BELIEFS AND SENTIMENTS OF PARENTS VACCINATING THEIR CHILDREN – SMALL TOWN PERSPECTIVE IN POLAND: A PRELIMINARY STUDY

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SUMMARY

Objectives: Since 2009 the number of unvaccinated children in Poland has been regularly increasing. The purpose of the study was to learn what parents who decide to vaccinate their children feel and believe about their children's vaccines and in particular to find out how these sentiments and beliefs affect their attitude and decision-making with reference to vaccinations.

Methods: The interviews were conducted during an immunization visit of parents whose children are covered by immunization schedule; 53 parents aged 23 to 48 years took part in the study. Most study participants were high school or university graduates living in rural areas. Children were 1 week to 5 years old. Thematic analysis was used to analyse interview data.

Results: Identified factors shaping the parents' positive attitude to vaccination included conviction of necessity of vaccines (effective disease prevention, safety, favourable benefit-to-risk ratio, and concerns about the child). The general anti-vaccination belief was that vaccines are unnecessary. External factors, mainly authority figures and media broadcasts, affect parents' beliefs and decisions.

Conclusions: Various factors affect parents' decision concerning immunization of their children. Both compulsory and recommended vaccines should be provided free-of-charge. Choice overload should be reduced. Paediatricians should address parental vaccine hesitancy.

Key words: attitudes, beliefs, children, decision-making, immunization, vaccines

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INTRODUCTION

In Poland, there is a general obligation of immunization against selected diseases (1, 2). For children, the responsibility for fulfilling this obligation generally lies with the parents (legal or actual custodian (1).

The obligatory vaccination programme is announced annually in the form of the Chief Sanitary Inspector's Communication (3). The vaccination programme defines, in particular, the compulsory vaccinations and recommended vaccinations including the vaccination schedule as well as the general principles of performance and organization of vaccinations in Poland.

Immunization coverage among Polish children is stable and maintained at the level which ensures herd immunity (4). In 2019, immunization coverage rates for most mandatory vaccinations were between 92.6% and 97.7%. Despite the high immunization coverage, the number of unvaccinated children has increased since 2009. In 2015, over 16,000 children were not vaccinated, which is about 4,000 more than in 2014 and about four times more than in 2010 (4).

The purpose of the study was to learn what parents who decide to vaccinate their children feel and believe about their children's vaccines and in particular to find out how these sentiments and beliefs affect their attitude and decision-making with reference to vaccinations. Studying these issues in depth may help to adapt measures intended to strengthen the parents' belief in the necessity of vaccinations and to overcome an increasing dislike and reluctance towards prophylactic vaccination among Polish parents.

MATERIALS AND METHODS

The study was conducted between 18 February and 31 March 2016 in the Paediatric Clinic at the Primary Healthcare Polyclinic in the Independent Public Healthcare Facilities Complex, in the town of Przysucha of approximately 6,500 inhabitants (Masovian voivodship, Poland). A convenience sample of 53 parents of children required to undergo mandatory prophylactic vaccines, as per the annually updated immunization schedule, were invited to take part in the study.

Semi-structured interviews were conducted (data collected by PB). The audio-recorded statements of parents were transcribed verbatim. Thematic analysis was used to analyse the collected material (5).

The study was approved by the Ethics Committee at the Medical University of Warsaw, Poland.

RESULTS

Forty-five mothers and 8 fathers participated in the study. Demographic characteristics of the participating parents are presented in Table 1.

Most parents (38 individuals) attended vaccination appointments as per the immunization schedule. For 13 parents, slight delays of vaccination appointments resulted from the child's infections. In the case of 1 child, an appointment delay was caused by the child's prematurity, whereas one parent started to vaccinate his children according to the immunization schedule only after the oldest child (previously unvaccinated) had had pertussis.

