ORIGINAL ARTICLE

Factors and Reasons Associated with Childhood Vaccination Refusal

Eduardo Silva[1,2], Catarina Samorinha[3,4], Susana Silva[3,4]

Port J Pediatr 2020;51:168-75
DOI: https://doi.org/10.25754/pjp.2020.18836

Abstract

Introduction: Vaccination refusal is a global public health concern. There is a need to promote confidence in the importance, safety, and effectiveness of vaccines. This study aimed to analyze the factors and reasons associated with the decisions of caregivers to refuse childhood vaccination.

Methods: Between May and June 2018, a telephone questionnaire was completed by 149 caregivers of children under 16 years of age registered in a Portuguese health centers group. Among them, 64 refused at least one vaccine under the national immunization program due to non-medical reasons, according to the Shared Services of the Ministry of Health. Adjusted odds ratios and 95% confidence intervals were calculated using multivariate logistic regression.

Results: Vaccination refusal was more frequent among caregivers older than 40 years (adjusted odds ratio 5.98, 95% confidence interval 1.32-27.00) and non-Portuguese citizens (adjusted odds ratio 5.40, 95% confidence interval 1.80-16.16). Vaccination refusal was less likely to occur among Catholics (adjusted odds ratio 0.25, 95% confidence interval 0.09-0.68). The fear of side effects and the health consequences of vaccines was mentioned as a reason for vaccination refusal by 48.4% of caregivers of unvaccinated children and 30.6% of caregivers of vaccinated children. In addition, 37.5% of caregivers of unvaccinated children reported that vaccines were neither safe nor effective, and 49.4% of caregivers of vaccinated children considered that there were no reasons for vaccination refusal.

Discussion: Vaccination promotion among older and non-Portuguese caregivers is needed as well as an investment in communication campaigns regarding the risks and benefits of vaccines. This work contributes to identify the target groups and preferential contents of future interventions for vaccination promotion.

Keywords: Anti-Vaccination Movement; Health Knowledge, Attitudes, Practice; Immunization Programs; Portugal; Surveys and Questionnaires; Vaccination Refusal/statistics & numerical data; Vaccination Coverage

Introduction

Access to vaccines is one of the factors that contributes the most to the reduction of mortality and morbidity worldwide.[1] Vaccination is one of the greatest successful and cost-effective interventions in improving health outcomes, especially in the primary prevention of infectious diseases, thus reducing the incidence of certain diseases,[2] and avoiding 2-3 million annual deaths from diphtheria, tetanus, whooping cough, and measles worldwide.[3] At an individual level, the person being vaccinated is expected to develop immunity to the disease or, if not possible, to at least have a milder form of the disease in the presence of the pathogen concerned.[4] At a population level, vaccines are intended to eradicate, eliminate, control, or minimize the impact of the disease in the community. This requires a high proportion of people vaccinated in order to limit the circulation of the causative agent and increase the indirect protection of unvaccinated people.[4] The phenomenon, designated as herd immunity, protects those who cannot be vaccinated, due to contraindication or insufficient age, as well as those who failed to develop immunity to the disease following vaccination.[5]

In Europe, licensed vaccines have a high degree of safety, efficacy, and quality, being certified before distribution and subject to surveillance in order to ensure, among other aspects, that any abnormal reaction is thoroughly investigated.[6] Serious adverse reactions that are proven to be associated with vaccines are rare or very rare, and the risk of their occurrence is much lower than the risk of a serious complication arising from the diseases that they prevent.[6] However, some parents express concern

1. Health Centers Group of Baixo Vouga, Aveiro, Portugal
2. Public Health Unit, Aveiro Health Center, Aveiro, Portugal
3. EPIUnit – Instituto de Saúde Pública, Universidade do Porto, Portugal
4. Departamento de Ciências da Saúde Pública e Forenses e Educação Médica, Faculdade de Medicina, Universidade do Porto, Porto, Portugal
Corresponding Author
Eduardo Miguel Vale da Paixão e Silva
https://orcid.org/0000-0001-9777-7868
eduardomvpsilva@gmail.com
Public Health Unit - Aveiro Health Center, Praça Rainha D. Leonor, 3810-042 Aveiro, Portugal
Received: 08/09/2019 | Accepted: 06/03/2020 | Published: 01/07/2020

about the possible harmful effects of vaccines, and may use them as arguments to intentionally refuse or delay recommended vaccination.[7]

