among subjects of the study conducted in Jundiaí, São Paulo, in 2016.

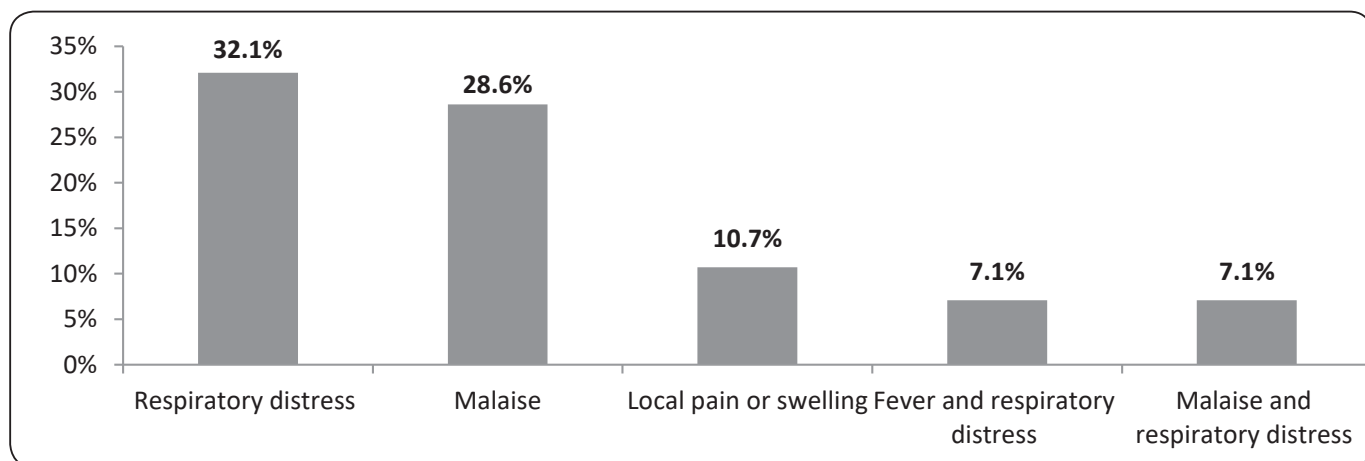


FIGURE 3: Distribution of the 28 adverse events recorded within two days of influenza immunization. The study was conducted in Jundiaí, São Paulo, in 2016.

findings were reported from the City of Campinas¹³, São Paulo, Brazil, where 20.4% of subjects reported an adverse event.

A study from Pelotas², RS, Brazil, reported that only 8.1% of the 1027 elderly vaccinated participants reported adverse events.

Respiratory discomfort was the most frequently reported adverse event in the present study (**Figure 3**), accounting for 32.1% of all complaints, followed by malaise (28.6%), and pain and swelling at the injection site (10.7%). In a study conducted in the city of Pelotas², malaise was the most recalled adverse event reported by elderly participants, in contrast to that observed in this study, while respiratory distress was the fourth most commonly reported adverse event.

In a study of elderly participants vaccinated against seasonal influenza conducted in the city of Tubarão¹², malaise was the most commonly reported adverse event while a headache was the second most cited adverse event.

As far as we know, respiratory distress has not been reported by any previous study as the most common adverse event following immunization; however, a study that analyzed data from the *Sistema de Informação de Eventos Adversos Pós-Vacinação* (SI-EAPV) (2004 to 2013) and verified 2692 adverse events registered following vaccinations in elderly people concluded that the elderly group presented with non-serious adverse events¹⁴.

In this study, 26 elderly people had never received the vaccine, and the reasons cited included “did not want to receive the vaccine” (42.3%), followed by “forgot” (19.2%), and “got the flu after vaccination the previous year” (15.4%). A similar result was noted in a study conducted in the city of Pelotas-RS², which reported that 45% of elderly people from the South of Brazil stated that they did not want to or did not like to receive the influenza vaccine, while 17% stated that they had never experienced a cold.

Two Brazilian studies^{4,9,10} have demonstrated similar results, and the main reasons cited by the elderly for not receiving the vaccine were adverse events and a fear of needles and death.

The results of this study reveal that the acceptance rate of the influenza vaccine needs to be increased in the elderly. A favorable outcome depends on conducting healthcare education campaigns with increased participation from professionals in the primary health system and at the ESFs. These measures would help in ensuring a favorable attitude towards the vaccine.

Other studies corroborate that educating the target population about the need for and the safety of immunization would help achieve this goal^{2,4,10,11}.

Another indispensable necessary aspect is improving assistance on adverse events following immunization to alleviate secondary problems like local pain and any other undesirable reactions. Such problems can be controlled and prevented through appropriate guidance at the time of vaccination. Thus, the confidence of the population can be assured and the adherence improved.

The present study was limited by the size of the sample, which affects the generalizability of the results. However, the methodological rigor ensures the accuracy and reliability of the study results.

