

# Vaccination coverage among adolescents in the areas surrounding the Cachoeirinha health center in the northeastern region of Belo Horizonte – MG

## *Cobertura vacinal dos adolescentes da área de abrangência do centro de saúde cachoeirinha na região nordeste de Belo Horizonte – MG*

Alamanda Kfoury Pereira<sup>1</sup>, Camila Godinho Silveira<sup>2</sup>,  
Rafaela Cristina Brito Gonçalves<sup>2</sup>, Priscila Aleixo Marinho<sup>2</sup>, Liliâne Machado Pereira<sup>2</sup>

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### ABSTRACT

**Introduction:** vaccination in adolescence has received growing scientific attention in recent years. This age group's vulnerability to a number of preventable diseases, including some STDs, has a relevant impact in morbimortality, and caused it to be included in the National Immunization Program (Programa Nacional de Imunização). **Objective:** to check the influence of vaccination in a Basic Health Unit (BHU), analyzing vaccination records, data from the Ministry of Health, and the degree of knowledge demonstrated by adolescents and their guardians regarding these preventable diseases. **Method:** a household survey was carried out with a selected population of adolescents and/or their guardians, within the area covered by a BHU in northeastern region of Belo Horizonte – MG. Simple random sampling was the method used and the research was performed with 210 adolescents. **Results:** the main age group was 15-19 years (55.23%), corresponding to teenagers who answered the questionnaire. Guardians who participated totaled 149 respondents. Vaccine coverage established by the adolescents' personal vaccination cards showed that 39 were up to date with their schedules shots, 111 were behind and 60 did not respond. Yellow fever vaccine had the lowest coverage among youths. Lack of knowledge about immunization is high among adolescents and their guardians. **Conclusion:** Among adolescents, vaccination coverage and knowledge about diseases and their corresponding vaccines should be improved, not only increasing vaccination but also through health education in schools.

**Key words:** Vaccination; Immunization Coverage; Adolescent.

### RESUMO

**Introdução:** a vacinação na adolescência desperta crescente interesse científico, devido à vulnerabilidade dessa faixa etária a inúmeras doenças preveníveis, como algumas doenças sexualmente transmissíveis, com impacto significativo na morbimortalidade, por isto incluída no Programa Nacional de Imunização. **Objetivo:** verificar a influência dessa ação em uma Unidade Básica de Saúde (UBS), a partir da análise do cartão de vacina, de acordo com o Ministério da Saúde, e do nível de conhecimento dos adolescentes e responsáveis para com essas doenças preveníveis. **Métodos:** foi feito inquérito domiciliar selecionando-se população de adolescentes e/ou seus responsáveis, da área de abrangência de uma UBS na região nordeste de Belo Horizonte-MG. Usou amostra aleatória simples e a investigação foi realizada com 210 adolescentes. **Resultados:** a faixa etária predominante foi de 15 a 19 anos (55,23%), correspondendo aos jovens que responderam o questionário. Os responsáveis participantes totalizaram 149 entrevistados. A cobertura vacinal definida pelo cartão do adolescente mostrou que 39 estavam em dia, 111 em atraso e 60 não responderam. A

<sup>1</sup> Physician. Associate Professor at the Department of Gynecology and Obstetrics of the Faculty of Medicine of UFMG, Belo Horizonte, MG – Brazil.

<sup>2</sup> Undergraduate student with the Education for Work in Healthcare Program (PET-Saúde). UFMG. Belo Horizonte, MG – Brazil.

