

Prevalence of influenza vaccination among physicians and related enhancing and preventing factors in Italy

Prevalenza in Italia della vaccinazione anti-influenzale tra i professionisti sanitari e fattori incentivanti e ostacolanti correlati

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Abstract

Introduction: Several studies proved the convenience of vaccinating health care workers (HCWs), especially physicians, and vaccination is recommended by health authorities in many Countries. Nonetheless in Italy only a small part of HCWs get vaccinated. The aim of this study is to conduct a systematic review in order to estimate the pooled prevalence of influenza vaccinations among physicians in Italy and to investigate the enhancing/preventing factors associated with this kind of preventive tool.

Methods: Relevant articles up to 1st May 2010 have been identified through Scopus, PubMed and Google Scholar; data extraction and quality assessment were performed independently by two researchers. The analysis was performed using StatsDirect 2.7.8.

Results: Sixteen studies, performed between 1990 and 2008, reported vaccination rates with pooled prevalence among all HCWs. From nine of them data regarding physicians have been extracted and analysed, finding a pooled proportion of 23.18% (95% CI = 17.85-28.98%). One study allowed an analysis of the reasons encouraging and preventing influenza vaccination. The main ones are on one side self protection, and patients' and family's protection, and on the other side "not caring about influenza," followed by "fear of adverse effects" and "belief that vaccine isn't effective."

Discussion: Italy has a good overall influenza vaccination coverage, and national records are available for population aged over 65 years or with chronic illness. Unfortunately there isn't any national record about HCWs or physicians vaccination, and from the data gathered from the studies examined in this analysis vaccination prevalence is low. The reasons brought from physicians are worrying because of their position in the society and in the health care system, in close contact with patients. This shows a great need for well-done information and educational campaigns stressing the importance of prevention.

Keywords

Influenza vaccination; Physicians; Italy

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Disclosure

The authors declare that they have no financial competing interests

Introduction

Vaccination against seasonal influenza in health care workers (HCWs), and especially physicians, is recommended by the Italian Ministry of Health and has proven to be a useful device for reducing absenteeism, and for interrupting the contagion chain between patients and HCWs, who often continue their job even if with symptoms of influenza [1]. Besides, if done systematically, this kind of vaccination is useful for an adequate use of the hospital resources.

The convenience of vaccinating HCWs has been proven by several studies [2]; a cost-benefit analysis also proved the efficiency of vaccination strictly from an economical point of view [3].

Despite these evidences, there is a consistent part of the population of physicians which doesn't support, or even oppose, this preventive practice [4-7].

In many European Countries, such as United Kingdom, Germany, France, Spain, vaccination of people working in medical field is perceived as important and this group gets vaccinated more than general population, with percentages ranging from 15% to 29% [8]. Vaccination practice is even stronger in Canada, ranging from 35.5% to 51% [9,10], and in Australia, 28% [11].

This doesn't happen in Italy, where the percentage of HCWs that get vaccinated is totally overlapping with the general population, and sometimes even lower. Rates are respectively 11-16% and 9-13% from 2004 to 2007 [8].

The aim of this study is to conduct a systematic review in order to:

- Estimate the pooled prevalence of influenza vaccinations among physicians in Italy.
- Investigate the enhancing/hindering factors associated with this kind of vaccination among physicians.

Methods

Identification of relevant studies

The research was conducted using medical databases Scopus and PubMed, and the search engine Google Scholar. The research algorithm used in Scopus and PubMed was: (influenza (OR) flu) (AND) vaccination(AND) healthcare (AND) workers (AND) Italy. In Google Scholar we used the simple algorithm: influenza vaccination healthcare workers Italy. The research was concluded May 1st 2010.

The abstracts were examined, and pre-determined inclusion criteria for the studies were: Italian setting, only seasonal flu (not avian or swine flu), English or Italian language. Then we included in the meta-analysis only the articles which showed specifically quantitative and qualitative data about physicians; the others have been used to have a global vision of the context. This led to a strict selection of the results, especially from Google Scholar, which is highly sensitive, but much less specific.

When the same article was found in more than one database, it was considered once.

Finally, the eligible papers were obtained in full text.

Following data extraction was performed by two independent researchers. Discrepancies were recorded and resolved by discussion. The information extracted were year, setting, study design, population involved in the study and responders, prevalence, and beliefs associated with vaccination.

Quality assessment

All the selected studies were revised by two different researchers to assess the quality score, according to a score sheet available for observational studies [12,13]. Disagreement about quality was solved with a discussion and a second examination. In particular concerning the power of the sample, the

researchers evaluated number of responders on the total population involved in the studies (see Tables I and II).