Another important limitation of the study is that it was difficult to confirm the prevalence of vaccination accurately, since immunization records were available for only 47.6% of the 185 subjects. The rest of the participants did not have proof of immunization, although the self-reported prevalence of vaccination was 71.9%. This number was used in the discussion of results, considering that the self-reporting method has been adopted for most of the national studies in the area^{2,4,10,11}.

Previous important publications^{10,13,14} agree that the evaluation of immunization records or that of documents containing vaccination records is the correct method to estimate the prevalence of vaccination-related events as in this study, and this premise is in line with that of the current study.

The verification of immunization records or equivalent documents can contribute to methodology standardization, improve study quality, and facilitate effective comparison of results reported from studies conducted in this area.

The high crime rate in the region where the study was carried out is another limitation and contributed to the rate of participation refusal. Some of the elderly people may have refused to participate in the study for fear of having to allow the researchers to visit their homes. In general, it was difficult to approach a majority of the elderly people, and the distrust

to attend to the researchers was a considerable obstacle factor for data collection. Even with proper identification from the health unit and even after presenting other documents related to the study, obtaining consent and reducing the participation rate involved a lot of effort.

Future studies are required to evaluate the effectiveness of education campaigns or other strategies for intervention in the area. Such education campaigns will address a pressing need in this context and will help in increasing the adherence of the elderly to vaccination campaigns. Such campaigns will additionally require commitment from scholars and professionals in the area.

In conclusion, the most commonly cited reason for not being vaccinated was “did not want to receive the vaccine”, in addition to “forgot” or “got the flu after vaccination the previous year”.

Among the vaccinated elderly participants, 21.1% reported one or more adverse events following immunization, and the most frequent complaint was respiratory discomfort.

Our results allowed us to identify aspects of the subjects’ perception and determinants of vaccination acceptance in the study population. Thus, these findings can help formulate action plans to increase acceptance rates of the influenza vaccine among elderly people.

Conflict of interest: The authors declare that there is no conflict of interest.

REFERENCES

1. Ministério da Saúde (MS). Secretaria de Vigilância em Saúde. Departamento de Vigilância das Doenças Transmissíveis. Protocolo de tratamento de Influenza: 2015. Brasília: MS, 2014. 41 p.
2. Neves RG. Vacinação contra influenza em idosos de Pelotas-RS, 2014: um estudo transversal de base populacional. *Epidemiol Serv Saúde*. 2016; 25(4):755-766.
3. Brasil. Ministério da Saúde. Informe Técnico: 19ª campanha nacional de vacinação contra a influenza 2017. [cited 2019 Jan 04]. Available from: http://pni.datasus.gov.br/sipni/03%2003%202017%20Informe_Cp_Influenza%20_%20final.pdf
4. Dip RM, Cabrera MAS. Influenza vaccination in non-institutionalized elderly: a population-based study in a medium-sized city in Southern Brazil. *Cad Saúde Pública*. 2010;26(5):1035-44.
5. Cruzeta APS, Schneider IJC, Traebert J. Impact of seasonality and annual immunization of elderly people upon influenza-related hospitalization rates. *Int J Infect Dis*. 2013;17(12):1194-7.
6. Instituto Brasileiro de Geografia e Estatística. IBGE Censo Demográfico 2010: Jundiá. [cited 2018 May 10]. Available from: <https://cidades.ibge.gov.br/brasil/sp/jundiai/panorama>.
7. Daniel WW. *Biostatistics: a foundation for analysis in the health sciences*. 6.ed. New York, John Wiley & Sons, Inc., 1995. 780p.
8. Guedes MLS, Guedes JS. *Bioestatística para profissionais de saúde*. Brasília: Ao Livro Técnico S.A., 1988. 201p.
9. Berquó ES, Souza JMP, Gotlieb SLD. *Bioestatística*. São Paulo: EPU, 1981. 350p.
10. Oliveira AD, Reiners AAO, Mendes PA, Azevedo RCS, Gaspar ACM. Vacinação contra influenza: conhecimentos, atitudes e práticas de idosos. *Rev Enferm UFSM*. 2016;6(4):462-70.

11. Nakamura EY, Mello LM, Silva AS, Nunes AA. Prevalence of influenza and adherence to the anti-flu vaccination among elderly. *Rev Soc Bras Med Trop.* 2012; 45(6):670-74.
12. Pereira TSS, Freire AT, Braga AD, Pereira GW, Blatt CR, Borges AA. Estudo dos efeitos adversos e do efeito protetor da vacina contra influenza em idosos vacinados pela rede pública no município de Tubarão, Estado de Santa Catarina. *Rev Soc Bras Med Trop.* 2011;44(1):48-52.
13. Donalisio MR, Ramalheira RM, Cordeiro R. Eventos adversos após vacinação contra influenza em idosos, Distrito de Campinas, SP, 2000. *Rev Soc Bras Med Trop.* 2003;36(4):467-71.
14. Linheira-Bisetto LH, Ciosak SI, Cordeiro TLR, Boing MS. Ocorrência de eventos adversos pós-vacinação em idosos. *Cogitare Enferm.* 2016;21(4):01-10.