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Fearing the disease and fearing the vaccine – what drives choices concerning influenza and COVID-19 immunization in Poland

Strach przed chorobą i strach przed szczepionką – co kieruje Polakami w decyzjach o szczepieniu przeciwko grypie i COVID-19

ABSTRACT

Vaccination is one of the greatest healthcare achievements and one the most important scientific developments of the human civilization. Epidemiological status and population's attitude towards vaccination has been evolving rapidly in recent years. The main goal of this article is to assess and compare people's approach towards influenza and COVID-19 vaccines, in addition to identifying the most prevalent information sources concerning both the former and the latter. As a research method, data obtained from 150 online surveys submitted by respondents were analysed. The results suggest connection between COVID-19 and influenza vaccinations. The study was designed to provide a better understanding of public attitudes in favour as well as against the vaccinations. The results obtained regarding the public views on influenza and COVID-19 vaccinations can be pointed out as an additional value derived from the research.

Keywords: influenza, COVID-19, vaccine, vaccination

STRESZCZENIE

Szczepienia są jednym z największych osiągnięć cywilizacji w dziedzinie nauki i ochrony zdrowia. Status epidemiologiczny i stosunek populacji do szczepień zmieniał się gwałtownie w ciągu ostatnich kilku lat. Głównym celem badania była ocena i porównanie opinii społecznej dotyczącej szczepień przeciwko grypie i COVID-19, a także określenie najbardziej powszechnych źródeł pozyskiwania informacji na temat szczepień. Jako metodę badawczą wykorzystano analizę

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danych pozyskanych ze 150 ankiet internetowych wypełnionych przez polskich respondentów. Uzyskane wyniki sugerują zależność między szczepieniami przeciwko COVID-19 a szczepieniami przeciwko grypie. Badanie pozwoliło na lepsze zrozumienie postaw społecznych w odniesieniu do szczepień i potencjalnych opinii przeciwko szczepieniom. Uzyskane wyniki dotyczące postaw respondentów wobec szczepień przeciwko grypie i COVID-19 można uznać za wartość naukową wniesioną przez badanie.

Słowa kluczowe: grypa, COVID-19, szczepionka, szczepienia

Introduction

Immunization is a global scientific development and a health achievement, saving millions of people every year. Vaccination is an undeniable human right and one of the greatest investments in humans' health (WHO, 2023). It is hard to imagine today's reality without vaccination – it remains one of the most groundbreaking changes in the history of civilization. By minimizing the risks of numerous infectious diseases that have plagued mankind for thousands of years it has improved health and saved lives of millions, and spared incredibly vast resources otherwise required to treat the diseases and their complications. The Centers for Disease Control and Prevention (CDC) estimates that during 2019–2020 flu vaccination season, more than 3.5 million medical visits, 100,000 hospitalizations and 6,000 deaths were avoided in the United States alone (Becker *et al.*, 2021). Vaccinations globally save 3.5–5 million lives a year by preventing diseases such as tetanus, diphtheria, pertussis, measles and influenza (WHO, 2023).

Despite these unbiased advantages, vaccination encounter plenty of opponents, which is not different in the case of Polish population. In the recent years, anti-vaccine movements have become increasingly popular, gaining a wide audience in social media as well as the support of some political representatives (Żuk, Żuk, 2020). All this have a direct impact on the statistics – between 2007 and 2017, the number of people avoiding compulsory vaccinations in Poland increased almost 10 times (Żuk, Żuk, 2020; BIP, 2019). Considering influenza, Poland has one of the lowest vaccination rates in the European Union's countries (OECD, 2023). The low public trust in immunization programs is a significant threat to public health – understanding its causes is necessary for development of long-term strategies in the healthcare system.

In the present times, most people who make decisions about vaccination have never seen the consequences nor serious complications of infectious diseases. The protection from multiple infections provided by vaccinations has made former threat quite distant. On the other hand, post-vaccination complications appear to be increasingly important in the perception of patients (Wawrzuta *et al.*, 2021).

