

Brief Communication



Knowledge and Attitudes of School Teachers on Vaccination in Greece

Despoina Gkentzi ¹, Eleni Benetatou², Ageliki Karatza ¹, Markos Marangos ³,
Anastasia Varvarigou ¹, and Gabriel Dimitriou ¹

¹Department of Paediatrics, Patras Medical School, Patras, Greece

²56th Primary School, Directorate of Primary Education of Achaia, Patras, Greece

³Division of Infectious Diseases, Patras Medical School, Patras, Greece

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Corresponding Author:

Despoina Gkentzi, MD, PhD

Department of Paediatrics, Patras Medical School, 26504, Greece.

Tel: 2610 999.466

Fax: 2610 994.683

E-mail: gkentzid@hotmail.com


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ORCID iDs

Despoina Gkentzi 

<https://orcid.org/0000-0002-1421-0813>

Ageliki Karatza 

<https://orcid.org/0000-0001-5649-9021>

Markos Marangos 

<https://orcid.org/0000-0001-5030-2398>

Anastasia Varvarigou 

<https://orcid.org/0000-0003-4558-0136>

Gabriel Dimitriou 

<https://orcid.org/0000-0001-7929-1573>

Conflict of Interest

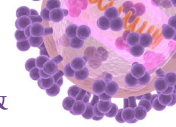
No conflicts of interest.

ABSTRACT

Few studies have assessed attitudes and beliefs of school teachers on vaccination. Our cross-sectional questionnaire-based prospective survey aims to explore vaccination coverage and relevant knowledge of school teachers in Greece. Out of the 217 respondents, 93% believe that vaccines offer protection but only 69.7% were completely vaccinated as per adults' National Immunization Schedule. In multivariate analysis, female gender, being a parent, beliefs that vaccination should be mandatory and imposing penalties to vaccine refusals are the main factors that account for teachers' "behavioral" variability towards vaccination. Strengthening the training of school teachers in health promotion should become a priority in the era of the highly anticipated vaccine against severe acute respiratory syndrome-coronavirus-2 (SARS-CoV-2).

Keywords: Knowledge; Attitudes; School teachers; Vaccination; Immunization

Greek National Immunization Schedules as well as relevant schedules worldwide recommend specific vaccines for adults including measles-mumps-rubella, varicella, herpes zoster, diphtheria-tetanus-pertussis, influenza [1]. School teachers represent a special group from a public health point of view as they have daily close contact with children who may suffer from various infectious diseases including some vaccine preventable ones. In addition, young children do not consistently adhere to hand hygiene and other infection control measures. From this perspective school teacher's adherence to the National Immunization Schedule is crucial in order to protect both themselves as well as their students. Consequently, in 2009, the National Scientific Committee for the Treatment of the New Influenza Pandemic in Greece, included teachers in the priority vaccination groups for influenza. This vaccination was characterized as an expression of social responsibility, albeit optional, as it was intended both for their personal protection and protection of the students. Worldwide few studies have aimed to explore attitudes, knowledge and vaccination coverage of school teachers and the majority of them have focused on measles and influenza vaccination [2-5]. The general conclusion is that teachers have a lower than expected vaccine acceptance rate which may be improved with targeted education [2-5]. Studies have also shown that teachers may have an important role in addressing students' and parents' vaccine hesitancy and this role has been found to be associated with their own knowledge, attitudes



Author Contributions

Conceptualization: DG, GD, EB. Data curation: EB, DG, AK. Formal analysis: DG, EB. Methodology: DG, GD, MM, AV, AK. Supervision: DG, GD, MM, AV. Validation: AK, DG. Visualization: SWP. Writing - original draft: DG. Writing - review & editing: DG, EB, AK, MM, AV, GD.

and practices towards vaccines [5-7]. Our study aims to explore vaccination coverage as well as the general knowledge of school teachers in the field in Greece.

We performed a cross-sectional prospective survey over a period of three months (August – October 2019) on a random sample of elementary school (6 - 12 years old) teachers working on randomly selected 26 out of the 62 public schools in the prefecture of Achaia with a population of approximately 400,000 inhabitants (4% of the total Greek population). A structured, anonymous, self-administered questionnaire was used for data collection. It was designed by the authors based on previous similar studies in the field [2-4]. Before fulfilling the questionnaire, a written explanation of the study objectives was given to all teachers. The questionnaire was written in Greek, composed of 18 questions and consisted of two parts. The first part (7 questions) concerned information on teachers' demographics including sex, age, educational level, marital status and the number of children if any. The second part of the questionnaire (11 questions) assessed vaccine uptake, general knowledge and attitudes towards mandatory vaccination, awareness of vaccine risk and potential benefits as well as the sources of information on vaccines. The study protocol was approved by the Regional Steering Committee of Patras Medical School (decision number: 749/14.10.2019). To ensure clarity, content validity and internal consistency prior to conducting the study, the questionnaire was distributed to 20 teachers (pilot phase) and the questionnaire was adjusted accordingly. For statistical analysis, we used SPSS (IBM SPSS Statistics for Windows, Version 25.0. IBM Corp. Armonk, NY, USA). For multivariate analysis we used logistic regression to assess the factors that may influence teachers' decision to get vaccinated.

