




Influenza vaccination in older adults living in rural riverside areas: potential implication of the findings regarding the covid-19 pandemic in Amazonas

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Abstract

Objective: To evaluate the proportion of unvaccinated older adults and the reasons that interfere with immunization against Influenza in rural riverside locations, discussing the potential implications on vaccination against SARS-CoV-2 infection. **Method:** Household-based survey conducted in 38 rural riverside locations in Manaus, Amazonas, Brazil, covered by a primary care Fluvial Health Unit. Participants answered a questionnaire that investigated living conditions, health status and access to health services. In this study, the outcomes related to immunization against Influenza in the last 12 months and the main reported reason for non-vaccination were evaluated. Descriptive data analysis was performed, followed by logistic regression to identify factors associated with non-vaccination. **Results:** Of the 102 older adults included in the study, 28 (27.5%) reported not vaccinating against Influenza in the previous year. The main reasons were lack of information about vaccination (60.7%) and barriers to accessing health services (28.6%). An increased chance of non-vaccination was identified among those who did not see a doctor in the last year (OR=4.18; 95%CI=1.57-11.11) and those with higher household income (OR=1.08; 95%CI= 1.02-1.14). **Conclusion:** A high proportion of older adults reporting no immunization against Influenza was identified. The reasons for non-vaccination may also represent barriers to the vaccination of this population group against COVID-19. Thus, it is necessary to improve the vaccination planning in rural riverside contexts, developing more contextualized strategies to assure coverage for this population, more vulnerable to the effects of respiratory diseases.

Keywords: Rural Population. Vaccination Coverage. Health of the Elderly. Influenza Vaccines.

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INTRODUCTION

Social and health inequalities are striking in the Brazilian territory¹, especially among rural populations, characterized by worse living and health conditions, geographical and financial barriers in accessing services, insufficiency of health professionals and fragile care structure².

In addition to being more vulnerable to such inequities, older people make up the population group at greater risk of respiratory and systemic diseases³. The COVID-19 pandemic accentuated its health risks, placing them as a priority group for vaccination, as a strategy to control the impacts of the epidemic⁴. In this context, reflecting on the main reasons that make it difficult to vaccinate this group against Influenza is relevant, since such motivations could also represent obstacles to vaccination against COVID-19.

Thus, the present study aimed to evaluate the proportion of unvaccinated older people and the reasons that interfere with immunization against Influenza in rural riverside localities, discussing the potential implications for vaccination against SARS-CoV-2 infection.

METHOD

Household-based epidemiological survey, carried out in 2019 in 38 rural riverside locations along the left bank of the Rio Negro, Manaus (AM), Brazil, located in the coverage area of a primary care fluvial health unit (UBSF) in the municipality. For the study, stratified random sampling was performed, calculated based on the number of individuals and households informed by community health agents working in the territory. The selection of households in each location was systematic random. The sample size calculation considered the probability of finding the survey's interest groups in households, including older people aged 60 years or more ($p=0.118$), a prevalence of 50% of the outcomes of interest and 95% accuracy, with 10% being added for possible losses or refusals, with adjustment for the finite population ($N=277$), with 287 of a universe of 765 households dispersed throughout the territory having been visited. The riverside locations studied are accessible only by river, taking about 12 hours to travel regularly between the

urban area of the municipality and the most distant location in the researched region.

The selected older people answered a questionnaire developed in the *Research Electronic Data Capture* (REDCap) application regarding socioeconomic issues, related to health and access to health services. The main outcome of the study was evaluated using the question "In the past 12 months, have you had a flu vaccine?" For those who had not been immunized, the main reason for non-vaccination was asked through an open question. The older people's responses regarding the reasons for non-vaccination were analyzed and classified into three categories, defined after analysis: 1-Weaknesses of information about vaccination, 2-Barriers to access to vaccination and 3-Other specified reasons.

After checking for inconsistencies, data were exported for descriptive analysis of the variables. Then, logistic regression analysis was performed between the independent variables and the non-vaccination outcome, estimating the adjusted odds ratios (OR) and their respective 95% confidence intervals. The variables included in the multiple analysis were sex, age, logarithm of household income (in R\$), having already attended school, self-perceived health and referring a medical appointment in the last 12 months.

This study is linked to the project *Exploratory study of living conditions, health and access to health services of rural riverside populations of Manaus and Novo Airão, Amazonas*, approved by the Research Ethics Committee involving Human Beings, under No. 1,742,086.

RESULTS

In the 287 households visited, 102 older people were evaluated, 56 male (54.9%) and 46 female (45.1%). The mean age was 67.8 (\pm sd=8.1), ranging from 60 to 90 years. In households with older people, the average number of residents was 3.2 (minimum=1, maximum=9). The average monthly household income was R\$1,600.17 (\pm sd=836.19) and 44 (43.1%) respondents had never attended school. Among the older people, 28 (27.5%) were not vaccinated against Influenza in the previous year (95%CI: 19.6-37.1). Table 1 shows the main reasons reported by the older people for non-vaccination.

