IMMUNIZATION BARRIERS AND ENABLERS AMONG HEALTH CARE PROFESSIONALS: ANALYSIS OF FINDINGS

1. Introduction

HProImmune is a 3-year project funded by the DG SANCO Public Health Program 2008 – 2013 aiming to promote immunization among Health Care Workers (HCWs) in Europe. The project will add to the knowledge on barriers concerning HCW immunizations and develop educational material for health professionals in both the private and the public sector, as well as propose recommendations for policy-makers.

The **general objective** of this project is to promote vaccination coverage of HCWs in different health care settings by developing a tailored communication toolkit. The **specific objectives** of the project

- Increase awareness about the most important vaccine preventable diseases, which pose a particular risk to EU HCWs
- Increase awareness about immunizations among HCWs through a database comprising vaccination specific information from across the EU
- Provide new knowledge about vaccination behaviors and barriers among HCWs
- Identify best practices for the immunization of health professionals
- Provide new knowledge on how to communicate and promote immunizations among HCWs by piloting a purpose and tailor-made Immunization Toolkit
- Increase awareness and promote HCW immunizations through a widely disseminated and pilot tested HCW Immunization Promotion ToolKit comprising recommendations, communication guidelines, tools and fact sheets.

Prior to designing the HproImmune toolkit it was necessary to conduct an in depth exploration of immunization barriers and enablers towards vaccination among Health Care Professionals. This was necessary in order to enhance understanding of risk perception, behaviors towards vaccination and barriers inhibiting HCWs from immunization.

This report presents the main findings and implications for the HproImmune toolkit as emerged from the research conducted through the HProImmune survey and the focus groups.

2. Methodology

Qualitative and quantitative methodology was followed in order to acquire a comprehensive understanding of the issues in all of the countries comprising the HProImmune consortium but also across the EU. In particular an online survey was developed so as to cover as many EU Member States as possible as well as focus groups conducted by all HProImmune partners.

2.1 Survey questionnaire

The HproImmune questionnaire was developed by the partner consortium and the project Advisory Board. It comprises 14 questions that explore vaccination barriers and enablers for specific vaccine preventable diseases among various categories of HCP. In particular Q1-Q7 explored demographic

information including gender, age, and country of work, education, specialty, work setting and years of experience. Q8-Q14 explored behavior towards vaccines asking respondents questions about risk perception of Vaccine Preventable Diseases (VPDs), vaccination coverage in the past 10yr, reasons for being immunized or not being immunized and attitudes towards obligatory vaccination.

The survey was uploaded on the HProImmune website and is available in 10 languages namely English, Greek, Italian, Spanish, Polish, Romanian, German, Swedish, Lithuanian and French.

Responses were analyzed through the statistical package SPSS 21. The statistical tests applied for the analysis of data included apart from descriptive analysis pearson chi square and logistic regression analysis.

2.2 Focus Groups

Focus groups were conducted in all the consortium countries namely Greece, Cyprus, Italy, Poland, Lithuania, Germany, and Romania. The convenience sample comprised 282 HCWs and participants were recruited from hospitals and other settings.

The focus group approach was selected for data collection as it involves and uses group interaction to generate data. Before beginning the focus group interviews a questionnaire was administered to collect information about socio-demographics, and work experience of the participants. For most the focus group offered a unique opportunity to express their feelings, to provide distinctive types of data and to clarify their attitudes to vaccination in a way that would be less easily accessible in a one-to-one interview. Nevertheless in some cases the one-to-one interview was chosen as the most appropriate method due to small numbers of participants.

Taking into consideration the need to guarantee validity and reliability in the collection of qualitative data, the focus group discussions were analyzed in a continuous way, giving feedback to the participants for additional comments. The questions were open-ended, neutral, sensitive and well understood by the participants. All focus group interviews were recorded and transcribed verbatim.

Participants received an explanation of the purpose and aim of the study, and those who agreed to participate were asked to provide verbal consent. No personal identity information was documented and participants were informed that they had the right to withdraw from the study whenever they wished. The focus group interviews were completed between 2012 and 2013.

3. Part A: Survey Results

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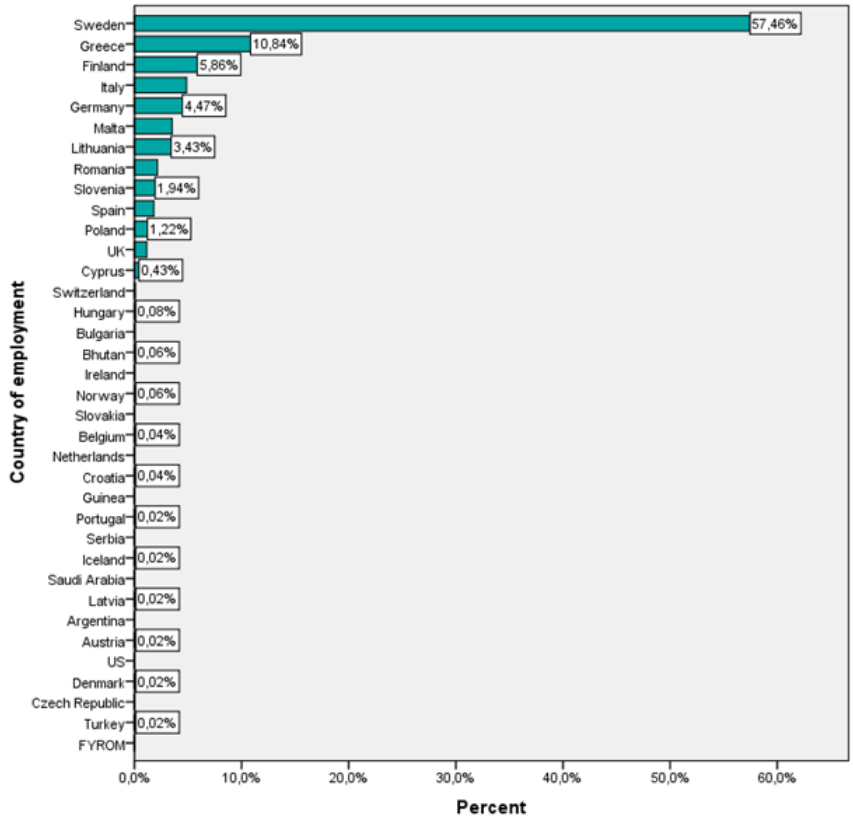
3.1 Demographic characteristics

The sample consists of 5165 health care workers from 36 countries (64 respondents did not declare country of employment) who completed the online survey. The countries which have been taken into account for this analysis are those which have produced more than 20 questionnaires. As shown in Table 1 and Figure 1, 13 countries have been included with a total of 5058 questionnaires. Analysis was conducted after adjusting (weighting) the sample.

Table 1: Distribution by country

Country of employment	No. of questionnaires	%
Sweden	**2931**	**56,75**
Greece	**553**	**10,71**
Finland	**299**	**5,79**
Italy	**248**	**4,80**
Germany	**228**	**4,41**
Malta	**179**	**3,47**
Lithuania	**175**	**3,39**
Romania	**110**	**2,13**
Slovenia	**99**	**1,92**
Spain	**93**	**1,80**
Poland	**62**	**1,20**
UK	**59**	**1,14**
Cyprus	**22**	**0,43**
Switzerland	5	0,10
Bulgaria	4	0,08
Hungary	4	0,08
Bhutan	3	0,06
Ireland	3	0,06
Norway	3	0,06
Belgium	2	0,04
Croatia	2	0,04
Netherlands	2	0,04
Slovakia	2	0,04
Argentina	1	0,02
Austria	1	0,02
Czech Republic	1	0,02
Denmark	1	0,02
Guinea	1	0,02
Iceland	1	0,02
Latvia	1	0,02
FYROM	1	0,02
Portugal	1	0,02
Saudi Arabia	1	0,02
Serbia	1	0,02
Turkey	1	0,02
US	1	0,02
Missing	64	1,24
Total	5165	100,00

Figure 1: Distribution by country



The majority of respondents are females (80.7%, Figure 2) and the distribution of their age is displayed in Figure 3. The majority of participants (96.0%) are between 25 and 64 years old.

Figure 2: Distribution of the respondents by gender

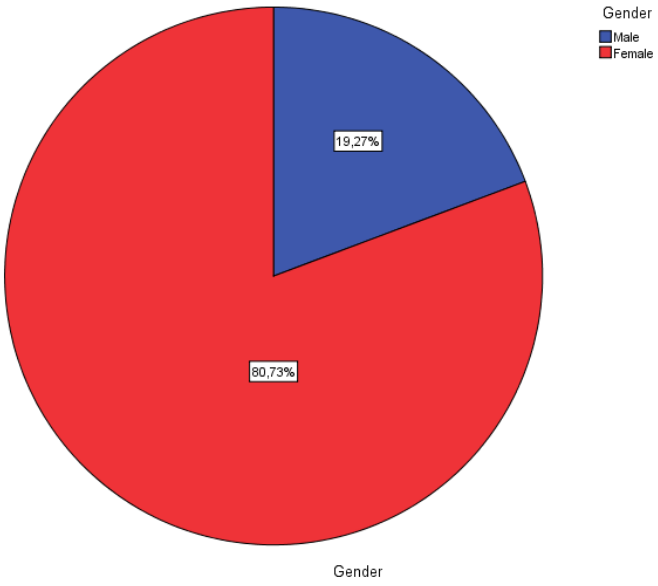
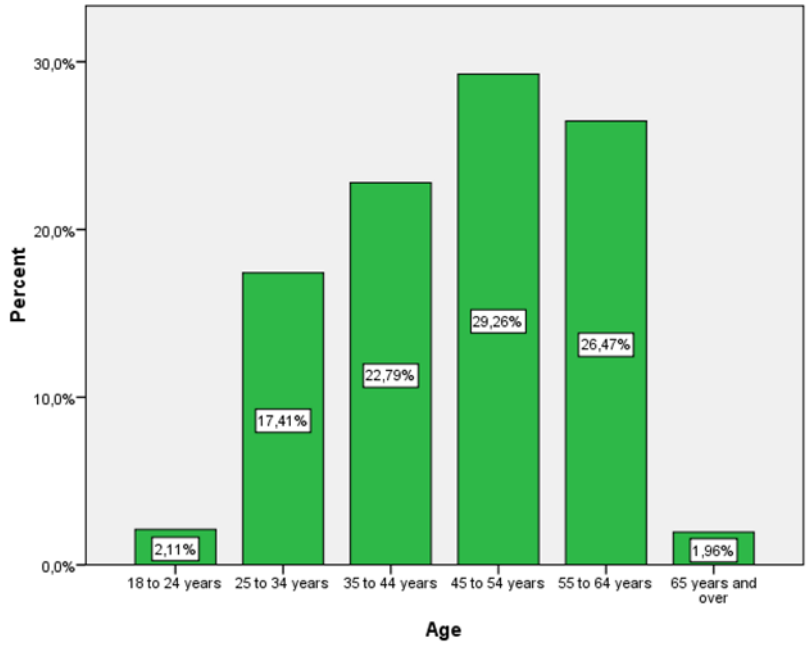
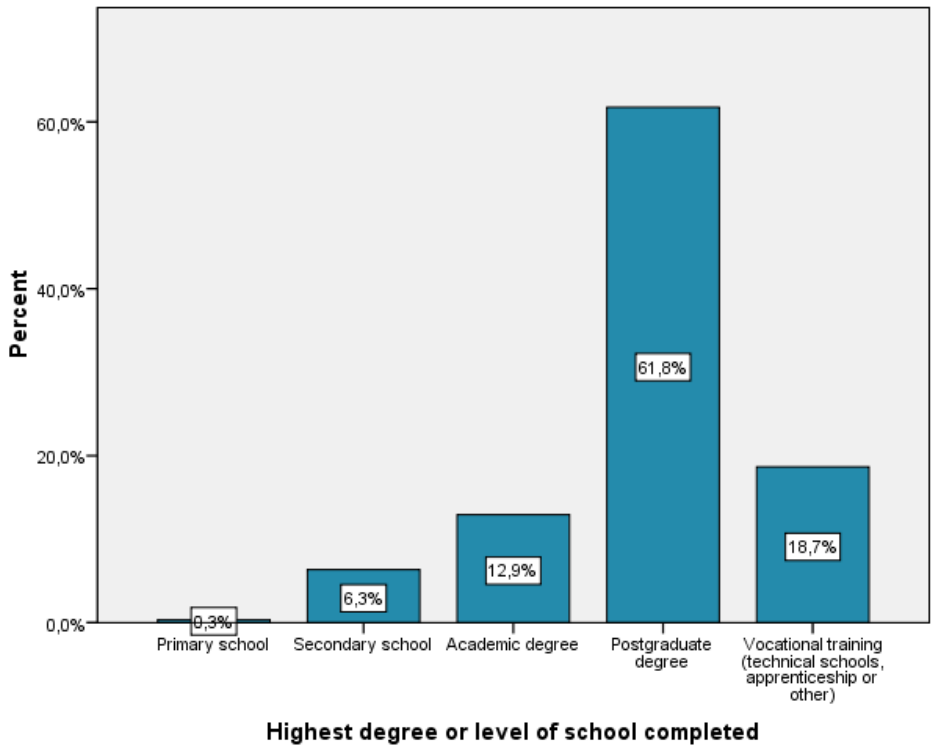


Figure 3: Distribution of the respondents in terms of their age



Most of the participants have completed a postgraduate degree (61.8%), while a significant number have received vocational training (18.7%) or academic degree (12.9%) as shown in Figure 4.

Figure 4: Distribution of the respondents by educational level

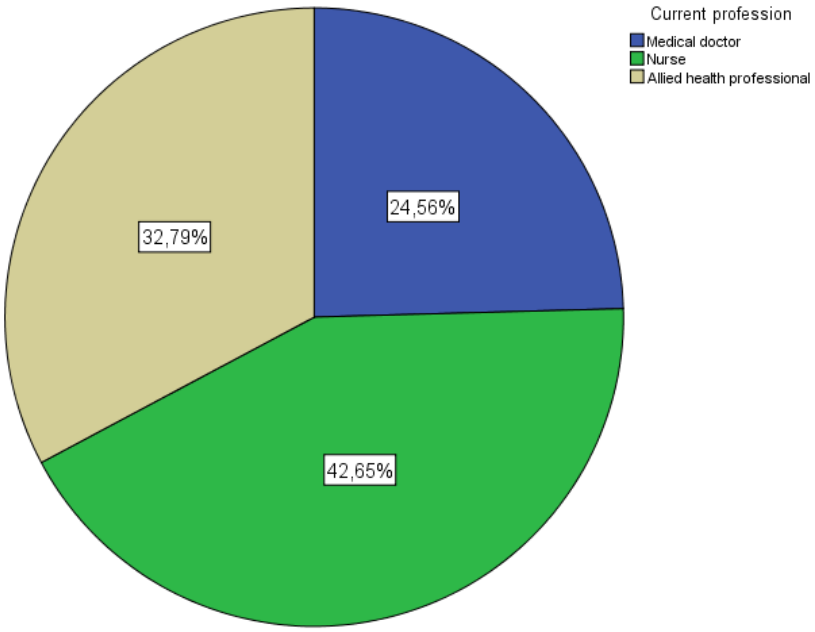


The respondents' current profession is presented specifically for all categories in Table 2 and generally in Figure 5. The majority of respondents (42.7%) are nurses, 32.8% allied health professionals and 24.6% medical doctors.

Table 2: Distribution according to current profession (specific categories)

	Frequency	Percent	Valid Percent
Pediatric specialty or subspecialty	111	2,1	2,3
Surgical specialty or subspecialty	126	2,4	2,6
Internal medicine specialty or subspecialty	142	2,7	2,9
General Practice, family medicine or equivalent	317	6,1	6,5
Laboratory	53	1,0	1,1
Medical doctor_Other	454	8,8	9,3
Hospital nurse	498	9,6	10,2
Emergency Department nurse (A&E)	88	1,7	1,8
Infection control nurse	101	2,0	2,1
Public health nurse	230	4,5	4,7
Midwife or maternal health nurse	89	1,7	1,8
Maternal health / child health or school health nurse	148	2,9	3,0
Primary health care nurse	317	6,1	6,5
Nurse in other settings (nursing home, outpatient clinic)	264	5,1	5,4
Nurse_other	354	6,9	7,2
Pharmacist	31	,6	,6
Dieticians	1	,0	,0
Physical, Occupational, Respiratory Therapists	146	2,8	3,0
Dental Hygienists	23	,4	,5
Social workers	48	,9	1,0
Psychologists	57	1,1	1,2
Hospital epidemiologists	29	,6	,6
Ambulance personnel	27	,5	,6
Laboratory Technicians	45	,9	,9
Assistants / Aides (e.g. home health aides, orderlies, attendants)	353	6,8	7,2
Administrative health care service personnel	196	3,8	4,0
Nonclinical Support personnel of health care facilities (Food services, maintenance, housekeeping/other technical support, janitors)	36	,7	,7
Allied Health Professionals_Other	614	11,9	12,5
Missing	267	5,2	
Total	5165	100,00	

Figure 5: Distribution of the respondents by their current profession (general categories)



Figures 6 and 7 display the sector of work and years of experience in current profession. A large number of participants work in public regional/community hospitals (27.8%), in primary health care centers (23.4%) and in public tertiary/university hospitals (11.8%). Two-thirds of cases have more than 10 years' experience in their current profession (66.7%), 25.2% 2 to 10 years and 8.0% less than 2 years.

Figure 6: Distribution of the respondents by their setting of work

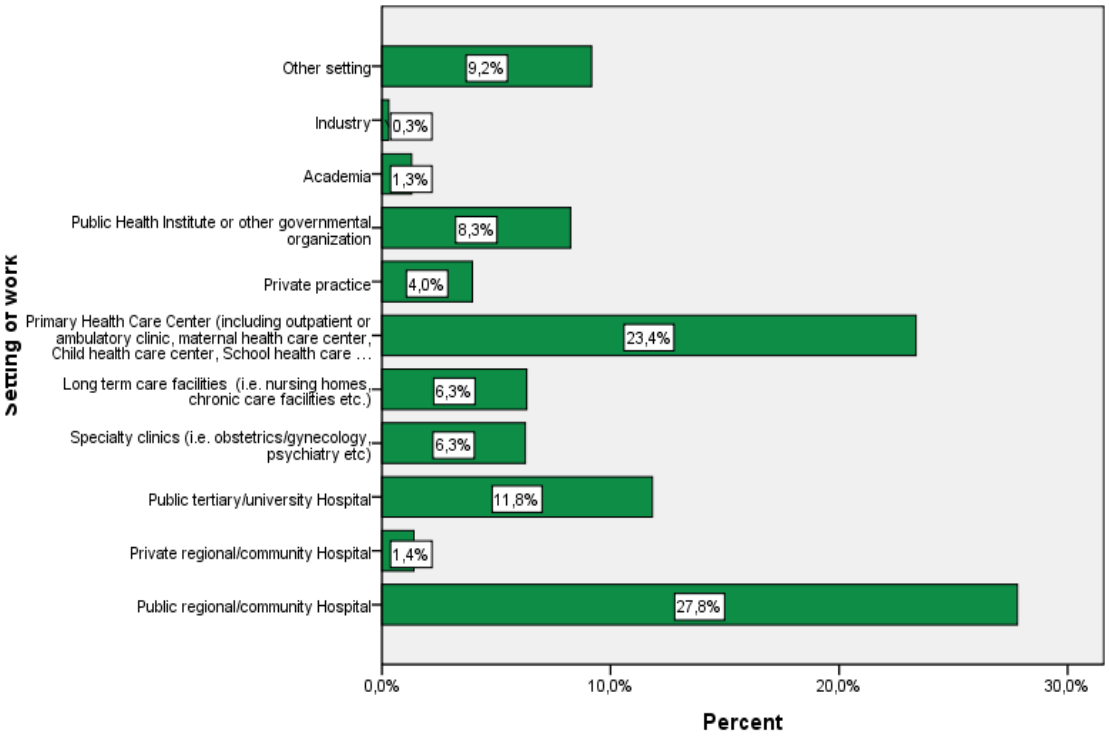
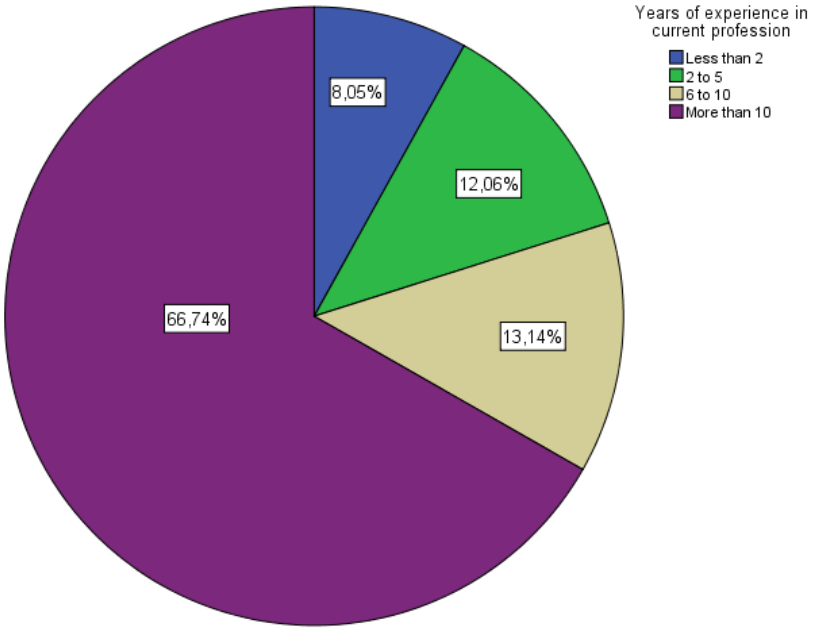


Figure 7: Distribution of the respondents in terms of their experience in current profession



Explanatory Note - sample adjustment

In view of the large number of questionnaires from Sweden compared to the other countries, and the general asymmetry in the distribution among countries, we choose to adjust the sample using weights in order to correctly represent the population. We used the following procedure:

- We obtained from WHO database the number of Health Care workers, distributed by country and profession category (WHO reports data for 4 categories: physicians, nurses, dentists, pharmacists) (the latest available data covering all countries were those of 2009).
- Countries having less than 20 responses, as well as questionnaires in which the country is missing, were omitted from the adjusted sample (in total were omitted 107 questionnaires)

- We calculated the observed sample weights by country within each profession.
- We calculated the weights based in WHO data by country within each profession.
- By dividing the WHO weights with those of the observed sample, we obtained the frequencies used to weight each observation. In this way, for each profession, the distribution by country of the weighted sample is the same as in the WHO database.

Important notes:

1. WHO does not report data for other allied health personnel (reports only physicians, nurses, dentists and pharmacists). Thus, the country weights used for other allied health personnel and those who did not declare profession category (i.e. missing cases) are calculated based on the sum of medical doctors, nurses, dentists and pharmaceutical personnel for each country that are reported by WHO. Thus we assume that these are proportional for each country to the total of other health professionals (i.e. a country with many physicians and nurses is expected to have also large allied health personnel).
2. The above methodology weights the sample by country, to correspond to that of WHO, but not by profession (i.e. we cannot use the joint distribution, but the marginal), since WHO does not report the share of the other allied health professionals.

Figures 8 and 9 present country of employment before and after adjusting the sample. Tables A-1 to A-3 display the WHO weights used.

Figure 8: Distribution by country based on the unadjusted sample

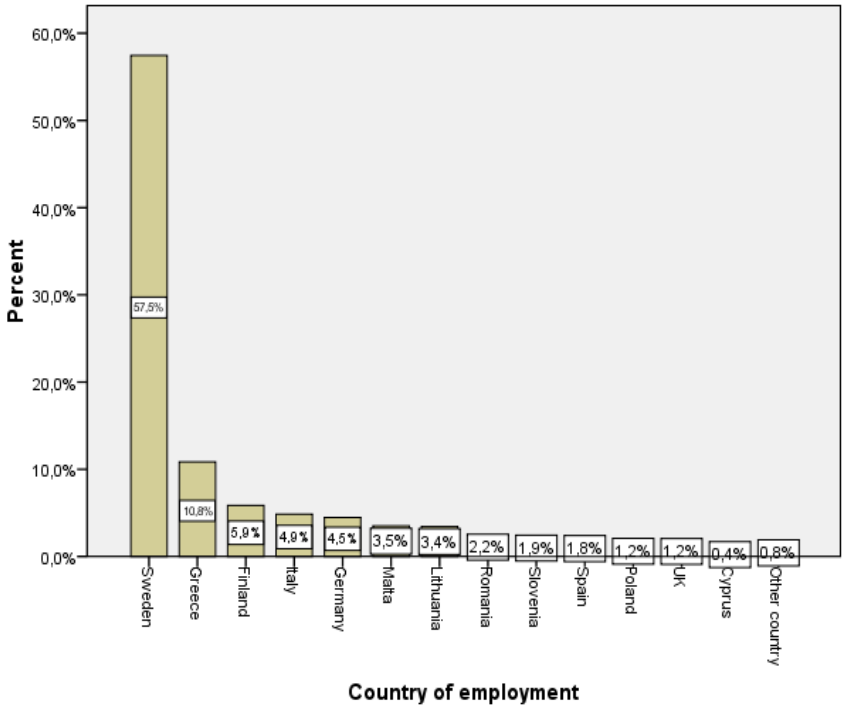
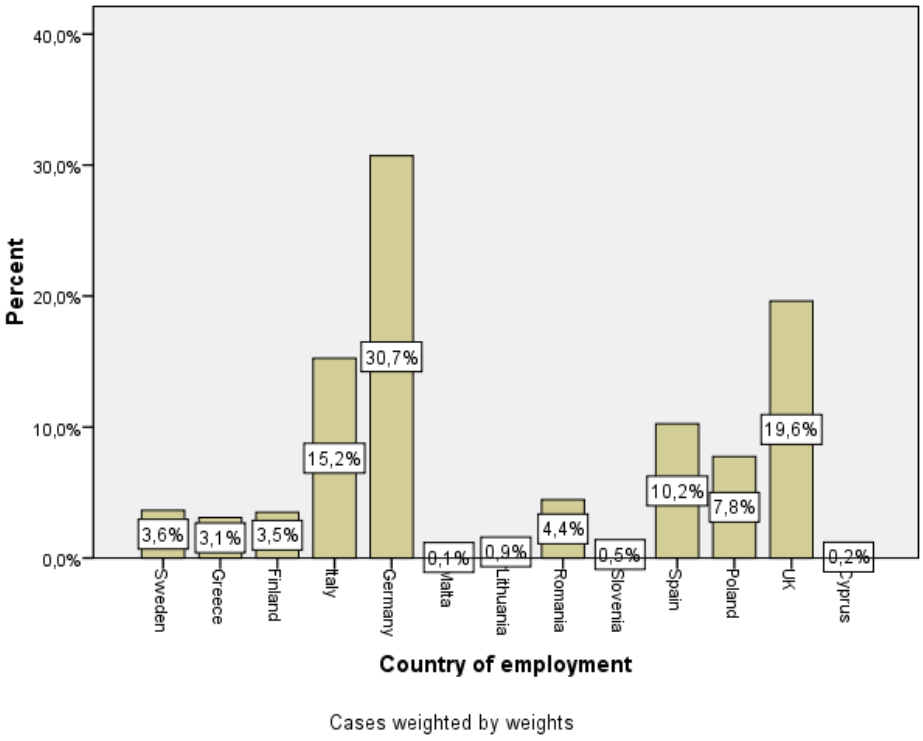


Figure 9: Distribution by country based on the adjusted sample (according to WHO 2009 database)



3.2 Vaccination behavior

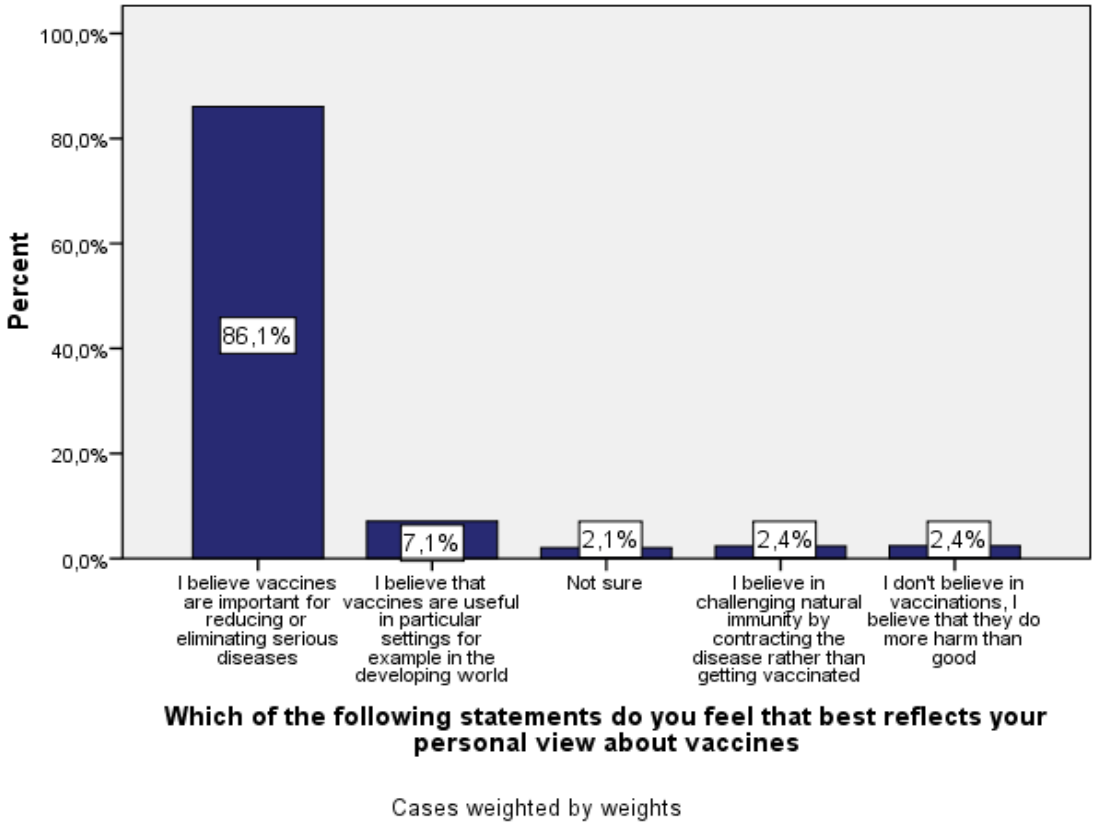
3.2.1. Personal view about vaccines

We asked respondents about their views on the importance of vaccines asking them to agree or disagree with the following statements: (1) I believe vaccines are important for reducing or eliminating serious diseases (2) I believe that vaccines are useful in particular settings for example in the developing world (3) Not sure (4) I believe in challenging natural immunity by contracting the disease rather than getting vaccinated (5) I don't believe in vaccinations, I believe that they do more harm than good

Responses were analyzed by country, age, current profession and years in current profession.