Pooled analysis

The pooled prevalence of influenza vaccination among physicians was calculated considering in the review only the studies reporting data on physicians, and after stratifying quality of the articles (score ≥ 3 ; see also the “Quality assessment” Paragraph).

The pooled proportion was calculated as the back-transformation of the weighted mean of the transformed proportion [14], using inverse arcsin variance weights for the fixed effects model and DerSimonian-Laird weights for the random effects model [15]. Together the pooled prevalence with relative 95% confidence interval (CI) and forest plot was realised. The Cochran chi-square (Cochran Q) test [16] was used to evaluate the between-study heterogeneity in the different groups. Besides, the I^2 [17] statistic was calculated as a measure of the proportion of the overall variation attributable to the between-study heterogeneity rather than chance [17,18]. The statistical analysis was conducted using StatsDirect statistical software version 2.7.8.

Ideas regarding prevention and encouragement to vaccination have been extracted from all the available studies; they were examined and compared, stressing the relevance of factors reported in different papers.

Results

Identification of relevant studies

The flow-chart shown in Figure 1, and built on the basis of PRISMA's indications [19], shows the selection of articles. Using inclusion criteria we found five articles in Google Scholar, ten in PubMed and six in Scopus. Five articles, that were contemporary present in more than one database, were considered once, and one paper was excluded because it criticised vaccination policy without concrete data supporting this hypothesis [20].

The review was performed using 16 articles [1,3-8,21-29]: 15 with a cross-section study design and 1 with a cohort one (Table I). Six papers contained the measure of occurrence of vaccination (prevalence) among physicians; the others were used for qualitative analysis.

Quality assessment

In all the six articles we calculated the score using the observational studies protocol [12,13]. The range of quality obtained was between 1 and 7 (Table I). Three of the studies had a score ≥ 3 .

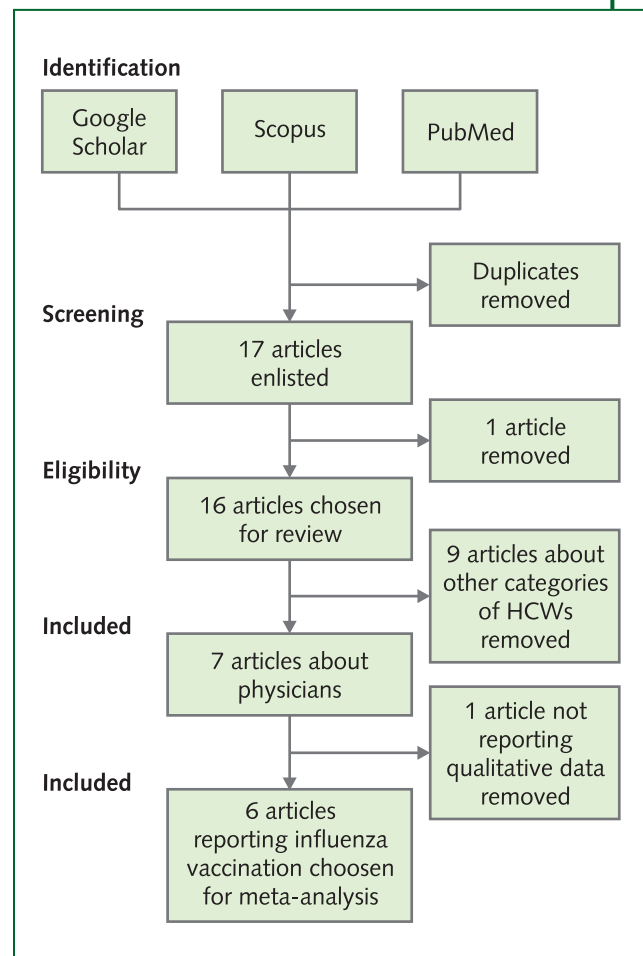


Figure 1. Flow-chart of the bibliographic research

Author	Year	Presence of prevalence	Quality of the study*	Type of population of the study (phy, nur, anc, oth)	Number of responders
Panico [7]	2010	Yes	3	Phy, nur, oth	2,079
Esposito [4]	2008	Yes	4	n.r.	2,143
Amodio [22]	2010	Yes	4	Phy, nur, anc, oth	2,570
La Torre [25]	2009	No	5	n.r.	1,960
Blank [8]	2008	Yes	5	n.r.	84
Fanetti [23]	2007	Yes	1	n.r.	1,418
Chittaro [26]	2009	Yes	7	Phy, nur, anc	473
Grandi [1]	2005	No	0	n.r.	n.r.
Calisto [24]	2002	No	2	Phy, nur, anc	811
Brusaferro [21]	2004	Yes	2	Phy, nur, anc	6,102
Nicholson [27]	1995	No	0	n.r.	n.r.
Rizzuto [28]	2006	No	4	n.r.	129
Ballada [5]	1994	Yes	2	Phy, nur, oth	1,129
Di Giuseppe [29]	2007	No	6	n.r.	369
Colombo [3]	2006	No	7	n.r.	214
Piffer [6]	2000	Yes	1	Phy, nur, oth	815

