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Factors determining parents' decision to follow their children's recommended vaccination schedule – preliminary study

Czynniki determinujące decyzje rodziców do wykonania szczepień zalecanych u dzieci – doniesienia wstępne

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(b) *collecting materials*
(c) *statistics*
(d) *text and bibliography compilation*
(e) *substantive supervision of the study*
(f) *participation in the discussion*

ABSTRACT

Introduction. Recommended vaccination plays an important role in reducing the risk of complications, which may accompany many dangerous diseases. However, they also generate numerous ambivalent emotions among parents. The aim of the study was to evaluate the factors which might influence parents' decision to have their children given the recommended vaccines.

Material and methods. 100 parents of children aged between 0 and 5 took part in the study. The survey was carried out by means of a diagnostic poll with the application of a self-designed research questionnaire.

Results. Parents' level of education and knowledge has a significant influence on positive decisions concerning recommended vaccination of their children. The advocacy of anti-vaccination movements does not entail the decision about not having their children vaccinated.

Conclusions. Promotional campaigns should be launched in the media, in which solid information should be provided by doctors and nurses. Popularizing free vaccination campaigns among parents will increase the number of vaccinated children.

Key words: recommended vaccination, children

STRESZCZENIE

Wstęp. Szczepienia zalecane stanowią istotny element w zmniejszaniu ryzyka powikłań związanych z zachorowaniem na wiele groźnych chorób. Budzą jednak wiele sprzecznych emocji u rodziców. Celem badań była ocena czynników mogących mieć wpływ na podjęcie przez rodziców decyzji o zaszczepieniu dzieci zalecanymi szczepionkami.

Materiał i metody. Badaniem objęto 100 rodziców dzieci wieku 0-5 roku życia. Badania zostały przeprowadzone metodą sondażu diagnostycznego z wykorzystaniem autorskiego kwestionariusza ankiety.

Wyniki. Poziom wykształcenia i wiedzy rodziców ma znaczący wpływ na podejmowanie pozytywnych decyzji o szczepieniu dziecka zalecanymi szczepionkami. Poparcie dla działalności ruchów antyszczepionkowych nie decyduje o niezaszczepieniu dziecka.

Wnioski. Należy podjąć działania propagujące znaczenie szczepień poprzez udzielanie rzetelnych informacji przez zespół lekarsko-pielęgniarski z wykorzystaniem mediów. Propagowanie wśród rodziców bezpłatnych akcji szczepionkowych zwiększy szczepialność wśród dzieci.

Słowa kluczowe: szczepienie zalecane, dzieci

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INTRODUCTION

The vaccination schedule for Poland assigns basic prophylactic vaccination, which is compulsory (Dz.U. Nr 180 poz.1215; Dz. U. Nr 182 poz. 1086). Apart from compulsory vaccination, parents have a wide variety of additional recommended vaccines to choose from and, although they are not free , many parents decide to have them given to their children. Nowadays there is a vast assortment of vaccines available on the market and their administration should be a common decision of parents and pediatricians [1–6]. New possibilities for preventing more and more diseases, which have been emerging recently, give rise not only to public discussion about recommended vaccination but also to fierce opposition from those who start campaigns against artificial immunization of children. In the 1990s there appeared numerous hypotheses about the potential harmfulness of vaccination, which have not been scientifically proved so far [7–10]. Parents often tend to base their opinions about health only on press coverage, radio and television programmes and numerous web portals. As a result of media chaos, they might lose their confidence in vaccination and see it only as a potential threat to their children. Due to a large amount of contradictory information which surrounds parents they often feel confused and worried about their children's health condition and also have a lot of doubts about vaccines and their impact. Parents may present various attitudes towards vaccination, ranging from full confidence and following recommended schedules to complete refusal to have their children given vaccination, but all of them expect competent and honest information about vaccination and possible side effects from the medical staff. Therefore, it is important to reiterate that only thorough knowledge about obligatory as well as recommended vaccination spread by medical staff might help parents make their decisions and confirm their validity [11–14]. Medical staff directly responsible for administering prophylactic vaccination of both children and adults is obliged to continuously broaden their knowledge in this field, as only in this way can they be a source of knowledge and support for parents. Similar attitude should be expected from other staff responsible for taking care of children and pregnant women (antenatal clinics, nurseries, kindergartens).