Traditionally, it is the professionals – doctors, biologists and others – who should be the authorities for the wider public, shaping opinions and behaviours in the field of healthcare. But in the world of modern media, their role is often taken over by influencers – creators who seem closer, more familiar and much more engaging than scientists and formal institutions. It is worth noting that in the context of COVID-19 pandemic, Poland has one of the lowest vaccination rates in Europe despite the strong involvement of the Government and many high-profile academic authorities in the promotion of vaccination against coronavirus (Matveeva, Shabalina, 2023; Rzymski *et al.*, 2021). Poles seem to largely distrust official recommendations and strategies, even when confronted with a vast number of excess deaths and the direct experience of danger from the disease (Walkowiak, Domaradzki, Walkowiak, 2022).

The experience of the pandemic apparently did not have a lasting effect on public attitude towards seasonal flu vaccination. For years, the percentage of vaccinated Poles has remained very low (not exceeding 7%) and according to the latest reports, it fell even further (dropping below 6%) for 2022–2023 season (CBOS, 2020).

Our study aims to contribute to the understanding of public approaches towards

vaccination and reasons of potential anti-vaccination behaviours. Exploration of public opinions on influenza and COVID-19 vaccinations in the context of information sources and future willingness for vaccination can also be pointed as added value of the research. This article is intended to increase the impact of educational projects by finding the most appropriate methods of communication in order to create effective public health strategies in terms of vaccination.

Objective of the work

The main objective of this research is to assess and compare approaches of Polish respondents towards influenza and COVID-19 vaccines in order to recognize factors that may encourage or discourage individuals towards vaccination. This study and its results may support future investigations of social trends in the field of vaccination. A more complete understanding of the decision-making processes in this area will enhance the effectiveness of infectious diseases control – a crucial role of the healthcare system.

Research method and sample

For aforementioned purposes, in November 2023 a questionnaire was prepared in Google Forms. It was divided into three sections, including questions regarding influenza virus, COVID-19 virus, and vaccinations against them. In addition questionary was supplemented by a metric concerning basic information on respondents and their sources of knowledge in the topic of vaccination. Scales used for the responses were three-point and consisted of "yes/rather yes," "don't know," "no/rather no" options for most questions. In the question regarding sources of knowledge on vaccination, a multiple response model was utilized. In the questions concerning vaccination status, respondents could choose number of doses received. The questionnaire was available for respondents for two weeks. All questionnaires were completed correctly and were included into the research sample. A total number of 150 responses were gathered and included into the study. The responses were anonymous, which means that identification of the individuals participating in the survey is impossible. Responses were analysed only in aggregate manner and compared quantitatively in the form of percentage of answers given by all respondents. Basic information about respondents is presented in Table 1.

Based on information concerning respondents, the sample is about equally divided between female and male respondents. Predominance of

Table 1. Basic information about respondents

Category	Feature	Share
Gender	Female Male	52% 48%
Education	Basic or vocational Higher	40% 60%
Age (years)	18–26 27–37 38–50 51–65 above 65	14% 27% 20% 20% 19%
Medical connection	No Yes, medical student or medical professional	88% 12%

Source: own study based on research.

those with higher education (60%) in opposition to basic or vocational (40%) can be noticed. The age range is dominated by 27–37 years (27%), while in other groups the number of respondents is almost equal. Respondents with medical connection described as medical student or medical professional represented 12% of all.

Results

The first question focused on sources of knowledge regarding vaccination. The form of the questionnaire allowed respondents to select freely any number from the given options. Obtained results are shown in Figure 1.

It is observed that the dominant source of knowledge about vaccination is the advice of medical professionals, taking into account physicians, nurses, midwives, pharmacists and dentists. Moreover, the opinion of family and trusted people, traditional media and respondents' own experience appeared close to each other in second place in terms of importance. As the question offered multiple choice, the number of sources simultaneously used by individuals in order to get their knowledge is shown in Table 2.

Most respondents base their knowledge only on one source of information. With similar frequency, respondents focused on two or three sources. They occasionally used more channels to search for information about vaccination.

