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ADHERENCE TO INFLUENZA VACCINATION

ADESÃO À VACINAÇÃO CONTRA INFLUENZA

ADHESIÓN A LA VACUNACIÓN CONTRA INFLUENZA

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ABSTRACT

Objective: to check adherence to an influenza vaccination campaign. **Method:** this is a quantitative, cross-sectional study conducted in a public day-care center serving 211 children. The preparation of the nurses and the sending of an educational leaflet, the application for authorization to vaccinate the child, the use of the therapeutic instructional toy and the administration of the first dose of the influenza vaccine were contemplated by the vaccination campaign. The results were presented in figure and table form. **Results:** it was verified that the adherence was 79.1%, being significantly lower in the families of children with lower average age, and 149 children had the complete scheme for the current year and 77.8% of those who needed the second were vaccinated at a health facility. **Conclusion:** it was noticed that the nurse plays an essential role in actions to promote vaccination in the environments of children's education aimed at increasing vaccination coverage and prevention of diseases. **Descriptors:** Influenza Vaccines; Immunization; Child Health; Health education; Creches; Pediatric Nursing.

RESUMO

Objetivo: verificar a adesão a uma campanha de vacinação contra a influenza. **Método:** trata-se de um estudo quantitativo, transversal, conduzido em uma creche pública que atende 211 crianças. Contemplaram-se, pela campanha de vacinação, a elaboração pelos enfermeiros e o envio às famílias de um folheto educativo, a solicitação de autorização para vacinar a criança, o uso do brinquedo terapêutico instrucional e a administração da primeira dose da vacina contra a influenza. Apresentaram-se os resultados em forma de figura e tabela. **Resultados:** verificou-se que a adesão foi de 79,1%, sendo significativamente menor nas famílias de crianças com menor média de idade, sendo que 149 crianças tiveram o esquema completo para o ano vigente e 77,8% daquelas que necessitavam da segunda dose foram vacinadas em um serviço de saúde. **Conclusão:** percebeu-se que o enfermeiro tem papel essencial nas ações de promoção da vacinação nos ambientes de educação infantil visando ao aumento da cobertura vacinal e à prevenção de agravos. **Descritores:** Vacinas Contra Influenza; Imunização; Saúde da Criança; Educação em Saúde; Creches; Enfermagem Pediátrica.

RESUMEN

Objetivo: verificar la adhesión a una campaña de vacunación contra la influenza. **Método:** se trata de un estudio cuantitativo, transversal, conducido en una guardería pública que atiende a 211 niños. Se incluyeron por la campaña de vacunación, la elaboración por los enfermeros y el envío a las familias de un folleto educativo, la solicitud de autorización para vacunar al niño, el uso del juguete terapéutico instruccional y la administración de la primera dosis de la vacuna contra la influenza. Se presentaron los resultados en forma de figura y tabla. **Resultados:** se verificó que la adhesión fue del 79,1%, siendo significativamente menor en las familias de niños con menor promedio de edad, siendo que 149 niños tuvieron el esquema completo para el año vigente y el 77,8% de las que necesitaban la segunda se vacunaron en un servicio de salud. **Conclusión:** se percibió que el enfermero tiene un papel esencial en las acciones de promoción de la vacunación en los ambientes de educación infantil con el objetivo de aumentar la cobertura de vacunación y la prevención de agravos. **Descritores:** Vacunas contra la Influenza; Imunización; Salud del Niño; Educación en Salud; Guarderías Infantiles; Enfermería Pediátrica.