Twenty-seven parents in the study claimed they had been advised to do the recommended vaccinations. Within this group, 7 parents decided to get these vaccinations, whereas 20 others refused. An important factor influencing the decision to vaccinate the child with recommended vaccines (particularly, pneumococcal and rotavirus vaccines) was the child's enrolment in the nursery or preschool. The decision not to vaccinate the child was mainly made for financial reasons; these vaccines are generally self-paid (parents used these vaccinations willingly if they were provided free-of-charge, e.g., for preterm babies). Other reasons included missed vaccination appointment (with the rotavirus vaccine), a belief that vaccination is unnecessary (e.g., parents were convinced that these vaccines would have been obligatory and reimbursed, had they been truly advisable), less confidence and more concerns than with compulsory vaccinations, and even dissuasion from vaccinations recommended by doctors. Sixteen parents received no information about recommended vaccines. Ten study participants provided no information on whether or not they had been told about the possibility to vaccinate their children against other diseases.

Most often, the parents obtained information about vaccinations from the Internet (18 people).

Table 1. *Demographic characteristics of parents (n = 53)*

Age range	23–48 years (median: 29 years)
Education – n (%)	
University degree	24 (45)
High school	22 (42)
Vocational	6 (11)
Junior high school	1 (2)
Elementary	0
Place of residence – n (%)	
Countryside	41 (77)
Town	12 (23)
Financial situation – n (%)	
Good	35 (66)
Average	18 (34)
Poor	0
Children's age range	1 week–5 years (median: 2 years)

Factors Shaping Parents' Positive Attitude to Vaccination

Most parents described themselves as vaccine advocates. The identified themes and subthemes along with a selection of representative responses concerning factors shaping the positive attitudes towards vaccinations are presented in Table 2.

Necessity of Vaccines

Parents were convinced that it was generally advisable to vaccinate children. Vaccines are good for children as they prevent the occurrence of infectious diseases or decrease their severity (Table 2, quote 1.1). Parents mainly base their belief in the efficacy of vaccines on the overheard information that non-vaccination causes recurrence of diseases that had been previously eliminated through immunization (Table 2, quotes 1.2 and 1.3), the incidence of diseases in countries where vaccinations are not commonly used (Table 2, quote 1.4), and the personal experience of disease in their unvaccinated child (Table 2, quote 1.5).

Overall, the parents believed that vaccines were safe, based on their own experience (Table 2, quotes 1.8–1.10). It was also important that vaccines are commonly used, well-tested, systematically improved and controlled (Table 2, quotes 1.6 and 1.7). Even if some parents feel that vaccines are not completely safe, they believe that benefits of vaccination outweigh any possible risks (Table 2, quotes 1.11 and 1.12). Apparently, the possibility to choose between self-paid and free vaccines consolidates the parent's conviction that there are "better" and "worse" vaccines, e.g.: "We preferred to pay. We were advised that, apparently, they were better." (interview no. 26).

Among the parents who chose the self-paid vaccination option using a multivalent DTaP-IPV-Hib combination vaccine, this decision was motivated not only by the "better quality" of the product, but also by a wish to reduce the child's discomfort related to vaccine administration. The parents are often afraid of vaccines, but at the same time they are worried that if they failed to vaccinate their child, he/she might become ill (Table 2, quote 1.13).

External Influence

An important role in shaping the parents' positive attitude to vaccinations was the influence of broadly understood authority figures, and above all, confidence in health professionals who recommend vaccinations and the fact that vaccination is preceded by a medical exam (Table 2, quotes 1.14–1.17). It is also important that a vast majority of parents in Poland are vaccination advocates, and generally "all people vaccinate" their children (Table 2, quote 1.21).

Additionally, parents are influenced by media broadcasts on the consequences of non-vaccination of children (Table 2, quotes 1.18 and 1.19). In Poland, vaccines are the only prescription medications that can be advertised. Influenced by an advertisement, one of the parents plans to vaccinate his next child using the advertised vaccine (Table 2, quote 1.20).

Factors Affecting Parents' Negative Attitude Towards Vaccination

Parents demonstrating negative attitude towards vaccination believed that a decision whether or not to vaccinate should be an "individual matter" of parents (interview no. 51).

The identified themes and subthemes along with a selection of representative responses concerning factors affecting the negative attitudes towards vaccinations are presented in Table 3.