The vast majority of respondents believe that vaccines are important for reducing or eliminating serious diseases (86.1%), while only 7.1% feels that vaccines are useful in particular settings, 2.4% prefers challenging natural immunity by contracting the disease rather than getting vaccinated, 2.4% do not believe in vaccines and considers vaccinations harmful and 2.1% is not sure about the role of vaccinations (Figure 10).

Figure 10: Personal view about vaccination



Analysis by country is shown in Figure 11. As is seen in all countries except Slovenia, ***the majority of the health care workers believe that vaccines are important for reducing or eliminating serious diseases (the corresponding percentages are above 77.0%). In Slovenia however the majority (55.6%) of respondents believe vaccinations do more harm than good.*** (The percentages are displayed analytically in Table A-4).

Figure 11: Personal view about vaccination by country

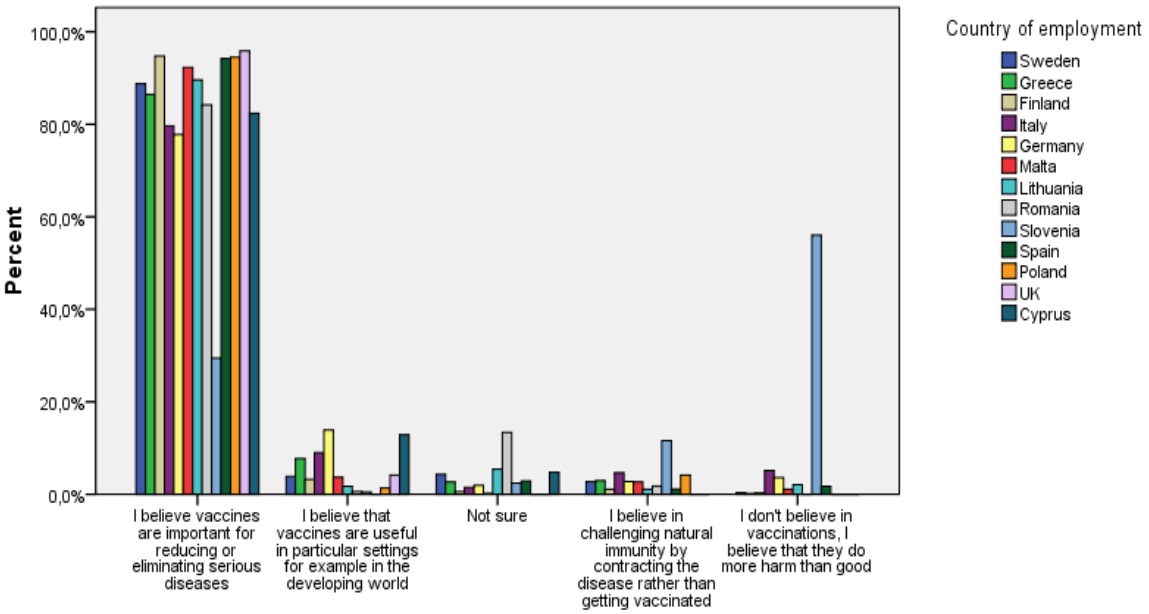
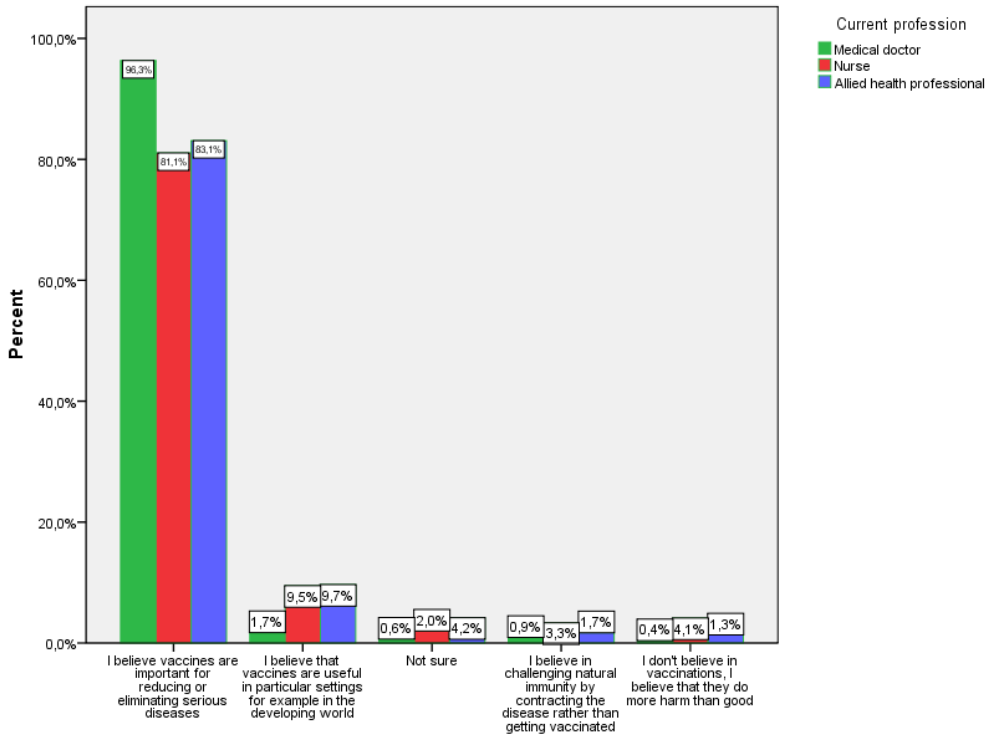


Figure 12 depicts participants' view about vaccination in terms of their current profession. Physicians believe in higher percentages that vaccines are important for reducing or eliminating serious diseases (96.3% versus 81% for nurses and 83.1% for allied health professionals), while only a 1.7% believes that vaccines are useful in particular settings (versus 9.5% for nurses and 9.7% for allied health professionals). 1.3% of medical doctors does not believe in vaccinations and feel that they do more harm than good (versus 7.6% for nurses and 3.1% for allied health professionals). ***The corresponding statistical test indicates that there is significantly relationship between current profession and personal view on vaccination*** (Pearson χ^2 = 201.3, p-value < 0.001, Table A-5).

Figure 12: Personal view about vaccination by their current profession



The number of age groups was reduced to achieve a better presentation and understanding of findings. Figure 13 shows that ***the majority of respondents of each age group believe that vaccines are important for reducing or eliminating serious diseases***. In particular, 85.9% of respondents aged 18 to 34 years, 83.6% of those aged 35 to 44, and 87.0% of those aged 45 to 54 and 88.1% of those over 55 years old believe that vaccines are important. However, a considerable percentage of participants believe that vaccines are useful in particular settings (6.7% for the age group of 18-34 years, 9.4% for 35-44 years and 8.1% for 45-54 years). Views about vaccines are slightly different for older respondents. More specifically, 5.4% of respondents aged 55 years and over believe in challenging natural immunity by contracting the disease rather than getting vaccinated, while the corresponding percentage of people 18 to 34 years is 1.2%, 35 to 44 years is 1.9% and 45 to 54 years is 1.7%. On the other hand, younger respondents seem to have a worse opinion about vaccinations compared to older people, as 4.8% aged 18 to 34 years, 3.6% of 35 to 44 years believe that vaccines do more harm than good. The corresponding percentages for ages between 45 to 54 and older than 55 years are 0.7% and 0.6% of 55 respectively. ***The relation between age and personal view on vaccination is statistically significant*** (Pearson χ^2 = 167.7, p-value < 0.001).

Figure 13: Personal view about vaccination by age group

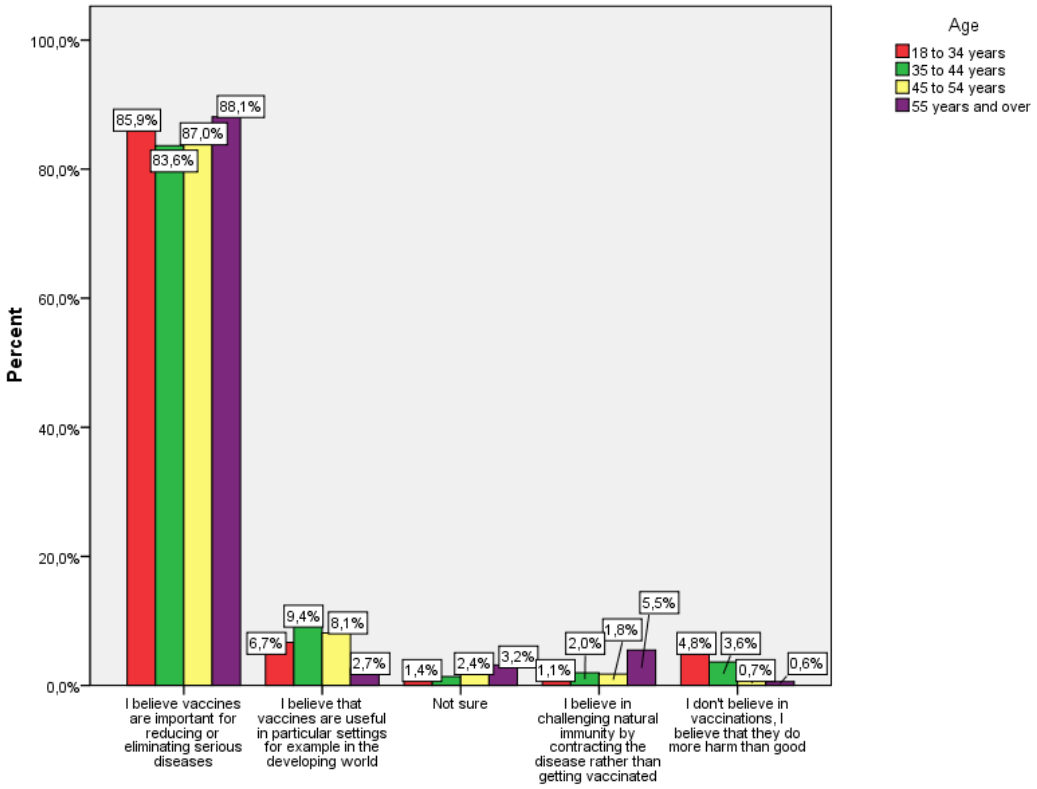
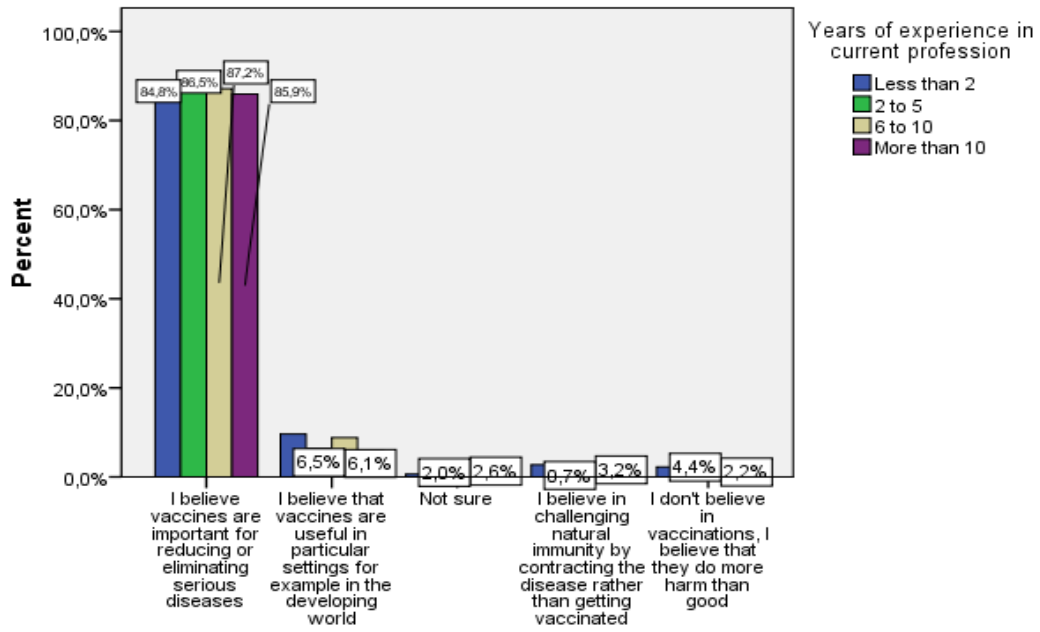


Figure 14 shows the HCWs opinions about vaccination by years of experience in their current profession. The majority of participants believe that vaccination is important regardless of years of experience**. There is a statistical significant relation between respondents' personal statement about vaccines and their experience in current profession** (Pearson $\chi^2 = 61.8$, p-value < 0.001).

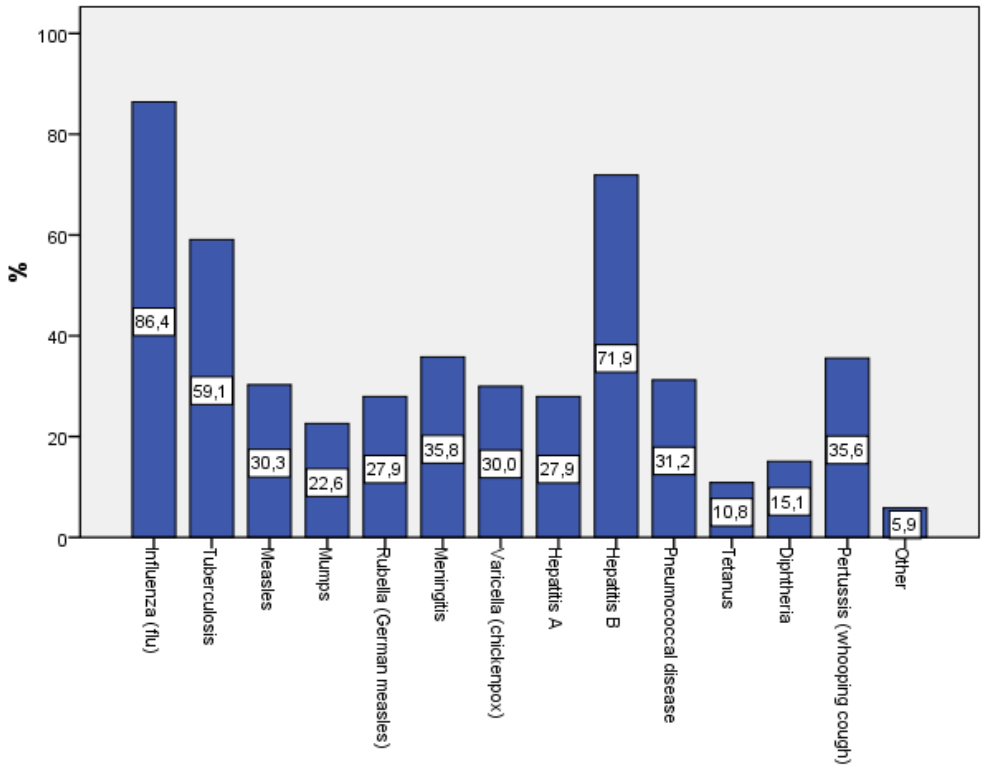
Figure 14: Personal view about vaccines by years of experience



3.2.2. Diseases believed by respondents to be more at risk of contracting or transmitting to patients or family

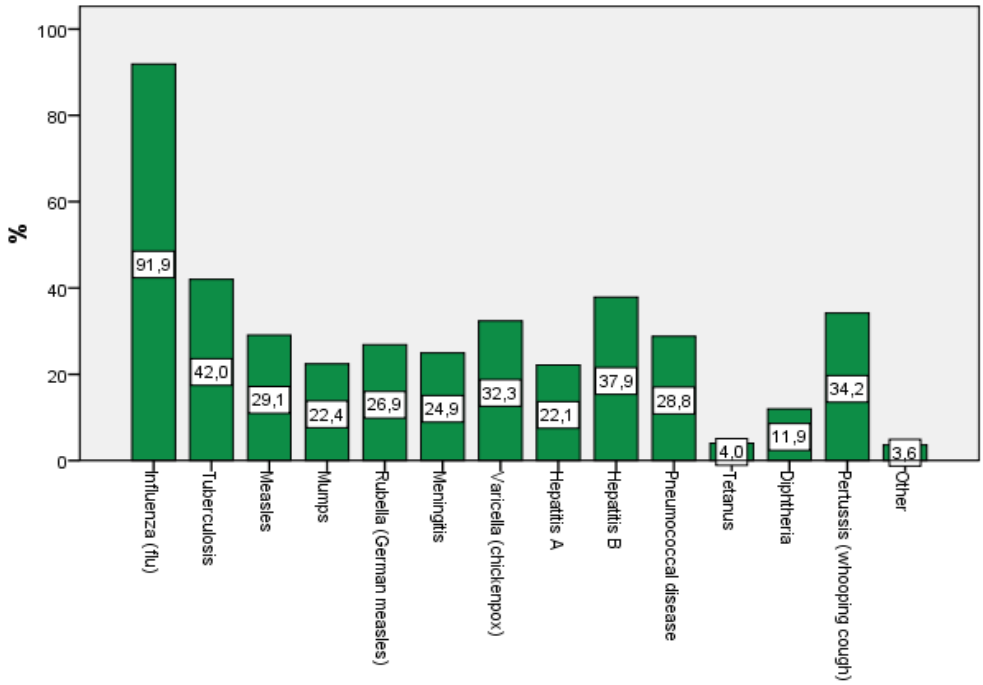
Health care workers were asked about the diseases they believe they are more at risk of contracting due to the nature of their work or transmitting to patients and family. In these two types of questions respondents could choose more than one answer. Respondents declared that ***Influenza (86.4%), Hepatitis B (71.9%) and Tuberculosis (59.1%) are among the diseases that are more at risk of being contracted at their work*** (Figure 15).

Figure 15: Diseases that are believed by the respondents to be more at risk of contracting



The percentage of the health care workers who believe that Influenza, Tuberculosis and Hepatitis B are among the most dangerous diseases for transmitting to patients and family are 91.9%, 42.0% and 17.9% as shown in Figure 16.

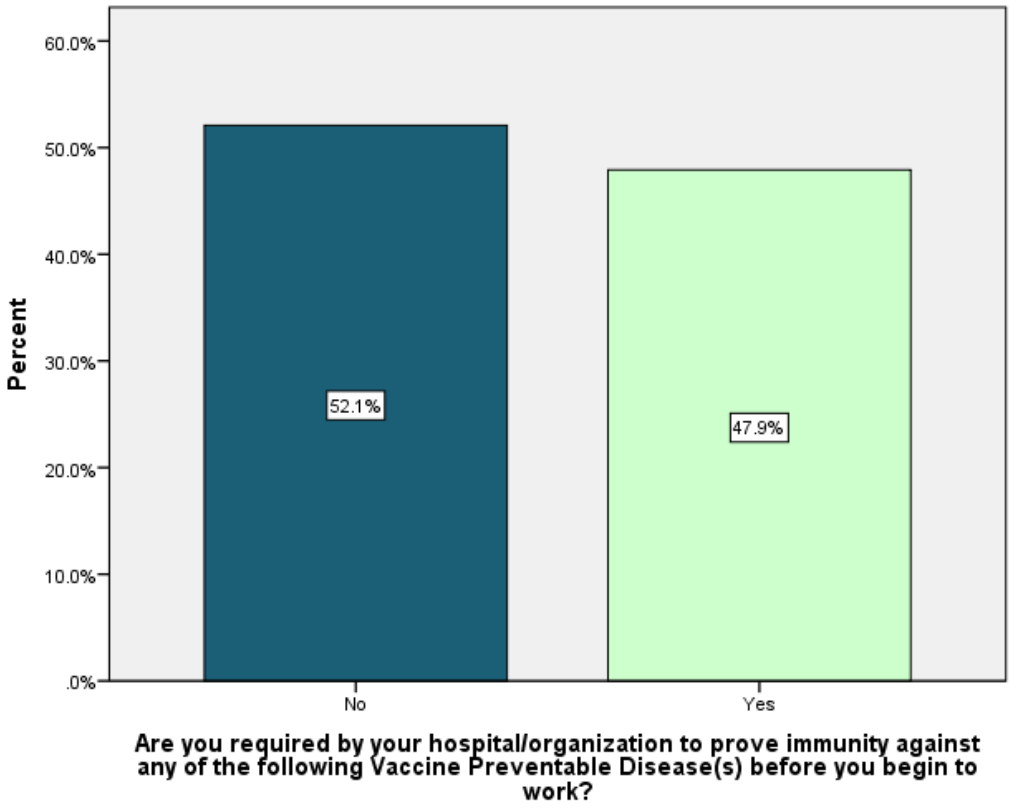
Figure 16: Diseases that are believed by the respondents to be more at risk of transmitting to patients and family



3.2.3. Immunization against Vaccine Preventable Diseases (VPD)

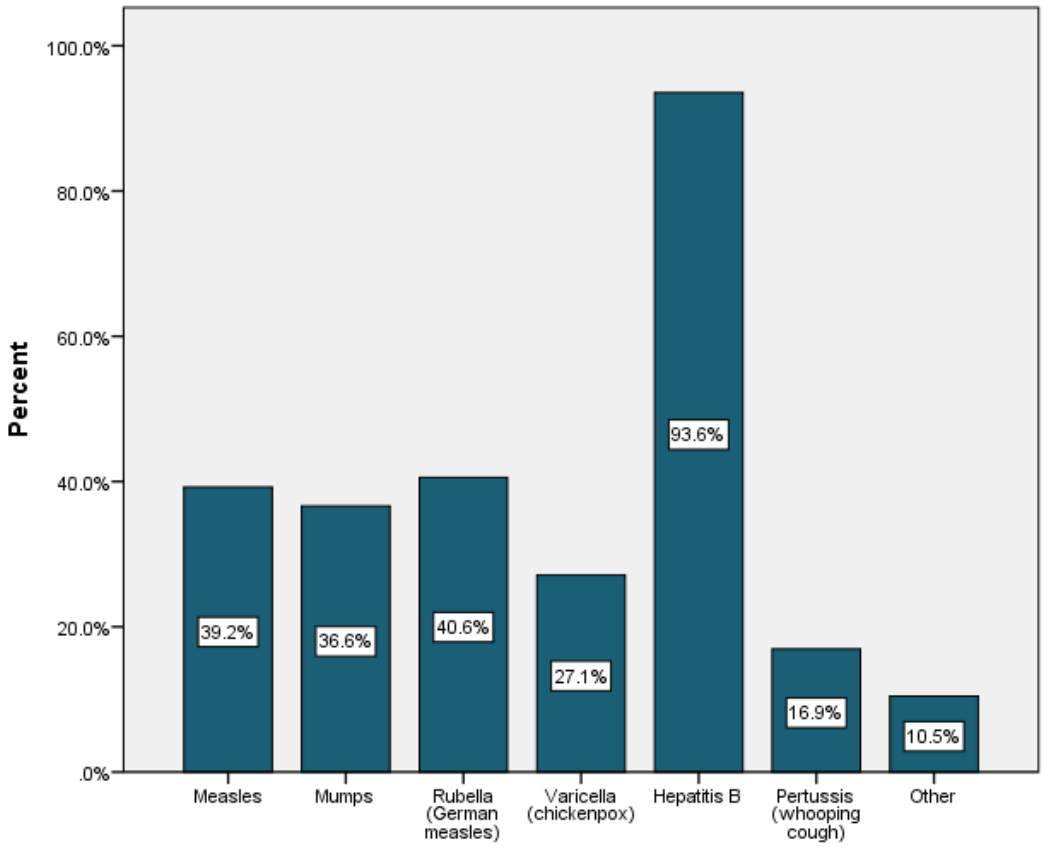
Respondents were asked whether they were required to prove immunity before they began work. Figure 17 shows that more than half of the workers (52.1%) did not need to prove immunity against vaccine preventable diseases.