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INTRODUCTION

A priority group for the promotion of vaccination against influenza is represented by children under five years of age, since it presents higher rates of hospitalization and respiratory complications, such as pneumonia.¹⁻² The socioeconomic impact of influenza was demonstrated in a study of 434 children under 13 years of age, revealing that the rate of absenteeism of the parents at work was 184 days for every 100 children with moderate to severe influenza and 135 days for every 100 children with mild influenza.³

The goal of vaccination coverage is attained as a challenge in the child's health care because, despite reaching the goal of vaccinating 90% of the target public in the national flu campaign in 2018, coverage was only 76.5% among children under five years of age.⁴

In this sense, it is believed that the child education environment creates a series of health education opportunities aimed at strengthening families in child care. In a study of actions to promote influenza vaccination in schools, conducted with more than 10,000 children and adolescents under the age of eighteen, a reduction of 84% to 89% in the risk of demand for emergency services was revealed due to respiratory symptoms among children under four years of age.⁵

Nurses have a crucial role in promoting early childhood health through health education actions among children, families and educators. In this context, they can be involved in influenza vaccination campaigns, the sharing of knowledge in family health education, the monitoring of children's vaccination status, and the preparation of the child using the instructional therapeutic toy before administering the vaccine.⁶

Impact interventions to reduce infant morbidity are represented by national influenza vaccination campaigns,⁷ however, evidence of adherence of families of children to influenza vaccination campaigns conducted by nurses in day-care centers is necessary in order to contribute for the practice of nurses working in primary health care or in the school environment. It was intended, therefore, by this study, to answer the following research question: "What is the adhesion to a vaccination campaign against influenza by families of children in a day-care center?".

OBJECTIVE

- Check adherence to an influenza vaccination campaign.

METHOD

This is a cross-sectional, quantitative study conducted in a public day-care center linked to the city hall and belonging to a philanthropic care center located in a region with social vulnerability in the city of São Paulo, Brazil. 211 places for children between the ages of zero and four are available through the day care center.

The survey was carried out from April to July 2017, and the population sample was constituted for convenience, given that the influenza vaccination campaign was intended for all families and children in the day-care center.

In the development of the study, national and international standards of research ethics involving human beings were considered. The research project was approved by the Research Ethics Committee of the Federal University of São Paulo (Opinion 1,849,484), authorizing it by the management of the philanthropic assistance center. Those responsible for the children enrolled were informed about the objectives of the study, who agreed and signed the Free and Informed Consent Term (FICT).

As a criterion for inclusion of the study population, it was classified as a family of children aged six months or more and less than four years of age enrolled in the day care center, and the exclusion criterion was the impossibility of contacting the family to invite it and clarify it about the research.

A data collection instrument containing the variables of the study was developed: sex, age of the child, adherence to influenza vaccination in its first dose (administered in the day care campaign) and second dose, being administered in a health service at family criteria 30 days after the first dose for children who did not receive the vaccine in the previous year. The data were collected through the records in the Child Health Handbook on the date of the influenza vaccination campaign in the day care center and after 60 days to verify the administration of the second vaccine dose.

The influenza vaccination campaign was developed in the preparation and sending to families of an educational leaflet, application for authorization to vaccinate the child, use of the instructional therapeutic toy, administration and registration of the first

dose of the influenza vaccine, as well as sending of ticket to the family of the vaccinated children congratulating her by the adhesion to the campaign and directing her on the vaccination situation of the child. Information on the importance of the influenza vaccine, its composition and aspects related to its safety and effectiveness, as well as the vaccination schedule for children under five, were included in the educational leaflet. Information was provided using illustrations and language that are easy to understand. The educational leaflet was forwarded to the families through the child's agenda along with the application for authorization to vaccinate the child one week before the scheduled date of the campaign. Children aged two to four years were prepared 30 minutes before vaccine administration using instructional therapeutic toy in groups of ten to twenty children with the educators in the room.

The activities of the influenza vaccination campaign in the nursery were planned and developed by two nurses and two nursing

techniques linked to the philanthropic care center of which the nursery is a part, a teacher, eight students of the third year of the Nursing course of a public university in the municipality of São Paulo in partnership with the nursery directorate.

Data was tabulated in Excel spreadsheet from Microsoft®, analyzing them in Epi Info 7. The categorical variables are presented according to the absolute and relative frequencies and the numerical variables according to descriptive statistics with mean, standard deviation, minimum and maximum values. The Student's t-test was used for the association analysis, adopting a significance level of 5% and a confidence interval of 95%.