It is estimated that between 3%-7% of children worldwide do not receive all of the recommended vaccines due to parental refusal.[8] A review of the literature published in 2012 found that approximately 2% of parents refused the administration of vaccines to their children, and between 2% and 27% of parents delay vaccination or only allow the administration of certain recommended vaccines.[9] These parental decisions may lead to a decrease in vaccination coverage to the point where the reemergence of vaccine-preventable diseases may occur with serious public health consequences.[9] The underestimation of the risk of vaccine-preventable diseases and the overestimation of the risk of side effects associated with vaccines have emerged in countries with high vaccination coverage rates.[4,9-12] This has led to outbreaks of vaccine-preventable diseases, like measles or mumps, in population groups where group immunity is no longer ensured.[13,14]

Vaccination hesitation, that is, the delay in vaccination or the refusal of vaccines despite the availability of vaccination services,[13,15,16] is essentially the result of confidence issues, complacency and/or convenience.[13,16] The dissemination of misinformation about vaccination by the media, particularly through the Internet,[11,17-24] influences the decision not to vaccinate.[11,18,24] Anti-vaccination messages are more frequent on the Internet than in any other medium,[22] in a context where access to anti-vaccination websites for only five to 10 minutes increases the risk perception of vaccines, while decreasing the perceived risk of vaccination refusal and intention to vaccinate.[18] In addition, most videos available on YouTube portray vaccination negatively, registering more views and positive ratings than those portraying vaccination positively.[19] Moreover, parents who decide not to vaccinate their children are more likely to search for information about vaccination on the Internet than parents who comply with the vaccination schedule.[11,17] In this regard, American primiparous women who reported an intention to delay one or more recommended vaccines showed a higher confidence in information about vaccination from the Internet compared to that conveyed by health professionals.[20]

The literature adds other motivations for vaccination refusal, namely religious or ideological beliefs,[11,21,25] misperceptions about the safety and effectiveness of vaccines, and the risks of vaccination,[5,10,11,21,26,27] lack of confidence in the pharmaceutical industry, governmental policies, or in the information conveyed by health professionals,[7,9,11,21,26,28-30] particularly regarding the possible side effects of vaccines[26-28] and their long-term consequences.[10] In addition, the literature also mentions the fear of and pain from needles,[21,31] the fear that children will receive too many vaccines simultaneously, the belief that caregivers can protect children from vaccine-preventable diseases without vaccination, the idea that vaccination interferes with the natural development of children or that it is more beneficial for children to recover from diseases instead of being vaccinated[7,10,26,27] and, finally, a lack of information to form an informed opinion.[10,30]

Even though the Portuguese population shows high levels of confidence in the importance, safety, and effectiveness of vaccination, and compatibility with religious affiliations,[32] a few cases of vaccination refusal have been observed. In addition, some parents who vaccinate children express doubts, fears, and concerns.[12] The challenges that these phenomena entail in terms of public health have set the public agenda for public and political debate. The idea that outbreaks only occurred in the past (poliomyelitis in 1972, diphtheria in 1976, measles in 1989 and 1994, and mumps in 1996-1997) was deconstructed in 2017, when two measles outbreaks emerged in different regions of Portugal, Algarve, and Lisbon, with no apparent relation.[12] Among a total of 29 confirmed cases, 19 (66%) occurred in people who were not vaccinated against measles, with one resulting fatality.[33] In 2018, four measles outbreaks were investigated, again with cases in people who were not vaccinated against measles, but with most of the confirmed cases being adequately immunized.[34] These situations have called for the need to intervene in the causes underlying vaccine refusal and the importance of raising public awareness for compliance with the national immunization program. In this regard, it is important to determine the scope of vaccination refusal as well as to perceive the underlying reasons and determinants.[2] In fact, the development of effective intervention strategies for vaccination involves the adequacy of scientific arguments to counter the doubts and concerns shown by parents and caregivers.[2,15,25,26,28,35] Therefore, this study seeks to ascertain the reasons given for vaccination refusal and to identify the associated demographic and socioeconomic factors based on a study conducted among the caregivers of children under 16 years of age registered in the Baixo Vouga health centers group.

Methods

The target population was the primary caregivers of children under 16 years of age as of December 31, 2017 registered in the Baixo Vouga health centers group.

The study considered as a primary caregiver the adult person whose telephone number was listed in the administrative files of the child concerned.