Table 2. *Factors shaping parents' positive attitude to vaccination*

Theme/subtheme	Statement
Necessity of vaccines	
Effective disease prevention	1.1. "Because, even if (the child) becomes ill, the disease will be much milder." (interview no. 33)
	1.2. "Unvaccinated children do get ill; we observe some mortality. We vaccinate against these diseases, such as tuberculosis, yes. They are actually these old-time diseases." (interview no. 43)
	1.3. "Nowadays, we observe reappearance of diseases that were long gone. Diseases that we have forgotten about for a long time now, appear again." (interview no. 23)
	1.4. "I think there must be something to it, because in many countries where these vaccines are not used, there are higher mortality rates among people, children. So I think they must be necessary." (interview no. 33)
	1.5. "My older daughter used to have stomach flu repeatedly; once or twice she was even referred to a hospital. And this is why we vaccinate our children (against rotavirus infection) to keep this from happening." (interview no. 42)
Safe	1.6. "If they were dangerous, they wouldn't be available." (interview no. 17)
	1.7. "…these vaccines are continuously being improved." (interview no. 49)
	1.8. "My child is vaccinated and nothing bad has ever happened." (interview no. 20)
	1.9. "Children have been vaccinated for many years now; I also have been vaccinated and there is nothing wrong with me, so I hope that it will be the same for my child." (interview no. 42)
	1.10. "We have been vaccinated. Vaccines have always been mandatory and, generally, they didn't do anything wrong to people." (interview no. 43)
Favourable benefit-to-risk ratio	1.11. "I know that these vaccines are also associated with some risk of complications, but I think there is more benefit than harm from vaccination." (interview no. 21)
	1.12. "I am a bit worried, but more importantly I want my child to be healthy..." (interview no.1)
Concerns about the child	1.13. "You know what? I am a bit afraid of vaccines, but I am even more afraid that if my children become ill, because I failed to vaccinate them, they may suffer more harm. So my children's well-being is the most important thing for me." (interview no. 31)
External influence	
Authority figures	1.14. "Since everybody, including prominent authority figures, says that vaccines are good, maybe less people will say that vaccines are unnecessary." (interview no. 31)
	1.15 "...I don't have any concerns. She's always examined, and I trust the doctors we visit. So I know that if something was wrong, she wouldn't get the vaccine and we would have to wait a little." (interview no. 21)
	1.16. "I guess, if they were not preferred by health service or the entire health service administration, then nobody would administer vaccines." (interview no. 12)
	1.17. "... the doctor's decision to vaccinate my child is made based on some medical exams, observation. I think that if such a decision is made, it is not necessarily to increase the profits of pharmacists or manufacturers of these drugs." (interview no. 33)
Media	1.18. "I believe that we should vaccinate children. We hear on the TV that unvaccinated children, well, become ill and sometimes, indeed, die." (interview no. 43)
	1.19. "I once heard on the TV that parents fail to vaccinate their children against tuberculosis. Whereas more and more children get all these diseases." (interview no. 19)
Advertisements	1.20. "Yes, but (I will use) also these additional vaccines for my next child, because... they are being advertised, so I suspect that it's also for prevention." (interview no. 27)
Other people	1.21. "...I decided that if everybody vaccinated their children, I will also do it." (interview no. 23)
	1.22. "Everyone advised me to do it; my older daughter is at a preschool, so it will be safer for such a toddler (to be vaccinated)." (interview no. 42)

Questioning the Necessity of Vaccines

Belief that there are alternative methods for prevention of diseases was one of the reasons for questioning the necessity of vaccination (Table 3, quote 2.1). Some parents believed that it was very unlikely for a child to become infected with the disease against which the vaccine was designed, especially if the child did not attend educational care facilities (Table 3, quote 2.2). Even if the child gets a specific disease, the parents are not worried about it, since it can be cured (Table 3, quote 2.3). In general, parents had greater confidence in reimbursed vaccines (Table 3, quote 2.13). Parents felt that if recommended vaccines or self-paid vaccination options were truly needed, they would be reimbursed (Table 3, quote 2.13). Among these parents, the risks associated with vaccines raised greater anxiety than the consequences of infectious diseases. This did not refer to known and established post-immunization adverse reactions, but rather some anecdotal concerns, including the occurrence of autism (Table 3, quotes 2.4–2.6). Self-paid vaccination options, which are interpreted by parents as "new", raise particular concern (Table 3, quote 2.6).