Table I. Characteristics of the selected studies

* Quality was calculated using protocol of observational studies [12,13]
anc = ancillary worker; n.r. = not reported; nur = nurses; oth = others; phy = physicians

Pooled analysis

Physicians (Table II, Figure 2), as sustained by many Authors [5,18,19], appear to be the category of HCWs that cares more about vaccination, with a pooled proportion of 23.18% (95% CI = 17.85-28.98%). This data are much better than the average population of HCW and even better than nurses and ancillary workers [5-7,21,22,27].

Author	Year	Year of follow-up	Physicians				Prevalence CI95%	
			Vaccinates (n.)	Responders (n.)	Workers in the hospital (n.)	Prevalence of vaccinates in the responders sample (%)	Lower	Upper
1 Panico [7]	2010	2002-03	79	409	409	19.3	15.6	23.46
		2003-04	81	409	409	19.8	16.05	24
2 Amodio [22]	2010	2005-06	80	620	620	12.9	10.36	15.8
		2006-07	86	648	648	13.3	10.8	16.16
		2007-08	71	656	656	10.8	8.52	13.43
3 Chittaro [26]	2009	2004	26	106	117	24.5	16.67	33.81
		2005	63	106	117	59.4	49.43	68.83
		2006	48	106	117	45.2	35.51	55.16
4 Brusaferro [21]	2004	1999-00	321	1,521	1,521	21.1	19.07	23.24
5 Ballada [5]	1993	1990	102	781	781	13	10.72	15.56
6 Piffer [6]	2000	1998	55	153	874	36.2	28.59	44.35
Total			1,012	5,515	6,269	23.18*	17.85*	28.98*

Table II. Prevalence of vaccinates in the selected studies and pooled analysis for physicians

* Pooled prevalence calculated using Random effects (Non-combinability of studies: Cochrane Q: 227,104
P < 0.0001)

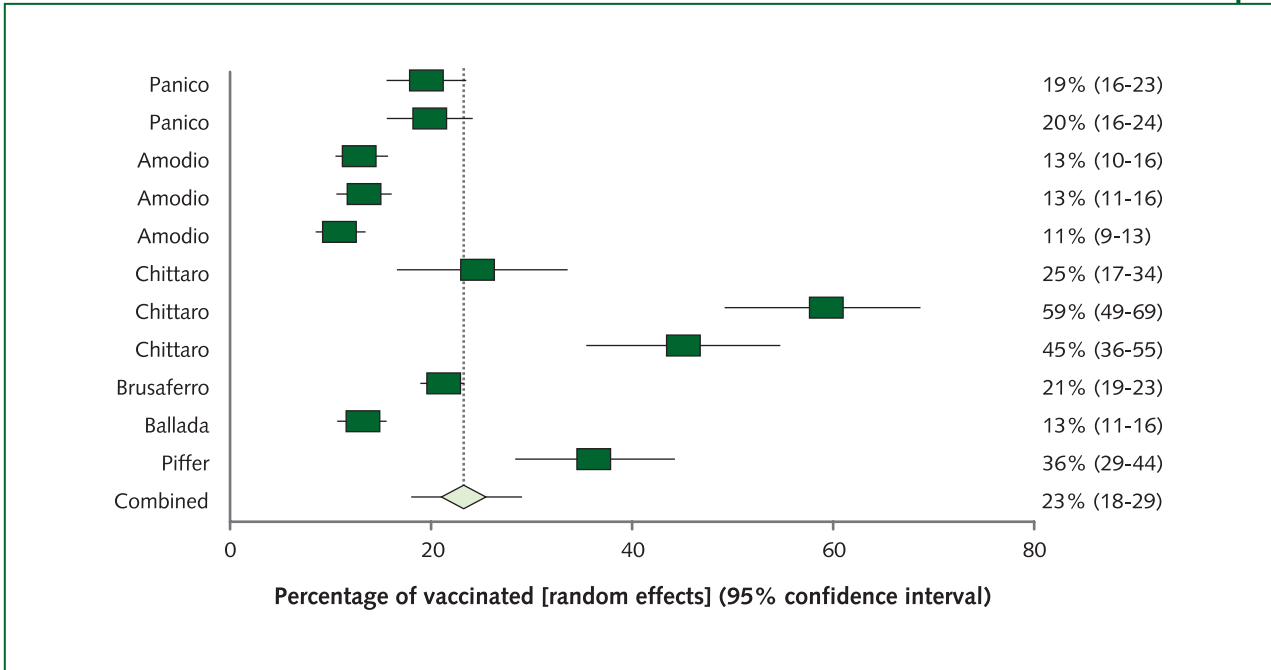


Figure 2. Forest plot of physicians for the prevalence of influenza vaccination among physicians

Analysis of the reasons for and against vaccination

Ideas encouraging and hampering vaccination are shown in Table III. Among these six papers, only one [5] presented physicians enhancing and preventing ideas about vaccination.