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Institution:  
Faculty of Medicine of UFMG  
Belo Horizonte, MG – Brazil

Corresponding Author:  
Camila Godinho Silveira  
E-mail: camilagodinhos@hotmail.com

*vacina contra febre amarela foi a que apresentou a menor cobertura entre os jovens. O desconhecimento sobre a imunização é grande entre adolescentes e seus responsáveis. Conclusão: a cobertura vacinal dos adolescentes e o escasso conhecimento sobre as vacinas e doenças contra as quais protegem poderiam ser melhorados, seja pelo fornecimento de vacinas, como pela educação em saúde articulada com a escola.*

*Palavras-chave: Vacinação; Cobertura Vacinal; Adolescente.*

## INTRODUCTION

The Ministry of Health (MH), in consonance with the World Health Organization (WHO), limits adolescence to the second decade of life – 10 to 19 years of age –, a fundamental period to human development, in which intense biopsychosocial changes take place. In this transition phase, teenagers search for their identities, define their options, and restructure their family and social relations. In this period, due to their higher vulnerability to sexually transmitted diseases (STD), experiences with illicit drugs, teenage pregnancies, alcohol abuse, and needle stick accidents expose them to an increased risk of certain diseases such as hepatitis B, rubella, tetanus.

The immunization of children, teenagers, and adults has become a fundamental element of preventive Medicine since the end of the nineteenth century. In 1973, the Brazilian government created the National Immunization Program (NIP) as a strategy to prevent and/or control incidence of contagious diseases. The impact of this program can be known by means of vaccination coverage – defined as the percentage of vaccinated individuals in the target-population.

Although vaccination is an effective method of disease prevention, few vaccines achieve the coverage goals set by the MH. This fact is due to the difficulty of mobilizing and implementing strict follow-up of patients' immunization history, especially for patients aged 10 or more. According to the Governmental Decree nº 597/GM by the MH regarding the basic immunization schedule, health services must make the following vaccines available to teenagers: hepatitis B, MMR or MR, diphtheria and tetanus toxoids (DT) and yellow fever. In case patients show any type of immunosuppression or are included in other risk groups for any reason, they must have access to other special vaccines, available in the Reference Center of Special Immunobiologicals (CRIES).<sup>2</sup>

Hepatitis, specially the B type, persists as a serious public healthcare problem in Brazil. Infection by the

hepatitis B virus (HBV) is one of the main causes of acute and chronic liver disease. Among the different kinds of risk behaviors for hepatitis, injectable drugs, tattoos, piercings, and unprotected sexual intercourse stand out. The difficulty in associating present actions with future consequences is among the factors that make teenagers a high risk group for HBV exposure.

Measles and rubella, being extremely contagious, can also bring serious complications to adolescents. Rubella has a potential risk for pregnancies and can lead to intrauterine fetal death or to the birth of a child with congenital rubella syndrome.

Teenagers are highly susceptible to tetanus. Tetanus spores penetrate through solutions in contact with the skin and common accidents make teenagers vulnerable to tetanus.

During adolescence, it is also important to be vaccinated against yellow fever, an endemic disease in several Brazilian states which affects all ages. The vaccination scheme consists of the giving first dose at nine months of age and then every 10 years. The state of Minas Gerais is a risk area where there are cases of humans with the disease or circulation of the virus among animals such as monkeys.

Due to vulnerability to the aforementioned diseases, teenagers became a priority group in the NIP, whose objective is to reduce morbidity and mortality caused by diseases preventable through immunization by achieving high and homogeneous vaccination coverage in health centers and national campaigns. Thus, vaccination programs constitute one of the most efficient preventive healthcare actions and, if well executed, deliver remarkable results in the short term.

In this context, students in the Education through Work Program (Educação pelo Trabalho e Saúde, PET-Saúde) in the Cachoeirinha Health Center evaluated the vaccination coverage among teenagers and the how much this age group and their parents or legal guardians knew about immune-preventable diseases.

## OBJECTIVES

To establish the percentage of teenagers who are fully vaccinated following the scheme proposed by the MH's vaccination schedule, and to analyze how knowledgeable teenagers and their parents or legal guardians are about the vaccine-preventable diseases.

## METHODOLOGY

This study based its methodology in the research “Cobertura vacinal e fatores relacionados à vacinação dos adolescentes residentes na área norte de Teresina/PI”, carried out in Teresina, Piauí, which aimed to check the vaccination coverage among teenagers living in the northern part of the city of Teresina.