RESULTS

It is reported that 211 families of children enrolled in the day care center participated in the study, according to figure 1.

Figure 1. Flowchart - Families of children enrolled in day care. São Paulo (BR), Brazil, 2017.

It is revealed that 167 families (79.1%) were enrolled in the vaccination of their children in the campaign against influenza in the day care center. Relatives of 149 children were informed that their children had the complete influenza vaccine schedule for the current year, and the relatives of 18 children were advised to administer the second dose of the influenza vaccine at a health facility in 30 days.

In the follow-up data on the vaccination status of these 18 children, the majority

(77.8%) received the second dose of the influenza vaccine, 5.5% did not receive it and in 16.7% it was not possible to obtain this information.

It should be noted that, in terms of the characteristics of the vaccinated children, the age ranged from six months to four years, with a mean of 2.4 years and a fashion of 9.6 months, with the majority of children being male (50, 9%). Adherence to influenza vaccination was analyzed according to the age range of the child, according to table 1.

Table 1. Adherence to influenza vaccination according to the age range of the child. São Paulo (BR), Brazil, 2017.

	Vaccination against influenza		Value of p
	Sim	Não	
Mean age and standard deviation (years)	2.49 (DP: 0,9)	2.13 (DP: 1,0)	0.02
Age group	n (%)	n (%)	Total
< 1 year	29 (69%)	13 (31%)	42 (100%)
From 1 to 2 years	55 (78.6%)	15 (21.4%)	70 (100%)
From 2 to 3 years	51 (80.9%)	12 (19.1%)	63 (100%)
From 3 to 4 years	32 (88.9%)	4 (11.1%)	36 (100%)

In the data in table 1, it was demonstrated that adherence to influenza vaccination was significantly lower in children with lower mean age ($p = 0.02$). In the analysis of vaccination by age group, it can be observed that children under one year of age had the lowest rate of adherence to vaccination when compared to the other age groups.

DISCUSSION

The findings of this study contributed to demonstrate that the vaccination campaign against influenza resulted in a membership of 79.1% of the families regarding the first dose of the vaccine and 77.8% regarding the second dose. Adherence to vaccination was found to be significantly lower in children with a lower mean age (2.1 versus 2.4 years), being lower among the families of children less than one year old.

In Brazil, influenza vaccination coverage in children was higher than 80% between 2011 and 2016.⁸ It is known that the target for the year 2017 was to reach 90% of vaccine coverage against influenza, however, vaccination coverage against influenza in Brazil was less than 80% in children² and, in this sense, the findings of this study were similar national vaccination coverage in 2017.

There were lower results in international studies.⁸⁻¹⁰ A study conducted in Michigan (United States) with 2,373,826 children aged six months to seventeen years showed that adherence to influenza vaccination between 2010 and 2011 was 17% and 9% that factors such as the percentage of families living below the poverty line, family income and black race did not influence adherence, however, the vaccination rate in public services was significantly lower in relation to private services (13% versus 18%, OR = 0.60, 95% CI = 0.60, 0.61). A further investigation conducted in Texas revealed a 65% adherence to the influenza vaccine, with more frequent vaccination in white, non-Hispanic, female children and whose parents had higher education.⁹ In another US national study,

coverage of the first dose of the influenza vaccine in children aged six months to 17 years was increased from 16.2% between 2004-2005 to 47, 1%, between 2011-2012.¹⁰ Results showed that, although vaccination coverage increased, less than half of American children were vaccinated annually, highlighting the importance of initiatives that promote immunization in this age group.

Similar rates of adherence were reported in a prospective study conducted in Thailand with 968 children under three years of age, revealing that influenza vaccination coverage was 29.3% between 2011-2012 and 30% between years 2012-2013, corroborating previous studies revealing a low influenza vaccine coverage rate in children.¹¹ It is added that influenza vaccination coverage in most European countries is less than 75%,² and these data reiterate the need for actions that strengthen family competencies in early childhood care as well as improve the knowledge of families on vaccination, thus contributing to increased adherence to vaccination.

