

# Attitudes, behaviours and perceptions of Italian General Practitioner trainees towards influenza vaccination in Western Sicily (Italy)

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## ABSTRACT

**BACKGROUND:** General practitioners (GPs) have to be considered as key figures of health promotion among health care workers since they are strongly asked to recommend influenza vaccination to their patients and perform on them. Despite this consideration, GPs have influenza vaccination rates that are significantly below the 75% coverage proposed by International Public Health guidelines. In order to increase future coverage of influenza vaccination within GPs, and through them within the population, the aim of this study was to assess determinants associated with influenza vaccine uptake among GP trainees.

**METHODS:** A survey was carried out on GP trainees attending the training course in Community Medicine of Western Sicily (Italy). Each participant was interviewed via an anonymous self-administered questionnaire which included questions on attitudes, behaviours and perceptions regarding influenza and influenza vaccination.

**RESULTS:** Vaccination coverage was 26.2% for seasonal 2008-2009 influenza, 20.0% for pandemic A (H<sub>1</sub>N<sub>1</sub>) influenza and 18.7% for seasonal 2009-2010 influenza. Considering themselves as a high risk group for developing influenza was significantly associated with seasonal 2009-2010 influenza vaccine (adj-OR 2.35). Vaccination for seasonal 2009-2010 influenza (adj-OR 10.63), pandemic A (H<sub>1</sub>N<sub>1</sub>) influenza (adj-OR 16.77) and seasonal 2010-2011 influenza (adj-OR 38.08) were significantly more frequent in GP trainees who had been vaccinated more than three times in the previous five influenza seasons.

**CONCLUSION:** Influenza vaccine uptake among GP trainees is more a habit than a professional responsibility, and influenza vaccination is still administered to patients on the basis of GP trainees' clinical evaluation or patient willingness. Multidisciplinary learning pathways may implement vaccination coverage in the attempt to modify the current GP trainees' attitude towards recommended influenza vaccination.

*Key words: Influenza Vaccination, General Practitioner Trainees, Attitudes, Western Sicily*

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## INTRODUCTION

Influenza is the respiratory infection that causes highest morbidity and mortality in the general population, especially among older

people and those with chronic diseases (1, 2). Influenza vaccine is universally recognized as the main preventive measure that decreases the incidence of influenza illness and therefore, indirectly, the chance of transmitting the virus (3). Nevertheless, the importance and the

efficacy of the influenza vaccine is constantly debated (4). Health care workers (HCWs) are repeatedly exposed to patients infected with the influenza virus and therefore they have to be considered at high risk of contracting the virus. Moreover HCWs could represent a source of infection for their patients. Consequently, influenza vaccination of HCWs can be considered as one of the main preventive measures to avoid virus transmission to the most vulnerable patients and to decrease HCWs absenteeism during annual epidemics (5, 6). Although every year new recommendations and guidelines advocate for influenza vaccination of the health care workers, coverage rates in European HCWs remain below public health expectations (7, 8, 9).

Similar considerations can be extended to general practitioners or family medical physicians (GPs), whose influenza coverage rates are significantly below the 75% coverage proposed by both the United States and the European Centres for Disease Control and Prevention (CDC) (3 - 13). In particular, among HCWs, GPs have to be considered as key figures of particular interest that play an essential role in health promotion, since they are strongly asked to recommend influenza vaccination to their patients and perform on them, and because they are more likely to support vaccination in the elderly more so than hospital doctors (14). Moreover, it has been demonstrated that GPs vaccinated against influenza act as a model to increase vaccination rates among their patients and among other HCWs (15).

In order to understand and modify future attitudes of GPs towards influenza vaccination, the aim of the present study was to assess determinants associated with influenza vaccination among GP trainees, analyzing, for the first time in Italy, their attitudes, behaviours and perceptions towards seasonal and pandemic influenza vaccination.

## METHODS

The study was carried out using data collected during January 2011 among first, second and third year GP trainees (n=105) attending the training course in Community Medicine of Western Sicily (Italy). This course includes all GP trainees from the Provinces (Counties) of Agrigento, Caltanissetta, Enna, Palermo and Trapani. Data were collected with an anonymous, self-administered questionnaire, previously tested

and fully utilized in a survey conducted among medical residents in the University of Palermo (16). Information contained in the questionnaires was only available to, and only reviewed by, the research investigators, with stringent assurance of the confidentiality of the individual data. The study was approved by the Institutional Review Board of the Teaching hospital "P. Giaccone" of Palermo, Italy.