This is an epidemiological study developed by means of a household survey in the northeastern region of Belo Horizonte-MG. The study population included teenagers living within the coverage area of the Cachoeirinha Health Unit (Cachoeirinha HU) in Belo Horizonte-MG. This area comprises 2,403 people aged between 10 and 19 years old, of whom 1,190 are males and 1,213 are females, according to the 2000 census by the Brazilian Institute of Geography and Statistics (IBGE).

A simple random sample was used, and 210 teenagers took part in the investigation. The cluster sampling used was based on the process recommended by the WHO for vaccine coverage inquiries, a technique known as 30x7 cluster survey method.

In this study, 10 of the 18 micro-areas in the Cachoeirinha HU coverage area were randomly selected for the research, and sketches of the area (sampling units) were then designed. The streets were numbered and one was randomly selected as the starting point for the inclusion of teenagers. Lastly, a side of the street was picked. In relation to the houses, only the first was randomly picked and, from then on, teenagers in the subsequent houses, clock-wise, were selected, to a total of seven teenagers in each conglomerate. Interviewers were expected to return in case the teenager was not present in the moment of the interview. Teenager were excluded when they were not found after three visits, and a new teenager from the same block was included, until there were seven interviewees.

Data was gathered from January to March 2011 through interviews with teenaged study subjects carried out during in-home visits by the participants of the PET-Saúde assisted by health community agents (ACS) of the Cachoeirinha HU, all of which had been previously trained. Pre-tested forms were used. In the instrument pre-test, the questionnaire was evaluated in terms of clarity, average duration of the interviews, as well as the self-assurance of the participants of the PET-Saúde who acted as field researchers.

The study variables were the following: socioeconomic and demographic data, possession of a vaccination card, vaccination situation, and knowledge

about the vaccines included in the teenagers' basic immunization calendar as well as the diseases which they give protection against. Four main diseases (yellow fever, rubella, tetanus, and hepatitis B) were picked for an analysis of level of information teenagers and their parents or legal guardians had.

The parents or legal guardians of teenagers aged 10-19 years answered the questionnaire. Those aged 15-19 years also answered it. The participants were presented with the Free and Informed Consent Term guaranteeing confidentiality and privacy. This study was approved by the COEP/PBH number 0066.0.410.410-10A.

All data was categorized, digitalized, and processed. The analysis was done through simple descriptive statistics like frequencies and percentages.

## RESULTS AND DISCUSSIONS

210 teenagers participated in this study, being 115 females and 95 males. The predominant age group was of 15 to 19 years old (55.2%), corresponding to the young people who answered the questionnaire. The place of birth of 90% of the participants was Belo Horizonte and others were from the Minas Gerais countryside or other states (10%). There were 149 participant parents or legal guardians, 23.8%, aged between 40 and 49 years. Parents or legal guardians were distributed according to the degree of kinship with teenagers, namely, father or mother, grandparent, uncle and aunt, no kinship, and other family relationship, representing 73.1, 8.7, 6.0, 9.40 and 2.7%, respectively.

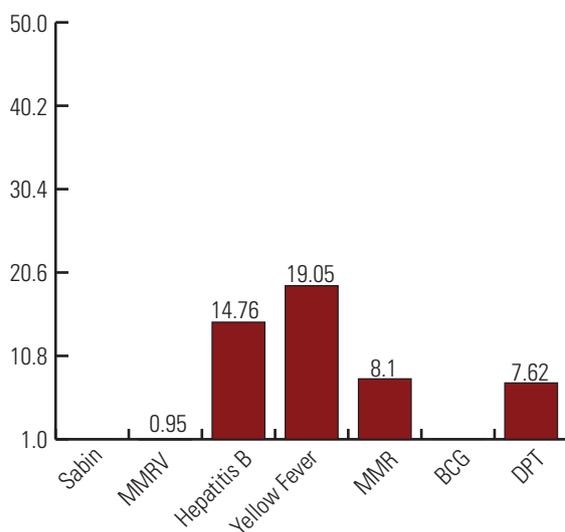
Most families earned more than three minimum wages (70 families), whereas 57 out of the total received financial aid.