The aim of the study was to evaluate the factors which might influence parents' decisions to have recommended vaccination for their children.

MATERIAL AND METHODS

The study was carried out in the group of 100 parents, both mothers and fathers, who had at least one child aged between 0 and 5. The respondents were parents who made use of medical services in one of Non-public Health Care Institutions in Cracow in 2014. The data was collected during their visits at the paediatric surgery. The group consisted predominantly of women – 66% (N = 66). The majority of the respondents 56% (N = 56) were parents aged between 31 and 40, 23% (N = 23) of them were aged between 20 and 30 and 21% (N = 21) were over 40. Parents who were raising their children in a nuclear family made up a vast majority 90% (N = 90).

Participation in the study was voluntary. The study was carried out by means of a diagnostic survey with the application of a self-designed questionnaire, which consisted of demographics and a general part (23 questions, most of which were multiple-choice ones). Part A was completed by parents (N = 62) whose children received at least one recommended vaccination, whereas part B was for parents (N = 38) who did not have any optional vaccines for their children. The level of knowledge about vaccination and knowledge about possible complications was evaluated on the basis of the number of points that the respondents scored. For the correct answer the respondent could score one point. The maximum number of points was 4 as far as knowledge about vaccination was concerned and 7 points for the part concerning possible complications following vaccinations as well as complications caused by lack of vaccination. Afterwards qualitative and quantitative analyses of the results were carried out. In statistical analysis Microsoft Office Excel 2003 and Statgraphics 5.1 programmes were used. In order to verify the significance of differences between particular groups the Chi2 independence test was applied and the significance level was estimated as 0.05.

RESULTS

Most parents who took part in the study were university graduates – 63% (N = 63), 29% (N = 29) – completed secondary education, 7% (N = 7) – vocational education and only 1% (N = 1) – elementary education. Statistically significant relationship ($\chi^2 = 9.442$; df = 3; $p = 0.024$) was found between parents' education and their decision to have their children given the recommended vaccination. The

higher parents' education, the more often children were vaccinated.

As many as 55% (N = 55) of respondents defined their financial status as good, 37% (N = 37) as quite good and 5% (N = 5) as very good. The others claimed their financial status was bad – 2% (N = 2) or very bad – 1% (N = 1).

All respondents who defined their financial status as very good had recommended vaccination for their children. 69.09% (N = 38) of parents who claimed their financial status was good also decided to administer optional vaccination to their children. As far as the group defining their financial status as quite good was concerned, 51.36% (N = 19) decided to take advantage of recommended vaccination. Statistical analysis proved a statistically significant relationship between family financial status and their decision to administer recommended vaccination to their children ($\chi^2 = 10.914$; df = 4; p = 0.0275). 93% (N = 93) of the respondents were aware of the possibility of administering recommended vaccination. No significant relationship was found between the awareness of the possibility of recommended vaccination for children and parents' sex (χ^2=0.099; df = 1; p = 0.7532).

In the evaluation based on the number of points scored in the questionnaire the level of knowledge about vaccination and knowledge about possible complications were classified as middle level. The analysis, which followed, shows that the highest number of respondents – 44% (N = 44) correctly answered three questions and only 7% (N = 7) scored the maximum number of points. The results of the research and the respondents' knowledge about vaccination including possible complications are presented in fig. 1. and fig. 2. Statistical analysis proved that the sex of the respondents had no significant influence ($\chi^2 = 6.795$; df = 4; p = 0.1471) on the level of their knowledge about vaccination and possible complications which may follow ($\chi^2 = 6.795$; df = 4; p = 0.1471).