Information about children was provided by the Shared Services of the Portuguese Ministry of Health, through an electronic immunization data collection system. This immunization information system contains a database on the immunization of the population that includes the name, date of birth, health card number, telephone number, address, and administered and refused vaccines. Among 53,243 children under 16 years of age registered in the Baixo Vouga health centers group, there were 130 children whose primary caregivers refused at least one national immunization program vaccine, excluding cases of non-vaccine uptake due to prior adequate immunization in other countries or contraindication for medical reasons, resulting in a vaccination refusal rate of 0.24%. Vaccination against the human *papillomavirus* infection was the most frequently refused (n = 84), followed by tetanus (n = 64), diphtheria (n = 63), rubella (n = 63), mumps (n = 62), and measles (n = 62). Moreover, a total of 139 caregivers of children who have fully complied with the national immunization program were randomly selected.

The selected caregivers were contacted via telephone by the first author between May and June 2018 and were invited to participate in the study. A total of 64 caregivers of unvaccinated children and 85 caregivers of vaccinated children were surveyed (49.2% and 61.2%, respectively). Non-participation of 66 caregivers of unvaccinated children was due to the telephone number that was listed in the administrative file not being assigned (n = 42), no answer after four contact attempts (n = 13), absence of a telephone number in the administrative file of children (n = 8), refusal due to previous negative experiences related to vaccination (n = 2), and the sensitivity of the subject (n = 1). Among the caregivers of vaccinated children, 49 did not answer the call after four contact attempts, the telephone number was not assigned in three situations, and two refused to answer the questionnaire without any explanation.

Based on a telephone questionnaire developed by the research team, demographic and socioeconomic data were collected as well as participants perceptions about the reasons for vaccination refusal through the following open question: What are the main reasons given by parents to refuse the administration of vaccines to their children? Please mention up to two reasons.

The thematic analysis of the answers to the open question focused on the main reasons justifying vaccination refusal follows the protocol established by Stemler.36 Answers with similar meanings were grouped into themes corresponding to the reasons identified in recent systematic reviews on the subject.[37-40]

This study included gender, family relationship with the children, age (categorized as ≤ 30, 31-40, > 40 years), years of education (categorized as ≤ 12 years and > 12 years), marital status (categorized as married/living with a partner, single, other), professional status (categorized as employed and other), subjective social class (low/middle-low, high/middle-high, none/prefer not to answer), country of origin (Portugal or another country) and religious affiliation (none, catholic, other). Perceived income adequacy was assessed through the question: Regarding your household income, would you say that your household is able to make ends meet? The answer categories were insufficient, caution with expenses, enough to make ends meet, and comfortable. For the analysis, the answer categories were dichotomized into insufficient (insufficient or caution with expenses) or sufficient (enough to make ends meet and comfortable).

Statistical analysis was carried out using the IBM Statistical Package for Social Sciences® (SPSS), version 24.0, Armonk, NY, USA. The chi-square test was applied to compare proportions. The crude odds ratios (OR) and adjusted odds ratios (aOR) were calculated, with the respective confidence intervals (CI) 95%, through logistic regression, to assess the factors associated with vaccination refusal of children. Multivariate models included the variables statistically associated with vaccination refusal in this sample ($p < 0.05$) or those considered to be potential confounders of the association by the authors. Variables that did not maintain an independent association with vaccination refusal and that did not confound the effect of the remaining ones in the multivariate analysis were excluded from the final model.

Results

The characteristics of the participants, according to refusal to vaccinate or not children under their care, are summarized in Table 1. More than three quarters of the participants were women (79.2%), with most being the mother (76.5%). Almost half of the participants were over 40 years of age (48.3%) and more than half of them had less than or equal to 12 years of education (56.4%), were Catholic (57.2%), married or living with a partner (79.2%), and borned in Portugal (74.5%). Approximately 82% of the participants were employed, just over half considered their income to be sufficient (51.7%) and perceived themselves as belonging to the low or lower-middle social class (58.4%). Compared to the caregivers of

vaccinated children, those of unvaccinated children were older (over 40 years of age 71.7% *vs.* 31.8%, $p \leq 0.001$), had a higher educational level (more than 12 years of education 56.3% *vs.* 34.1%, $p = 0.011$), born outside Portugal (46.9% *vs.* 9.4%, $p \leq 0.001$), and had no religious affiliation (46.8% *vs.* 24.1%, $p \leq 0.001$). There were no statistically significant differences between caregivers who vaccinated and those who did not vaccinate children regarding marital status, occupational status, perceived income adequacy, and subjective social class.