Figure 17: Requirement for immunization against VPDs



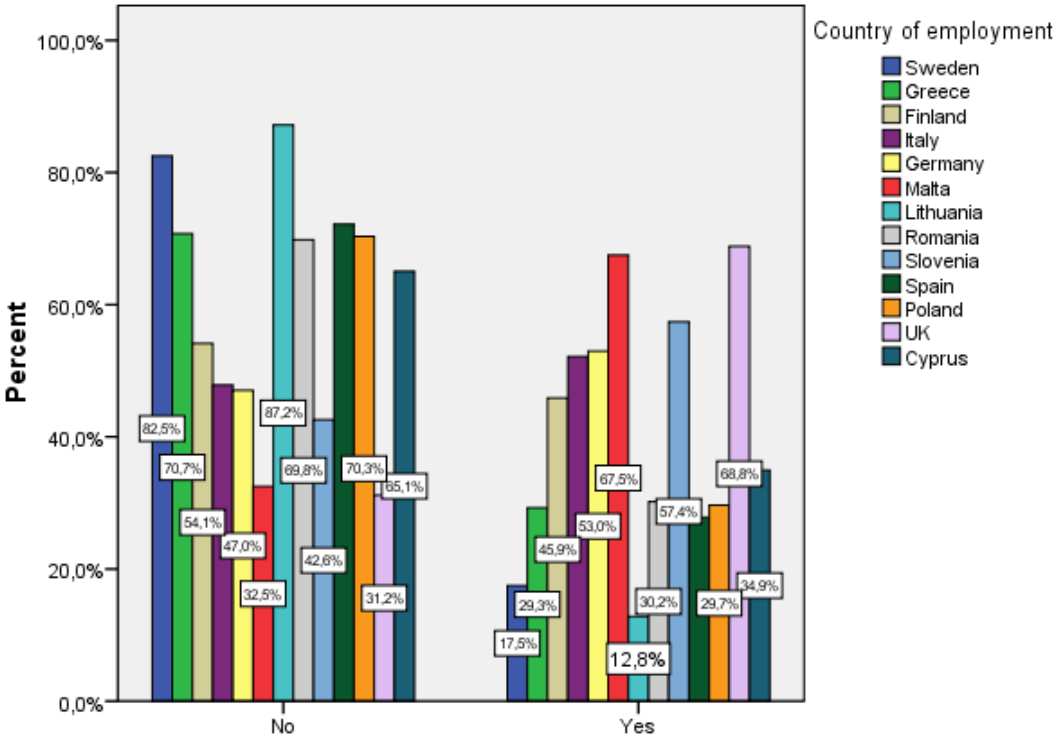
Of those who were asked to prove immunity, 93.6% had to prove immunity against Hepatitis B, 40.6% against Rubella, 39.2% against measles and 36.6% against Mumps (Figure 18).

Figure 18: Percentages of respondents having to prove immunity against VPDs (based on those who declared that had to prove immunity)



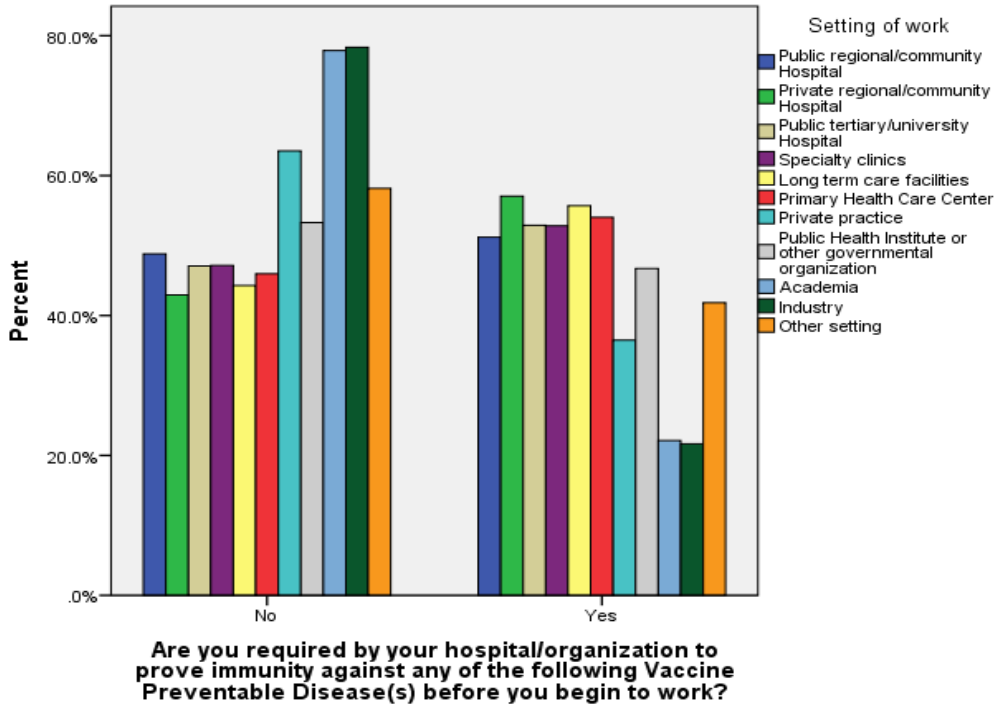
Percentages of respondents having to prove immunity are presented separately for each country in Figure 19. ***The majority of health care workers from all countries do not need to prove immunity against vaccine preventable diseases except Germany, Italy, Malta, Slovenia and UK.*** Thus the relation between country and requirement for immunity is statistically significant (Pearson $\chi^2 = 473.9$, p-value < 0.001, Table A-5).

Figure 19: Requirement for immunization against VPDs by country



The requirement to prove immunity before starting work is shown for each work sector in Figure 20 (percentages are given analytically in Table A-6). No great differences are observed between health care workers who have to prove immunity or not between different work sectors (percentages are close to 50%), except for those working in academia, industry or private practice that do not have to prove immunity in most of the cases. The relation between work sector and requirement for immunity is statistically significant (Pearson $\chi^2 = 105.4$, p-value < 0.001).

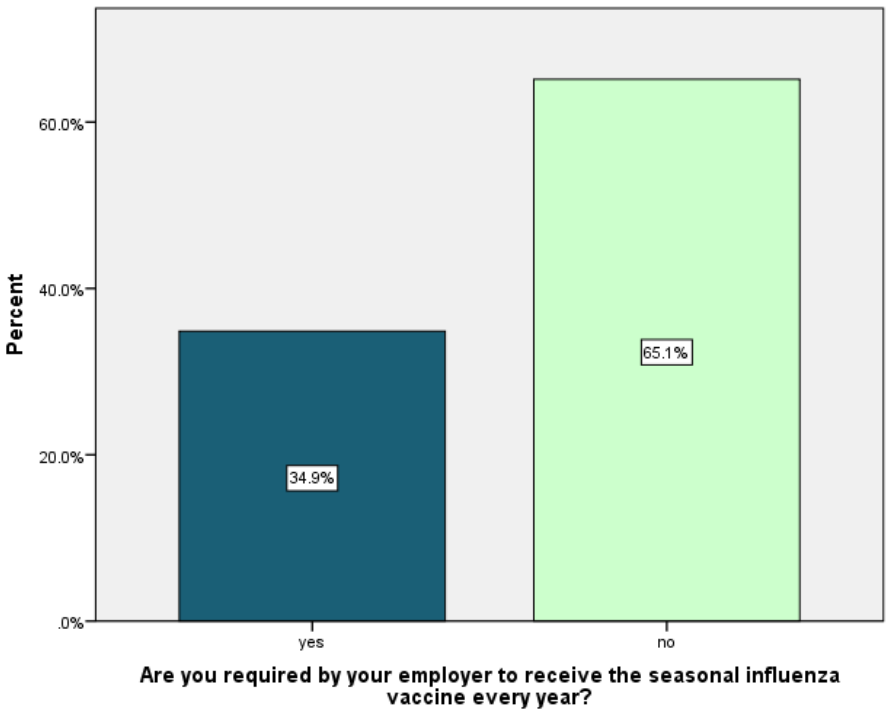
Figure 20: Requirement for immunization against VPDs by work sector



3.2.4. Vaccination against seasonal influenza every year

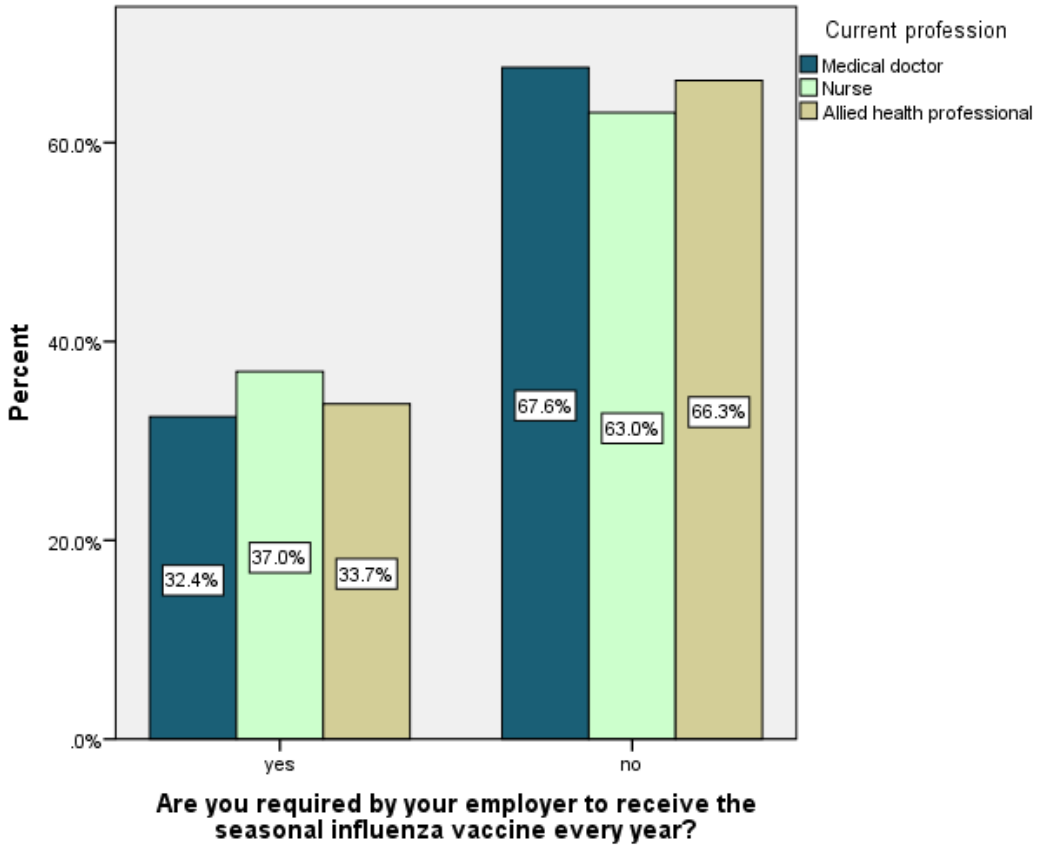
Most health care workers (65.1%) are not required by their employer to receive the seasonal influenza vaccine every year (Figure 21). The percentages of respondents who receive the seasonal influenza vaccine every year are presented with respect to their current profession, country of employment and work sector in Figures 22, 23 and 24. The corresponding percentages are displayed analytically in Table A-7 and A-8.

Figure 21: Percentage of respondents who are required to receive the seasonal influenza vaccine every year



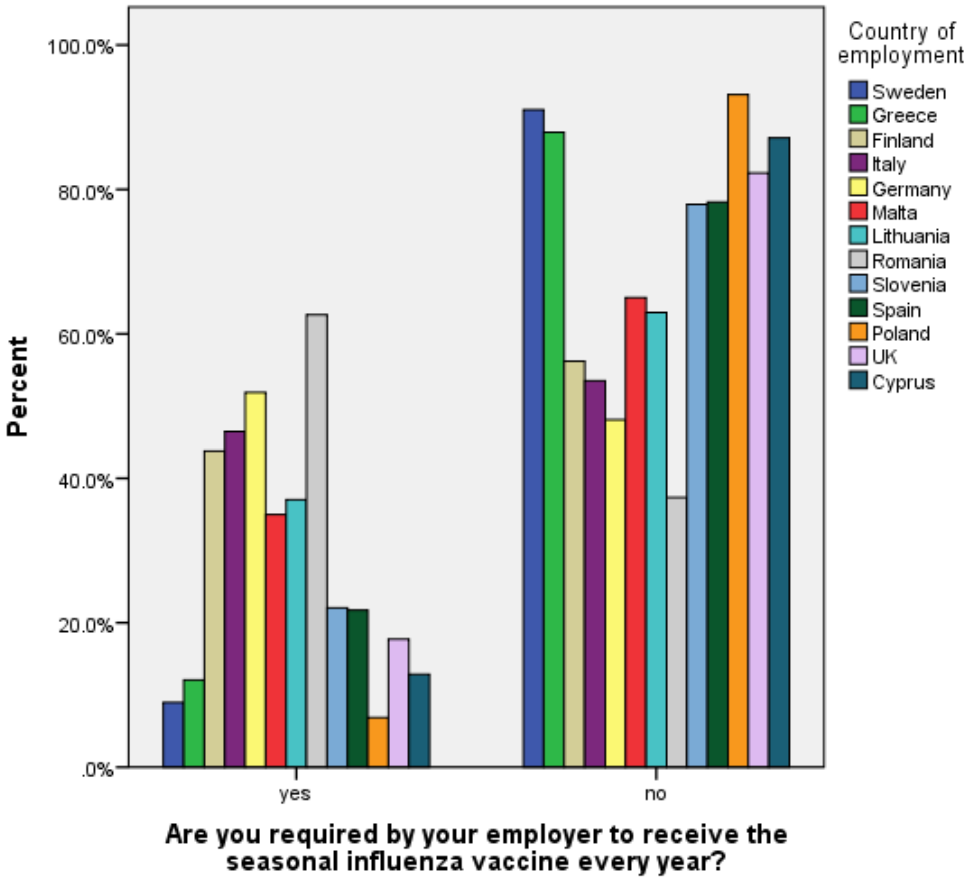
As is seen in Figure 22 nurses reported that they are not required to receive the seasonal influenza vaccine in 37.0% of the cases, which is more frequent than the corresponding frequencies for medical doctors (32.4%) and allied professionals (33.7%). Thus there is a significant difference between current profession and requirement to receive the seasonal influenza vaccine (Pearson $\chi^2 = 8.1$, p-value = 0.017).

Figure 22: Percentage of respondents who are required to receive the seasonal influenza vaccine every year by their current profession



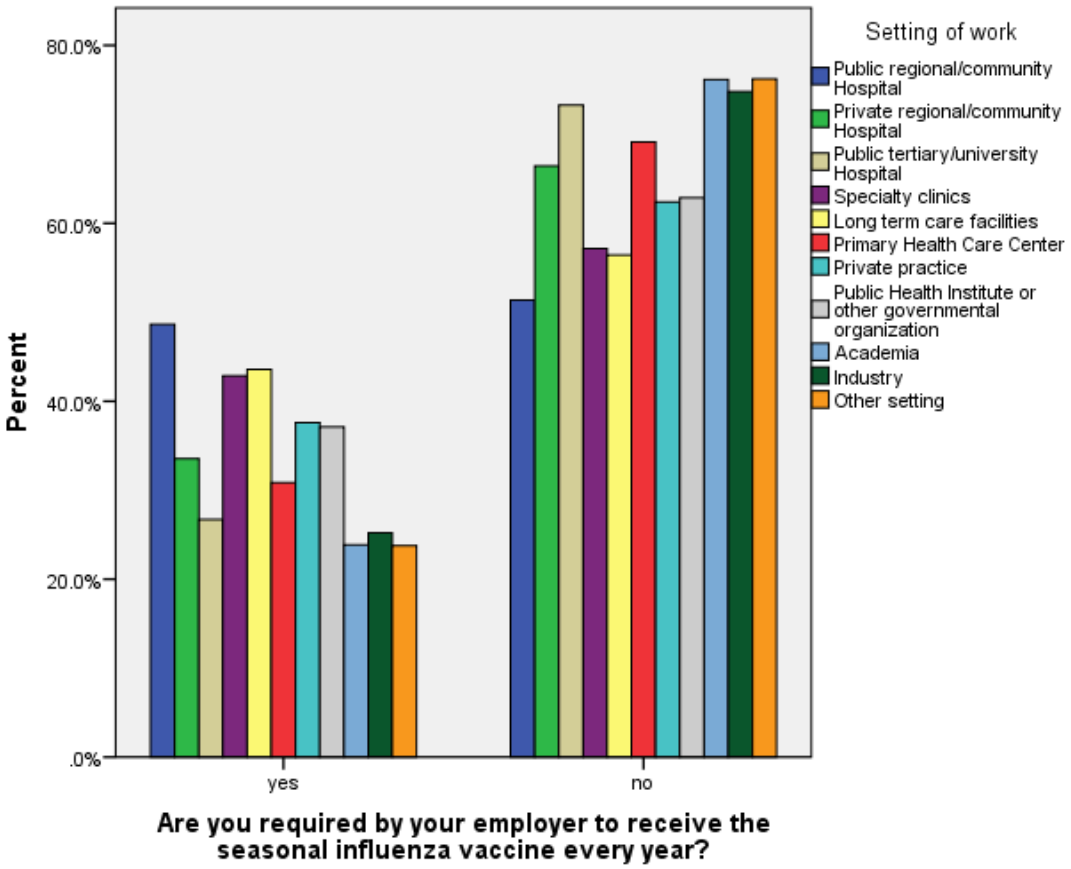
The majority of respondents as is seen in Figure 23 (more than 77.8%) in Sweden, Greece, Slovenia, Spain, Poland, UK and Cyprus are not required to receive the seasonal influenza vaccine. The corresponding percentages for health care workers from Finland, Italy, Malta and Lithuania are lower (between 53.5% and 63.0%). Most of the respondents from Germany (51.9%) and Romania (62.8%) do have to receive the seasonal influenza vaccine every year.

Figure 23: Respondents required to receive the seasonal influenza vaccine each year by country



Most of the health care workers in public tertiary or university hospital (73.4%), academia (76.4%), industry (74.5%) and other settings (76.2%) as is seen in Figure 24 are not required to receive the seasonal influenza vaccine every year. The corresponding percentages for health care workers in all the other work sectors are higher; however, they are still more than 50%. This relation is found to be statistically significant (Pearson $\chi^2 = 148.1$, p-value < 0.001).

Figure 24: Respondents required to receive the seasonal influenza vaccine every year by work sector



3.2.5. Vaccination in the last 10 years

Health care workers were asked about the vaccination they have received in the last years and the reasons for doing or not doing so. ***Hepatitis B, Td or Tdap and seasonal influenza flu are among the most frequent vaccines that the respondents have received the last 10 years.*** The percentages for each of the vaccines are shown in Figure 25 and they are based only on those who remember if they have received it. The following figures summarize the findings separately for each vaccine with respect to the country of employment and the current profession of the respondents.

Seasonal Influenza (flu) vaccine

As shown in Figure 26, UK and Finland have the highest percentage of respondents who have received seasonal influenza vaccines (83.5% and 80.6% respectively) the last 10 years. The corresponding percentages for Poland, Malta and Romania are 76.8%, 75.0% and 72.2%. It turns out that respondents from Spain (63.6%), Germany (59.3%), Lithuania (55.9%), Italy (54.0%) and Greece (52.5%) have received less frequently such vaccination. The majority of the health care workers from Sweden, Cyprus and Slovenia have not received the seasonal influenza vaccination. The percentages are presented analytically in Table A-9. Figure 27 displays the frequency of seasonal influenza vaccine with respect to the current profession. ***Medical doctors have received more frequently the seasonal influenza vaccine (76.7%) than nurses (62.0%) and allied health professionals (56.3%).*** The corresponding statistical test indicates significant relation (Pearson $\chi^2 = 97.5$, p-value < 0.001).

Health care workers were also asked to declare the reasons for receiving or not this vaccine. The majority (60.0%) of those who have received the vaccine did so, because they believe in the protection that it can offer (Figure 28). No great differences on the reasons for receiving this vaccine are observed among the current profession of the respondents (Figure 29). More than

30% percent of the nurses and the allied health professionals who did not received the seasonal influenza vaccine believe more in natural immunization rather than in vaccination, whereas, the corresponding percentage for medical doctors is 18.1% (Figures 30 and 31).

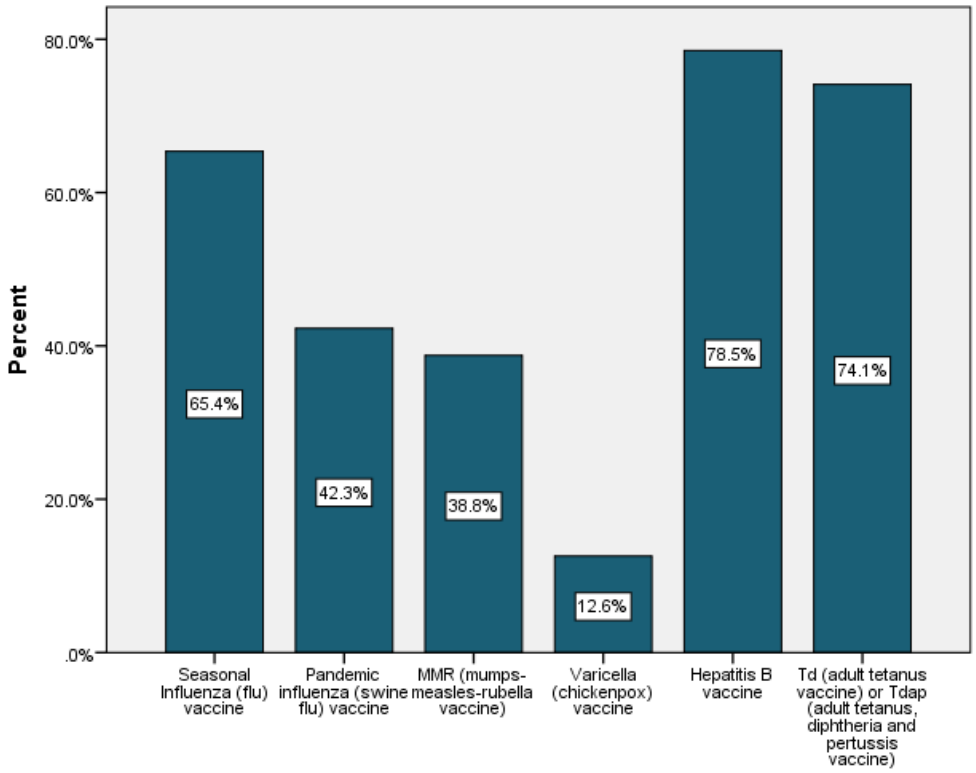


Figure 25: Percentage of respondents who have received any of the vaccines in the last 10 years (based on those who remember)

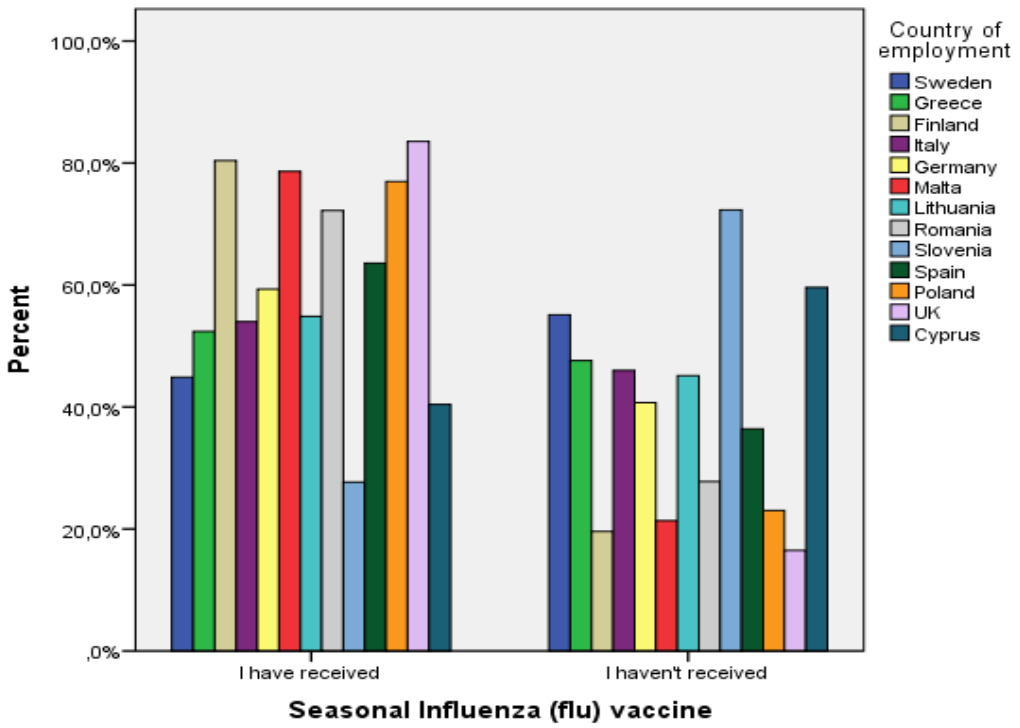


Figure 26: Percentage of respondents who have received the seasonal influenza vaccine by country

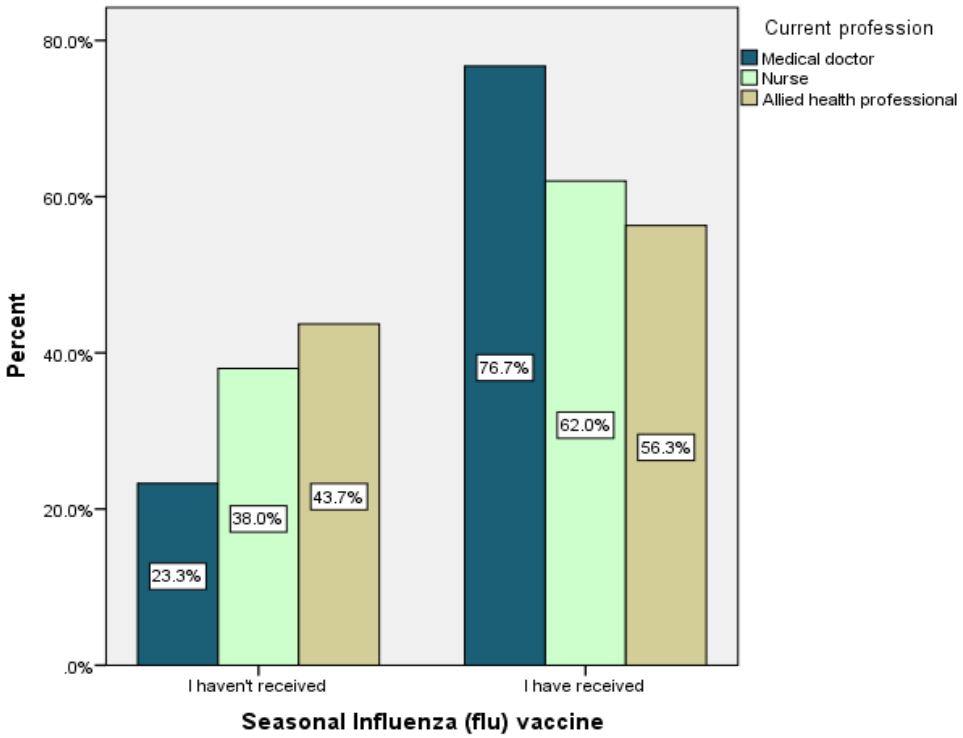


Figure 27: Percentage of respondents who have received the seasonal influenza vaccine by current profession