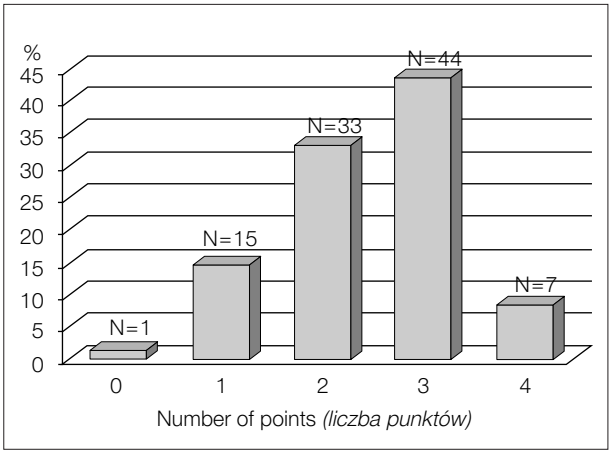


Fig. 1. Respondents' knowledge about vaccination
Ryc. 1. Wiedza respondentów dotycząca szczepień

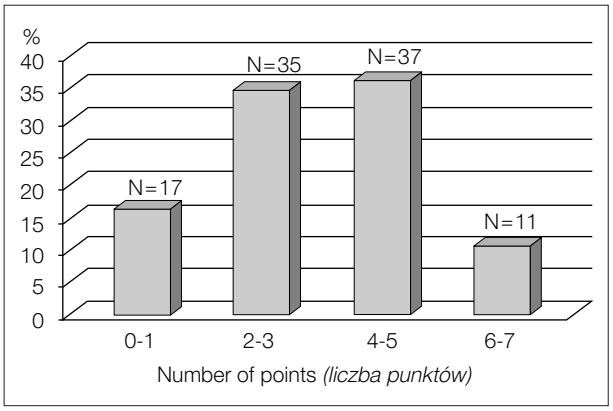


Fig. 2. The respondents' knowledge about the course of the disease and possible complications
Ryc. 2. Wiedza respondentów dotycząca przebiegu i powikłań chorobowych

The main source of knowledge about recommended vaccination for 87% (N = 87) of parents was the pediatrician, for 50% (N = 50) – the Internet, 43% (N = 43) claimed it was the nurse – details of the fig. 3 (it was possible to choose more than one answer). Statistical analysis proved no relation between respondents' knowledge and their sex ($\chi^2 = 8.377$; df = 7; p = 0.3006).

The information about vaccination which medical staff provided to parents was sufficient for 64% (N = 64) of respondents. Statistical analysis proved the incidence of a significant relationship ($\chi^2 = 16.673$; df = 5; p = 0.0052) between the respondents' sex and their level of satisfaction with the information about vaccination provided by medical staff. It was the men who were more likely to be satisfied with the information received.

The vast majority of parents – 87% (N = 87) have not observed their children suffering from any undesirable side-effects which would require medical intervention. Yet, as many as 67% (N = 67) of the respondents were afraid that vaccinating their children would involve undesirable postvaccination reaction. No statistically significant relations were found between the respondents' sex and their fears that their children may suffer from undesirable postvaccination reaction ($\chi^2 = 1.137$; df = 5; p = 0.9508).

The vast majority of the respondents – 86% (N = 86) came across the ideology spread by antivaccination activists. 50% (N = 50) of the parents had no opinion on this issue, 31% (N = 31) were strongly against such social campaigns and 5%

(N = 5) of the respondents were familiar with this ideology and gave it their full support.

As many as 80.65% (N = 25) of the respondents who were against anti-vaccination ideology administered recommended vaccination for their children. 58% (N = 29) of these parents who had no opinion on anti-vaccination movements also administered supplementary immunization to their children. What is more, 60% (N = 3) of the respondents who voiced their support for anti-vaccination movements had their children vaccinated in the recommended way.

62 parents who had had recommended vaccination for the children completed the questionnaire as a result of the analysis of part A.