Table 1. Reasons related to non-vaccination against Influenza in older people living in rural riverside locations, Manaus, Amazonas, 2019.

Main reason for not vaccinating against Influenza	n=28 (%)
Weakness of information regarding vaccination	
Rarely stricken with flu	2 (7.14)
Didn't know it was necessary to be vaccinated	3 (10.72)
Didn't know where to get vaccinated	1 (3.57)
Fear of adverse vaccine reactions	4 (14.29)
Is afraid of the injection	1 (3.57)
Doesn't believe the vaccine protects	3 (10.72)
Had the flu during the vaccination campaign, but did not seek to be vaccinated when healthy	1 (3.57)
Does not have vaccination card	1 (3.57)
Unable to inform	1 (3.57)
Barriers in access to vaccination	
Short time offer of the vaccine	1 (3.57)
Absence of companion for travel to the health service	2 (7.14)
It was not offered at health service	1 (3.57)
Not being present in the community at the time of vaccination	3 (10.72)
Lack of fuel resource	1 (3.57)
Other reasons specified	
Medical contraindication	1 (3.57)
Did not consent to vaccination	1 (3.57)
Reported allergy to the vaccine	1 (3.57)

Source: survey data, 2021.

Most of the reasons specified by the older people for non-vaccination were the weaknesses of information about vaccination (60.71%), followed by reasons related to barriers to access to vaccination (28.58%). Regression analysis showed a greater chance of non-vaccination among the older people who did not see a doctor in the last year (OR=3.75; 95%CI=1.41-9.96) and among those with higher household income (OR=3.03; 95%CI=1.18-7.79). No association was found with sex (OR=1.01; 95%CI=0.39-2.67), age (OR=0.99; 95%CI=0.94-1.06), having attended school (OR=0.63; 95%CI=0.23-1.72) and self-perception of health (OR=1.04; 95%CI=0.74-1.46).

DISCUSSION

The percentage of older people not vaccinated against Influenza who live in the rural riverside

locations studied is worrying. The findings suggest that the non-vaccination of the older people is multi-causal, involving both failures in the information process regarding the importance of the vaccine, as well as barriers to accessing the health service. The motivations found may not be limited to Influenza vaccination, but also represent impediments to vaccination coverage against COVID-19 in the territory in question.

The health education provided to the user is essential to clarify the importance of vaccination in the prevention of diseases, the potential adverse effects and to demystify mistaken information about the vaccination process⁵. In this sense, the findings suggest that individuals with higher household income represent an important target audience for actions aimed at expanding vaccination coverage. The occurrence of adverse effects and discredit to vaccination are reported as important

causes of evasion of older people in vaccination campaigns against Influenza⁶, with the potential to also negatively interfere in the vaccination campaign against COVID-19.

It is necessary that vaccination plans consider the geographic barriers present in the rural riverside context and promote strategies to expand access, not limiting themselves to reproducing the planning adopted in urban centers⁷. Such measures can ensure adequate vaccination coverage, especially among older people, who represent a significant portion of the rural population, given the selective exodus of young people⁸, in addition to constituting the group considered to be at greatest risk for mortality from respiratory diseases such as COVID-19⁴.

By residing in the territory and acting as a link with the service, the community health agent is a key actor in community-centered health education actions. They also play a relevant role in the active search for non-immunized older people and in recognizing the territory, in passing on information and in discussing vaccination strategies with the other components of the health team⁹. Regular access to the primary health care service is also an important strategy for vaccination, and the older people who reported not having a medical appointment in the last 12 months were almost four times more likely to not have been vaccinated against Influenza either. The operational organization of the UBSF can be maximized in order to expand vaccine opportunities, as well as promote prior agreements between the team and the community, aiming to contribute to increasing vaccine coverage. In addition to the adequate organization of services, the provision of adequate information to users regarding the need to return for annual doses, or a second vaccine dose, as

in the case of COVID-19, is essential for coverage to be adequately achieved.

It is reiterated that low vaccine coverage can contribute to viral mutation and consequent resistance of variants to vaccines¹⁰, an increase in the number of cases and deaths in the population, especially in the most vulnerable groups, such as older people. The study has as a limitation the use of referred information, subject to information bias. Considering the cross-sectional design of the study, causal inferences based on measures of association should also be interpreted with caution. Although the intention of the study is to provoke a critical reflection based on the findings regarding influenza vaccination, in order to contribute to the organization of services in view of the reality imposed by the COVID-19 pandemic, the behavior related to the two diseases may not be similar.

CONCLUSION

The present study analyzed the reasons related to non-vaccination against Influenza in older people living in rural riverside locations, in a context of urgency for vaccination against COVID-19. In addition to the difficulties faced by the population related to barriers to accessing services, weaknesses were observed in the effective availability of information about vaccination among older people. The guarantee and expansion of vaccination coverage for rural populations along the rivers demands a specific strategic planning that takes into account cultural competence and the ways of life and situations of vulnerability, allowing for greater equity in access to health services and actions.

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