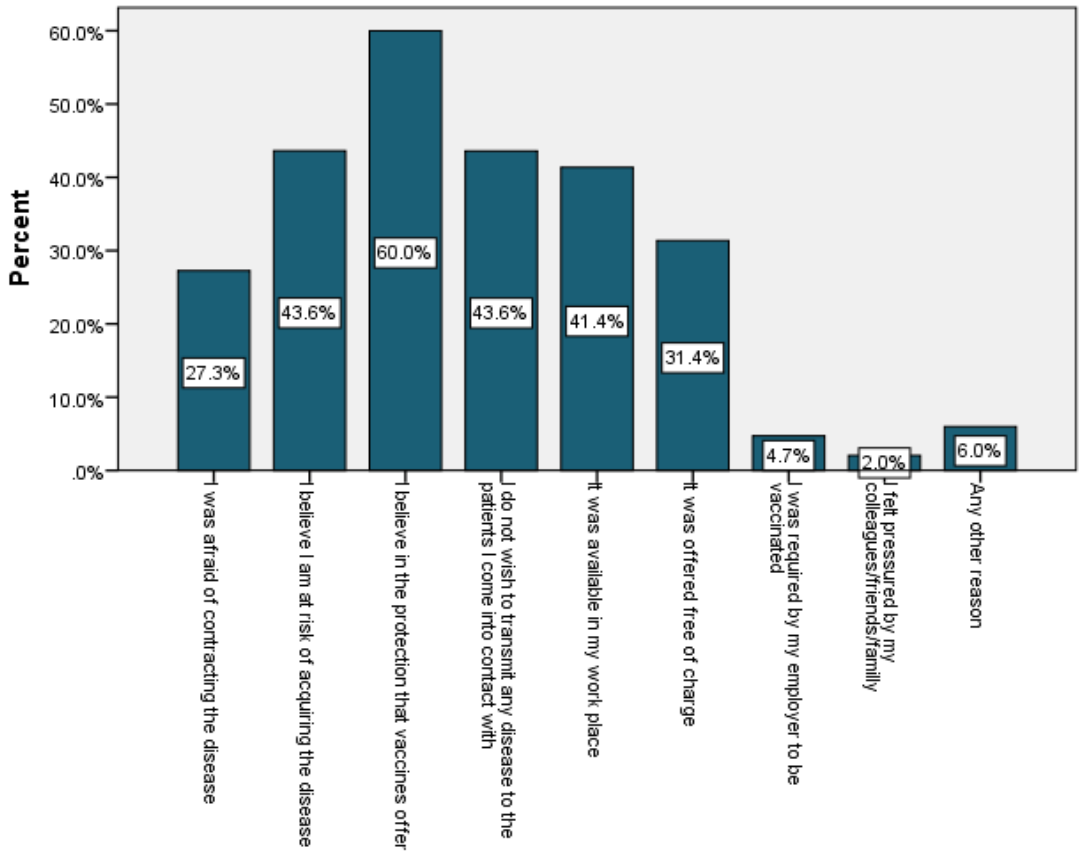


Figure 28: Reasons for receiving the seasonal influenza (flu) vaccine (based in those who declared a reason for receiving)

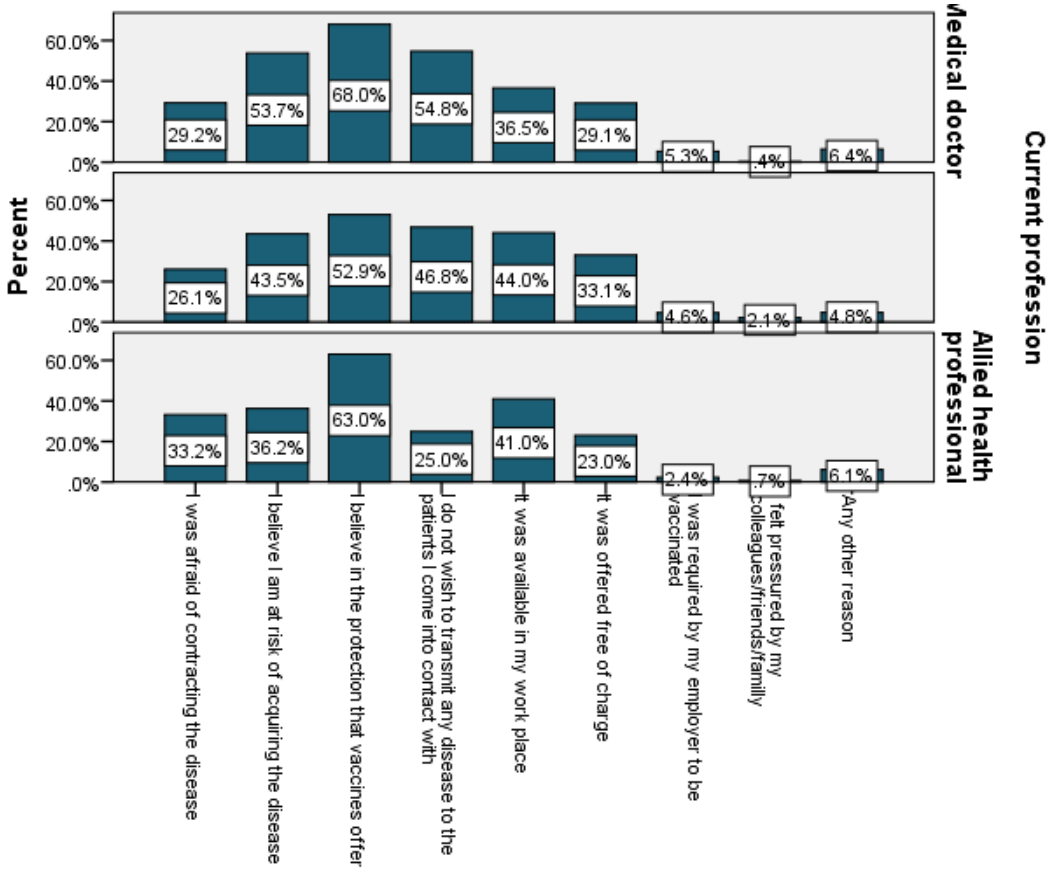


Figure 29: Reasons for receiving the seasonal influenza (flu) vaccine by current profession (based in those who declared a reason for receiving)

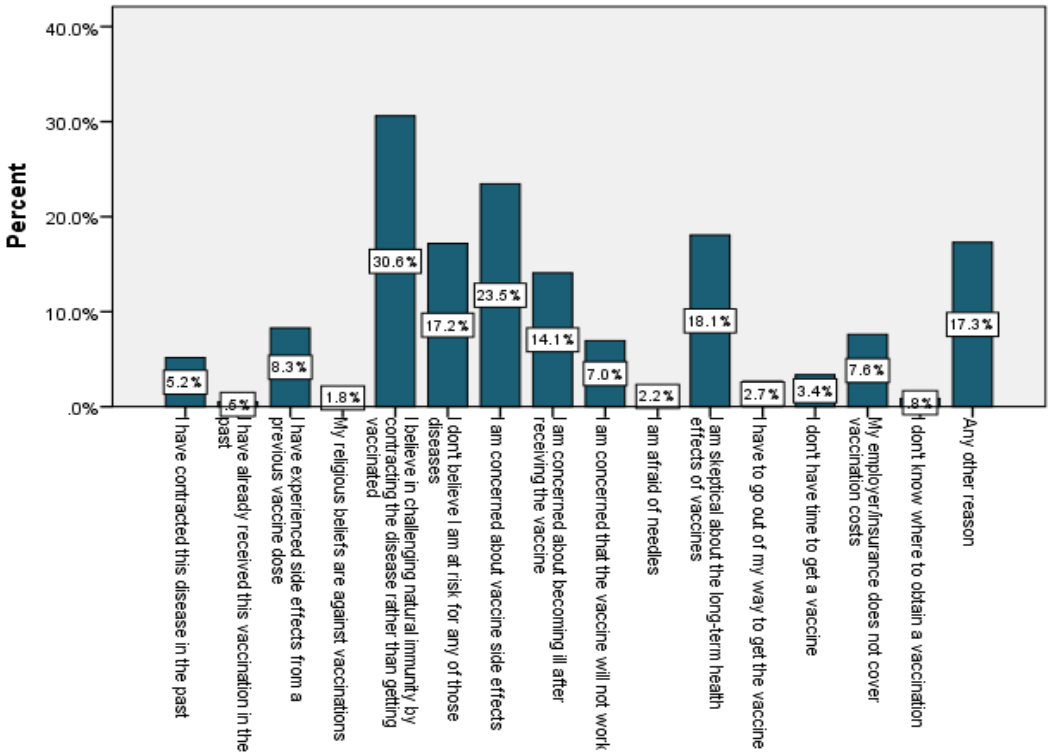


Figure 30: Reasons for not receiving the Seasonal Influenza (flu) vaccine (based on those who declared a reason for not receiving)

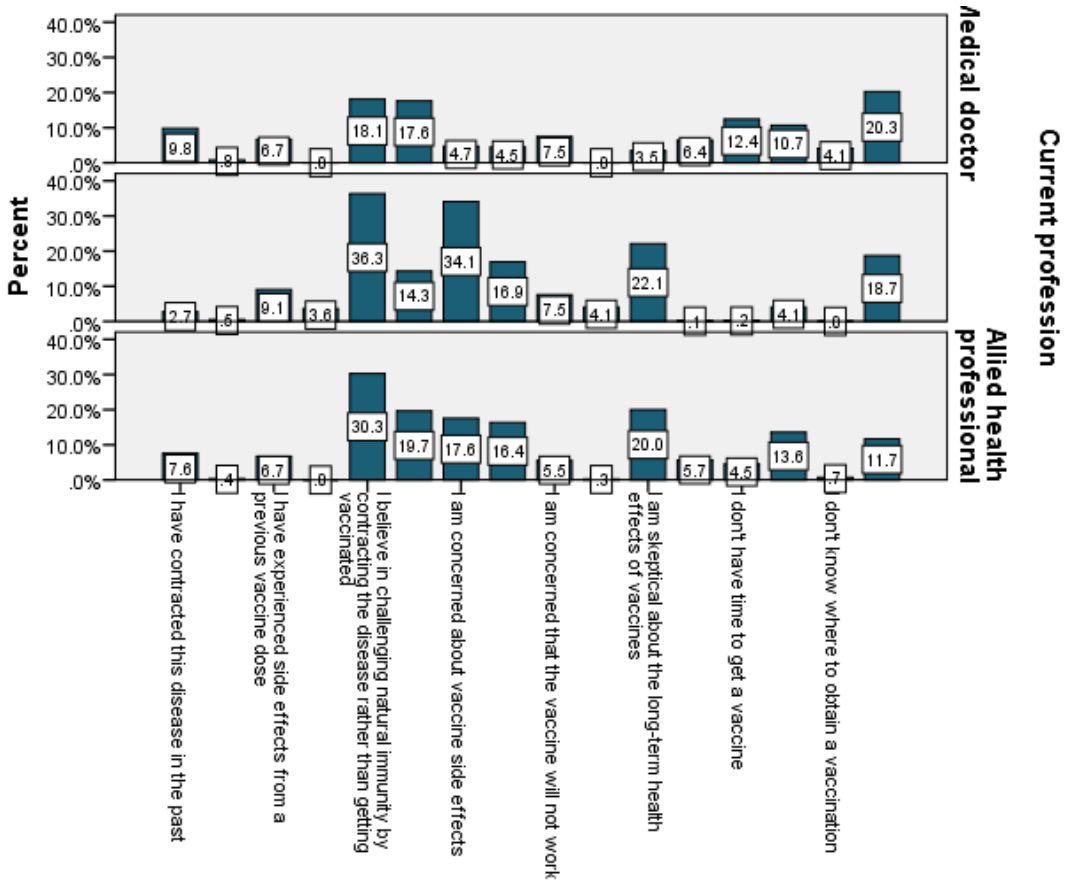


Figure 31: Reasons for not receiving the Seasonal Influenza (flu) vaccine by current profession (based on those who declared a reason for not receiving)

Pandemic Influenza (swine flu) vaccine

The majority of the respondents from Finland (88.9%), Sweden (83.1%), Malta (75.0%), Romania (62.7%) and the UK (59.3%) have received the pandemic influenza vaccine. Most of the respondents from the remaining countries have not received such vaccination (Figure 32 and Table A-10). ***Most of the medical doctors (56.5%) have received the pandemic influenza vaccine, whereas, most of the nurses (64.6%) and the allied health professionals (57.0%) have not received it*** (Figure 33). It turns out that the frequency of receiving the pandemic influenza vaccine differs significantly among the categories of the current profession of the respondents (Pearson $\chi^2 = 108.3$, p-value < 0.001).

The respondents have received this vaccine due to the protection that they believe that it offers in the 58.5% of the cases (particularly, this reason was selected by the 67.4% of medical doctors, 55.2% of nurses and 56.3% of allied health professionals, Figures 34 and 35). Most of the health care workers have not received this vaccine because they believe that they are not at risk (28.0%) or they are concerned about vaccines side effects (24.4%). Nurses and allied professional (31.0% and 21.7%) seem to worry more about vaccines side effects than medical doctors (14.7%). The results are given analytically in Figures 36 and 37.

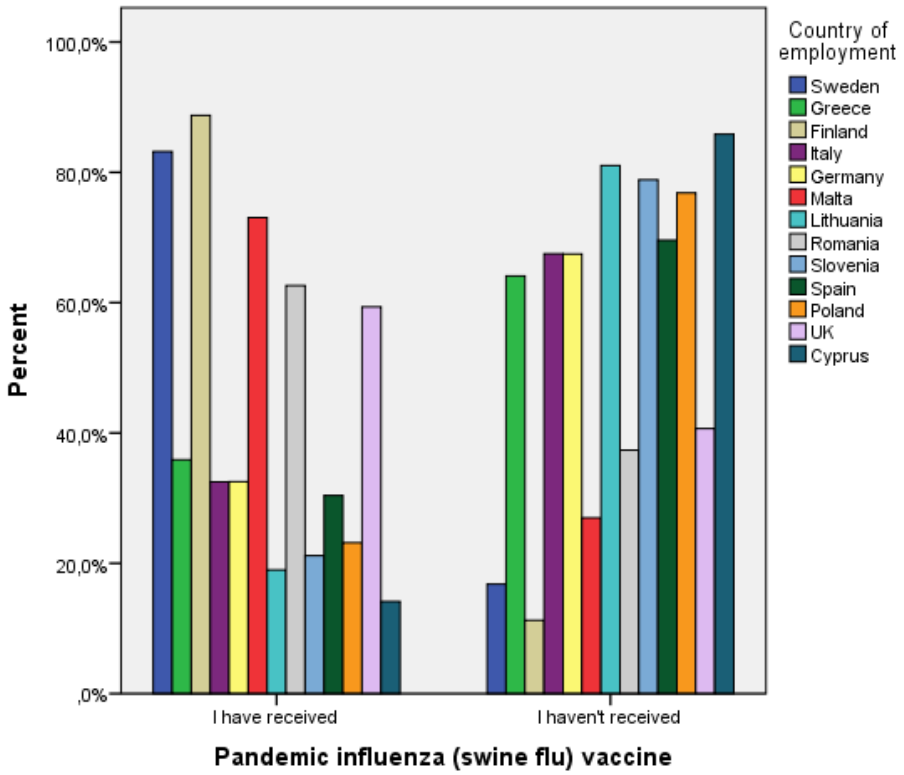


Figure 32: Percentage of respondents who have received the pandemic influenza vaccine by country

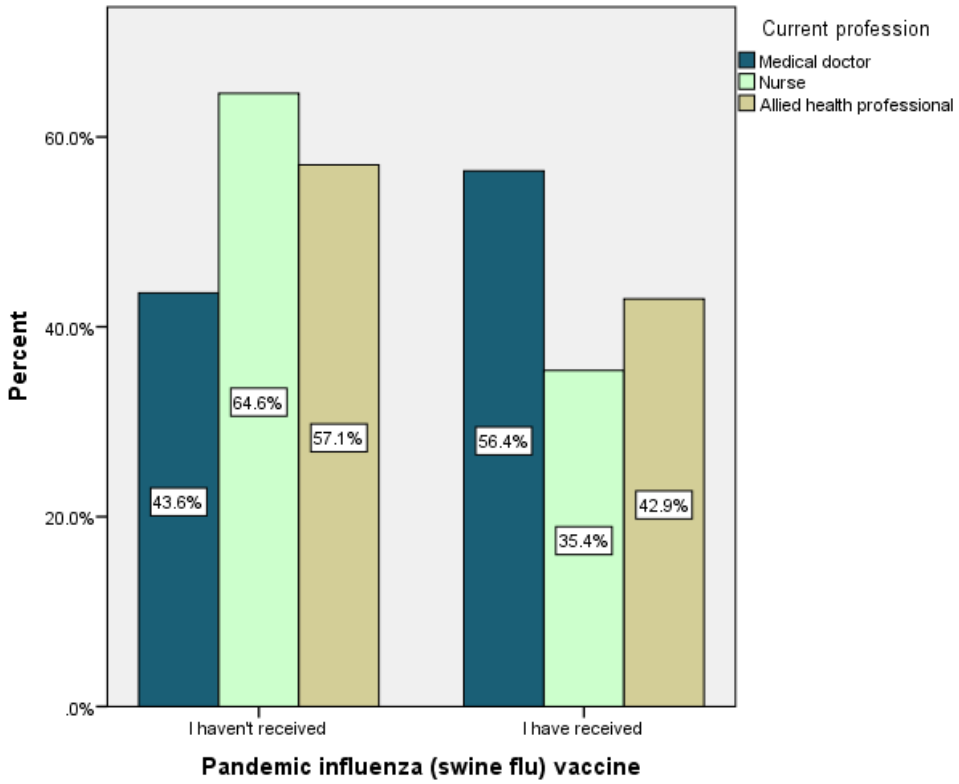


Figure 33: Percentage of respondents who have received the pandemic influenza vaccine by current profession

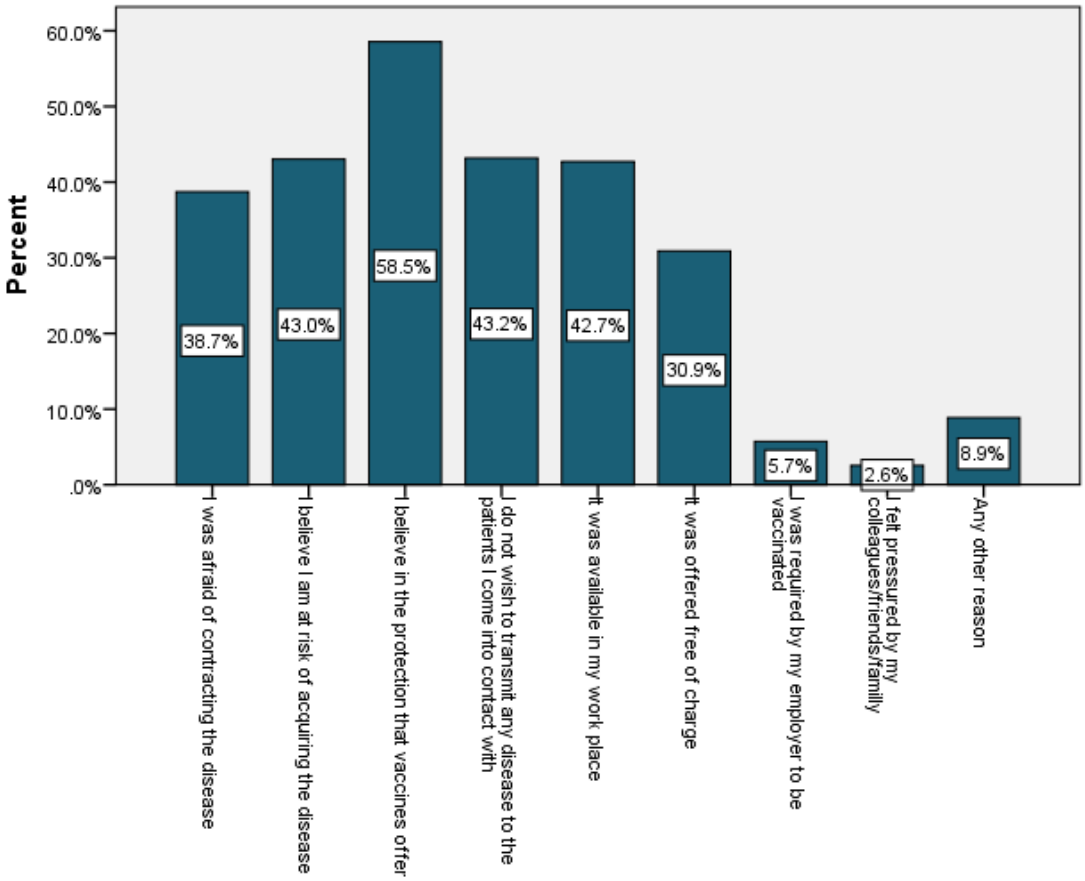


Figure 34: Reasons for receiving the Pandemic influenza (swine flu) vaccine (based on those who declared a reason for receiving)

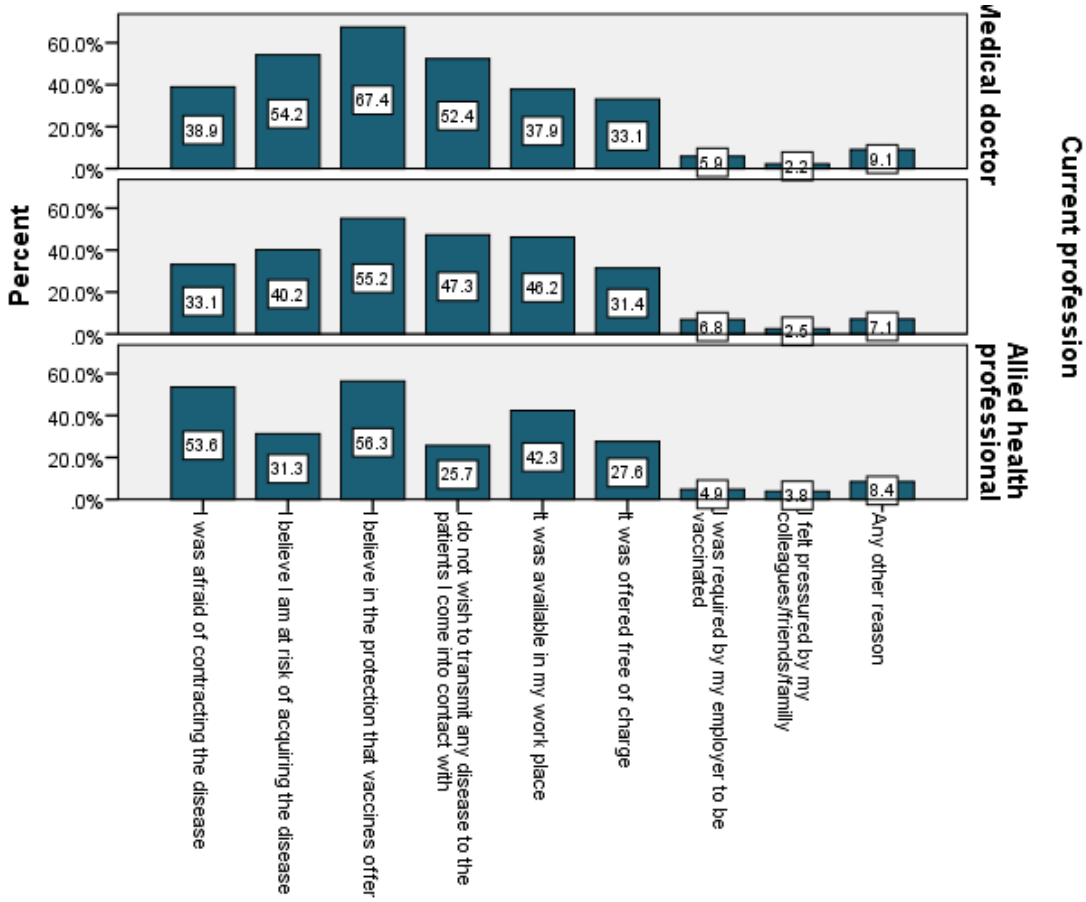


Figure 35: Reasons for receiving the Pandemic influenza (swine flu) vaccine by current profession (based on those who

declared a reason for receiving)

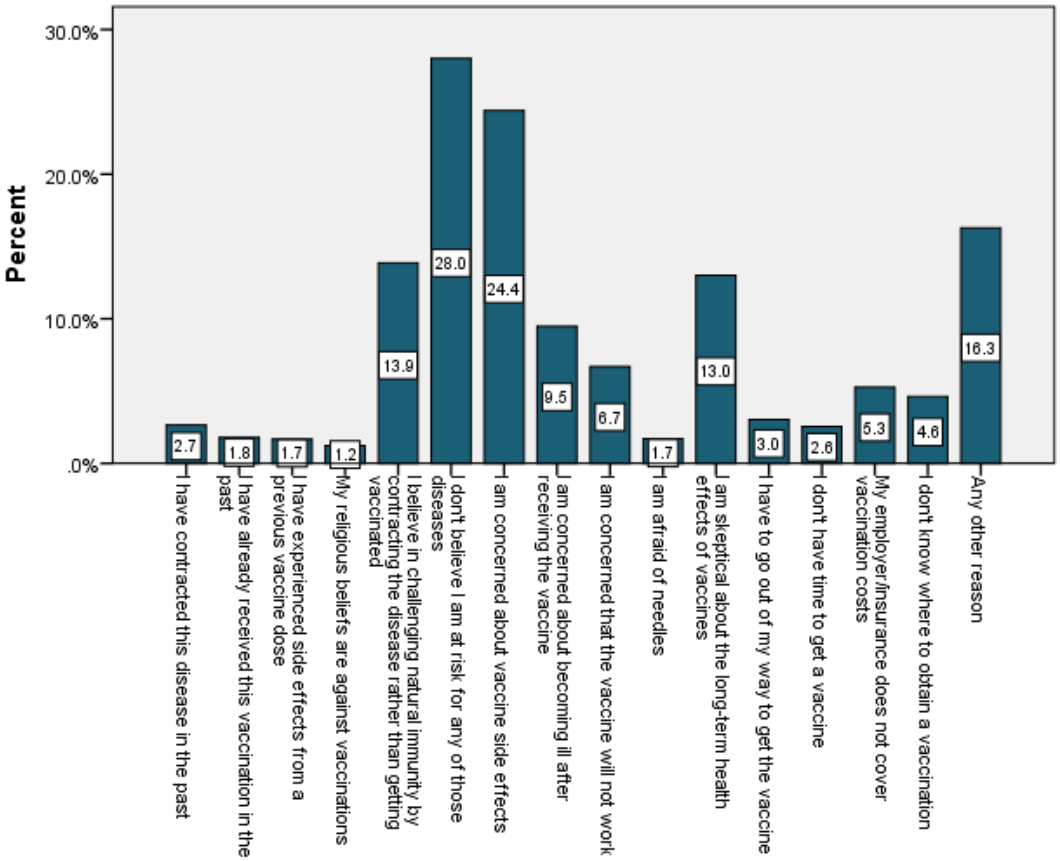


Figure 36: Reasons for not receiving the Pandemic influenza (swine flu) vaccine (based on those who declared a reason for not receiving)