Table 3. *Factors shaping anti-vaccination beliefs of surveyed parents*

Theme/subtheme	Statement
Vaccines are unnecessary	
Alternative methods for prevention of diseases	2.1. "I personally believe that it would be best if there were no vaccines. It's better to live in harmony with nature. That's why I breastfeed my babies for so long. I think it's better than vaccination... Generally, I am sceptical about vaccines." (interview no. 51)
Disease is very unlikely	2.2. "I do not want to vaccinate my second child because I think he won't get sick. We do not visit or stay in places where there are a lot of children, like nursery schools. So it is highly unlikely that he will get infected; so no, I don't want to do it." (interview no. 24)
There are medicines for infectious diseases	2.3. "When my mum was little, there were not that many vaccines, but ... today we have medicines for all these diseases. Virtually for all of them, so I think we shouldn't have (vaccines)." (interview no. 16)
Vaccines may cause diseases	2.4. "...they talk about autism, although it has not been proven. But you never know." (interview no. 49)
	2.5. "I mean, some of them contain a lot of mercury and may be harmful to children." (interview no. 16)
	2.6. "I mean we read that nowadays they may be causing these diseases of modern civilization (...) For example this cystic fibrosis, or cerebral palsy or autism, or something like that, or ADHD. Well, some of those. I'm afraid that my child can have this... I'm afraid of these new vaccines in particular." (interview no. 47)
Vaccines weaken immunity	2.7. "Honestly, if I were to decide again, I would not vaccinate my children from the start... Now, we have had a very long break in vaccination with our second child, and we simply see that she is less often sick than our first child at the same age. She has been very rarely ill, she sometimes had a mild cold, but it was quickly gone. ...especially that our second child, the one we have not vaccinated, has been spending time among other children who got ill." (interview no. 16)
Vaccines are ineffective	2.8. "(I didn't use recommended vaccines) probably out of fear that, well, there are these conspiracy theories... But I know that children who are vaccinated against pneumococcal diseases get infected precisely with pneumococci; that's what I've heard. Hence my concerns." (interview no. 31)
	2.9. "Let me say this: it is an expensive vaccine, and from what I've learned, it's not always effective." (interview no. 36)
	2.10. "For example, I'm afraid of pneumococci because they mutate so quickly, so I guess there is actually no ideal vaccine against them. Still, if it is supposed to work only on some, it may work differently on others. That's what I'm afraid of." (interview no. 47)
Vaccines mainly benefit the pharmaceutical industry	2.11. "I think they say that we should not vaccinate children because it is dangerous for them, because vaccines cause this autism, they are unnecessary; it's all about the money only." (interview no. 5)
	2.12. "For me, the worst part is that these companies are not held responsible if something happens after vaccination. If I had a problem like this, I would certainly take them to court." (interview no. 51)
Greater confidence in reimbursed vaccines	2.13. "Yes, (I will vaccinate my younger child) using normal vaccines, not the combined ones (as in the case of my older child). And we will see what it will be like. It seems to me that, after all, these combination vaccines are not good vaccines." (interview no. 24)
	2.14. "I think that these publicly funded (vaccines) are sufficient." (interview no. 53)
External influence	
Authority figures	2.15. "There are also opponents, fervent opponents of vaccines, and the worst part is that they are from countries like Sweden, Finland, Scandinavian countries; that's where the vaccine opponents are. And they also include doctors." (interview no. 31).
	2.16. "We know this from a certain professor who dissuaded us... He advised against vaccinating children in general." (interview no. 16)
	2.17. "And I asked the doctor, and she told me that it depended on the prophylaxis, on the child's preferences. She said: (the rotavirus vaccine) will help one child, but it may not treat another one, or it may even be harmful, because the disease will be even more severe in another child." (interview no. 36)
Contradictory information	2.18. "…now, there are all these different opinions... So far I have thought that it's good to vaccinate children. And now, I no longer know what's good." (interview no. 41)
	2.19. "Well, I've just heard something about these vaccines on the TV. Some people are for vaccines, other are against them, and one doesn't really know whom to believe." (interview no. 48)
	2.20. "My friend, who is a nurse, suggested (the recommended vaccines) to me. At first I was for it, but then the doctor said the scope of these vaccines was so small that in the end it didn't make much sense to do them. That I would vaccinate my child against some very small portion of, let's say, pneumococci. But there are so many of them that, in the end, the result is negligible. So I haven't vaccinated my child and I don't know if it makes any sense to do it." (interview no. 33)
Spouse	2.21. "My husband read that (these vaccines contain the mercury and may be harmful to a child). And this is why he is still so much against it... My husband has never been vaccinated and has never been ill... He has never been for vaccination." (interview no. 16)
Media	2.22. "Well, sometimes they say on the TV not to vaccinate children, because it's not good." (interview no. 19)
Other people	2.23. "Many parents do not want to (vaccinate their children) despite penal consequences." (interview no. 19)