The highest number of parents – 69.35% (N = 43) decided to have their children immunized against pneumococcal infections. 45.16% (N = 28) of the respondents vaccinated their children against meningococcal infections and the same number chose to vaccinate them against rotavirus diarrhea. Fewer those surveyed decided to have their children vaccinated against chicken pox – 24.19% (N = 15), hepatitis A – 22.58% (N = 14) and flu – 12.90% (N = 8). The least frequent vaccine was the one against tick-borne meningitis and encephalitis – 9.68% (N = 6). For 56.45% (N = 35) of the respondents the fact that their children were going to stay in the nursery or kindergarten had no direct influence on their positive decision about vaccination, whereas for the others – 43.55% (N = 27), it was a determining factor (fig.4.).

Only 27.42% (N = 17) of parents took advantage of the recommended vaccination for their children during various free vaccination programmes, although as many as 82.26% (N = 51) of them claimed that they would be willing to have their children vaccinated against other diseases if they were offered such a chance free of charge. Only 17.74% (N = 11) of those surveyed declared that they definitely would not vaccine their children.

A significant number of respondents – 43.55% (N = 27) of the respondents found the vaccination costs to be an average burden on their family budget. For 9.68% (N = 6) of parents the purchase of the vaccine meant a very heavy financial burden and for 33.87% (N = 21) it was a heavy burden. A detailed statistical analysis found no significant relation between the sex of the respondents and their opinions about their family budget being burdened by the purchase of vaccines ($\chi^2 = 1.29$; df = 3; p = 0.7315).

79.02% (N = 49) of those surveyed who had optional vaccination for their children declared that they would recommend supplementary immunization of children to other parents.

The analysis of part B of the questionnaire completed by 38 parents who followed the obligatory vaccination schedule but did not have any other available vaccination.

As many as 52.63% (N = 20) of those surveyed who did not have their children vaccinated claimed that financial issues had a decisive impact on their decisions., whereas 44.37% (N = 18) of them claimed that their decisions were not influenced by financial issues. No statistically significant relations were found between the respondents' sex and their opinion on the possibility to administer recommended vaccination to their children in the future ($\chi^2 = 6.606$; df = 4; p = 0.1583).

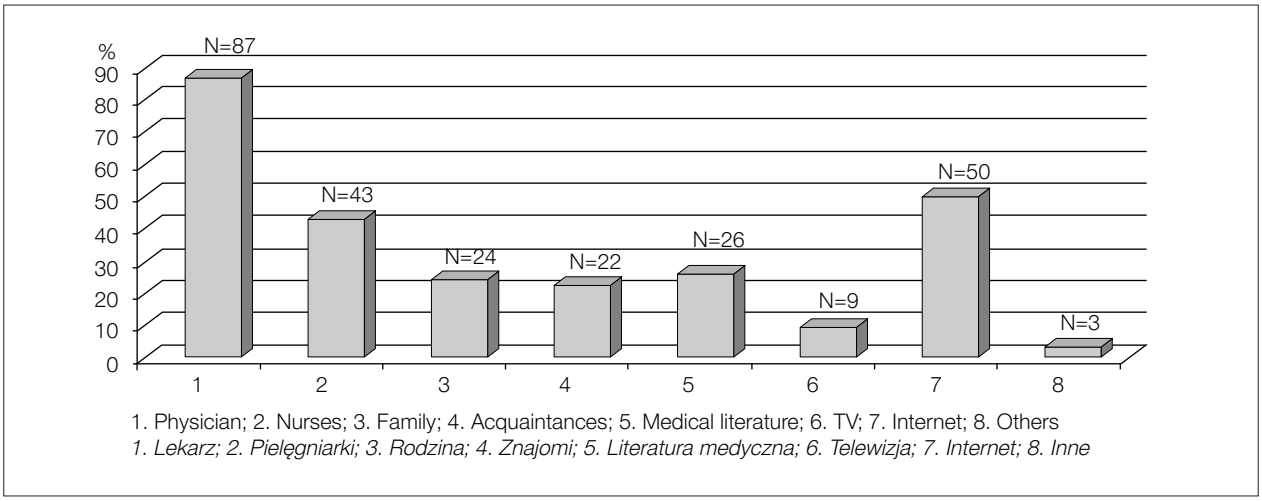
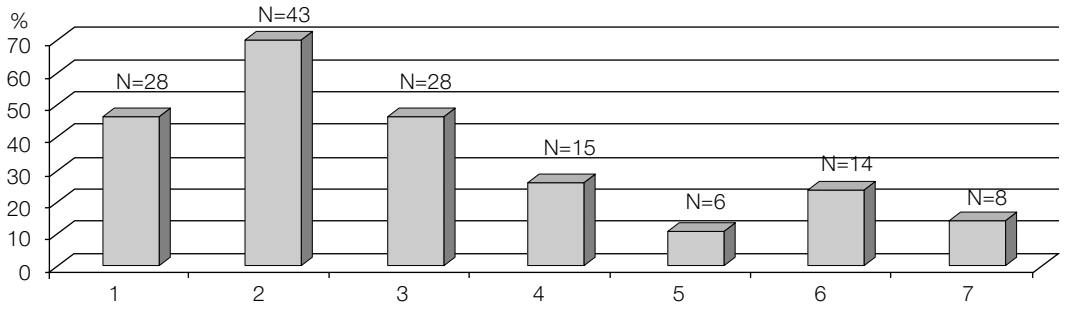