The majority of teenagers had not finished basic education totaling 8 years (109), and 84.8% declared they were enrolled in school when the interview took place. The fact that these young people were studying could facilitate their access to vaccination, taking in consideration that schools are a place where is possible to obtain information and necessary knowledge about personal and social life, as well as establishing interpersonal relations, which can influence individuals to adopt behaviors that improve self-care and understanding of the importance of vaccination.

When asked about their children record card, 150 affirmed they had one, while the majority of the young people (191) did not possess any other card. The high percentage of teenagers who did not know about the

card raised concern, considering they were teenagers living in areas covered by the family health teams, whose work consists mainly of educating about health promotion. In this sense, we expected that a higher percentage had access to information about the card.

After analysis of the vaccination cards, we verified that 76 of the interviewees had an up-to-date child record card, 73 were behind the schedule, and 61 did not answer. In the study, considering those who answered about their vaccine situation in this card, vaccines that presented complete coverage (100% vaccinated) were the Sabin, vaccine against poliomyelitis, and the BCG (Figure 1).



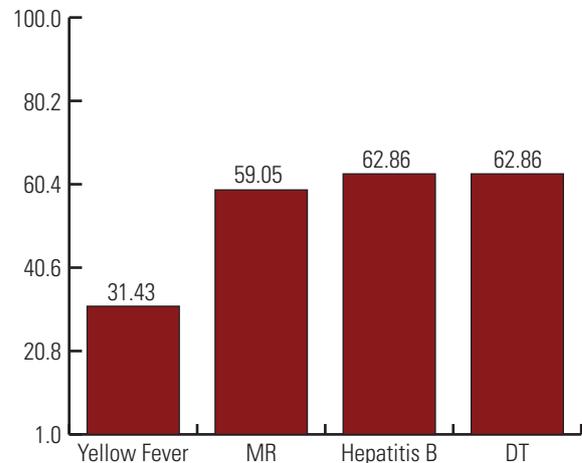
**Figure 1** - Prevalence of vaccines on a delayed schedule among teens in 2011.

The WHO effort to eradicate polio started in 1988, when there were 350 thousand cases of infantile paralysis around the globe. In this sense, several campaigns were launched that made significant contributions in lowering the number of cases. In Brazil, the last case of the disease was registered in 1989.

The coverage of the teenager vaccination card is low, being that 39 were up-to-date, 111 behind schedule, and 60 did not reply. Vaccination against yellow fever presented a lower coverage among young people (84 behind schedule, 66 up-to-date, and 60 did not answer). The MR and hepatitis B vaccines were the ones with highest coverage, including, respectively, 124 and 119 the vaccinated teenagers (Figure 2).

The second part of the questionnaire, in which the interviewees answered general and specific questions about vaccination, was included 143 parents or legal

guardians and 56 teenagers. In relation to the question “do you know if there are any vaccines for teenagers?”, approximately 15.4% of the parents or legal guardians knew about the yellow fever vaccine, and 12.6% about the diphtheria and tetanus toxoids vaccine (DT). The young people, in their majority, did not know about the vaccines in their age group vaccination schedule (89.3% - yellow fever, and 87.5% - DT).



**Figure 2** - Prevalence of vaccines on a delayed schedule among teens in 2011.

Both parents or legal guardians and teenagers knew very little about diseases that can be prevented with vaccination, such as diphtheria, rubella, hepatitis, tetanus, and yellow fever.

Although diphtheria has been declining since the 80s, in some states a change in the age group of 15+ years old has been observed in states such as São Paulo, according to the State’s Secretary of Health. In this study, it was observed that the disease is largely unknown to the parents or legal guardians (98.6%) or to the teenagers (100%).

For the analysis of the level of knowledge of teenagers and their parents or legal guardians, questions were asked about the four main diseases, dealing with information about them and their general presentation.