Some of the interviewed parents also voiced a belief that vaccines weakened the immunity (Table 3, quote 2.7), which was supported by subjective observations (unvaccinated child is less frequently ill). Some parents also claimed that vaccines were ineffective (Table 3, quote 2.9) and could even cause diseases they were supposed to protect against (Table 3, quote 2.8). Some study participants also believed that vaccines mainly benefited the pharmaceutical companies (Table 3, quote 2.11), rather than children. This belief was further strengthened by an impression that pharmaceutical companies were not held responsible for any negative consequences of vaccinations (Table 3, quote 2.12).

External Influence

Questioning the necessity of vaccines or the decision not to use recommended vaccines originated under the influence of authority figures, including physicians (Table 3, quotes 2.15–2.17). In some cases, it was a general belief that among vaccine opponents there were also doctors; sometimes, the parents were openly advised against vaccination by a specific person (Table 3, quote 2.16).

Generally, parents vaccinate their subsequent children as previously; however, with self-paid vaccines (self-paid vaccination option using multivalent DTaP-IPV-Hib combination vaccine and self-paid recommended vaccines), they often make different decisions. A change of mind is mainly caused by information noise and information overload. Parents are often unable to interpret contradictory pieces of information (Table 3, quotes 2.18–2.20), and – given the current crisis of authority – they do not know whom to believe. In consequence, when they have to make an active decision, they fail to take any action.

A radical stance of the spouse is also of great importance (Table 3, quote 2.21), as is the influence of negative media broadcasts (Table 3, quote 2.22) and increasingly more frequent voices of other parents who refuse to vaccinate their children despite the risk of fine (Table 3, quote 2.23).

DISCUSSION

The study is consistent with the trend of studies on factors affecting decision making on immunization of children (6–8).

Despite vaccine acceptance and fulfilment of obligation to vaccinate children, parents have concerns and misperceptions of vaccines (9), in particular concerning the reasons for their use (not so much questioning their efficacy as doubting whether or not they are necessary nowadays) and their safety, mainly due to contradictory information they receive, which has been confirmed in other studies and indicates the necessity to adapt the information addressed to parents to their current needs (10–13).

Statements of parents indicate that their decision was mainly influenced by fear; fear of contracting the disease the vaccine protects against is predominant in one group, whereas fear and mistrust towards vaccination prevails in the other. In both cases, the decision is made by the parent in order to protect the child (8, 10, 14). Parents are afraid of autism (15) as well as other neurological complications, although they do not seem to associate them with any specific vaccine (e.g., MMR), but rather with the presence of excipients (mercury) or with vaccines in general. In Poland, thiomersal as a paediatric vaccine excipient is only present in vaccines against diphtheria, tetanus and pertussis produced by one manufacturer only (16). Some parents believe in "conspiracy theories" – an arrangement between doctors and the profit-oriented pharmaceutical industry that primarily benefits from the general vaccination obligation (17). These theses are not supported by evidence (18), and their propagation contributes to undermining confidence in authority figures, mainly doctors (19).