The purpose of the following question was to determine whether respondents had been vaccinated against influenza in the last 3 years (Figure 2). A similar question considering

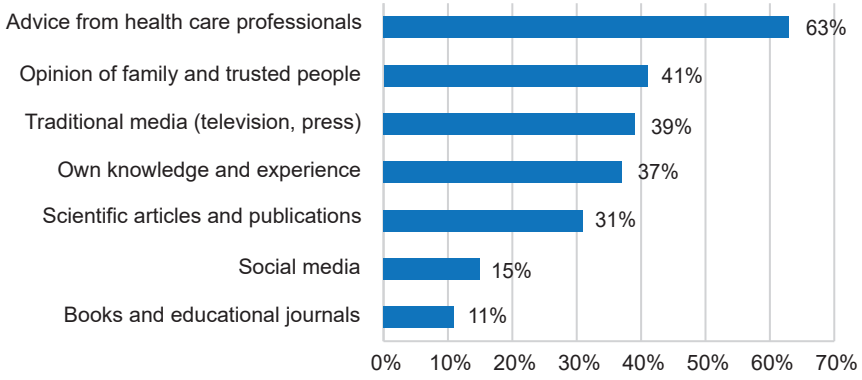

Figure 1. Main sources of getting knowledge about vaccination
Source: own study based on research.

Table 2. Number of sources used by respondents to get knowledge about vaccination

Number of sources used	Share of respondents
1	31%
2	27%
3	26%
4	11%
5 and more	5%

Source: own study based on research.

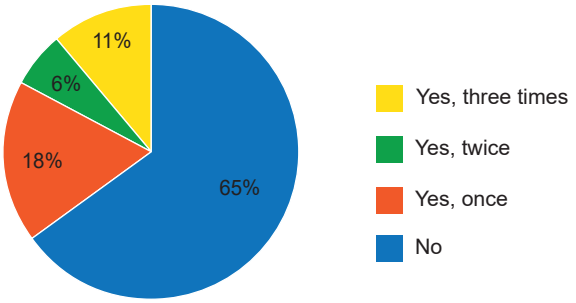

Figure 2. Have you been vaccinated against influenza within the last 3 years?

Source: own study based on research.

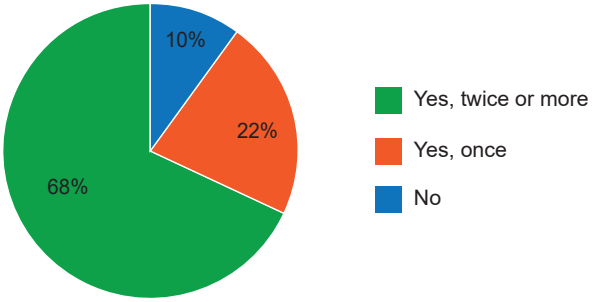

Figure 3. Have you ever been vaccinated against COVID-19 virus?

Source: own study based on research.

vaccination against COVID-19 was asked as well (Figure 3).

Most respondents have not been vaccinated against influenza in the last three years. The information whether respondents had been vaccinated against COVID-19 or not is shown in the chart below.

The results show that 9 out of 10 respondents got vaccinated against COVID-19. This included the vast majority vaccinated twice or more. In comparison with influenza, it can be noted that respondents were significantly more likely to be vaccinated against COVID-19.

Upon deeper analysis, a relationship between responses on COVID-19 and influenza vaccination rates can be observed.

None of those who refused COVID-19 vaccination accepted influenza vaccination. Among those who were vaccinated for COVID-19 once, 24% were vaccinated for influenza at least once in the last 3 years. Regarding those who were vaccinated for COVID-19 twice or more as many as 44% were vaccinated for influenza at least once in the last 3 years. In comparison the share of those vaccinated against influenza among all respondents was 35%.

Basic information about respondents in distinction into two groups for vaccinated and unvaccinated respondents separately is presented below in Table 3 for influenza and in Table 4 for COVID-19.

The discrepancy of data between the two groups with respect to flu vaccination shows no significant findings. Higher education seems to favour influenza vaccination in comparison to basic or vocal education whose share is higher in the unvaccinated group when compared to the vaccinated group.

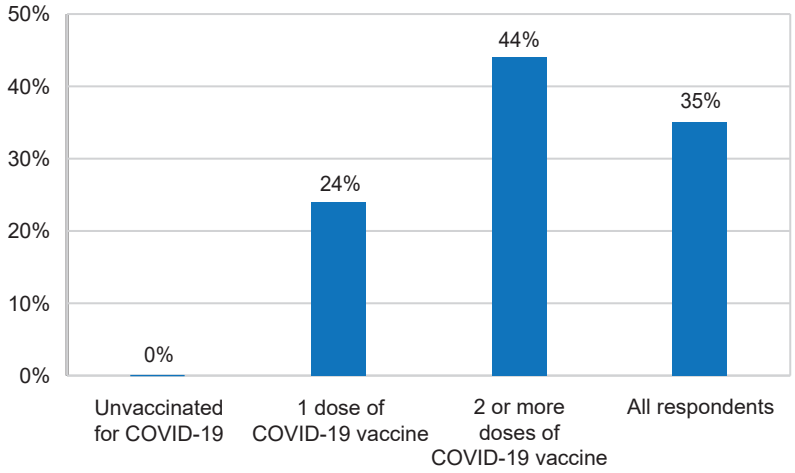

Figure 4. Share of respondents vaccinated against influenza at least once in 3 last years in certain groups