In Brazil, country of high exposure to the yellow fever virus, more than 80% of the cases happen between the ages of 14 and 35, predominantly on males. More than half of the parents or legal guardians (55.2%) and 51.8% of the teenagers knew about yellow fever transmission. 60.8% and 53.6; and 82.5 and 66.1% of the answers of the parents or legal guardians and teenagers, respectively, revealed that they knew that Minas Gerais was a high-risk area for yellow fever and of the necessity of a

vaccine booster. Since 2003, Minas Gerais is considered a high-risk area for the wild-type yellow fever virus, given that in 2001 and 2003 there were transmissions within the state. Due to notifications of these wild cases of the disease, there were several vaccination campaigns; however, many people were not vaccinated.

The Measles Eradication Plan, which started in Brazil in 1999, propelled the vigilance and control of rubella. In 2002, there were 1480 cases of rubella in the country, which corresponds to a decline of 95% in comparison to its incidence in 1997. 2008 marked the year of the biggest vaccination campaign against rubella in the world, and 65.9 million people between 19 and 39 years of age were vaccinated in the states of Rio de Janeiro, Minas Gerais, Rio Grande do Norte, Mato Grosso, and Maranhão.

Rubella is a universal infirmity, more frequent among children but also affecting teenagers and adults. It was observed that 74.8% of the parents or legal guardians knew the importance of the vaccination against rubella before pregnancy, and is known by 33.9% of the teenagers.

Knowledge about how one acquires tetanus and the necessity of a vaccine booster every 10 years and during pregnancy was noted in 88.1 and 62.5% and 83.9 and 69.9% of the parents or legal guardians and teenagers, respectively. Complications associated with tetanus were also described by 52.4% of the parents or legal guardians and 19.6% of the teenagers.

It is estimated that 350 million people all over the world are carriers of the hepatitis B virus. Vaccination is the most efficient way of preventing it and has been recommended since 1991 by the WHO. Young people resist taking the vaccination against hepatitis B, probably because it requires more than one shot. In this study, it was observed that 80.4% of the parents or legal guardians, and 91.1% of the teenagers are unaware that hepatitis B is a sexually transmissible disease, prevented by vaccination available in the public service. It was noted, still, that less than half the parents or legal guardians (44.0%) and the teenagers (30.3%) knew how it is transmitted.

## CONCLUSION

Actions are still needed to increase the vaccination coverage among teenagers, including making information available to raise awareness among young people and their parents or legal guardians in relation to the vaccines available in the national vaccination schedule and their respective preventable diseases.

Vaccination coverage among teenagers and their knowledge about vaccines and the diseases they protect against could be improved by simultaneously making supplies available in schools and offering health education. This has been proposed by the Health at School Program in partnership with the Family Health Strategy. This program was launched in September 2008 with the objective of integrating and permanently articulating education and health. For this to happen it is of fundamental importance that education as a whole be understood as a concept that encompasses protection, attention, and full development of young people.

In the health sector, some of the activities of the family health teams include prevention, promotion, recovery, and maintenance of individual and collective health. The expectation is that in the family health teams these teenagers are nurtured and cared for. The special attention they should receive must come in a contextualized form, that takes into account that the health-related experiences people have in their daily lives are partly related to the knowledge they have about the health technologies.

Because users do not always have access to health service means that it is necessary to incorporate measures and changes in the attitudes related to health-care. It is essential that the health professional understand that, regardless of the reasons teenagers go to the health units, each visit means an opportunity to detect, ponder, and assist in the solution of matters other than the main reason of the visit, as much as to reinforce the education about prevention.

Lack of data about the vaccination coverage in the population aged 10 to 19 years allows this research to help inform health professionals about problems involving this age group in relation to self-care, including immunization. Obtaining data about vaccination coverage among teenagers allowed us to detect of real necessity of investment through campaigns and initiatives that favor the community's immunization and education. When approaching teenagers in the health services it is important to ponder on the structure and particular history of each family, in the social realities that constitute them.

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