Parents demonstrating a negative attitude towards vaccination of children estimate that the risk associated with vaccines is higher than the risk of non-vaccination (15). In the opinion of this parent group, vaccines are not a necessity nowadays. In consequence, it is possible that their future decisions (e.g., concerning vaccination of subsequent children or administration of subsequent doses of vaccines) will exclude the use of vaccines (19). In this study, with obligatory vaccines, changes in adherence to the vaccination schedule resulted mainly from children's infections, which was also observed in other research (10, 20, 21). Often, the change also involved giving up self-paid vaccination options with younger children, unless a specific disease occurred in the older, unvaccinated child.

Among the study subjects, there was greater confidence towards free-of-charge products; the parents were more willing to use the recommended vaccines if they were offered free-of-charge due to additional indications for the child. This seems to be consistent with the findings of another Polish study in which "well-known" vaccines that had been used for many years were accepted with greater confidence (9).

In the study, one mother expressed a belief – which has no confirmation in reality – that long-term breastfeeding offers better protection than vaccination (10). This may indicate the need for education on real benefits of breastfeeding and vaccination, and that breastfeeding does not replace vaccines (22).

The study results show that confidence in doctors responsible for the child's care is an important factor for parents (10, 20, 23, 24). Opinions and recommendations of healthcare professionals – doctors, midwives, nurses and pharmacists whom parents come into contact with when deciding about vaccination – are of crucial importance, and if the recommendations are contradictory – as was the case in one interview (interview no. 33) which described a situation when a nurse recommended vaccination against pneumococcal diseases, whereas a doctor did not second this recommendation (or provided information in a way that discouraged the parent from vaccination) – parents will most likely decide not to vaccinate their children (19). In Poland, the opinion of paediatricians and family doctors is believed to be the most reliable source of information about vaccines (9). A relatively high number of vaccinated children in Poland may indicate that most doctors who qualify children for immunization support vaccines; however, it is possible that difficulties will gradually become apparent in their dealing with parents' concerns and providing fact-based information as well as respecting the parents' right to express concerns and beliefs, rather than only speaking from the position of authority. Therefore, it is important to strengthen the confidence in vaccines among healthcare professionals and their competence in adequately addressing the information needs of parents (25).

Contradictory information broadcast by the media on the subject of vaccines is an important factor raising doubts and concerns among parents (10, 12). The results of another Polish study demonstrate that parents are often aware that information given by the media, in particular diffused over the Internet, is

not always reliable (9), which indicates the necessity to double-check the sources of information used by parents and to support parents in the decision-making process based on facts rather than common beliefs (10).

It seems that the relatively high confidence in vaccines results from social conformity: at present, vaccination is a social norm in Poland. However, with the increasing number of people knowingly choosing not to vaccinate their children and promoting their beliefs supported by their own experience, the number of non-vaccinating parents will increase more rapidly (8).

Limitations

The limitations of this study are associated with its methodology (qualitative research). Study participants were countryside and small-town dwellers, and the study sample was relatively small, which limits generalisability – the study only signals the areas that may affect the vaccination decisions in a specific group of parents. It is possible that due to social desirability bias some parents did not reveal their beliefs completely. An equivalent study conducted among city dwellers or a quantitative study on a representative sample may help verify the findings obtained.

CONCLUSIONS

It is important for doctors who evaluate children's eligibility for vaccination not to limit themselves to providing information only, but also to openly listen to the parents' voice – their questions and concerns, and to adapt their message to individual parents' needs in order to support informed vaccination decisions. Since the parents participating in the study sometimes claimed that they were dissuaded from vaccinating children by their doctors, we need to focus on improving the awareness of doctors and other healthcare professionals (e.g., nurses, pharmacists) on this subject, and train them in providing adequate and comprehensive information about vaccines. Both compulsory and recommended vaccines should be provided free-of-charge. When parents have to make an active decision, they fail to take any action, therefore, choice overload should be reduced.

Conflict of Interests
None declared

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