Of the 250 teachers approached, 217 (73.9% were women) agreed to participate in the study (response rate: 86.8%). 42.7% were between 50 - 59 years old, 33% between 40 - 49 years old, 19.7% between 30 - 39 years old and the rest were less than 30 years old. The majority of respondents were married (71,6%) with children (72%). With regards to receipt of prior vaccination, 75.2% had received two doses of measles-mumps-rubella vaccine, 64.2% had been vaccinated for diphtheria and tetanus in adulthood and 40.8% had received the annual influenza vaccine in the season 2018 - 2019. Nearly half of them (45%) intended to get the flu vaccine in the forthcoming season 2019 - 2020 although the majority (88.5%) did understand that they are at increased risk of contracting the disease due to the daily close contact with children. With regards to their general knowledge and attitudes, 93% of them believed that vaccines offer protection against vaccine preventable diseases. Although 85% of them did believe they should get vaccinated as per National Immunization Schedule, only 69.7% were vaccinated. More than two thirds (72.5%) believed that vaccination should be mandatory for both adults and children and interestingly nearly half of them (47.7%) were in favor of imposing penalties to those teachers who refuse to get vaccinated. Similarly, 70.6% stated that there should be consequences for parents who do not vaccinate their children. Moreover, 21.6% believed that vaccination has no adverse health effects, whereas 47.7% consider them to be present, yet mild. A large proportion (67.4%) of the study participants also admitted that they were aware about the existence of a National Immunization Schedule for adults in Greece and they were mainly informed about it from their family physician (47.7%). Nearly half of them admitted significant lack of knowledge in the field (45.9%) especially when it comes to the possible vaccine side effects. In a multivariate logistic regression analysis we assessed the factors that may influence teachers' decision to get vaccinated. In this model, we have included the values that were statistically significant correlated with the vaccine uptake in the univariate analysis which were the following: female gender ($\beta = 0.208$, $P = 0.022$), being a parent ($\beta = - 0.160$, $P = 0.028$), their belief that vaccination should be mandatory ($\beta = 0.310$, $P = 0.004$),

their belief of imposing penalties to vaccine refusals ($\beta = 0.177$, $P = 0.028$) and their belief that vaccines do have adverse effects on general health ($\beta = -0.256$, $P = 0.001$). With this model we were able to explain 45% of teachers' "behavioral" variability towards vaccination.

In terms of vaccine coverage, nearly three quarters of the teachers in our cohort have been vaccinated with measles, mumps, rubella (MMR) and two thirds of them for diphtheria and tetanus. With regards to MMR, this percentage appears to be high but it is actually less than the desired goal for measles control. In particular, as per the World Health Organization, countries aiming at measles elimination should achieve $\geq 95\%$ coverage with both doses to all children and adults [8]. On the contrary, influenza vaccination coverage was very low, as less than half of them have been vaccinated in the previous years. This is a worrying finding given the fact that teachers have a daily contact with young children who are the main reservoirs of influenza in the community. Moreover, the proportion of those teachers who intend to get vaccinated the following season, although they understand that they belong to a high risk group, is equally and worryingly low. The latter has various explanations such as the general belief of low vaccine efficacy, possible fear of side effects and need to receive annually the particular vaccine. Interestingly, in a cross-sectional study including school teachers and conducted in Poland, vaccine coverage of teachers against influenza was alarmingly low, and vaccination uptake was mainly associated with teacher's behaviors and beliefs [3]. The main reasons for non-vaccination were lack of confidence in its efficacy and concern about its adverse effects³. Obviously understanding and addressing teachers' attitudes and knowledge towards influenza vaccination could help future immunization efforts [4]. In a US survey in 2018, teachers' positive attitudes and knowledge were associated with increased vaccination rates [6]. Similar to the above, the results of our multivariate analysis suggest that vaccine receipt is mainly associated with the overall teacher's general beliefs in the field.

Of note, teachers can play a key role in addressing students' and parents' vaccine hesitancy the reluctance of students and parents to be immunized. This role is associated with their own knowledge, attitudes and practices on vaccines which should be recognized and promoted by public health policy makers [2]. Unfortunately, strategies aiming at health promotion in schools are not very well developed and do not constitute high priorities for policy makers. Moreover, school teachers, are not aware of their role in health promotion. Interestingly, studies show that teachers who have received training on health promotion tend to be involved more frequently in health promotion projects and have a more comprehensive approach to health education [5-7]. Therefore, it is of paramount importance to emphasize health promotion development strategies at the school environment. The latter is a necessity nowadays worldwide during the coronavirus disease 2019 (COVID-19) pandemic and the role of teachers is crucial in this global crisis especially upon school return.

We acknowledge that our study as a pragmatic one has several limitations. The main one is that it is geographically restricted to Western Greece and conducted in a relatively small sample size which leads to limited power and generalizability. However, given the paucity of data in the field, it brings a great insight in the area and ideally should be repeated in a larger sample of school teachers across Greece. In addition, a recall bias could exist in data collection as the questionnaires were filled in based on information given by teachers rather than checking on healthcare record books.

In conclusion, in this study we found suboptimal vaccination uptake rates in teachers in a large geographical area in Greece. Public health interventions should aim to increase

knowledge on infectious diseases and prevention of them via immunization in this particular at-risk population due to the profession's nature. Strengthening and supporting the training of school teachers in health promotion is also of paramount importance and should become a priority especially during the current coronavirus pandemic and potential for prevention with newly developed vaccines.

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