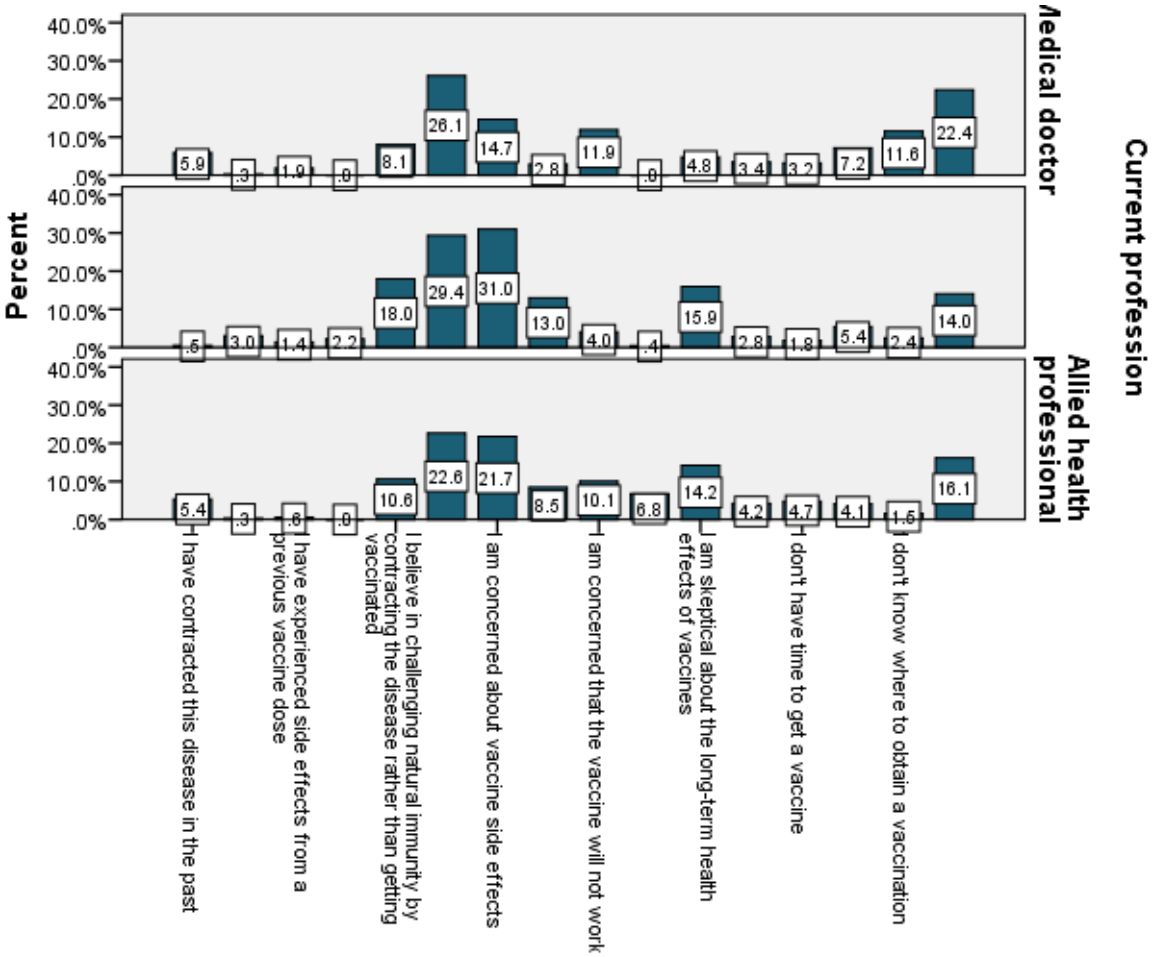


Figure 37: Reasons for not receiving the Pandemic influenza (swine flu) vaccine by current profession (based on those who declared a reason for not receiving)

MMR (mumps-measles-rubella vaccine)

The majority of the respondents from Finland (54.1%) and Germany (60.8%) have received MMR vaccination. The percentage of health care workers who have received MMR vaccination in Malta is 50%, in Greece 43.3%, in Spain 41.6%, in the UK 39.3% and in Sweden 28.4%. The corresponding percentages for the remaining countries are much lower (less than 14.4%) as shown in Figure 38 and Table A-11. ***No great differences are observed among the current profession of the respondents and the frequency that they receive MMR vaccination*** (Figure 36). The relation is found to be non-significant (Pearson $\chi^2 = 1.5$, p-value = 0.477).

Almost 67% of the respondents have received the MMR because they believe in the protection it offers (Figure 40). Around 42% of the medical doctors have received this vaccine to avoid transmitting the disease to patients, whereas, the corresponding percentages for nurses and allied professionals are 28.3% and 8.7% respectively. Besides that, almost 20% of the medical doctors declared that they have been vaccinated because they were required by their employer, though, less than 5% of the nurses and allied professional got vaccinated for this reason (Figure 41). The great majority of the respondents have not received this vaccine because they have contracted the disease in the past or have already received this vaccination (Figures 42 and 43).

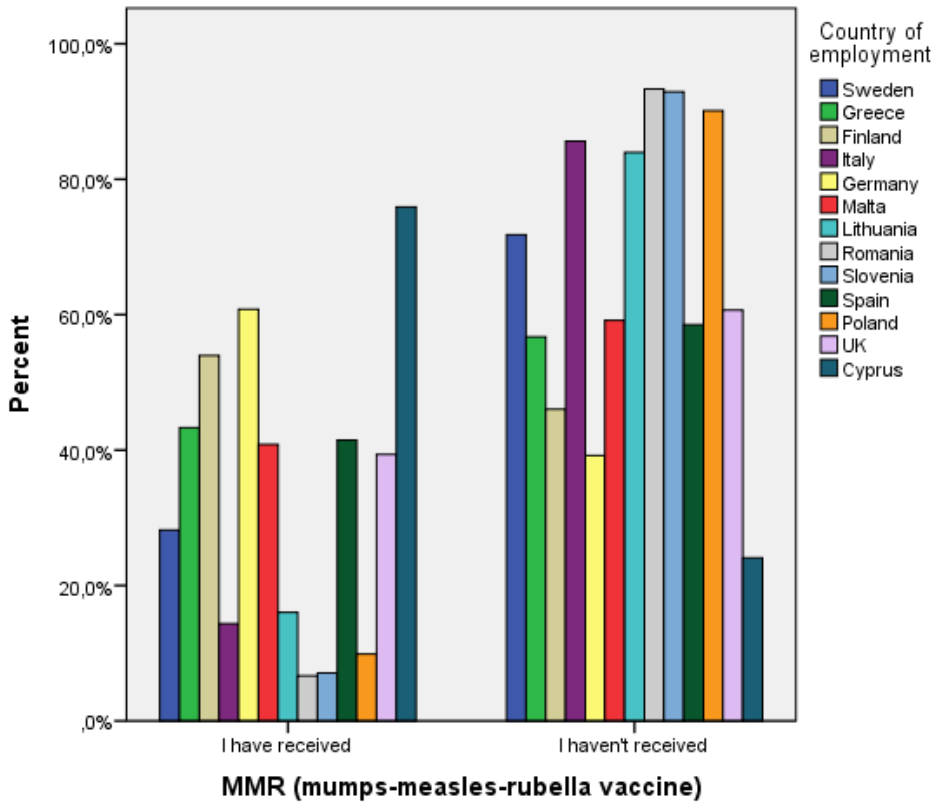


Figure 38: Percentage of respondents who have received the MMR vaccine by country

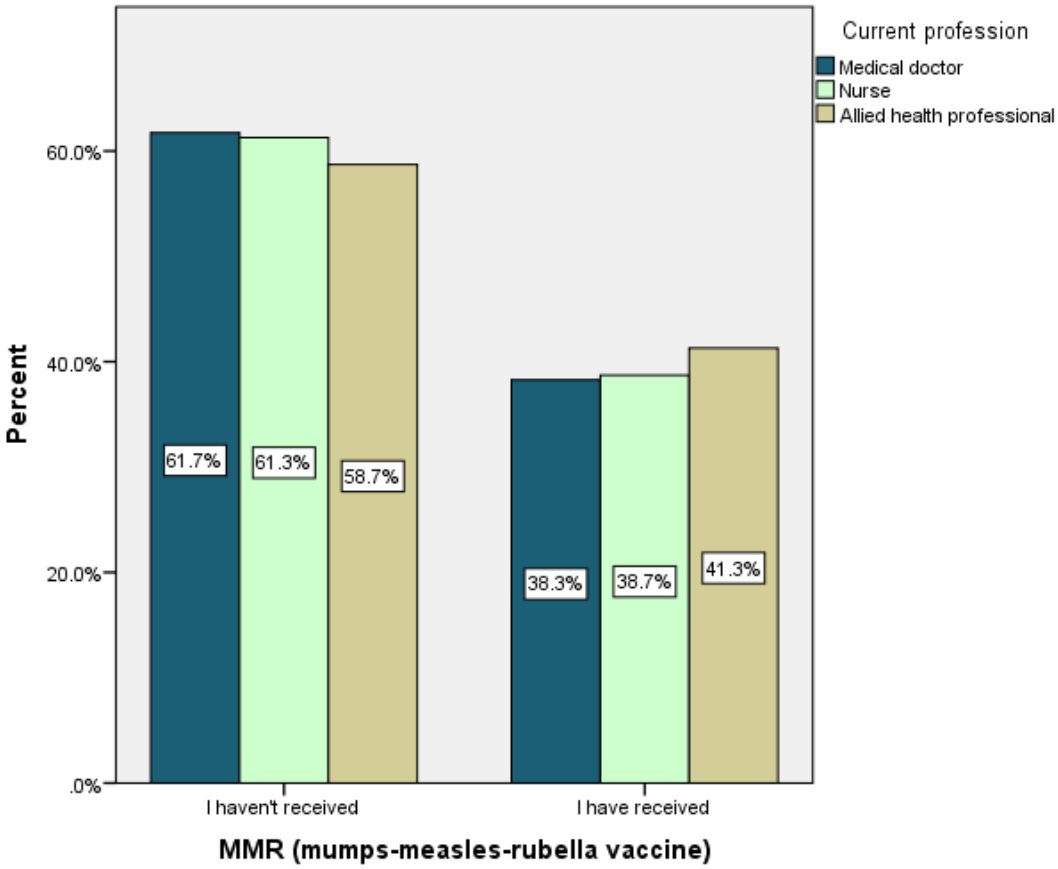


Figure 39: Percentage of respondents who have received the MMR vaccine by current profession

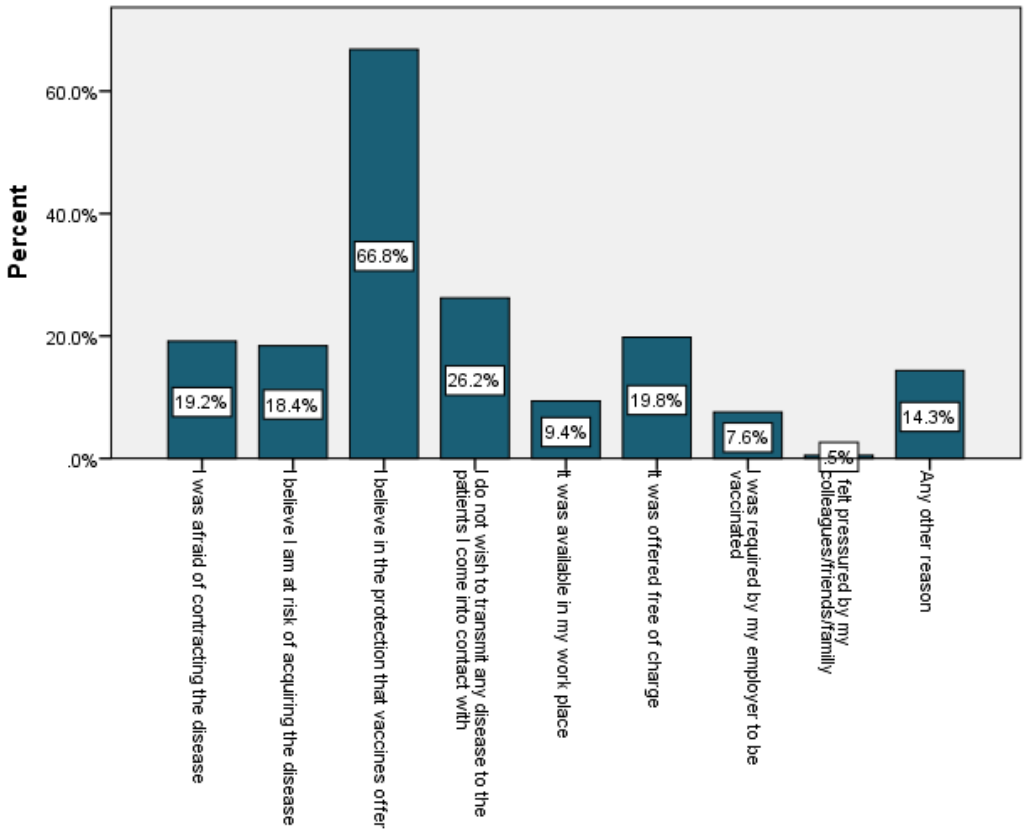


Figure 40: Reasons for receiving the MMR (based on those who declared a reason for receiving)

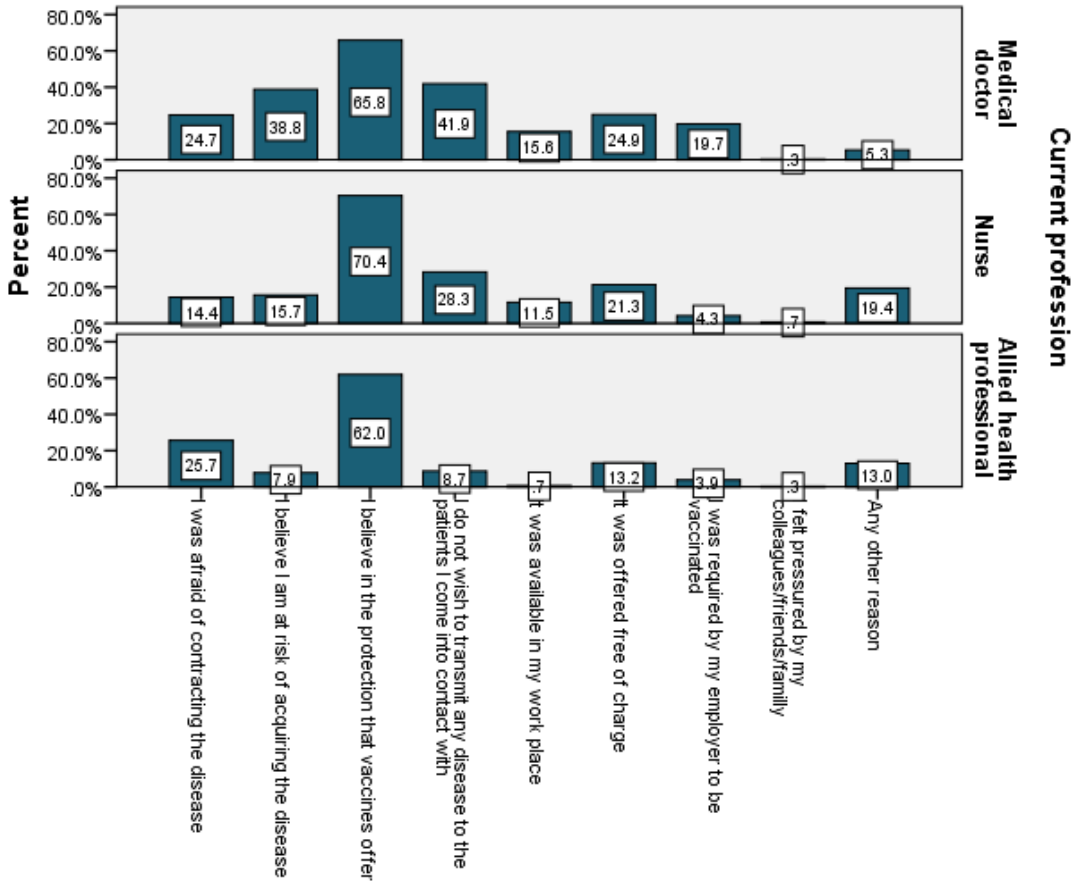


Figure 41: Reasons for receiving the MMR by current profession (based on those who declared a reason for receiving)

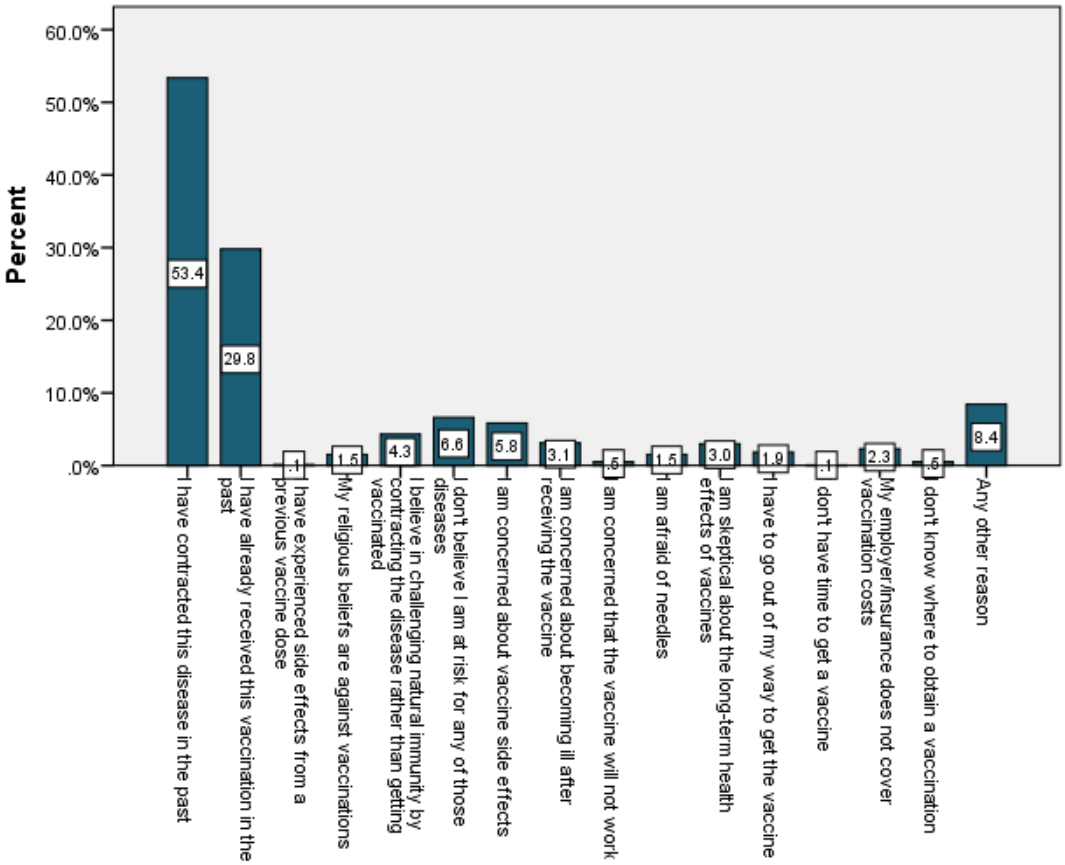


Figure 42: Reasons for not receiving the MMR (based on those who declared a reason for not receiving)

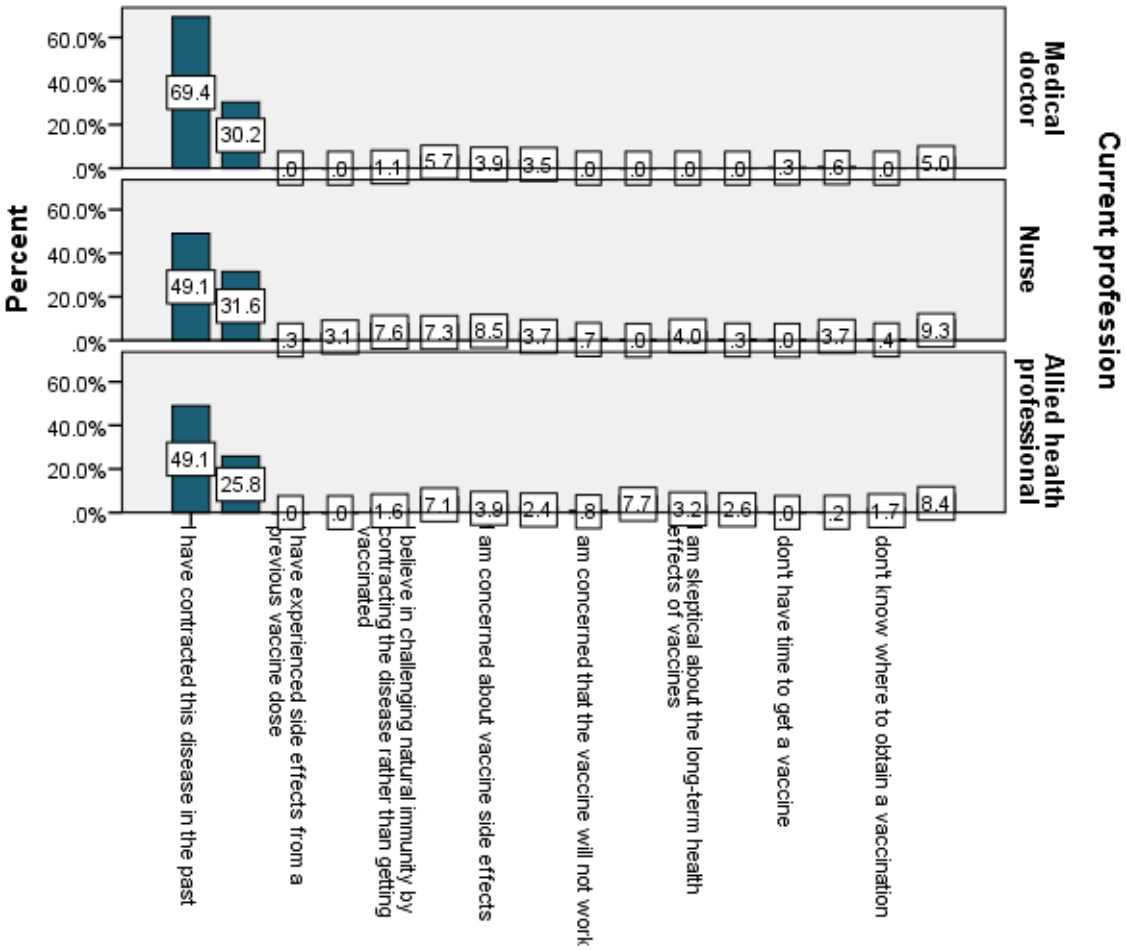


Figure 43: Reasons for not receiving the MMR by current profession (based on those who declared a reason for not receiving)

Varicella (chickenpox) vaccine

The majority of respondents from all the countries have not received the varicella vaccine (Figure 44, the percentages are displayed in Table A-12). The percentages of nurses and allied professionals who have received the varicella vaccine are 13.4% and 13.0% respectively; slightly higher than the percentage for medical doctors, which is 11.0% (Figure 45). This relation is found to be statistically significant (Pearson $\chi^2 = 221.9$, p-value < 0.001).

The majority of those who have received this vaccine reported that they did so because they believe in the protection that it offers. Nurses declared that this was the reason that they got this vaccine in the 79.3% of the cases, medical doctors in the 57.3% and allied health professional in the 39.0% (Figures 46 and 47). The great majority of the respondents have not received the varicella vaccine because they have received it in the past (Figures 48 and 49).