It is noteworthy that, in this sense, there is little evidence of parents' perception of influenza vaccination in healthy children attending day care centers, and a survey of 466 parents of children aged six to 59 months revealed that the factors that increased adherence to influenza vaccination were the recommendation of the same by a medical professional, the presence of preventive behaviors by the parents (updated vaccination status and health monitoring by a physician), the perception that the child is at risk of acquiring the disease and the low perception of adverse events related to vaccination.⁹ It is suggested by the authors that these aspects be considered in the public health interventions aimed at increasing influenza vaccination coverage in this population. It is noted that similarly a study conducted with 456 families at a health service in India found that 53% of parents who did not consent to their child's vaccination against influenza

reported not having received a physician's recommendation to vaccinate the child and 44.9% did not believe that the vaccine was effective.¹¹

In this sense, it was announced by a systematic review that aimed to identify parents' facilitators and barriers to influenza vaccination campaigns in schools, that low or cost-free vaccine, the belief that the vaccine is effective and perceiving the severity and susceptibility of the child to the disease facilitate adherence. The barriers to vaccination costs, safety concerns, efficacy, use of sterile materials to administer the vaccine, adverse events, contraindication of vaccination by a medical professional, and concerns related to the privacy of health information.¹²

It is exposed that, although vaccination against influenza in children older than six months is the main strategy in the prevention of the disease, aspects related to its safety and effectiveness still generate concerns in the parents and, consequently, decrease adherence to this strategy. It is pointed out in the evidence that 85-95% of children aged six months or more develop levels of protective antibodies after two doses of the vaccine; in children aged six to 35 months, 50% will develop protective levels of antibodies, and among children aged three to nine years, 75% will develop protective levels of antibodies.¹³ The effectiveness of the vaccine is varied by season, age patient and the type of vaccine between 56% and 100%.¹³ Influenza vaccines were considered immunogenic and safe when administered simultaneously with other vaccines,^{7,13} and vaccination of pregnant women had efficacy greater than 90% in preventing influenza-related hospitalizations in their children; Finally, evidence shows that vaccination of children in day care reduces influenza-related morbidity among household members.^{3,5,13}

It is based on the applicability of the findings of this study, the nurse's role in health promotion in school settings, since they represent privileged spaces for preventive actions of diseases and health education for children and their families. In that sense, a survey that analyzed 3775 records of influenza-vaccinated students by school nurses showed a lower rate of absenteeism at school for students vaccinated in health services. In these actions, the importance of actions that promote immunization and, therefore, the health of the child, as well as the community.¹⁴

Some limitations of this study are included, such as the limited sample of families and the

lack of data that characterize the families, allowing inferences regarding the predictors of family adherence to the child's vaccination in the day care campaign, as well as health education carried out through the sending of leaflets and tickets to families and not in person.

CONCLUSION

It is concluded that it is necessary to strengthen families in child care in order to increase adherence to influenza vaccination. It is believed that nurses play an essential role in health education actions for children and families in child education environments, aiming at the empowerment of the population to care for their health and to prevent injuries at the individual and collective levels through membership vaccines of the Brazilian vaccination calendar.