Source: own study based on research.

Table 3. Share of respondents based on basic information in comparison between people vaccinated and not vaccinated against influenza

Category	Feature	Vaccinated	Not vaccinated
Gender	Female Male	48% 52%	54% 46%
Education	Basic or vocational Higher	35% 65%	42% 58%
Age (years)	18–26 27–37 38–50 51–65 above 65	20% 21% 21% 17% 21%	11% 32% 18% 22% 17%

Source: own study based on research.

In reference to COVID-19, and in contrast to influenza vaccination higher education is more common in the unvaccinated group of respondents. Analysis of gender structure among respondents unvaccinated for COVID-19 provides interesting finding. Specifically, a prevalence of women can be seen in this group. A possible explanation of this phenomena may lie in concern about fertility and the health of the infant given that age 27–37 which is most prevalent in unvaccinated group is also a centre of reproductive age.

The next 2 questions concerned respondents' points of view on potential risks connected which influenza and COVID-19 infections and vaccinations (Figure 5 and Figure 6).

Responses to that question were dominated by answers "rather not" in each category. Alike for the fear of contracting the virus, the severe complications after infection, in addition to the fear of feeling bad after vaccination or serious side effects caused by it.

Table 4. Share of respondents based on basic information in comparison between people vaccinated and not vaccinated against COVID-19

Category	Feature	Vaccinated	Not vaccinated
Gender	Female Male	50% 50%	67% 33%
Education	Basic or vocational Higher	42% 58%	13% 87%
Age (years)	18–26 27–37 38–50 51–65 above 65	14% 25% 21% 21% 19%	13% 54% 7% 13% 13%

Source: own study based on research.

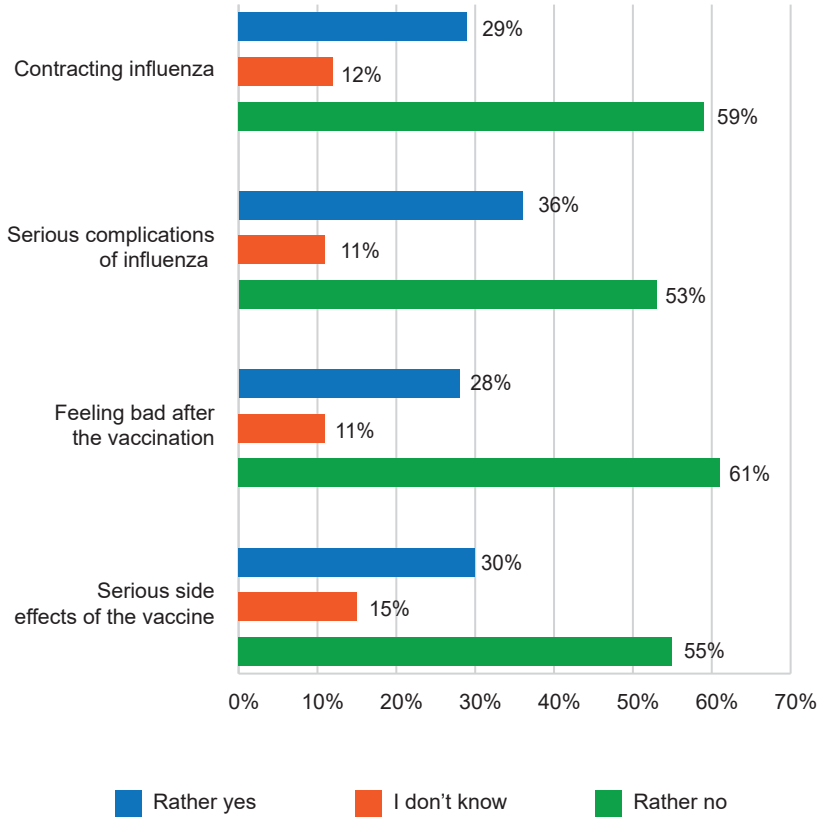

Figure 5. Are you concerned about contracting influenza, serious complications of the disease, feeling bad after the vaccination or serious side effects of the vaccine?