Table 2 shows the main factors associated with the vaccination refusal of children. The gender of caregivers was tested as a potential confounder of the association, which was not verified. After adjustment for all of the variables significantly associated with vaccination refusal, only the associations for age, country of origin, and religious affiliation remained statistically significant. Therefore, the vaccination refusal of children was significantly more frequent among older caregivers (> 40 *vs.* ≤ 30 years, aOR = 5.98, 95% CI 1.32-27.00) and

Table 1. Characteristics of participants according to the vaccination of children under their care

	Total	Unvaccinated	Vaccinated	
	n = 149	n = 64	n = 85	
	n (%)	n (%)	n (%)	*p*
Gender				
Male	31 (20.8)	19 (29.7)	12 (14.1)	
Female	118 (79.2)	45 (70.3)	73 (85.9)	0.035
Age (years)				
≤ 30	15 (10.3)	4 (6.7)	11 (12.9)	
31-40	60 (41.4)	13 (21.7)	47 (55.3)	
> 40	70 (48.3)	43 (71.7)	27 (31.8)	≤ 0.001
Education (years)				
≤ 12	84 (56.4)	28 (43.8)	56 (65.9)	
> 12	65 (43.6)	36 (56.3)	29 (34.1)	0.011
Marital status				
Married/living with a partner	118 (79.2)	47 (73.4)	71 (83.5)	
Single	15 (10.1)	7 (10.9)	8 (9.4)	
Other*	16 (10.7)	10 (15.6)	6 (7.1)	0.218
Occupational status				
Employed	122 (81.9)	49 (76.6)	73 (85.9)	
Other	27 (18.1)	15 (23.4)	12 (14.1)	0.212
Perceived income adequacy				
Insufficient	72 (48.3)	35 (54.7)	37 (43.5)	
Sufficient	77 (51.7)	29 (45.3)	48 (56.5)	0.237
Subjective social class				
Low/middle-low	87 (58.4)	35 (54.7)	52 (61.2)	
High/middle-high	35 (23.5)	13 (20.3)	22 (25.9)	
None/prefer not to answer	27 (18.1)	16 (25.0)	11 (12.9)	0.159
Country of origin				
Portugal	111 (74.5)	34 (53.1)	77 (90.6)	
Other†	38 (25.5)	30 (46.9)	8 (9.4)	≤ 0.001
Religious affiliation				
None	49 (33.8)	29 (46.8)	20 (24.1)	
Catholic	83 (57.2)	22 (35.5)	61 (73.5)	
Other‡	13 (9.0)	11 (17.7)	2 (2.4)	≤ 0.001

* This category includes divorced and widowed individuals.
† This category includes Angola, Armenia, Brazil, France, Guinea Bissau, Romania, Russia, São Tome and Príncipe, Spain, Ukraine, and Venezuela.
‡ This category includes the Islamic, Eastern Orthodox, and Jehovah Witness religions.
The total may not add up to 149 participants, 64 caregivers of unvaccinated children, and 85 caregivers of vaccinated users due to missing values. In age, education, and marital status, the total percentage for unvaccinated children does not reach 100% due to rounding.

those who did not born in Portugal (non-Portuguese *vs.* Portuguese, aOR = 5.40, 95% CI 1.80-16.16). Vaccination refusal was less likely to occur among Catholics (Catholic *vs.* no religious affiliation, aOR = 0.25, 95% CI 0.09-0.68). Table 3 shows the frequency distribution of the perceived reasons that may justify the vaccination refusal of children according to the position of the respondents as caregivers of vaccinated or unvaccinated children. Almost half of the caregivers of unvaccinated children (48.4%) and nearly one-third of caregivers of vaccinated users (30.6%) mentioned a fear of the side effects and consequences of vaccines as a major reason for caregivers refusing the administration of vaccines to their children. Over one-third (37.5%) of caregivers of unvaccinated children also reported vaccines as being not safe or effective, while nearly half of the caregivers of vaccinated users (49.4%) reported no reasons justifying vaccination refusal.