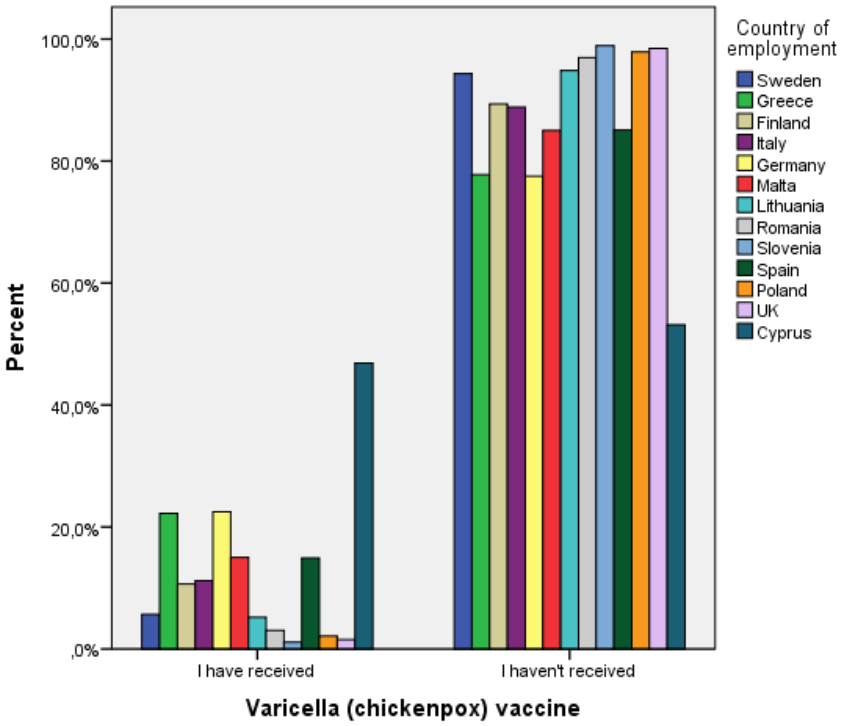


Figure 44: Percentage of respondents who have received the varicella (chickenpox) vaccine by country

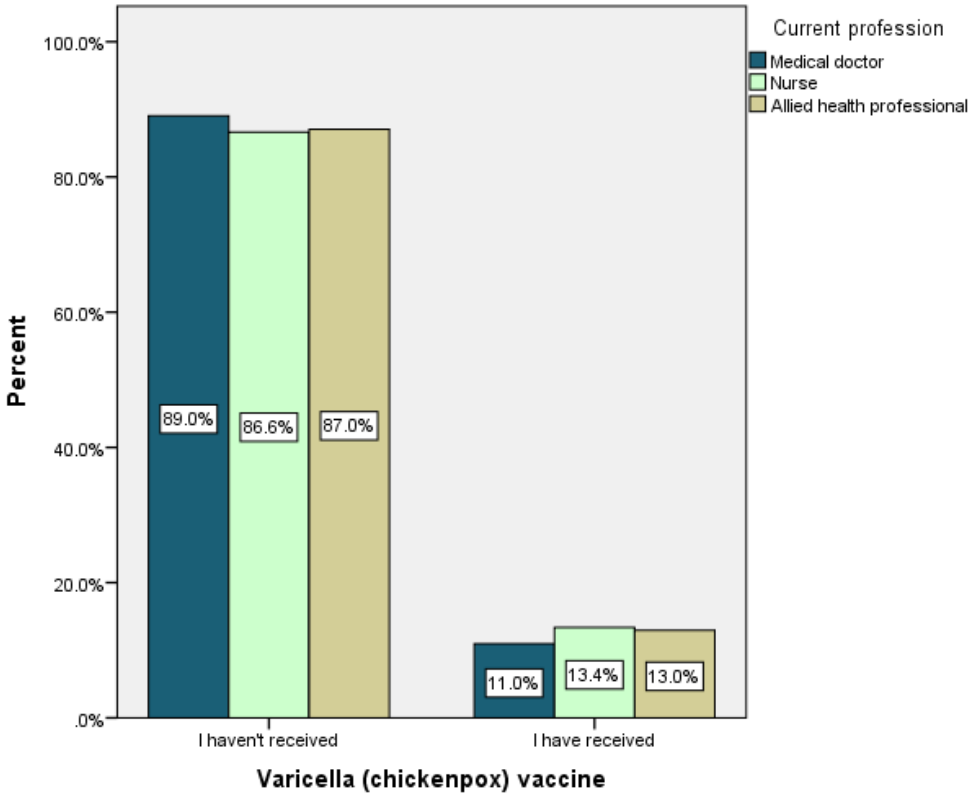


Figure 45: Percentage of respondents who have received the varicella (chickenpox) vaccine by current profession

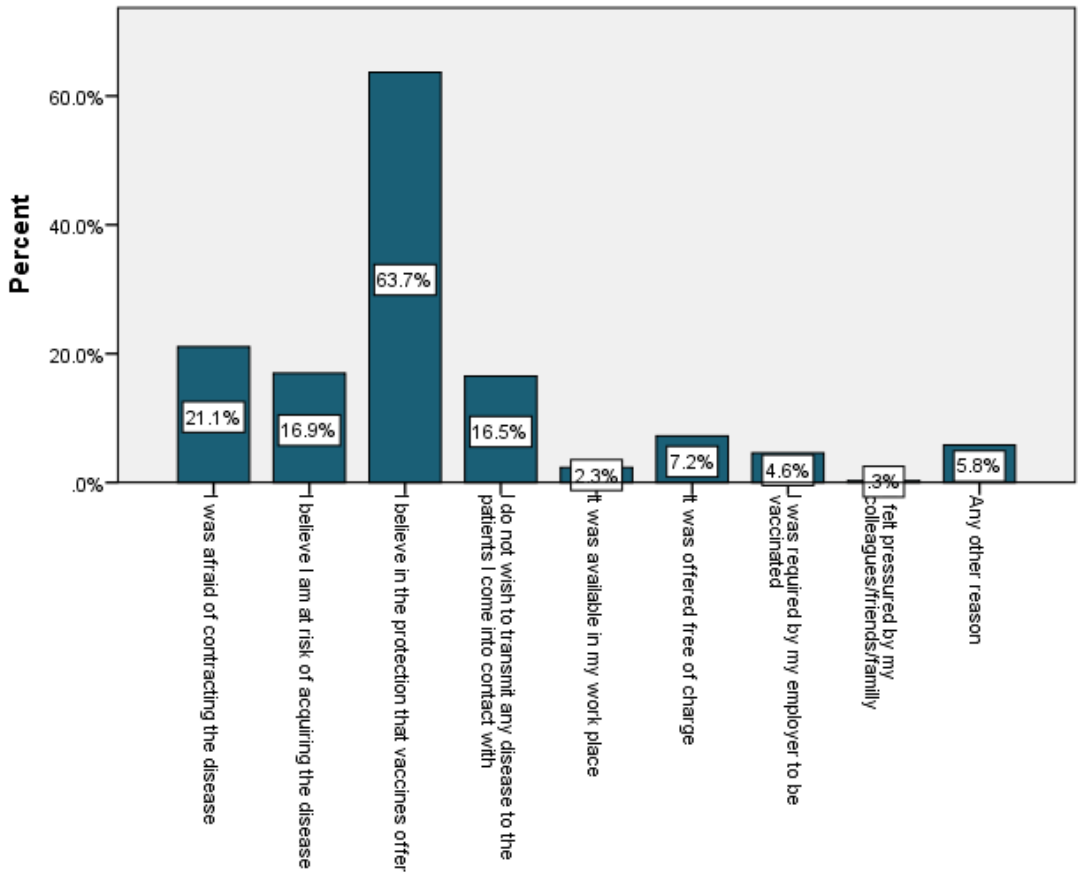


Figure 46: Reasons for receiving the varicella (chickenpox) vaccine (based on those who declared a reason for receiving)

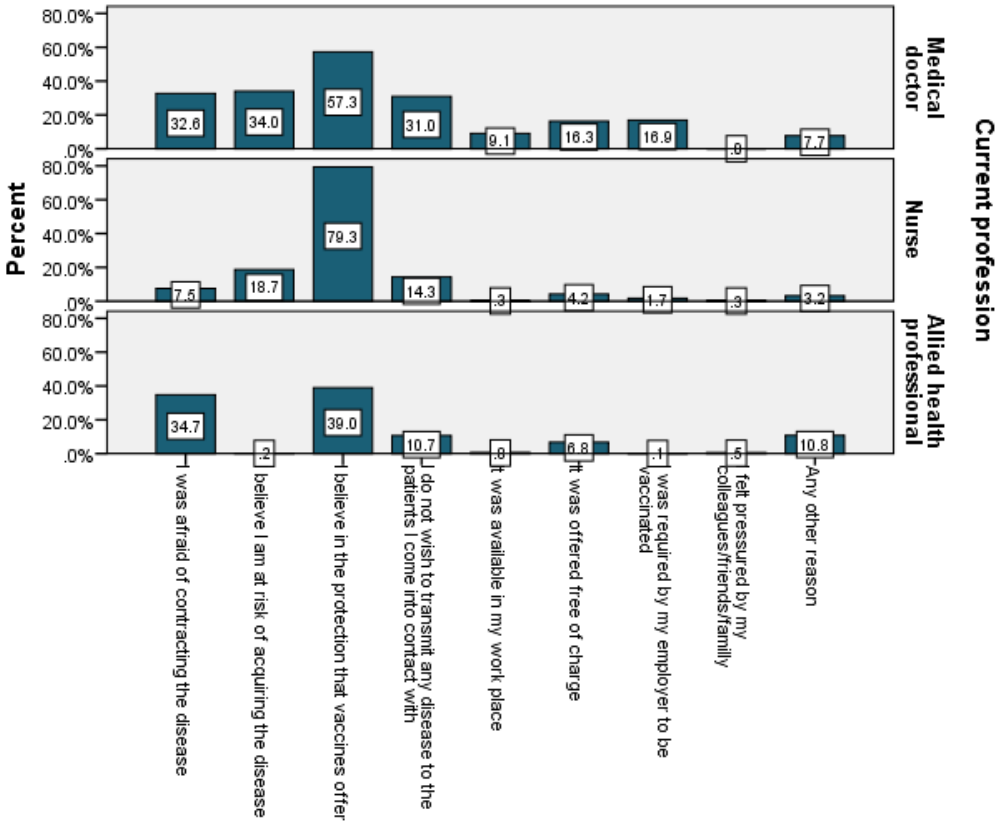


Figure 47: Reasons for receiving the varicella (chickenpox) vaccine by current profession (based on those who declared a reason for receiving)

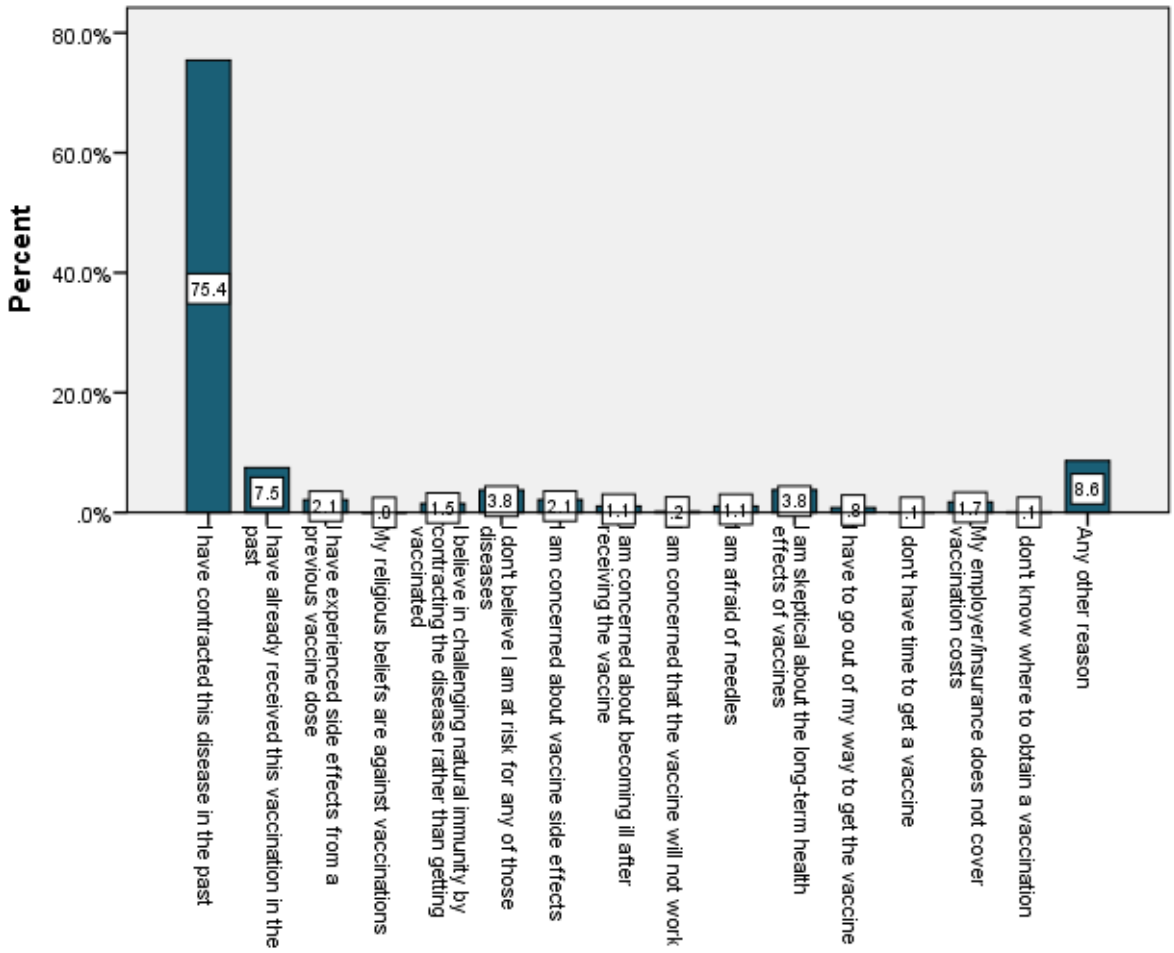


Figure 48: Reasons for not receiving the varicella (chickenpox) vaccine (based on those who declared a reason for not receiving)

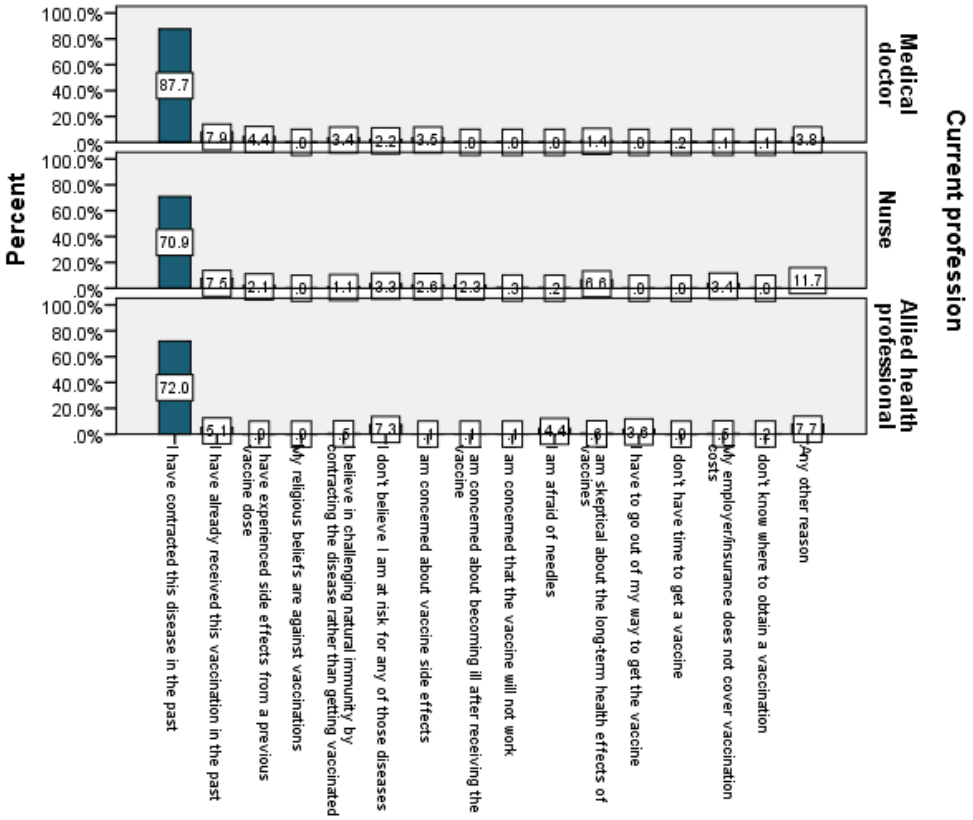


Figure 49: Reasons for not receiving the varicella (chickenpox) vaccine by current profession (based on those who declared

a reason for not receiving)

Hepatitis B vaccine

The majority of the respondents in all countries have received the hepatitis B vaccine, apart from Lithuania, where 45.8% of the health care workers have received it (Figure 50 and Table 1-13). Besides that, the majority of the respondents from all the categories of current profession have received this vaccine. In particular, 82.7% of the doctors have received the hepatitis B vaccine, 79.3% of nurses and 72.4% of allied health professionals (Figure 51). The differences are found to be significant among the categories of current profession (Pearson χ^2 = 27.5, p-value < 0.001).

Concerning the reasons for receiving this vaccine, most of the respondents declared that they did so because they believe in the protection it offers or they were at risk of acquiring or contracting the disease (Figure 52). Most of the respondents have not received this vaccine because they have already received it in the past (Figure 54). More than the half doctors and nurses who have received the Hepatitis B vaccine, did so because they believe in the protection it offers (Figure 53). More than the half doctors and nurses who have not received the vaccine in the last 10 years is because they have already received it in the past (Figures 55). Around 37% of the allied health professionals, who have not received it, declared that they did so because they believe that they are not at risk. The corresponding percentage for medical doctors is lower (20.4%) and for nurses very low (3.7%).

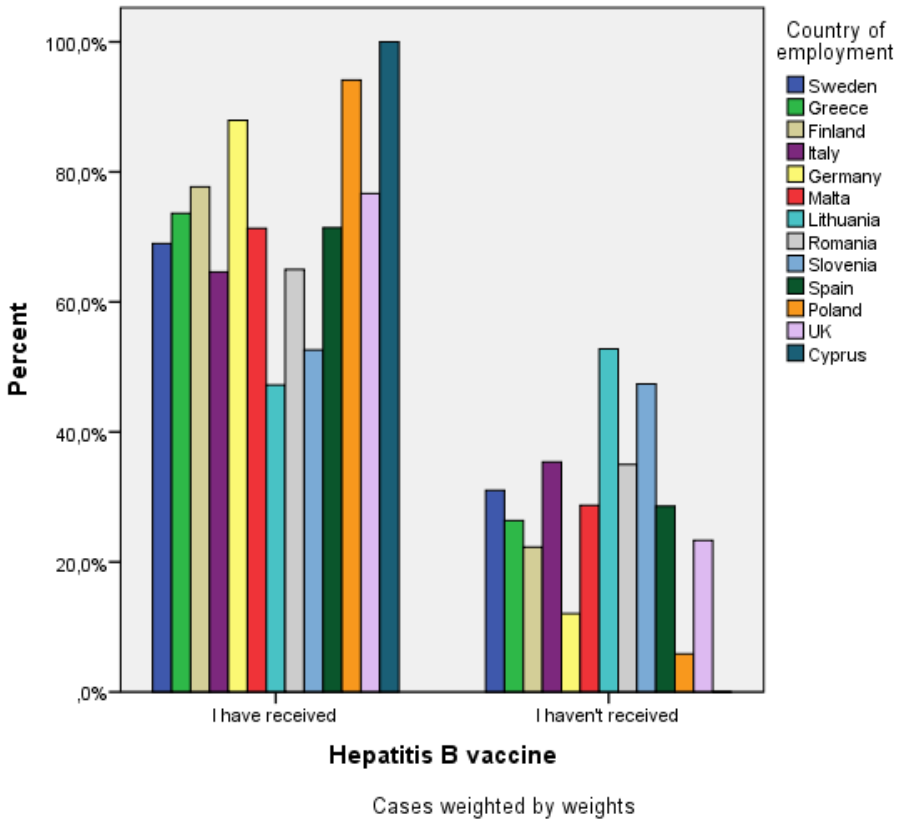


Figure 50: Percentage of respondents who have received the Hepatitis B vaccine by country

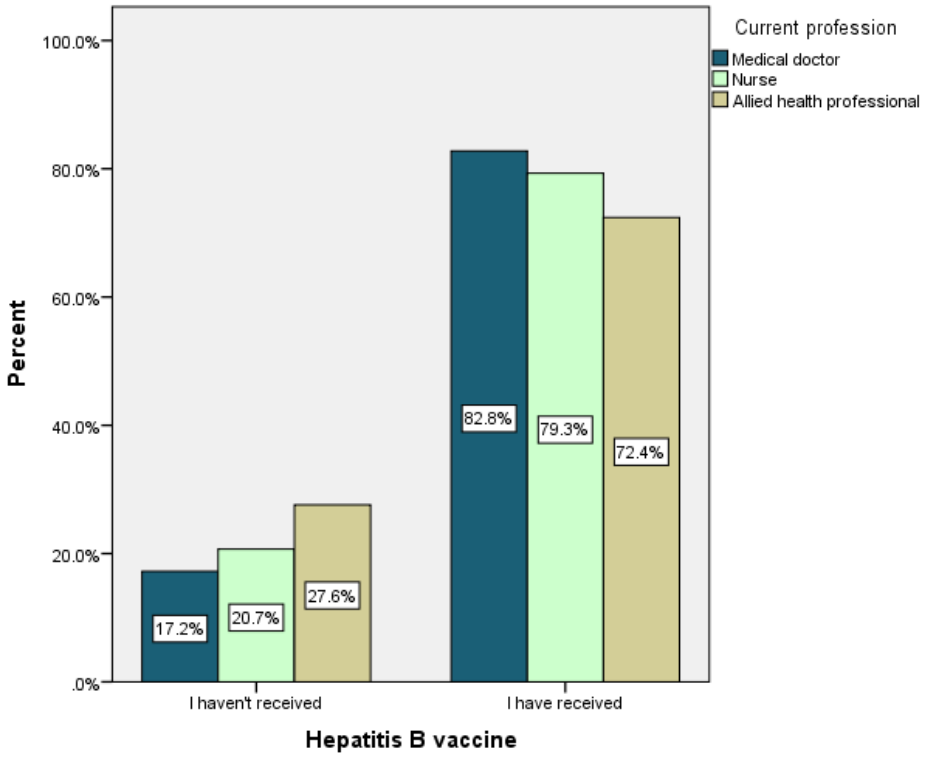


Figure 51: Percentage of respondents who have received the Hepatitis B vaccine by current profession

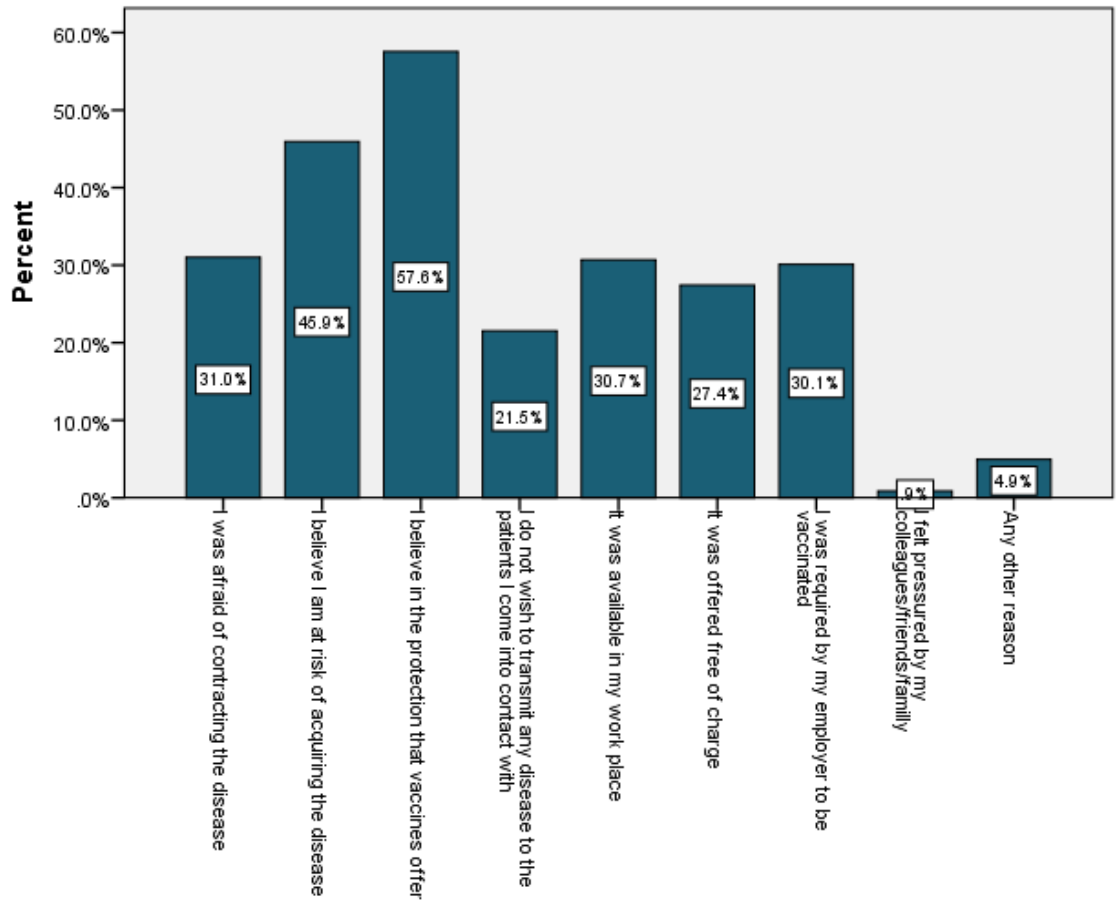


Figure 52: Reasons for receiving the Hepatitis B vaccine (based on those who declared a reason for receiving)

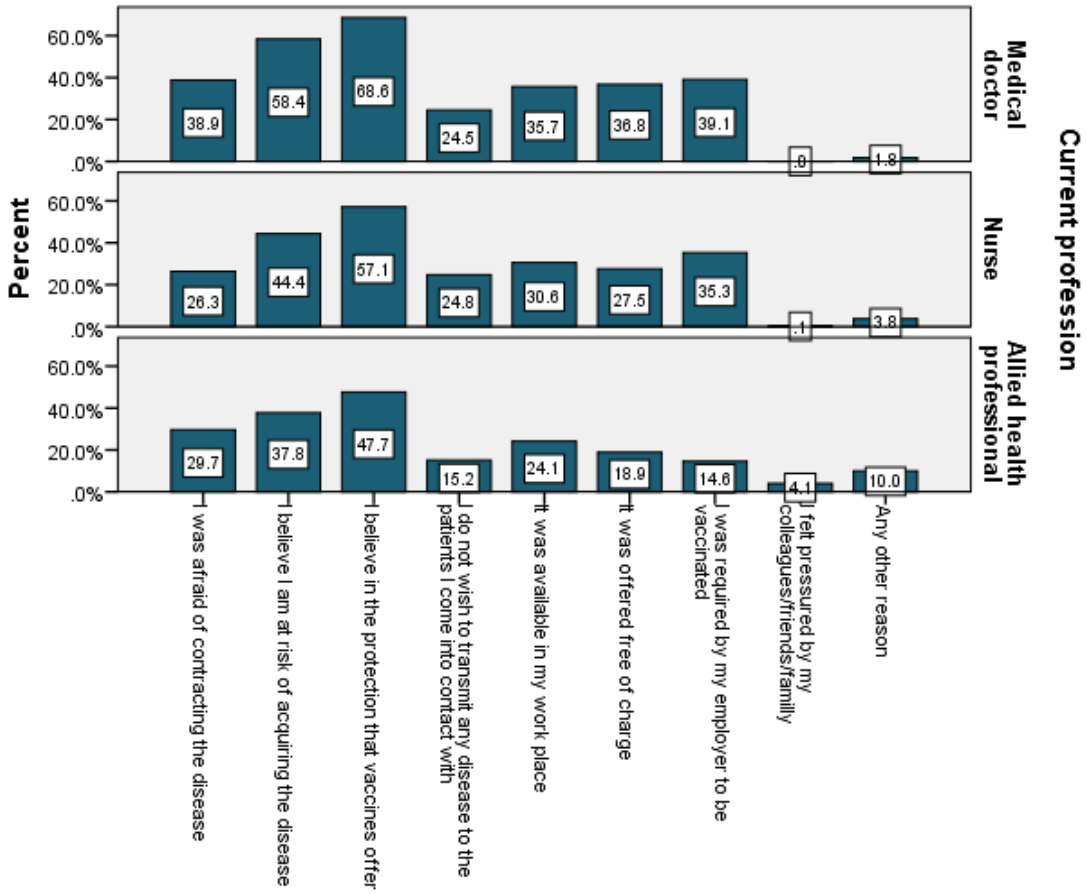


Figure 53: Reasons for receiving the Hepatitis B vaccine by current profession (based on those who declared a reason for receiving)

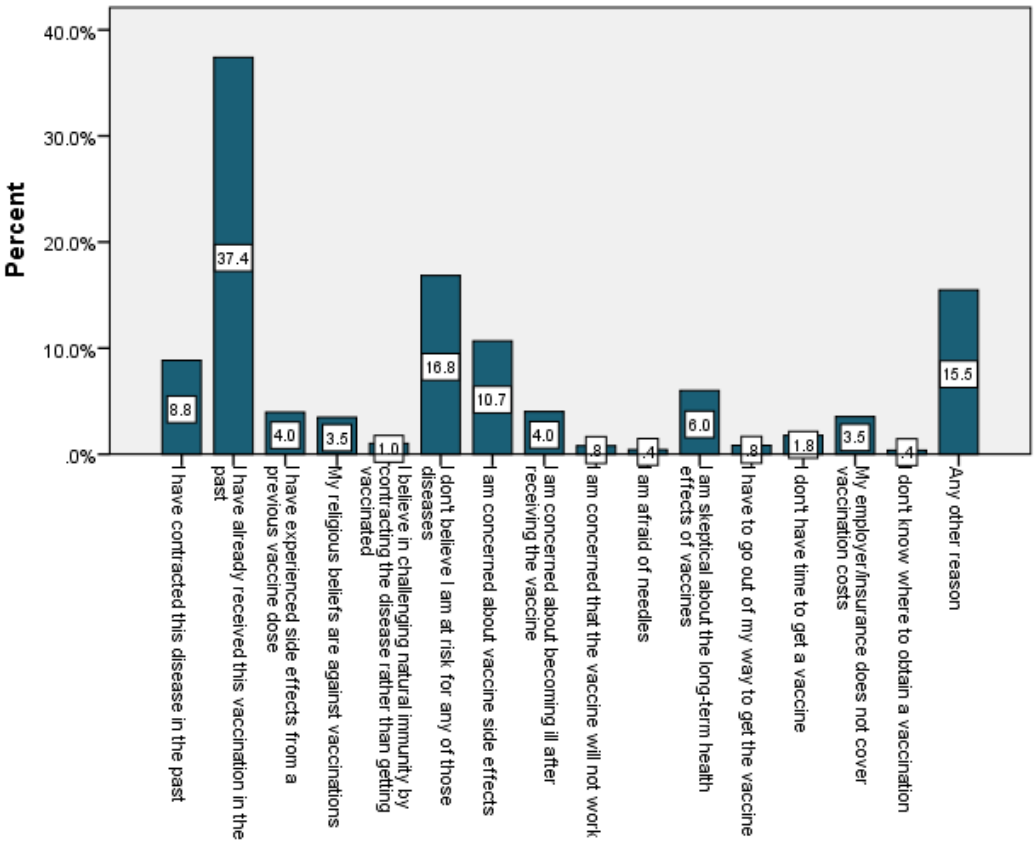


Figure 54: Reasons for not receiving the Hepatitis B vaccine (based on those who declared a reason for not receiving)