Source: own study based on research.

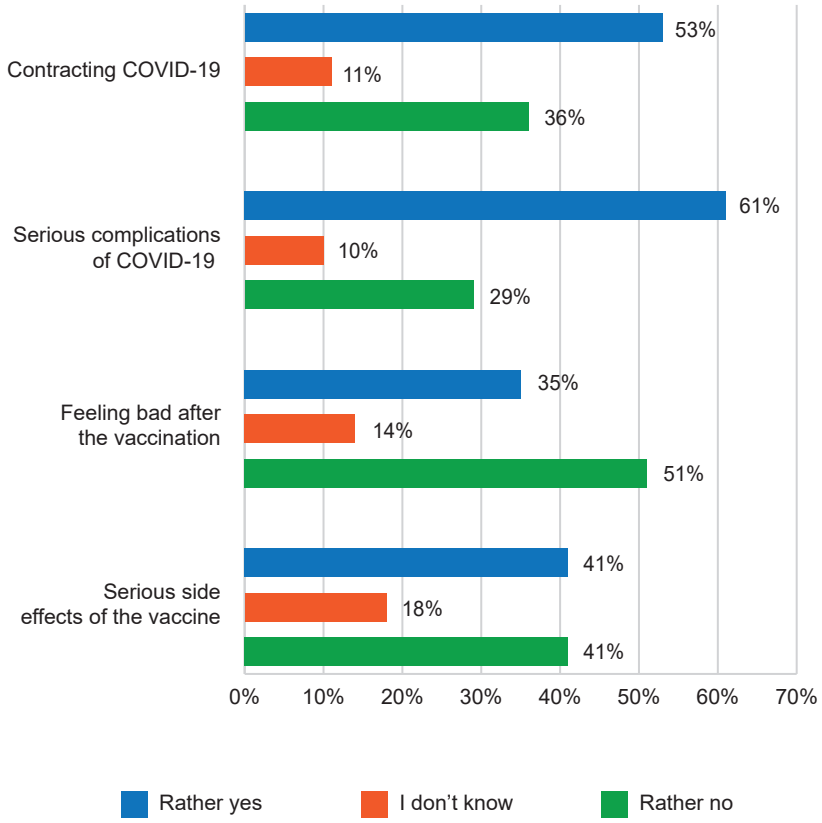

Figure 6. Are you concerned about contracting COVID-19, serious complications of the disease, feeling bad after the vaccination or serious side effects of the vaccine?
Source: own study based on research.

In the Figure 6 respondents' attitudes towards threats connected with COVID-19 and its vaccines are shown.

Analysis of the answers show a vast concern for both COVID-19 infection and complications. In comparison, answers to corresponding questions about influenza show strong differences. Answers to question concerning feeling bad after COVID-19 vaccination favoured the "Rather yes" and "I don't know" slightly more in comparison to influenza. More importantly, the number of respondents who feel rather safe about serious side effects of COVID-19 vaccines appeared to be similar to those concerned about it.

The next questions focuses on respondents' perspective on three attributes of influenza and COVID-19 vaccinations, taking into account safety, effectiveness, and accessibility of vaccines. The results are shown in Figure 7 and 8.

In relation to safety, vast majority of respondents indicated that influenza vaccination is rather safe. In regard to effectiveness opinions are notably divided. Less than half of the answers state that influenza vaccines are rather effective. Moreover, as much as 59% are unsure of or neglect the effectiveness of influenza immunization.

In the Figure 8 answers to similar questions concerning COVID-19 are presented.

Alike the fear about side effects of COVID-19 vaccines, worries about safety of vaccines is a serious issue for respondents. Nearly 4 out of 10 respondents were uncertain of vaccine's safety.