Table 2. Factors associated with the vaccination refusal of children (n = 141)

	Crude odds ratio (95% confidence interval)	Adjusted odds ratio* (95% confidence interval)
Age (years)		
≤ 30	1	1
31-40	0.76 (0.21-2.79)	0.76 (0.17-3.45)
> 40	4.38 (1.27-15.16)	5.98 (1.32-27.00)
Education (years)		
≤ 12	1	1
> 12	2.48 (1.27-4.84)	1.37 (0.56-3.33)
Country of origin		
Portugal	1	1
Other	8.49 (3.53-20.44)	5.40 (1.80-16.16)
Religious affiliation		
None	1	1
Catholic	0.25 (0.12-0.53)	0.25 (0.09-0.68)
Other	3.79 (0.76-18.99)	1.28 (0.19-8.86)

* Adjusted for all of the variables.

Discussion

The Baixo Vouga health centers group presented a high vaccination coverage with only 0.2% of children under 16 years of age not fully complying with the national immunization program at the end of 2017. Although this figure is lower than the minimum rates of vaccination delay or refusal estimated in a recent literature review,[9] our study showed the persistence of fears regarding the side effects and consequences of vaccines, and doubts about the safety or effectiveness of vaccines. These perceptions were mentioned by the caregivers who participated in this study as reasons that may justify vaccination refusal and are in line with the results of previous studies conducted among several European populations.[37-39] This conclusion is also supported by the fact that the vaccine against the human *papillomavirus* infection has been the most refused, a decision that is often associated with concerns about its safety and, in particular with the fear of side effects and long-term consequences.[7,39]

The results of the present study also demonstrated that being over 40 years of age and a have borned outside Portugal were directly associated with the vaccination refusal of children, while being Catholic was inversely associated with this practice. Other authors[32] also reported lower levels of confidence in vaccine safety among atheists/agnostics compared to Catholics. The high levels of confidence of Portuguese citizens in the importance, safety, and effectiveness of vaccination, and its compatibility with their religious affiliations[32] may explain the fact that the country of origin and religious affiliation emerged as determinant factors toward vaccination refusal.

The statistical effect found for education, with caregivers of unvaccinated children often having a higher level of education than those of vaccinated children, is

Table 3. Frequency distribution of the perception of the reasons that may justify the vaccination refusal of the children according to the vaccination of children under their care

Reasons	Unvaccinated n = 64 n (%)	Vaccinated n = 85 n (%)	Total n = 149 n (%)
Fear of the side effects and consequences of vaccines	31 (48.4)	26 (30.6)	57 (38.3)
Vaccines are not safe or effective	24 (37.5)	5 (5.9)	29 (19.5)
There is no reason to refuse vaccination	11 (17.2)	42 (49.4)	53 (35.6)
Religious/ideological beliefs	9 (14.1)	12 (14.1)	21 (14.1)
Number of vaccines administered at a very early age	9 (14.1)	1 (1.2)	10 (6.7)
Access to contradictory vaccine information	7 (10.9)	8 (9.4)	15 (10.1)
No need to vaccinate healthy children	5 (7.8)	2 (2.4)	7 (4.7)
Lack of information about vaccination	4 (6.3)	9 (10.6)	13 (8.7)
Other	4 (6.3)	2 (2.4)	6 (4.0)

The variation in total responses (unvaccinated = 104 and vaccinated = 107) is because some caregivers reported only one reason (instead of two reasons) to justify the vaccination refusal of their children.

consistent with what is observed in the literature.[38] However, in this study, this seems to be explained by the effect of age, country of origin and religious affiliation, which were the most relevant demographic and socioeconomic indicators for vaccination refusal. Other authors[41] call for the need to interpret with caution the existence of significant associations between religious affiliations and the decision-making process regarding vaccination as there are very few religious groups that explicitly reject vaccination. Most hesitations and vaccination refusals allegedly attributed to religious affiliations have, in fact, originated in distrust regarding the safety of vaccines or personal opinions.

The exclusive analysis of caregivers of children registered in the Baixo Vouga health centers group and the relatively low proportion of participation, mainly due to outdated telephone numbers in the administrative records of children, limit the generalization and interpretation of the results. Comparability among groups of caregivers may have been reduced because there was no matching for specific characteristics (*e.g.* age and education) of the caregivers of children who have fully complied with the national immunization program and those who have not complied. It would also be necessary to conduct an in-depth analysis of the reasons mentioned by caregivers to refuse their children vaccination in a context in which social desirability should be considered in the justifications given by caregivers of unvaccinated children. Future studies may systematize quantitative and qualitative approaches to better understand the decision for vaccination refusal. Nonetheless, this study contributed to identify the target groups of future interventions for the promotion of vaccination - older and non-Portuguese caregivers - as well as the contents and preferential messages to be disseminated in future communication campaigns - scientifically rigorous, reliable, and comprehensible information on the risks and benefits of vaccines.