Each questionnaire included seven sections as outlined below:

- a) Demographical characteristics: sex, age, year of graduation, specialty, whether already attended (categorized in clinical, surgical and diagnostic duties).
- b) Episodes of influenza like illness in the previous five years.
- c) Personal experiences of seasonal influenza vaccination for the previous five years (categorized as "never vaccinated", "for one to three times" and "more than three times"), for the 2009-2010 seasonal influenza vaccination, for pandemic A (H1N1) influenza vaccination and for 2010-2011 seasonal influenza vaccination.
- d) Reason for getting vaccinated for 2009-2010 seasonal influenza, pandemic influenza A (H1N1) 2009 and 2010-2011 seasonal influenza. Four reasons (perception of high efficacy/safety, considering themselves as part of a high risk group for contracting influenza, considering themselves as a part of a high risk group for spreading influenza to the general population, considering themselves as a part of a high risk group for spreading influenza to patients) were investigated by self-scoring of the individual response on a 1 ("minimum level of importance") to 5 ("maximum level of importance") scale.
- e) Main sources of information on influenza/influenza vaccination were investigated as closed ended question (categorized as "none", "recommendation of Health Minister", "scientific sources" and "mass media").
- f) Attitude of GP trainees to recommend influenza vaccination to patients were categorized as "Yes, according to the recommendations of the health minister", "Yes, according to my clinical experience", "No, leaving patients to their free will".
- g) Willingness to take part in a specific course on influenza and influenza vaccination

The questionnaire responses were entered in a database created within EpiInfo 3.5.1 software. All the data were analyzed using the R statistical

software package (17). Absolute and relative frequencies were calculated for qualitative variables, while quantitative variables were summarized as means (standard deviation). Differences by groups for categorical variables were analyzed using the chi-square test (Mantel-Haenszel). Odds ratio (OR) and adjusted OR (adj-OR) with 95% confidence intervals (95% CIs) were also calculated. Differences in means were compared with the Student t-test. All variables found to have a statistically significant association (two-tailed p-value <0.05) with vaccine uptake in the univariate analysis were included in three different multivariable logistic-regression models, having the following dependent variables:

- a) 2009/2010 Seasonal influenza
- b) Pandemic A (H1N1) influenza
- c) 2010/2011 Seasonal influenza

Measures of goodness of fit were calculated to compare logistic regression models by using Akaike's Information Criterion (AIC) and the model with the lowest AIC was considered the best fit. The significance level chosen for all analysis was  $p < 0.05$  (two-tailed).

## RESULTS

The response rate for GP trainees attending the training course in Community Medicine for Western Sicily was 76.2% (80/105), ranging from 73.3% among respondents attending the third year to 77.7% among those of the first year of the course. The general characteristics of the 80 GP trainees included in the study are summarized in Table 1.

Table 2 reports attitudes, behaviours and perceptions towards influenza vaccination of our study participants. 60% of the 80 GP trainees usually recommended influenza vaccination to their patients according to the indications of the Health Minister, while 18% recommended influenza vaccination according to their clinical evaluation. Finally, 22.5% of future family physicians did not recommend influenza vaccination, leaving patients to their own free will.

About half of the 80 GP trainees (42.5%) declared they had suffered from 1 to 3 episodes of influenza like illness (ILI) in the previous five years. However, more than half the sample had not been vaccinated for influenza in the previous five years (57.5%), even though they considered themselves as part of a high risk group for developing influenza. The large majority of the sample (75%; 60/80) was willing to take part in

a specific course on influenza and influenza vaccination. Overall, during the 2009-2010 influenza vaccine campaign, 21 GP trainees (26.2% [95% CI, 17.0%-37.3%]) were vaccinated for seasonal influenza and 16 (20% [95% CI, 11.9%-30.4%]) for pandemic influenza A (H1N1). During the 2010-2011 influenza vaccine campaign, 15 GP trainees (18.7% [95% CI, 10.9%-29.0%]) were vaccinated for seasonal influenza.