Fig. 3. Sources of knowledge about recommended vaccination
Ryc. 3. Źródła wiedzy rodziców dotyczących szczepień zalecanych



1. Rotavirus diarrhea; 2. Pneumococcal infectio; 3. Meningocooal infection; 4. Chiceknpox; 5. Tick-borne meningitis; 6. Hepatitis; 7. Influenza
1. Biegunka rotawirusowa; 2. Infekcje spowodowane pneumokokami; 3. Infekcje spowodowane meningokokami; 4. Ospa wietrzna; 5. Kleszczowe zapalenie opon mózgowych; 6. Zapalenie wątroby typu A; 7. Grypa

Fig. 4. The most frequent recommended vaccination
Ryc. 4. Najczęściej podawane szczepienia zalecane

The results of the study lead to the conclusion that a significant number of those surveyed 76.32% (N = 29) who did not have their children vaccinated would be likely to do it if the vaccines were available free of charge. Only 23.68% (N = 9) of the respondents would not decide to immunize their children even if the vaccines were free. According to 84.21% (N = 32) of parents, the decision not to have their children vaccinated was not influenced by medical contraindications. Only 15.79% (N = 6) of the respondents could not have their children vaccinated because of medical contraindications. Despite not having their children vaccinated, 60.53% (N = 23) of the respondents were not afraid that their children may be taken ill. Only 39.47% (N = 15) of the respondents expressed some fears concerning their children's health. Half of the group of respondents who did not have their children vaccinated 50% (N = 19) did not consider the possibility of having the recommended vaccination for their children in the future.

For 84.21% (N = 32) of the respondents activities of anti-vaccinations movements had no influence on their decision not to have their children vaccinated. The highest percentage of children with recommended vaccination was observed in the cases when the respondents decided to take advantage of combined vaccines within the obligatory vaccination schedule, even if these vaccines were not free – 83.33% (N = 24). Those surveyed, who during obligatory vaccination not only for a fee combined vaccines but also vaccines available at the vaccination clinic free of charge, in 67.31% (N = 52) of cases decided to have their children immunized with recommended vaccines. 70.83% (N = 24) of parents who during obligatory vaccination for their children only vaccines available free of charge did not decide to have their children immunized with any other vaccines.

Statistical analysis confirmed the relation between the type of vaccines used during obligatory vaccination and parents' decision to have their children vaccinated ($\chi^2 = 16.239$; df = 2; p = 0.0003).

In the group of children whose parents decided to apply recommended vaccination as many as 83.33% (N = 6) were vaccinated following the obligatory vaccination schedule but in a specialized vaccination clinic. Children who received recommended vaccination despite the fact that they did not follow the obligatory vaccination schedule, because of frequent infections, constituted a significant percentage – 70.00% (N = 10). Among the children who were vaccinated following the obligatory vaccination schedule, 59.52% (N = 84) received recommended vaccination as well. Following the obligatory vaccination schedule did not affect parents' decision about recommended vaccination for their children ($\chi^2 = 1.649$; df = 2; p = 0.4384). Neither did parents' fears concerning postvaccination reactions ($\chi^2 = 4.327$; df = 5; p = 0.5034).