The Baixo Vouga health centers group presented a high vaccination coverage, but the persistence of doubts and fears regarding this medical act among the caregivers of children calls for the need to invest in communication campaigns on the risks and benefits of vaccines to disseminate knowledge and reduce non-adherence to vaccination. Considering that health professionals are the main source of information on which caregivers rely for answering their doubts and from whom they expect clear answers, it is crucial to reinforce spaces for debate and training on intervention strategies to address hesitation in vaccination so that these professionals can inform, clarify, and advise caregivers regarding vaccination. Furthermore, it is also important to promote vaccination among older and non-Portuguese caregivers, using, for example, child health appointments to promote information, and implement debate sessions about the doubts and concerns of caregivers regarding vaccination.

WHAT THIS STUDY ADDS

- The Baixo Vouga health centers group presented a high vaccination coverage.
- The vaccine against the human *papillomavirus* infection has been the most refused.
- The caregivers age, country of origin, and religious affiliation were the most relevant predictors of vaccination refusal.
- Doubts and fears regarding the side effects, consequences, safety, or effectiveness of vaccines persist.
- Improvements on the vaccination awareness of caregivers depend on training providers' communication skills and developing health campaigns.

Conflicts of Interest

The authors declare that there were no conflicts of interest in conducting this work.

Funding Sources

There were no external funding sources for the realization of this paper.

Protection of human and animal subjects

The authors declare that the procedures followed were in accordance with the regulations of the relevant clinical research ethics committee and with those of the Code of Ethics of the World Medical Association (Declaration of Helsinki).

Provenance and peer review

Not commissioned; externally peer reviewed

Confidentiality of data

The authors declare that they have followed the protocols of their work centre on the publication of patient data.

References

1. Manfredi P, Posta PD, d'Onofrio A, Salinelli E, Centrone F, Meo C, et al. Optimal vaccination choice, vaccination games, and rational exemption: An appraisal. Vaccine 2009;28:98-109. doi: 10.1016/j.vaccine.2009.09.109.
2. Eskola J, Duclos P, Schuster M, MacDonald NE. How to deal with vaccine hesitancy? Vaccine 2015;33:4215-7. doi: 10.1016/j.vaccine.2015.04.043.
3. World Health Organization. Immunization coverage fact sheet [accessed 15 November 2017]. Available at: http://www.who.int/mediacentre/factsheets/fs378/en/
4. Direção Geral da Saúde. Programa nacional de vacinação: Perguntas e respostas [accessed 30 October 2017]. Available at: https://www.dgs.pt/paginas-de-sistema/saude-de-a-a-z/