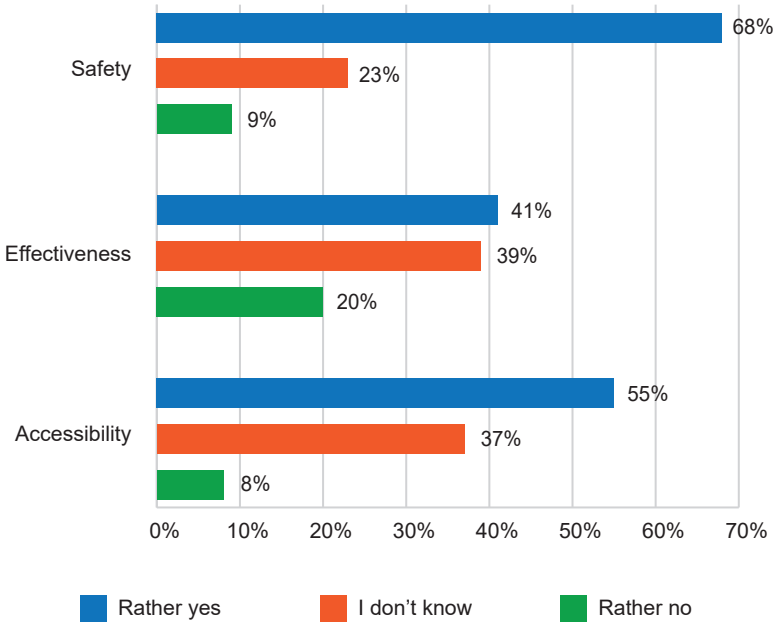

Figure 7. Do you think that the influenza vaccine is safe, effective, accessible?
Source: own study based on research.

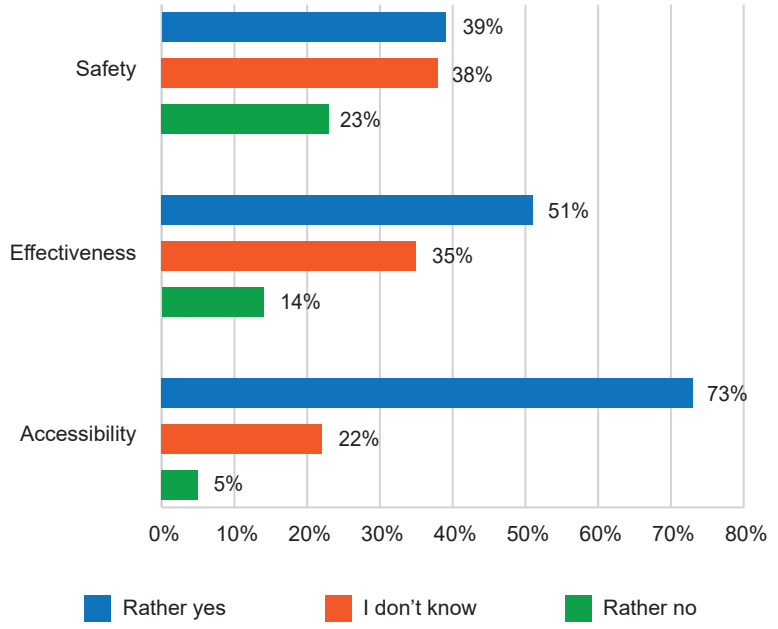

Figure 8. Do you think that the COVID-19 vaccine is safe, effective, accessible?
Source: own study based on research.

In terms of efficiency, COVID-19 vaccines obtained a slightly better result than the influenza vaccines. However, it was the availability of vaccinations for COVID-19 that was the most prominent difference between COVID-19 and influenza. It was rated strongly positive, with as many as 73% of respondents confirming that COVID-19 vaccines were available in their opinion.

The final questions concerning influenza and COVID-19 vaccinations were meant to assess the attitudes toward future vaccination. The results are shown in Figures 9 and 10.

In the received answers, more than half (51%) of the respondents do not plan to get the influenza vaccination in the future. Among those who have not been vaccinated against influenza in last 3 years, the ratio increases to 68%.

In reference to COVID-19, the proportion of respondents who plan to get vaccinated in the future is greater than for influenza. Only 3 out of 10 people replied with a negative answer (30%), while 41% are willing to get vaccinated if there were recommendations for it and the remaining 29% are unsure how they would act.