Ideas encouraging vaccination

Most physicians (91.2%) know that the vaccine is protective, and self protection appears to be a good motivation (77.5%), followed by patients' protection (37.8%), family's protection (34.4%) and protection of other people (33%). It's important to notice that not all physicians think that vaccine is protective, and while many of them want to protect themselves, only few care about patients, family and other people, which is not exactly reassuring. Moreover, it is strange that physicians do not take into account that fragile and sensitive patients have a higher risk associated to influenza compared to ordinary people.

Ideas encouraging influenza vaccination	
	% (N)
Vaccine is protective	91.2 (708)
Self protection	77.5 (162)
Patients' protection	37.8 (79)
Family's protection	34.4 (72)
Protection of other people	33 (69)
Ideas hampering influenza vaccination	
Doesn't care about influenza	56.2 (300)
Doubts about vaccine efficacy	8.9 (44)
Fear of adverse effects	7.5 (40)
Vaccine isn't protective	6.9 (54)

Table III. Distribution of ideas about influenza vaccination, derived from Ballada [5]

Ideas preventing vaccination

Not caring about influenza (56.2%) appears clearly to be the most frequent answer (as well as the main problem). It is worrying that such a great part of physicians simply doesn't care about this problem, despite recommendations from Ministry of Health and international organisations. Other less strong reasons examined are doubts about vaccine efficacy (8.9%), fear of adverse effects (7.5%), and the belief that vaccine is not protective (6.9%).

Discussion

Italy has a good overall influenza vaccination coverage, and national records for population aged over 65 years or with chronic illness are available [8]. Unfortunately, despite the ministerial recommendation, there isn't any national record regarding HCWs' or physicians' vaccination. In fact the results show a mean prevalence of vaccination that is low if compared to other European Countries (ranging from 15% to 29% in Countries such as UK, Germany, France, Spain), while it becomes high if we consider the population aged over 65 years and chronic illness.

The result of this analysis suggests that physicians' vaccination for seasonal influenza in Italy seems to be of little interest. The most recurring reason provided by physicians is simply "I do not care about influenza." These answers show dangerous disinformation and scarce knowledge of the problem and, coming from the people who have a main role in preventing this disease and in taking care of their patients, protecting them as best as they can, is really worrying. Furthermore, when they get vaccinated it's more often because of self protection, rather than for their patients'.

Moreover, some physicians doubt about vaccine efficacy or have too much fear of adverse effects [5]. Adequate knowledge given by vaccination campaign can reduce this kind of problems. This idea is also confirmed observing higher vaccination rate among physicians [5,25] (who have a better knowledge of influenza and vaccination) rather than among nurses and ancillary workers.

Barriers such as "not caring about influenza," "fear of adverse effects" and "belief that vaccine isn't effective" appear strong but can be matched through well-done campaigns which can achieve good results. As an example, particularly encouraging results have been obtained through vaccination in the ward [27], which appears efficient in making physicians and other HCWs more aware of the importance of immunization, with a great increase of vaccination prevalence. Maybe this could be the direction in which vaccination campaigns should move.

Limitations of this study are that only one paper has examined the reasons behind vaccination, so that population is not as wide as the one studied for the prevalence among physicians. Another bias

could be represented by the responders themselves, due to their characteristic of answering to a questionnaire: this can aimlessly select physicians who care more than the average about the others, granting results better than reality.

The strength of this study is the large size of the responders which can guarantee a reliable picture of the situation at the national level.

Questions for further research

It could be interesting to investigate methods and tools to enhance HCW's knowledge about influenza vaccines, and to perform well-done sensitization campaign for its prevention among physicians

The review in brief

Clinical question	Pooled prevalence of influenza vaccination among physicians in Italy
Type of review	Systematic (meta-analysis)
Search of the literature	Scopus, PubMed and Google Scholar
Conclusions	Prevalence of vaccinates among physicians = 23.18%; 95% CI = 17.85-28.98%. Reasons hampering vaccination show a lack of concern about the severity of the disease and the importance of prevention. Influenza vaccination coverage among physicians should therefore be improved
Limitations	Small population sample in the investigation of the vaccination barriers among physicians

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