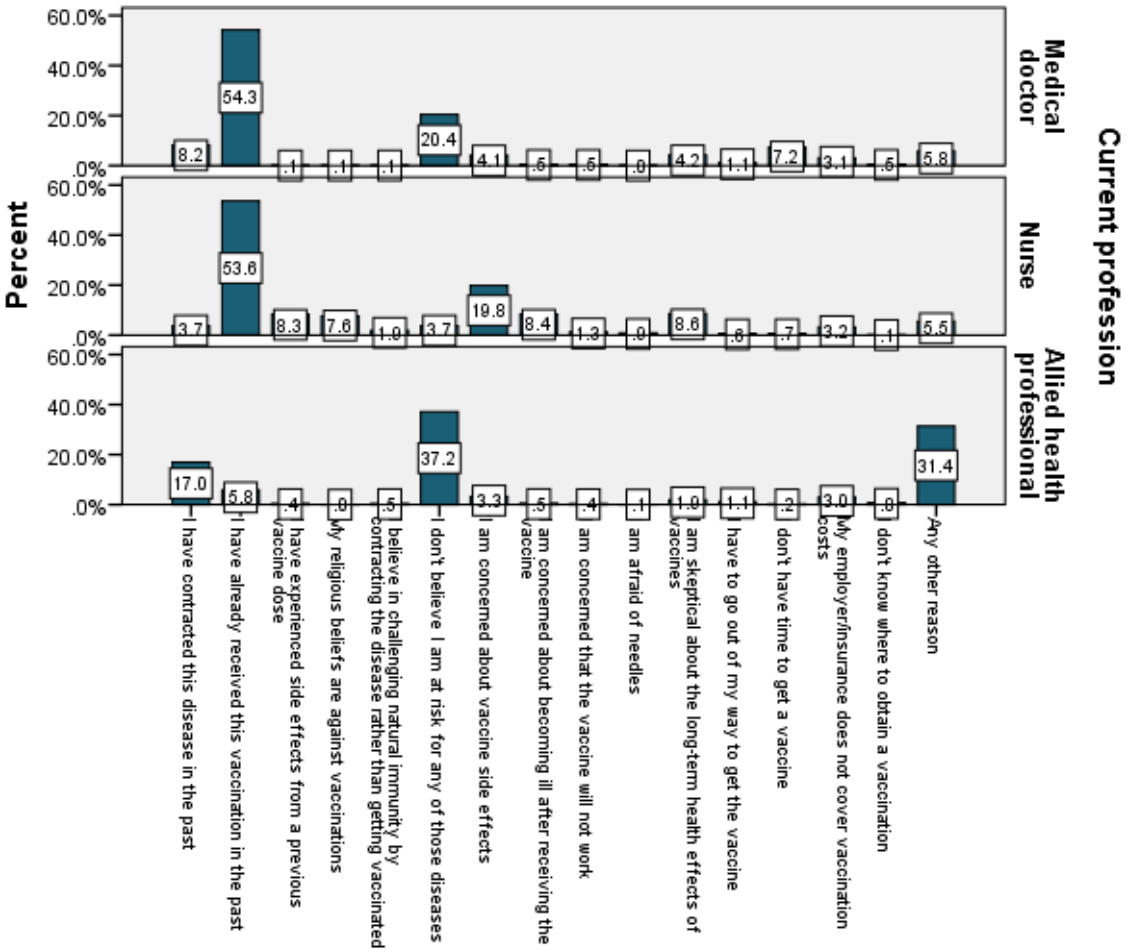


Figure 55: Reasons for not receiving the Hepatitis B vaccine by current profession (based on those who declared a reason for not receiving)

Td (adult tetanus vaccine) or Tdap (adult tetanus, diphtheria and pertussis vaccine)

The highest percentages of health care workers who have received the Td or Tdap vaccine are in Finland (97.9%) and Germany (91.3%) as shown in Figure 56 and Table A-14. The corresponding percentages for Spain, Greece, Malta, UK, Italy and Sweden are lower but still high (between 75.4% and 59.1%). Lithuania, Poland, Romania and Slovenia have the lowest percentage of respondents who have received the Td or Tdap vaccine (below 50%). No great differences are observed between the frequency of Td and Tdap vaccination and the current profession of the respondents (Figure 57). The majority of all the health care workers have received such vaccination. This relation is found to be non-significant.

The majority of the respondents who have received the Td or Tdap vaccine did so because they believe that it can protect them (Figures 58 and 59). About half of the respondents who have not received this vaccine the last 10 years claimed that they have already received it in the past (Figure 60). Similar are the percentages when they are presented according to their current profession (Figure 61). However, 20% percent of the doctors who have not received such vaccination, did so because they don't believe that they are at risk; whereas, the corresponding percentage for nurses is 4.5% and for allied professional 6.6%.

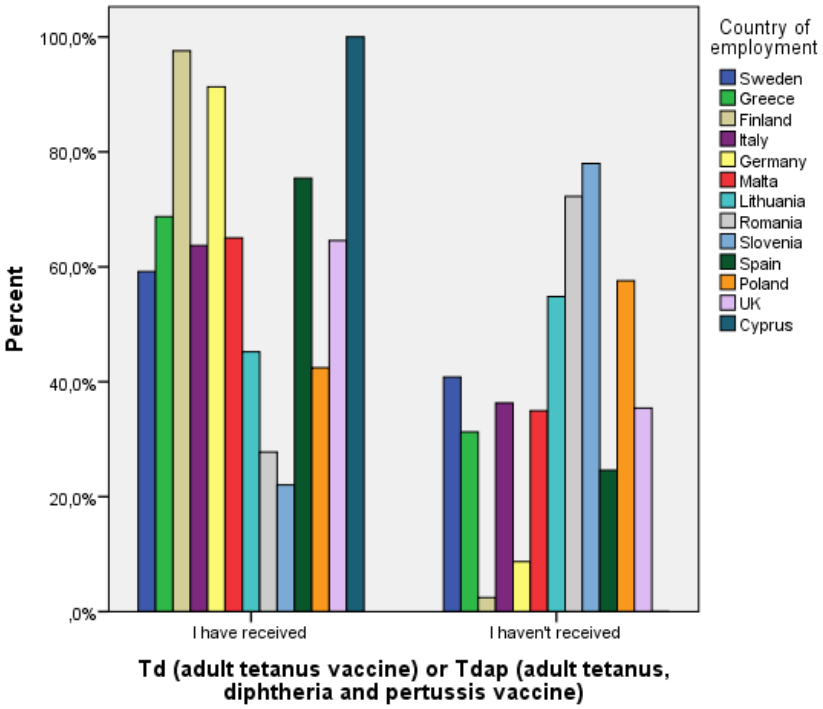


Figure 56: Percentage of respondents who have received the Td or Tdap vaccine by country

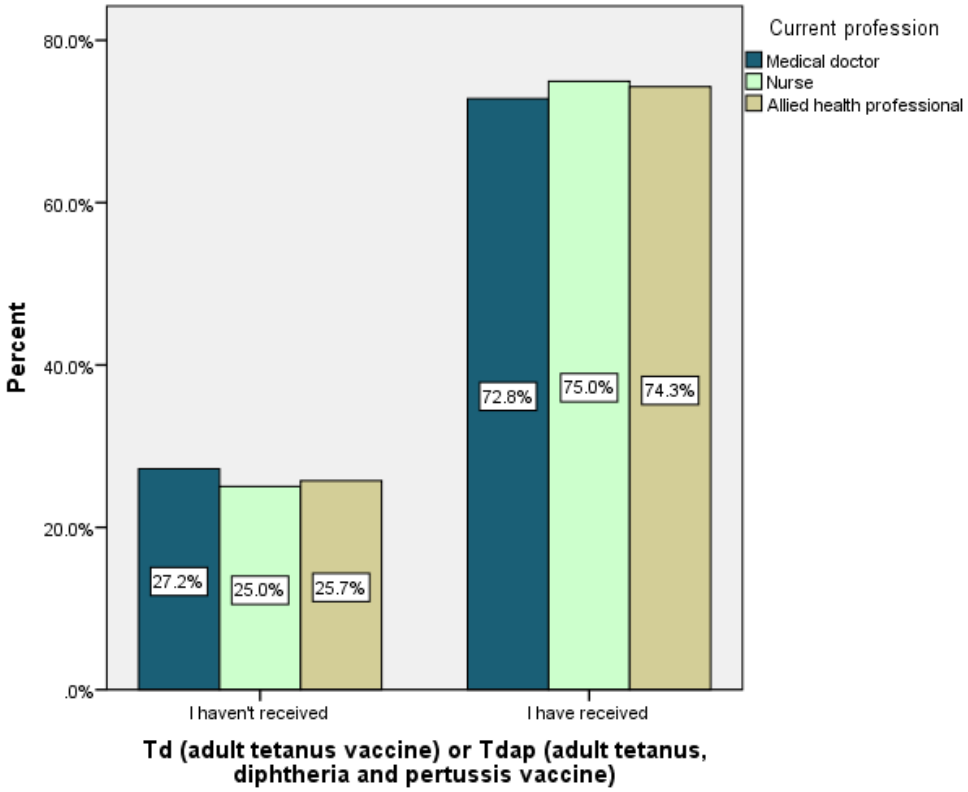


Figure 57: Percentage of respondents who have received the Td or Tdap vaccine by current profession

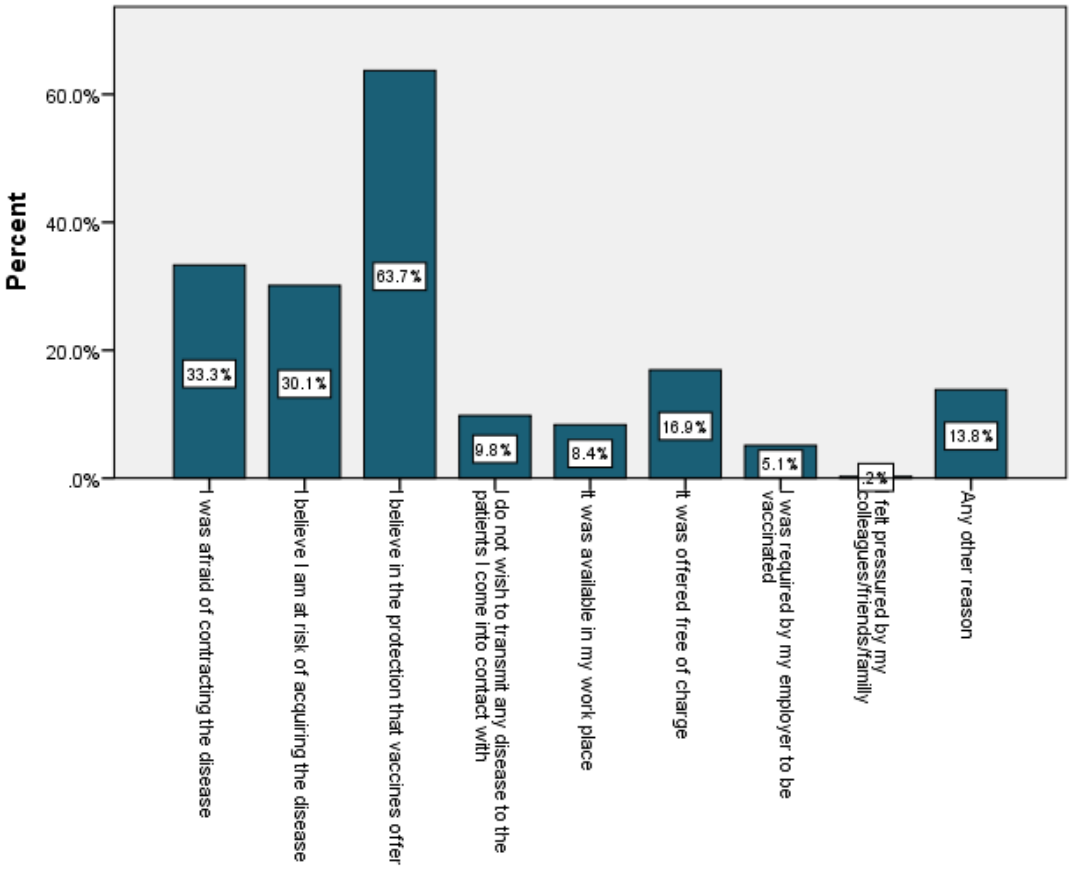


Figure 58: Reasons for receiving the Td or Tdap (based on those who declared a reason for receiving)

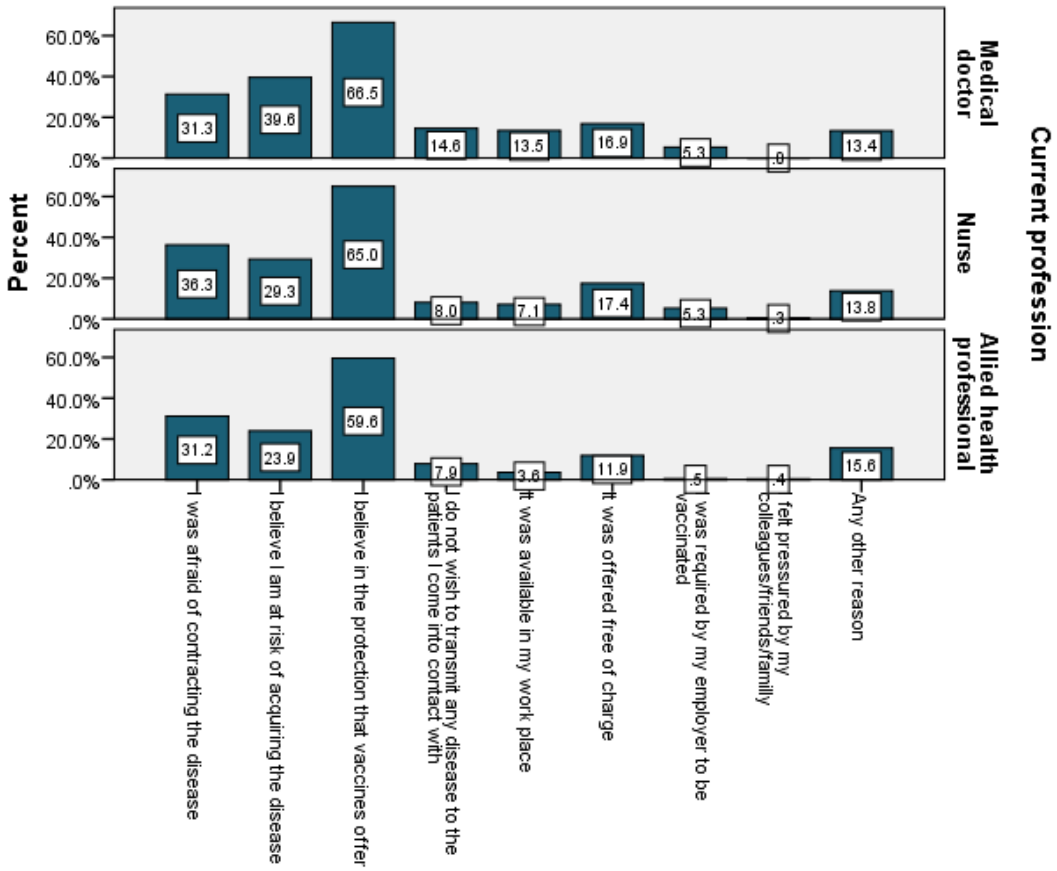


Figure 59: Reasons for receiving the Td or Tdap by current profession (based on those who declared a reason for receiving)

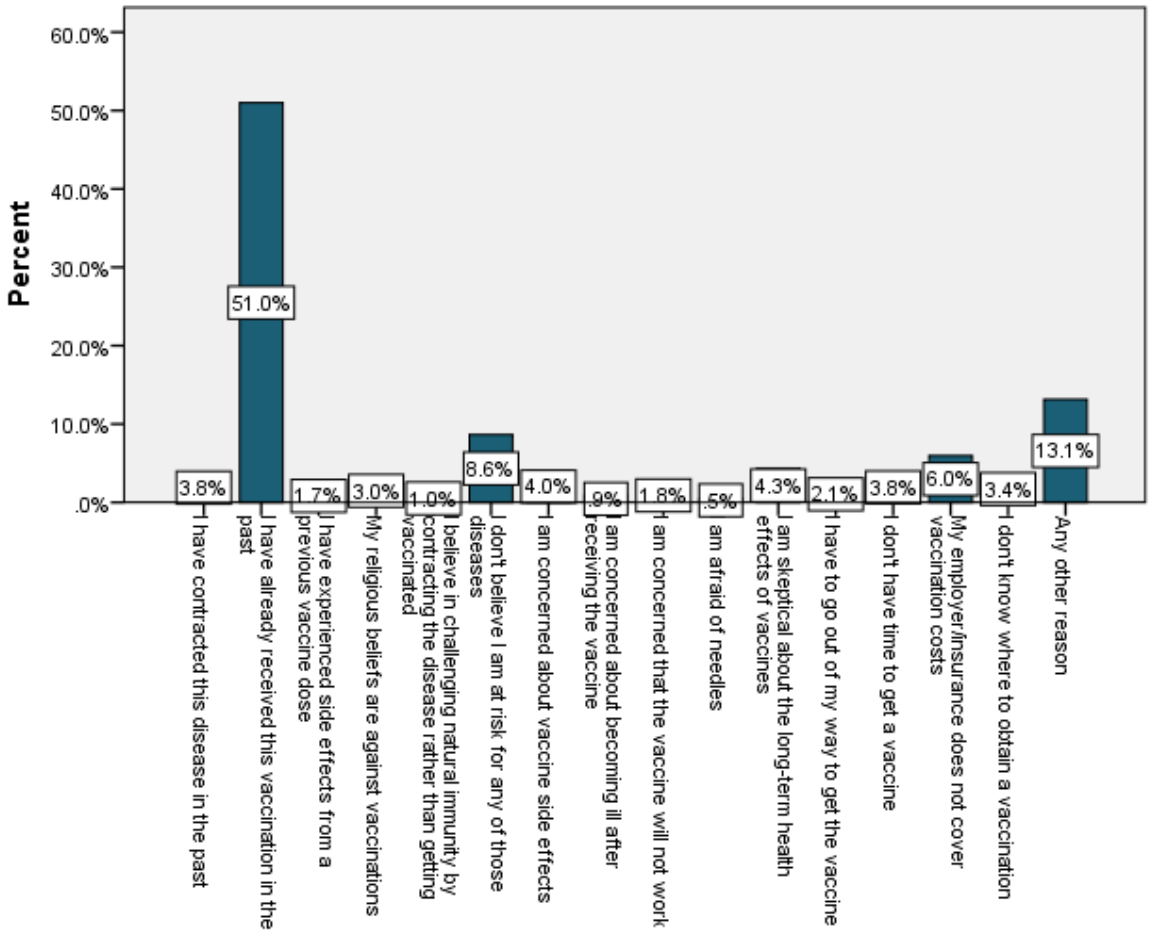


Figure 60: Reasons for not receiving the Td or Tdap (based on those who declared a reason for not receiving)

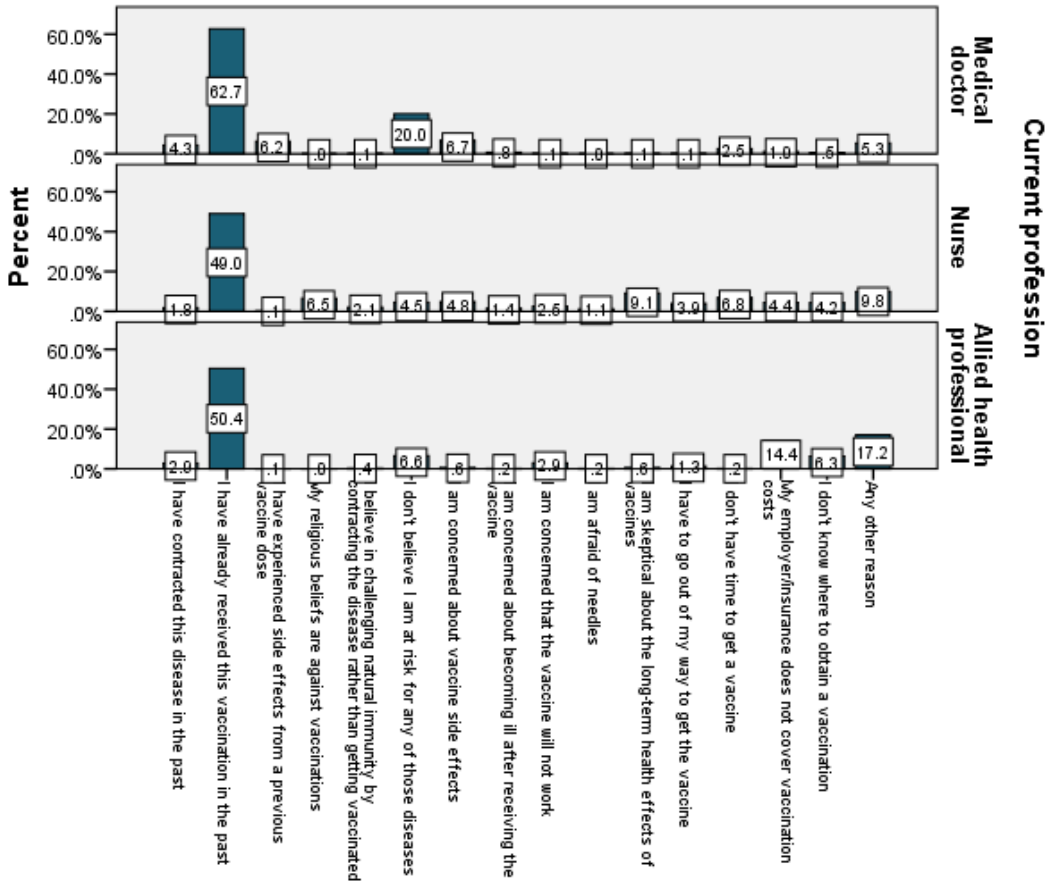


Figure 61: Reasons for not receiving the Td or Tdap by current profession (based on those who declared a reason for not receiving)

3.2.6. Views about mandatory vaccination against VPDs

Most of the respondents have positive view in the question whether the vaccination against VPDs should be mandatory for health care workers who come in regular contact with patients. About 62% gave positive answers (Figure 62). The majority of the medical doctors (77.3%) believe that vaccination should be mandatory, whereas, the corresponding percentages are lower for nurses and allied categories (Figure 63). There is statistical significant relation between the personal views about mandatory vaccination and the current profession (Pearson χ^2 = 257.9, p-value < 0.001).

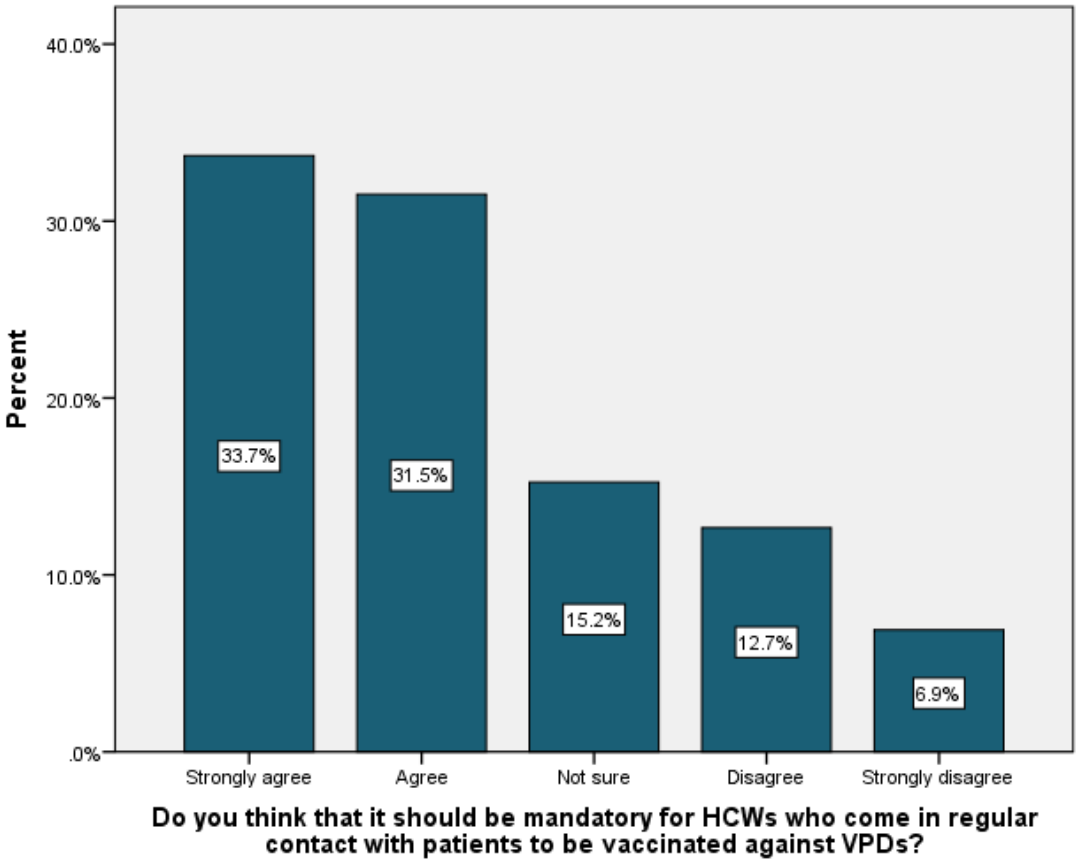


Figure 62: Views about mandatory vaccination for HCW

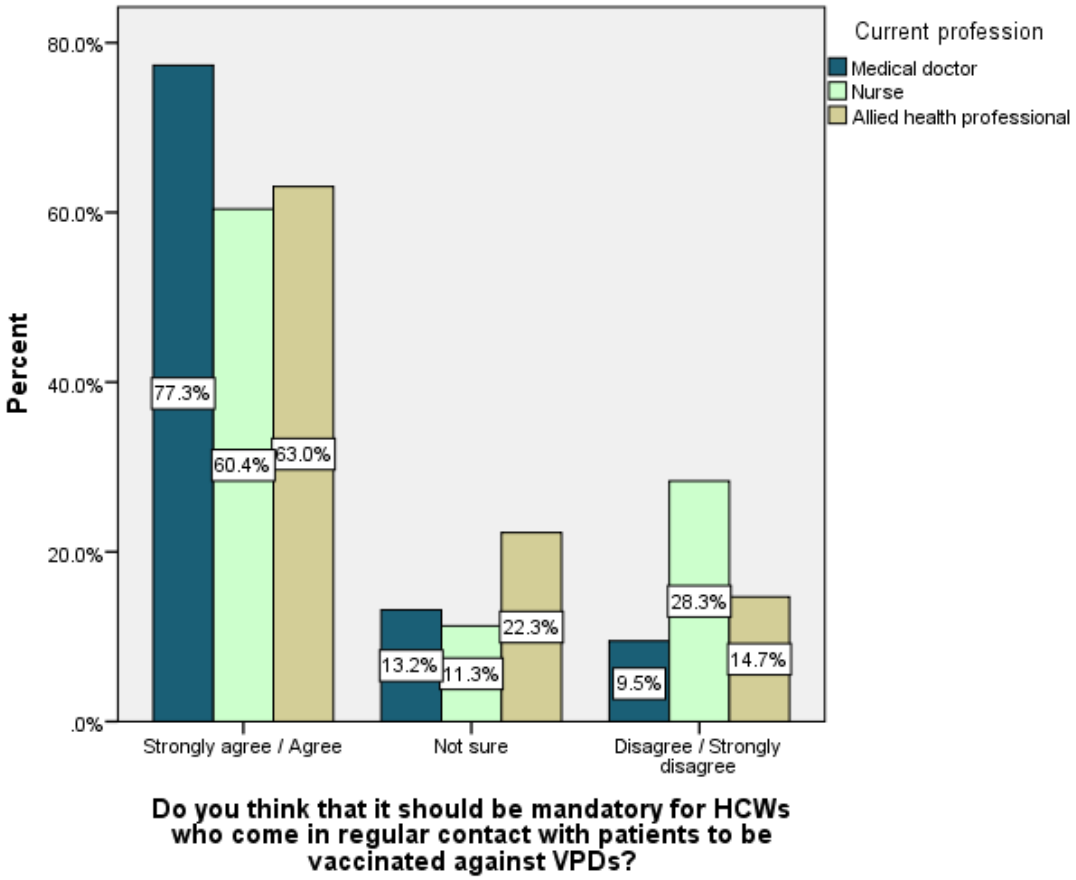


Figure 63: Views about mandatory vaccination by current profession

3 Logistic regression for the probability of not believing in vaccination

We seek to investigate the group of health care workers who do not hold a positive view towards vaccination. For this purpose we perform logistic regression (the dependent variable takes the value 1 for the last two categories of question 8, and zero otherwise), controlling for all participants' characteristics.