DISCUSSION

The advances made in vaccinology, developing new vaccines and enhancing the existing ones can be seen as a chance to prevent numerous infectious diseases from spreading. Undeniably, the knowledge and attitude of parents towards immunization including recommended vaccination for their children

have an essential impact on vaccination of children's population. It can be concluded from the study, as from similar ones [15], that both mothers and fathers were aware of the possibility of administering recommended vaccination to their children. However, the study proved that the level of knowledge about vaccination itself, the course of diseases and complications which may accompany possible infections was not satisfactory. Interestingly, not all respondents were satisfied with the quality of information provided by medical staff, even though parents claimed that, apart from the media, doctors and nurses are the main source of knowledge about prophylactic vaccination. Similar results were obtained by authors of other studies [16-18]. Therefore, it is essential to take necessary measures so that medical staff can provide parents with detailed information on vaccination on a regular and solid basis. Moreover, doctors and nurses should focus on educating families, dispelling myths about vaccination and pointing out its positive aspects so that they could encourage and mobilize parents to have their children vaccinated. It seems appropriate to start such educational campaigns during the prenatal stage (in obstetrics and gynecological clinics) [19, 20]. The role of the media should not be underestimated – massive promotional campaigns based on scientific facts and emphasizing the importance of vaccination might be extremely successful. Unfortunately, the media are known to spread information in a thoughtless or even socially harmful way to meet the demand for sensation and the populist needs of the society, which might deplorably undo the remarkable achievements of vaccinology.

While analyzing the factors which might influence parents' decision on recommended vaccination to children, a relationship was discovered between parents' education and their positive decision about having their child immunized. The higher respondents' education, the greater likelihood of recommended vaccination. Another important factor responsible for positive decision about vaccination was the financial status of the family. Parents who declared a higher financial status of their family were more likely to recommend vaccination to their children. Mothers and fathers who decided not to have their children vaccinated, would have been more willing to do so if the vaccines were available free of charge. Similar conclusions appear in other studies [17, 21–23].

Factors such as the number of children in the family, the perspective of nursery or kindergarten care or fears concerning possible incidence of post-vaccination reaction had no significant influence on the decision about recommended vaccination. According to the study as well as to other sources, the most frequently applied vaccine is the one against pneumococcal infections [16, 22], which might be explained by extensive media coverage devoted to this issue. Parents who decided to have their children vaccinated by supplementary vaccination were more likely to choose chargeable combined vaccines. The highest percentage of children given the recommended vaccines was among the ones who, for various reasons, were taken care of at specialized vaccination clinics and received their obligatory vaccination there.

The analysis of the influence of anti-vaccination campaigns proved that a vast majority of parents who decided to immunize their children had heard about anti-vaccination ideas but did not approve of them. However, the influence of such campaigns should not be underestimated or ignored. Interestingly, over half of the parents who declared their support for anti-vaccination activists (support for anti-vaccination campaigns) had their children given the recommended vaccines. Similar conclusions can be found in the study by Jaroszewska [24]. No rational explanation of this attitude was found while examining the questionnaire answers. It could be concluded, however, that promotional campaign should be addressed also to the parents who declare their support for anti-vaccination ideas. It is also important to find out about the reasons responsible for such opinions. Perhaps lack of solid information or mistrust towards medical staff can explain such attitudes among parents. Undoubtedly, it is advisable to carry out more research in this area and in this group of respondents. It would help to choose specific actions aimed at a particular target [25–29].

CONCLUSIONS

1. Campaigns promoting recommended vaccination and focused on their importance should be launched involving solid detailed information provided by medical staff and appropriate media coverage.
2. Popularization of free vaccination campaigns may increase the interest in vaccinating children.
3. The role and authority of nurses as vaccination educators should be enhanced by means of broadening the knowledge and upgrading skills among members of this profession.

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