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REFERENCES

1. Arlant LHF, Bricks LF. Hacia un mejor control de la influenza mediante la vacunación. *Rev Chil Infectol.* 2015 Apr;32(2):198-204. Doi: <http://dx.doi.org/10.4067/S0716-10182015000300009>
2. Ministério da Saúde (BR), Secretaria de Vigilância em Saúde, Departamento de Vigilância das Doenças Transmissíveis. Coordenação-Geral do Programa Nacional de Imunizações. Informe técnico 19ª Campanha Nacional de Vacinação contra a Influenza [Internet]. Brasília: Ministério da Saúde; 2017 [cited 2017 Apr 20]. Available from: http://pni.datasus.gov.br/sipni/03%2003%202017%20Informe_Cp_Influenza%20%20final.pdf
3. Heikkinen T, Silvennoinen H, Heinonen S, Vuorinen T. Clinical and socioeconomic impact of moderate-to-severe versus mild influenza in children. *Eur J Clin Microbiol Infect Dis.* 2016 July;35(7):1107-13. Available from: <https://www.ncbi.nlm.nih.gov/pubmed/27086364>
3. Ministério da Saúde. Vacina contra a gripe atinge 90% do grupo prioritário [Internet]. 2018 [citado 2018 Ago. 28]. Doi: [10.1007/s10096-016-2641-9](https://doi.org/10.1007/s10096-016-2641-9)

4. Tran CH, Sugimoto JD, Pulliam JRC, Ryan KA, Myers PD, Castleman JB, et al. School-located influenza vaccination reduces community risk for influenza and influenza-like illness emergency care visits. *PLoS One*. 2014 Dec;9(12):e114479. Doi: <https://doi.org/10.1371/journal.pone.0114479>
5. Pontes JED, Tabet E, Folkmann MAS, Cunha MLR, Almeida FA. Therapeutic play: preparing the child for the vaccine. *Einstein (São Paulo)*. 2015 Apr/June;13(2):238-42. Doi: <http://dx.doi.org/10.1590/S1679-45082015AO2967>
6. Scotta MC. Influenza in pediatrics. *Bol Cient Pediatr [Internet]*. 2013 [cited 2018 Jly 15];02(2):47-52. Available from: http://www.sprs.com.br/sprs2013/bancoimg/131210133757bcped_02_03.pdf
7. Clayton JL, Potter RC, Wells EV, Carlton CA, Boulton ML. Influenza vaccination of Michigan children by provider type, 2010-2011. *Am J Prev Med*. 2014 July; 47(1):46-52. Doi: [10.1016/j.amepre.2014.03.002](https://doi.org/10.1016/j.amepre.2014.03.002)
8. Offutt-Powell TN, Ojha RP, Qualls-Hampton R, Stonecipher S, Singh KP, Cardarelli KM. Parental risk perception and influenza vaccination of children in daycare centres. *Epidemiol Infect*. 2014 Jan;142(1):134-41. Doi: <https://doi.org/10.1017/S0950268813000782>
9. Santibanez TA, Lu PJ, O'Halloran A, Meghani A, Grabowsky M, Singleton JA. Trends in childhood influenza vaccination coverage U.S., 2004-2012. *Public Health Rep*. 2014 Sept/Oct; 129(5):417-27. Doi: <https://doi.org/10.1177/003335491412900505>
10. Kittikraisak W, Suntarattiwong P, Levy J, Fernandez S, Dawood FS, Olsen SJ, et al. Influenza vaccination coverage and effectiveness in young children in Thailand, 2011-2013. *Influenza Other Respir Viruses*. 2015 Mar; 9(2): 85-93. Doi: <https://doi.org/10.1111/irv.12302>
11. Ramprasad C, Zachariah R, Steinhoff M, Simon A. Parental attitudes towards influenza vaccination for children in South India. *World J Pediatr*. 2017 Feb;13(1): 84-90. Doi: [10.1007/s12519-016-0053-7](https://doi.org/10.1007/s12519-016-0053-7)
12. Kang GJ, Culp RK, Abbas KM. Facilitators and barriers of parental attitudes and beliefs toward school-located influenza vaccination in the United States: systematic review. *Vaccine*. 2017 Apr;35(16): 1987-95. Doi: [10.1016/j.vaccine.2017.03.014](https://doi.org/10.1016/j.vaccine.2017.03.014)
13. Fox TG, Christenson JC. Influenza and parainfluenza viral infections in children. *Pediatr Rev*. 2014 June;35(6). Doi: <https://doi.org/10.1542/pir.35-6-217>

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