programa-nacional-de-vacinacao/perguntas-e-respostas.aspx
5. Shimi E. Childhood immunization refusal: The return of vaccine-preventable diseases. J Vaccines Vaccin 2012;3:8. doi: 10.4172/2157-7560.1000e115.
6. Direção Geral da Saúde. Programa Nacional de Vacinação 2017. Norma nº. 16/2016 (16/12/2016). Lisboa: DGS; 2016.
7. Gilkey MB, Reiter PL, Magnus BE, McRee AL, Dempsey AF, Brewer NT. Validation of the vaccination confidence scale: A brief measure to identify parents at risk for refusing adolescent vaccines. Acad Pediatr 2016;16:42-9. doi: 10.1016/j.acap.2015.06.007.
8. Leask J. Target the fence-sitters. Nature 2011;473:443-5. doi: 10.1038/473443a.
9. Leask J, Kinnersley P, Jackson C, Cheater F, Bedford H, Rowles G. Communicating with parents about vaccination: A framework for health professionals. BMC Pediatr 2012;12:154. doi: 10.1186/1471-2431-12-154.
10. Lehmann BA, de Melker HE, Timmermans DRM, Mollema L. Informed decision making in the context of childhood immunization. Patient Educ Couns 2017;100:2339-45. doi: 10.1016/j.pec.2017.06.015.
11. Dube E, Laberge C, Guay M, Bramadat P, Roy R, Bettinger J. Vaccine hesitancy: An overview. Hum Vaccin Immunother 2013;9:1763-73. doi: 10.4161/hv.24657.
12. Leça A, Freitas G. Vacinas e programa nacional de vacinação: Ganhos em saúde e questões atuais. J Med Fam 2017;8:6-9.
13. Report of the SAGE working group on vaccine hesitancy [accessed 06 December 2017]. Available at: http://www.who.int/immunization/sage/meetings/2014/october/SAGE_working_group_revised_report_vaccine_hesitancy.pdf
14. Amin AB, Bednarczyk RA, Ray CE, Melchiori KJ, Graham J, Huntsinger JR, et al. Association of moral values with vaccine hesitancy. Nat Hum Behav 2017;1:873-80. doi: 10.1038/s41562-017-0256-5.
15. Dube E, Gagnon D, Nickels E, Jeram S, Schuster M. Mapping vaccine hesitancy-country-specific characteristics of a global phenomenon. Vaccine 2014;32:6649-54. doi: 10.1016/j.vaccine.2014.09.039.
16. MacDonald NE, Sage Working Group on Vaccine Hesitancy. Vaccine hesitancy: Definition, scope and determinants. Vaccine 2015;33:4161-4. doi: 10.1016/j.vaccine.2015.04.036.
17. Guidry JP, Carlyle K, Messner M, Jin Y. On pins and needles: How vaccines are portrayed on Pinterest. Vaccine 2015;33:5051-6. doi: 10.1016/j.vaccine.2015.08.064.
18. Betsch C, Renkewitz F, Betsch T, Ulshofer C. The influence of vaccine-critical websites on perceiving vaccination risks. J Health Psychol 2010;15:446-55. doi: 10.1177/1359105309353647.
19. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK. Healthcare information on YouTube: A systematic review. Health Informatics J 2015;21:173-94. doi: 10.1177/1460458213512220.
20. Weiner JL, Fisher AM, Nowak GJ, Basket MM, Gellin BG. Childhood immunizations: First-time expectant mothers' knowledge, beliefs, intentions, and behaviors. Am J Prev Med 2015;49:S426-34. doi: 10.1016/j.amepre.2015.07.002.
21. Yaqub O, Castle-Clarke S, Sevdalis N, Chataway J. Attitudes to vaccination: A critical review. Soc Sci Med 2014;112:1-11. doi: 10.1016/j.socscimed.2014.04.018.
22. Kata A. Anti-vaccine activists, Web 2.0, and the postmodern paradigm - an overview of tactics and tropes used online by the anti-vaccination movement. Vaccine 2012;30:3778-89. doi: 10.1016/j.vaccine.2011.11.112.
23. Larson H, Leask J, Aggett S, Sevdalis N, Thomson A. A Multidisciplinary research agenda for understanding vaccine-related decisions. Vaccines 2013;1:293-304. doi: 10.3390/vaccines1030293.
24. Sodemann M. Celebrities, cows and contagious ideas about vaccines. Scand J Public Health 2018;46:189-93. doi: 10.1177/1403494817724982.
25. Justich PR. Refusal to have children vaccinated: A challenge to face. Arch Argent Pediatr 2015;113:443-8. doi: 10.5546/aap.2015.443.
26. Ames HM, Glenton C, Lewin S. Parents' and informal caregivers' views and experiences of communication about routine childhood vaccination: A synthesis of qualitative evidence. Cochrane Database Syst Rev 2017;2:CD011787. doi: 10.1002/14651858.CD011787.pub2.
27. Harmsen IA, Mollema L, Ruiter RA, Paulussen TG, de Melker HE, Kok G. Why parents refuse childhood vaccination: A qualitative study using online focus groups. BMC Public Health 2013;13:1183. doi: 10.1186/1471-2458-13-1183.
28. Glanz JM, Wagner NM, Narwaney KJ, Shoup JA, McClure DL, McCormick EV, et al. A mixed methods study of parental vaccine decision making and parent-provider trust. Acad Pediatr 2013;13:481-8. doi: 10.1016/j.acap.2013.05.030.
29. Masaryk R, Hatokova M. Qualitative inquiry into reasons why vaccination messages fail. J Health Psychol 2017;22:1880-8. doi: 10.1177/1359105316656770.
30. Mrozek-Budzyn D, Kieltyka A, Mroz E. Opinions about vaccination among mothers who delivered newborns in two hospitals in Krakow and Myslenice. Przegl Epidemiol 2016;70:471-8.
31. Taddio A, Ipp M, Thivakaran S, Jamal A, Parikh C, Smart S, et al. Survey of the prevalence of immunization non-compliance due to needle fears in children and adults. Vaccine 2012;30:4807-12. doi: 10.1016/j.vaccine.2012.05.011.
32. Larson H, de Figueiredo A, Karafillakis E, Rawal M. State of vaccine confidence in the EU 2018. Luxembourg: European Union; 2018.
33. Direção Geral da Saúde. Sarampo: Atualização em 6 de julho de 2017 [accessed 13 December 2017]. Available at: https://www.dgs.pt/paginas-de-sistema/saude-de-a-a-z/sarampo1/boletim-epidemiologico.aspx
34. Direção Geral da Saúde. Sarampo: Atualização em 28 de maio de 2018. [accessed 29 February 2019]. Available at: https://www.dgs.pt/paginas-de-sistema/saude-de-a-a-z/sarampo1/boletim-epidemiologico.aspx
35. Chung Y, Schamel J, Fisher A, Frew PM. Influences on immunization decision-making among us parents of young children. Matern Child Health J 2017;21:2178-87. doi: 10.1007/s10995-017-2336-6.
36. Stemler S. An overview of content analysis. Pract Asses Res