Discussion and general conclusion

The research exposed that most respondents base their knowledge in the subject of vaccination only on one source of information with predominance of medical professionals' advice. Analysis of the answers revealed great differences between influenza and COVID-19 vaccinations in respondents' approach. To summarize the results as a general conclusion, most respondents do not fear either

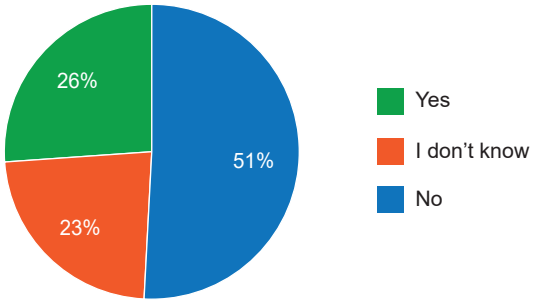

Figure 9. Do you plan to get vaccinated for influenza in future years?

Source: own study based on research.

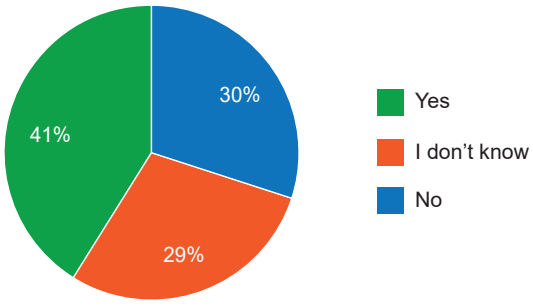

Figure 10. Would you vaccinate for COVID-19 if there were new recommendations for it?

Source: own study based on research.

the influenza virus or its vaccine. Vast majority indicated that influenza vaccination is rather safe. Less than half of the respondents believe in the effectiveness of influenza immunization, yet a great share hesitates to make a decision and therefore might represent a good target for encouragement. The ratio of those who plan to get vaccinated for influenza in the future to those who refuse to or have no opinion is approximately 1:3 which shows a strong evasive tendency and is not likely to change without intentional actions.

Regarding COVID-19 and its vaccines, respondents are more concerned both by disease and the vaccination. However, higher COVID-19 vaccination rates supports the thesis that the danger posed by the disease overthrow the risk associated with the vaccination. Compared to vaccination against influenza, it can be seen that respondents were significantly more likely to get vaccinated against COVID-19. The still recent COVID-19 pandemic may explain the gap between COVID-19 and influenza vaccination rates. However, in times of pandemics, a significant but only temporary growth in influenza vaccination rates can be noticed (PSSE, 2023). This may suggest that COVID-19 has brought attention to the relevance of other contagious diseases as well. Obtained data suggest that people are still aware and careful about potential threat posed by COVID-19 therefore it might be an urgent time to consolidate their attitude towards vaccination. According to fact that in Poland COVID-19 vaccines and vaccination were vastly available and entirely funded by National Health Fund it is possible that the potential barrier of accessibility has been lifted. Regarding influenza, features like the lack of worry about possible infection, disregard for influenza complications as well as only partial confidence in the effectiveness of the vaccine emerges as possible reasons for low vaccination rate. In case of COVID-19, the high availability of vaccinations and fear of the disease reinforced by prior pandemic are possible determinants of greater vaccination rate against COVID-19.

In contrast, among those who have never been vaccinated against COVID-19 as many as 87% gave negative answer to the question concerning future vaccination and none of this group has declared their willingness to get vaccinated if new recommendations appear. This suggests a solidified stand against vaccination in the population of people who decided not to vaccinate against COVID-19 throughout the entire pandemic and currently might find no motivation to change their attitude.

Limitations and further directions

Possible barrier in reaching certain groups of respondents could be pointed as a limitation of the research. People with limited access to mass media, such as the elderly, the poor, the disabled and other people who are not socially active, might be difficult to reach using an online form of research. The results presented are of a preliminary data and are meant to describe the study population since statistical tests were not applied and probability of receiving similar results in the general population was not assessed.

Since the research examines the topic of influenza and COVID-19 vaccinations in general terms, it may serve as a pilot study for a quantitative in-depth research or qualitative research in the form of interviews among a selected target group. Such research would allow to provide open-ended questions verifying the factors identified by respondents and to evaluate what type and source of information affect specific decisions in terms of vaccination. Moreover, the data presented could be utilized to perform a comparative analysis of the results obtained in other studies in the field of public attitudes towards vaccinations conducted among the Polish population or in foreign countries.

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