Table: Logistic regression analysis for the probability of not believing in vaccination

Variable	p-value	OR	95% CI	
Country of employment (reference level Sweden)				
Greece	0,617	0,65	0,12	3,56
Finland	0,108	0,24	0,04	1,37
Italy	0,000	9,65	3,02	30,81
Germany	0,408	0,60	0,18	2,00
Malta	0,946	0,82	0,00	271,47
Lithuania	0,377	0,34	0,03	3,76
Romania	0,906	1,10	0,23	5,29
Slovenia	0,000	480,89	76,11	3038,42
Spain	0,591	1,51	0,34	6,72
Poland	0,223	0,41	0,10	1,72

UK	:	:	:	:
Cyprus	:	:	:	:
Gender Male	0,066	0,61	0,36	1,03
Age (reference level 65 and over)				
18 to 24 years	0,340	0,22	0,01	5,00
25 to 34 years	0,934	1,12	0,08	14,87
35 to 44 years	0,480	2,47	0,20	30,62
45 to 44 years	0,680	0,59	0,05	7,38
55 to 64 years	0,522	2,31	0,18	29,70
Level of education (reference level vocational training)				
Primary school	0,585	5,05	0,02	1689,97
Secondary school	0,871	1,10	0,36	3,34
Academic degree	0,000	4,20	1,93	9,16
Postgraduate degree	0,866	1,06	0,52	2,16
Current Profession (reference level Other Allied Health Professional)				
Pediatric specialty or subspecialty	0,543	0,29	0,01	16,16
Surgical specialty or subspecialty	:	:	:	:
Internal medicine specialty or subspecialty	0,018	8,87	1,45	54,32
General Practice, family medicine or equivalent	0,000	20,20	4,67	87,50
Laboratory	:	:	:	:
Medical doctor_Other	0,215	0,30	0,04	2,03
Hospital nurse	0,000	19,31	5,09	73,29
Emergency Department nurse (A&E)	0,000	243,79	61,95	959,47
Infection control nurse	0,323	6,20	0,17	230,03
Public health nurse	0,000	14,97	3,60	62,30
Midwife or maternal health nurse	0,988	0,96	0,00	277,48
Maternal health / child health or school health nurse	0,229	3,60	0,45	29,00
Primary health care nurse	0,000	13,27	3,24	54,34
Nurse in other settings (nursing home, outpatient clinic)	0,000	35,35	10,22	122,21
Nurse_other	0,006	5,94	1,66	21,24
Pharmacist	0,000	57,94	6,78	495,06
Physical, Occupational, Respiratory Therapists	0,000	220,18	42,58	1138,55
Dental Hygienists	:	:	:	:
Social workers	0,000	223,74	47,00	1065,17
Psychologists	0,896	1,52	0,00	793,27
Hospital epidemiologists	0,783	2,40	0,01	1228,15
Ambulance personnel	0,000	43,12	5,21	357,27
Laboratory Technicians	0,751	1,95	0,03	120,94
Assistants / Aides (e.g. home health aides, orderlies, attendants)	0,098	5,32	0,73	38,59
Administrative health care service personnel	0,059	6,15	0,93	40,65
Nonclinical Support personnel of health care facilities (Food services, maintenance,	0,810	2,10	0,01	894,92

housekeeping/other technical support, janitors)				
Setting of work (reference level Other setting)				
Public regional/community Hospital	0,000	0,07	0,03	0,16
Private regional/community Hospital	0,064	0,36	0,12	1,06
Public tertiary/university Hospital	0,002	0,15	0,04	0,48
Specialty clinics (i.e. obstetrics/gynecology, psychiatry etc)	0,184	1,71	0,78	3,79
Long term care facilities (i.e. nursing homes, chronic care facilities etc.)	0,007	0,22	0,07	0,66
Primary Health Care Center (including outpatient or ambulatory clinic, maternal health care center, Child health care center, School health care center)	0,035	0,37	0,15	0,93
Private practice	0,905	1,07	0,35	3,31
Public Health Institute or other governmental organization	0,000	0,09	0,03	0,27
Academia	0,000	9,61	2,80	33,01
Industry	0,000	23,14	5,15	103,95
Years of experience in current profession (reference level More than 10)				
Less than 2	0,066	2,19	0,95	5,04
2 to 5	0,924	1,04	0,49	2,18
6 to 10	0,459	0,76	0,37	1,56
No. of observations after excluding missing cases for all variables: 4674; Nagelkerke R^2: 0.509. Correctly classified: 96.6%. With dots are denoted cases that all of the respondents believed in vaccination or were not sure.				

According to the results of the logistic regression health workers form Italy and Slovenia have higher probability of not believing for vaccination in relation to Sweden (OR=9.65, p-value<0.001 for Italy and OR=480.89, p-value<0.001 for Slovenia, respectively). There were no cases of health workers form UK or Cyprus not believing in vaccination. Gender and age do not seem to affect the probability of believing in vaccination. It seems that participants with less than 2 years of experience in the current profession are twice as likely not to believe in vaccination in relation to those with more than 10 years of experience, result no statistical significant though (p-value=0.066). Those with academic degree as opposed to those with lower o higher degree do not believe in higher percentages in vaccination.

In terms of profession higher probability of not believing in vaccination have (a) from the physicians those with internal medicine specialty or subspecialty and those of general Practice, family medicine or equivalent, (b) most of the kinds of nurses, (c) from allied health professionals, pharmacists, physical, occupational, respiratory therapists, social workers and ambulance personnel. On the other hand, all of the physicians with surgical specialty or subspecialty (126 cases), laboratory medical doctors (53 cases) and dental hygienists (23 cases) in our sample seem to believe in vaccination.

In terms of setting of work those working in public health hospitals, long term care facilities and public health institutes have lower probability of not believing in vaccination. On the other

hand, those working in academia and industry seem to not believe in vaccination in higher percentages.

Appendix A.

Table A-1: Observed weights

Observed sample weights by country within each profession	Medical doctor	Nurse & assistant	Dentists	Pharmaceutical personnel	Other allied professionals
Sweden	39,12%	60,46%	46,67%	82,61%	69,17%
Greece	6,29%	15,98%	10,00%	13,04%	6,15%
Finland	3,15%	8,53%	3,33%	4,35%	3,82%
Italy	4,59%	6,29%			2,97%
Germany	12,16%	1,20%	16,67%		3,61%
Malta	9,78%	1,70%	3,33%		1,56%
Lithuania	5,61%	2,40%			3,61%
Romania	6,63%	0,17%			1,98%
Slovenia	6,21%	0,29%	13,33%		1,06%
Spain	3,83%	0,87%	6,67%		1,77%
Poland	0,51%	0,58%			2,97%
UK	1,62%	1,12%			0,92%
Cyprus	0,51%	0,41%			0,42%
Sum of weights by profession	100,00%	100,00%	100,00%	100,00%	100,00%

Table A-2: WHO weights

WHO weigths by country within each profession	Medical doctor	Nurse & assistant	Dentists	Pharmaceutical personnel	Sum (for allied professionals)
Sweden	3,21%	3,84%	3,57%	2,77%	3,61%
Greece	6,27%	1,45%	7,07%	3,90%	3,07%
Finland	1,40%	4,50%	1,92%	2,32%	3,47%
Italy	18,44%	13,73%	14,87%	21,04%	15,39%
Germany	27,07%	32,56%	30,75%	19,77%	30,35%
Malta	0,11%	0,10%	0,09%	0,09%	0,10%
Lithuania	1,11%	0,86%	1,12%	1,03%	0,94%
Romania	4,41%	4,46%	5,95%	4,71%	4,53%
Slovenia	0,45%	0,58%	0,59%	0,42%	0,54%
Spain	14,78%	7,85%	12,78%	18,54%	10,44%
Poland	7,53%	7,90%	5,82%	9,60%	7,80%
UK	15,02%	22,05%	15,10%	15,73%	19,59%
Cyprus	0,21%	0,14%	0,37%	0,08%	0,16%
Sum of weights by profession	100,00%	100,00%	100,00%	100,00%	100,00%

Table A-3: Frequency matrix

Frequency matrix used to adjust the sample	Medical doctor	Nurse & assistant	Dentists	Pharmaceutical	Other allied professionals
Sweden	0,08	0,06	0,08	0,03	0,05
Greece	1,00	0,09	0,71	0,30	0,50
Finland	0,44	0,53	0,58	0,53	0,91
Italy	4,01	2,18			5,18
Germany	2,23	27,11	1,85		8,42
Malta	0,01	0,06	0,03		0,06
Lithuania	0,20	0,36			0,26
Romania	0,66	26,91			2,29
Slovenia	0,07	2,01	0,04		0,51
Spain	3,86	9,03	1,92		5,91
Poland	14,75	13,62			2,63
UK	9,30	19,72			21,31
Cyprus	0,41	0,33			0,38

Table A-4: Personal view about vaccines by country of employment

	Which of the following statements do you feel that best reflects your personal view about vaccines					
Country of employment	*Important for reducing or eliminating serious diseases*	*Useful in particular settings for example in the developing world*	*Not sure*	*Challenging natural immunity rather than getting vaccinated*	*Do more harm than good*	***Total***
Sweden	162 (88.5%)	7 (3.8%)	8 (4.4%)	5 (2.7%)	1 (0.5%)	183
Greece	134 (86.5%)	12 (7.7%)	4 (2.6%)	5 (3.2%)	0	155
Finland	166 (94.3%)	6 (3.4%)	1 (0.6%)	2 (1.1%)	1 (0.6%)	176
Italy	606 (79.6%)	69 (9.1%)	11 (1.4%)	36 (4.7%)	39 (5.1%)	761
Germany	1172 (77.8%)	210 (13.9%)	29 (1.9%)	42 (2.8%)	54 (3.6%)	1507
Malta	5 (100.0%)	0	0	0	0	5
Lithuania	42 (87.5%)	1 (2.1%)	3 (6.3%)	1 (2.1%)	1 (2.1%)	48
Romania	188 (84.3%)	1 (0.4%)	30 (13.5%)	4 (1.8%)	0	223
Slovenia	8 (29.6%)	0	1 (3.7%)	3 (11.1%)	15 (55.6%)	27
Spain	485 (94.2%)	0	15 (2.9%)	6 (1.2%)	9 (1.7%)	515
Poland	368 (94.6%)	5 (1.3%)	0	16 (4.1%)	0	389
UK	945 (95.8%)	41 (4.2%)	0	0	0	986
Cyprus	7(87.5%)	1 (12.5%)	0	0	0	8
Total	4288 (86.1%)	353 (7.1%)	102 (2.0%)	120 (2.4%)	120 (2.4%)	4983

Table A-5: Requirement for immunization against VPDs by country

			Are you required by your hospital/organization to prove immunity against any of the following Vaccine Preventable Disease(s) before you begin to work?		
			No	Yes	Total
Country of employment	Sweden	Count	151 (82.5%)	32 (17.5%)	183
	Greece	Count	110	45	155
		% within Country of employment	71,0%	29,0%	100,0%
	Finland	Count	95	80	175
		% within Country of employment	54,3%	45,7%	100,0%
	Italy	Count	366	400	766
		% within Country of employment	47,8%	52,2%	100,0%
	Germany	Count	726	817	1543
		% within Country of employment	47,1%	52,9%	100,0%
	Malta	Count	2	3	5
		% within Country of employment	40,0%	60,0%	100,0%
	Lithuania	Count	41	6	47
		% within Country of employment	87,2%	12,8%	100,0%
	Romania	Count	156	67	223
		% within Country of employment	70,0%	30,0%	100,0%
	Slovenia	Count	12	16	28
		% within Country of employment	42,9%	57,1%	100,0%
	Spain	Count	372	143	515
		% within Country of employment	72,2%	27,8%	100,0%
	Poland	Count	274	116	390

		% within Country of employment	70,3%	29,7%	100,0%
	UK	Count	307	679	986
		% within Country of employment	31,1%	68,9%	100,0%
	Cyprus	Count	5	3	8
		% within Country of employment	62,5%	37,5%	100,0%
Total		Count	2617	2407	5024
		% within Country of employment	52,1%	47,9%	100,0%

Table A-6: Requirement for immunization against VPDs by work sector

			Are you required by your hospital/organization to prove immunity against any of the following Vaccine Preventable Disease(s) before you begin to work?		Total
			No	Yes	
Setting of work	Public regional/community Hospital	Count	458	480	938
		% within Setting of work	48.8%	51.2%	100.0%
	Private regional/community Hospital	Count	47	62	109
		% within Setting of work	43.1%	56.9%	100.0%
	Public tertiary/university Hospital	Count	131	147	278
		% within Setting of work	47.1%	52.9%	100.0%
	Specialty clinics	Count	80	90	170
		% within Setting of work	47.1%	52.9%	100.0%
	Long term care facilities	Count	76	95	171
		% within Setting of work	44.4%	55.6%	100.0%
	Primary Health Care Center	Count	339	398	737
		% within Setting of work	46.0%	54.0%	100.0%
	Private practice	Count	171	98	269
		% within Setting of work	63.6%	36.4%	100.0%
	Public Health Institute or other governmental organization	Count	698	612	1310
		% within Setting of work	53.3%	46.7%	100.0%
	Academia	Count	115	33	148

	Industry	% within Setting of work	77.7%	22.3%	100.0%
		Count	43	12	55
		% within Setting of work	78.2%	21.8%	100.0%
	Other setting	Count	390	281	671
		% within Setting of work	58.1%	41.9%	100.0%
Total		Count	2548	2308	4856
		% within Setting of work	52.5%	47.5%	100.0%

Table A-7: Requirement to receive the seasonal influenza vaccine by country

			Are you required by your employer to receive the seasonal influenza vaccine every year?		Total
			yes	no	
Country of employment	Sweden	Count	16	165	181
		% within Country of employment	8.8%	91.2%	100.0%
	Greece	Count	18	134	152
		% within Country of employment	11.8%	88.2%	100.0%
	Finland	Count	76	98	174
		% within Country of employment	43.7%	56.3%	100.0%
	Italy	Count	350	403	753
		% within Country of employment	46.5%	53.5%	100.0%
	Germany	Count	790	733	1523
		% within Country of employment	51.9%	48.1%	100.0%
	Malta	Count	2	3	5
		% within Country of employment	40.0%	60.0%	100.0%
	Lithuania	Count	17	29	46
		% within Country of employment	37.0%	63.0%	100.0%
	Romania	Count	140	83	223

		% within Country of employment	62.8%	37.2%	100.0%
	Slovenia	Count	6	21	27
		% within Country of employment	22.2%	77.8%	100.0%
	Spain	Count	112	403	515
		% within Country of employment	21.7%	78.3%	100.0%
	Poland	Count	27	363	390
		% within Country of employment	6.9%	93.1%	100.0%
	UK	Count	168	778	946
		% within Country of employment	17.8%	82.2%	100.0%
	Cyprus	Count	1	7	8
		% within Country of employment	12.5%	87.5%	100.0%
Total		Count	1723	3220	4943
		% within Country of employment	34.9%	65.1%	100.0%

Table A-8: Requirement to receive the seasonal influenza vaccine by work sector

			Are you required by your employer to receive the seasonal influenza vaccine every year?		Total
			yes	no	
Setting of work	Public regional/community Hospital	Count	453	478	931
		% within Setting of work	48.7%	51.3%	100.0%
	Private regional/community Hospital	Count	36	72	108
		% within Setting of work	33.3%	66.7%	100.0%
	Public tertiary/university Hospital	Count	74	204	278
		% within Setting of work	26.6%	73.4%	100.0%
	Specialty clinics	Count	73	97	170
		% within Setting of work	42.9%	57.1%	100.0%
	Long term care facilities	Count	74	96	170
		% within Setting of work	43.5%	56.5%	100.0%
	Primary Health Care Center	Count	214	479	693
		% within Setting of work	30.9%	69.1%	100.0%

	Private practice	Count	97	162	259
		% within Setting of work	37.5%	62.5%	100.0%
	Public Health Institute or other governmental organization	Count	482	816	1298
		% within Setting of work	37.1%	62.9%	100.0%
	Academia	Count	35	113	148
		% within Setting of work	23.6%	76.4%	100.0%
	Industry	Count	14	41	55
		% within Setting of work	25.5%	74.5%	100.0%
	Other setting	Count	159	509	668
		% within Setting of work	23.8%	76.2%	100.0%
Total		Count	1711	3067	4778
		% within Setting of work	35.8%	64.2%	100.0%

Table A-9: Seasonal influenza vaccine by country

			Seasonal Influenza (flu) vaccine		Total
			I haven't received	I have received	
Country of employment	Sweden	Count	81	66	147
		% within Country of employment	55.1%	44.9%	100.0%
	Greece	Count	57	63	120
		% within Country of employment	47.5%	52.5%	100.0%
	Finland	Count	28	116	144
		% within Country of employment	19.4%	80.6%	100.0%
	Italy	Count	302	355	657
		% within Country of employment	46.0%	54.0%	100.0%
	Germany	Count	565	823	1388
		% within Country of employment	40.7%	59.3%	100.0%
	Malta	Count	1	3	4
		% within Country of employment	25.0%	75.0%	100.0%

	Lithuania	Count	15	19	34
		% within Country of employment	44.1%	55.9%	100.0%
	Romania	Count	49	127	176
		% within Country of employment	27.8%	72.2%	100.0%
	Slovenia	Count	14	5	19
		% within Country of employment	73.7%	26.3%	100.0%
	Spain	Count	148	259	407
		% within Country of employment	36.4%	63.6%	100.0%
	Poland	Count	76	252	328
		% within Country of employment	23.2%	76.8%	100.0%
	UK	Count	138	699	837
		% within Country of employment	16.5%	83.5%	100.0%
	Cyprus	Count	3	2	5
		% within Country of employment	60.0%	40.0%	100.0%
Total		Count	1477	2789	4266
		% within Country of employment	34.6%	65.4%	100.0%

Table A- 10: Pandemic influenza vaccine by country

			Pandemic influenza (swine flu) vaccine		Total
			I haven't received	I have received	
Country of employment	Sweden	Count	24	118	142
		% within Country of employment	16.9%	83.1%	100.0%
	Greece	Count	67	38	105

		% within Country of employment	63.8%	36.2%	100.0%
	Finland	Count	15	120	135
		% within Country of employment	11.1%	88.9%	100.0%
	Italy	Count	354	171	525
		% within Country of employment	67.4%	32.6%	100.0%
	Germany	Count	874	422	1296
		% within Country of employment	67.4%	32.6%	100.0%
	Malta	Count	1	3	4
		% within Country of employment	25.0%	75.0%	100.0%
	Lithuania	Count	18	4	22
		% within Country of employment	81.8%	18.2%	100.0%
	Romania	Count	59	99	158
		% within Country of employment	37.3%	62.7%	100.0%
	Slovenia	Count	15	4	19
		% within Country of employment	78.9%	21.1%	100.0%
	Spain	Count	242	106	348
		% within Country of employment	69.5%	30.5%	100.0%
	Poland	Count	218	66	284
		% within Country of employment	76.8%	23.2%	100.0%
	UK	Count	328	478	806
		% within Country of employment	40.7%	59.3%	100.0%
	Cyprus	Count	4	1	5
		% within Country of employment	80.0%	20.0%	100.0%
Total		Count	2219	1630	3849
		% within Country of employment	57.7%	42.3%	100.0%

Table A- 11: MMR vaccine by country

			MMR (mumps-measles-rubella vaccine)		Total
			I haven't received	I have received	
Country of employment	Sweden	Count	73	29	102
		% within Country of employment	71.6%	28.4%	100.0%
	Greece	Count	34	26	60
		% within Country of employment	56.7%	43.3%	100.0%
	Finland	Count	45	53	98
		% within Country of employment	45.9%	54.1%	100.0%
	Italy	Count	386	65	451
		% within Country of employment	85.6%	14.4%	100.0%
	Germany	Count	375	582	957
		% within Country of employment	39.2%	60.8%	100.0%
	Malta	Count	1	1	2
		% within Country of employment	50.0%	50.0%	100.0%
	Lithuania	Count	12	2	14
		% within Country of employment	85.7%	14.3%	100.0%
	Romania	Count	134	10	144
		% within Country of employment	93.1%	6.9%	100.0%
	Slovenia	Count	10	1	11
		% within Country of employment	90.9%	9.1%	100.0%
	Spain	Count	156	111	267
		% within Country of employment	58.4%	41.6%	100.0%
	Poland	Count	207	23	230
		% within Country of employment	90.0%	10.0%	100.0%
	UK	Count	332	215	547
		% within Country of employment	60.7%	39.3%	100.0%

	Cyprus	Count	0	1	1
		% within Country of employment	0.0%	100.0%	100.0%
Total		Count	1765	1119	2884
		% within Country of employment	61.2%	38.8%	100.0%

Table A- 12: Varicella vaccine by country

			Varicella (chickenpox) vaccine		Total
			I haven't received	I have received	
Country of employment	Sweden	Count	115	7	122
		% within Country of employment	94.3%	5.7%	100.0%
	Greece	Count	65	19	84
		% within Country of employment	77.4%	22.6%	100.0%
	Finland	Count	101	12	113
		% within Country of employment	89.4%	10.6%	100.0%
	Italy	Count	427	54	481
		% within Country of employment	88.8%	11.2%	100.0%
	Germany	Count	843	245	1088
		% within Country of employment	77.5%	22.5%	100.0%
	Malta	Count	2	0	2
		% within Country of employment	100.0%	0.0%	100.0%
	Lithuania	Count	17	1	18
		% within Country of employment	94.4%	5.6%	100.0%
	Romania	Count	106	3	109
		% within Country of employment	97.2%	2.8%	100.0%
	Slovenia	Count	14	0	14

		% within Country of employment	100.0%	0.0%	100.0%
		Count	265	46	311
	Spain	% within Country of employment	85.2%	14.8%	100.0%
		Count	244	5	249
	Poland	% within Country of employment	98.0%	2.0%	100.0%
		Count	598	9	607
	UK	% within Country of employment	98.5%	1.5%	100.0%
		Count	1	1	2
	Cyprus	% within Country of employment	50.0%	50.0%	100.0%
		Count	2798	402	3200
Total		% within Country of employment	87.4%	12.6%	100.0%

Table A- 13L Hepatitis B vaccine by country

			Hepatitis B vaccine		Total
			I haven't received	I have received	
		Count	39	87	126
	Sweden	% within Country of employment	31.0%	69.0%	100.0%
		Count	25	71	96
	Greece	% within Country of employment	26.0%	74.0%	100.0%
		Count	30	103	133
Country of employment	Finland	% within Country of employment	22.6%	77.4%	100.0%
		Count	182	333	515
	Italy	% within Country of employment	35.3%	64.7%	100.0%
		Count	146	1066	1212
	Germany	% within Country of employment	12.0%	88.0%	100.0%

		Count	1	2	3
	Malta	% within Country of employment	33.3%	66.7%	100.0%
		Count	13	11	24
	Lithuania	% within Country of employment	54.2%	45.8%	100.0%
		Count	43	81	124
	Romania	% within Country of employment	34.7%	65.3%	100.0%
		Count	9	10	19
	Slovenia	% within Country of employment	47.4%	52.6%	100.0%
		Count	104	259	363
	Spain	% within Country of employment	28.7%	71.3%	100.0%
		Count	16	261	277
	Poland	% within Country of employment	5.8%	94.2%	100.0%
		Count	173	570	743
	UK	% within Country of employment	23.3%	76.7%	100.0%
		Count	0	3	3
	Cyprus	% within Country of employment	0.0%	100.0%	100.0%
		Count	781	2857	3638
Total		% within Country of employment	21.5%	78.5%	100.0%

Table A- 14: Td or Tdap vaccine by country

			Td (adult tetanus vaccine) or Tdap (adult tetanus, diphtheria and pertussis vaccine)		Total
			I haven't received	I have received	
Country of employment	Sweden	Count	47	68	115
		% within Country of employment	40.9%	59.1%	100.0%
	Greece	Count	27	60	87
		% within Country of employment	31.0%	69.0%	100.0%
	Finland	Count	3	138	141
		% within Country of employment	2.1%	97.9%	100.0%
	Italy	Count	187	328	515
		% within Country of employment	36.3%	63.7%	100.0%
	Germany	Count	115	1209	1324
		% within Country of employment	8.7%	91.3%	100.0%
	Malta	Count	1	2	3
		% within Country of employment	33.3%	66.7%	100.0%
	Lithuania	Count	12	10	22
		% within Country of employment	54.5%	45.5%	100.0%
	Romania	Count	60	23	83
		% within Country of employment	72.3%	27.7%	100.0%
	Slovenia	Count	15	4	19
		% within Country of employment	78.9%	21.1%	100.0%
	Spain	Count	90	276	366
		% within Country of employment	24.6%	75.4%	100.0%
	Poland	Count	139	102	241
		% within Country of employment	57.7%	42.3%	100.0%

	UK	Count	221	403	624
		% within Country of employment	35.4%	64.6%	100.0%
	Cyprus	Count	0	4	4
		% within Country of employment	0.0%	100.0%	100.0%
Total		Count	917	2627	3544
		% within Country of employment	25.9%	74.1%	100.0%