Eval 2000;7;17. doi: 10.7275/z6fm-2e34.
37. European Centre for Disease Prevention and Control. Rapid literature review on motivating hesitant population groups in Europe to vaccinate. Stockholm: ECDC; 2015.
38. Larson HJ, Jarrett C, Eckersberger E, Smith DM, Paterson P. Understanding vaccine hesitancy around vaccines and vaccination from a global perspective: A systematic review of published literature, 2007-2012. Vaccine 2014;32:2150-9. doi: 10.1016/j.vaccine.2014.01.081.
39. Karafillakis E, Larson HJ. The benefit of the doubt or doubts over benefits? A systematic literature review of perceived risks of vaccines in European populations. Vaccine 2017;35:4840-50. doi: 10.1016/j.vaccine.2017.07.061.
40. Cobos Munoz D, Monzon Llamas L, Bosch-Capblanch X. Exposing concerns about vaccination in low- and middle-income countries: A systematic review. Int J Public Health 2015;60:767-80. doi: 10.1007/s00038-015-0715-6.
41. Grabenstein JD. What the world's religions teach, applied to vaccines and immune globulins. Vaccine 2013;31:2011-23. doi: 10.1016/j.vaccine.2013.02.026.

Fatores e Razões Associadas com a Recusa de Vacinação de Crianças

Resumo:
Introdução: A recusa vacinal constitui um importante problema de saúde pública, apelando-se a ações que promovam a confiança na importância, segurança e efetividade das vacinas. Pretendemos identificar os fatores sociodemográficos associados e explorar as razões invocadas para a não vacinação de crianças pelos seus cuidadores.
Métodos: Entre maio e junho de 2018, aplicamos um questionário por telefone a 149 cuidadores de utentes com menos de 16 anos inscritos num agrupamento de centros de saúde português, dos quais 64 recusaram pelo menos uma vacina do Programa Nacional de Vacinação por motivos não médicos, segundo informação dos Serviços Partilhados do Ministério da Saúde. As associações foram estimadas usando regressão logística multivariada.
Resultados: A não vacinação foi mais frequente entre cuidadores com mais de 40 anos (*odds ratio* ajustado 5,98, intervalo de confiança 95% 1,32-27,00) e com naturalidade não portuguesa (*odds ratio* ajustado 5,40, intervalo de confiança 95% 1,80-16,16). É menos provável que os católicos recusem a vacinação (*odds ratio* ajustado 0,25, intervalo de confiança 95% 0,09-0,68). O receio dos efeitos secundários e das consequências das vacinas foi invocado como motivo para a não vacinação por 48,4% dos cuidadores de utentes não vacinados e 30,6% dos cuidadores de utentes vacinados. A falta de segurança ou efetividade das vacinas foi referida por 37,5% dos cuidadores de utentes não vacinados, enquanto 49,4% dos cuidadores de utentes vacinados consideram não existir razões para a recusa vacinal.
Discussão: Importa promover a vacinação entre cuidadores mais velhos e não portugueses, e reforçar campanhas de comunicação sobre os benefícios e os riscos das vacinas. Este estudo contribuiu para identificar públicos-alvo e conteúdos preferenciais de futuras estratégias de promoção da vacinação.

Palavras-chave: Cobertura Vacinal; Inquéritos e Questionários; Movimento contra Vacinação; Portugal; Programas de Imunização; Recusa de Vacinação/estatística & dados numéricos