Factors associated with the decision to be vaccinated during the 2009-2010 and the 2010-2011 influenza seasons are presented in Table 3. In the multivariate analysis, 2009-2010 seasonal influenza vaccination was associated with trainees considering themselves to be a high risk group for developing influenza (adj-OR 2.35), and with having had one to three vaccinations (adj-OR 27.6), or more than three (adj-OR 1063) vaccinations in the previous five years. Otherwise, pandemic A(H1N1) influenza vaccination was associated with male sex (adj-OR 5.58) and with having had from one to three (adj-OR 21.36) or more (adj-OR 16.77) vaccinations in the previous five years.

TABLE 1

CHARACTERISTICS OF THE 80 GENERAL PRACTITIONER TRAINEES INCLUDED IN THE STUDY			
		N=80	
Age, mean in years $\pm$ SD		33.5	$\pm$ 5.4
Gender, n (%)			
	Male	30	(37.5)
	Female	50	(62.5)
Year of degree, n (%)			
	1996 or before	4	(5.0)
	1997 - 2001	6	(7.5)
	2002 - 2005	47	(58.8)
	2006 - 2009	23	(28.7)
Year of training course, n (%)			
	first year	35	(43.8)
	second year	23	(28.7)
	third year	22	(27.5)
Previous specialty duties, n (%)			
	None	34	(42.5)
	Clinical	34	(42.5)
	Surgical	6	(7.5)
	Diagnostic	6	(7.5)

TABLE 2

ATTITUDES, BEHAVIOURS AND PERCEPTIONS TOWARDS INFLUENZA VACCINATION OF THE 80 GENERAL PRACTITIONER TRAINEES INCLUDED IN THE STUDY			
		N=80	
		n	%
Attitude to recommend influenza vaccination for patients			
	Yes, according to the recommendations of the health minister	48	60.0
	Yes, according to my clinical evaluation	14	17.5
	No, leaving patients to their free will	18	22.5
Episodes of Influenza Like Illness (ILI) in the previous five years (2006-2010)			
	more than three times	8	10.0
	for one to three times	34	42.5
	I don't remember	6	7.5
	never	32	40.0
Personal experiences of influenza vaccination for the previous five years (2004-2008)			
	more than three years	9	11.2
	for one to three years	25	31.3
	never	46	57.5
Willingness to take part on a specific course on influenza and influenza vaccination			
	Yes	60	75.0
	No	20	25.0
Main information sources			
	Scientific reports	22	27.5
	Mass Media	23	28.7
	Recommendations of Health Minister	12	15.0
	None	23	28.8
Vaccination against 2009-2010 seasonal influenza		21	26.2
Vaccination against pandemic influenza A (H1N1)		16	20.0
Vaccination against 2010-2011 seasonal influenza		15	18.7

Finally, medical residents who stated they were vaccinated more than three times in the previous five years were significantly more likely to be vaccinated for 2010-2011 seasonal influenza (adj-OR 38.08).

## DISCUSSION

GPs represent an important group of HCWs responsible for recommending Public Health good practice on the theme of influenza vaccination because they hold a first-line role in advising their patients. As a consequence, GP trainees represent a category of key figures of particular interest for promoting and helping to increase

immunization coverage trends among primary care physicians, high risk patients and the general population. Moreover, considering the mean age of the sample, and that literature reports a higher incidence of influenza cases in young people, GP trainees should also themselves be considered as subjects at greater risk for acquiring and spreading influenza to patients (18). In addition, the leading role of influenza vaccination as a preventive measure against respiratory tract infection and swab-positive influenza among younger GPs has been demonstrated (19).

Looking at the vaccination rate of our survey, it is evident that GP trainees declare a poor compliance to seasonal influenza vaccination. Coverage rates observed in our study were con-

sistent with those observed in other studies conducted in Sicilian HCWs (25.2%) (8) and medical residents of Palermo and Province (21.8%), but lower than those reported among other European GP-trainees (43%) (12, 16).

This result contrasts with the most recent scientific literature, in which GPs showed a greater predisposition for seasonal influenza vaccination respect to other categories of HCWs (20%), with a range of vaccination coverage from 36% to 71% (10 - 12, 20).

This last finding has been correlated with a closer physical contact between patients with ILI and GPs, rather than with other HCW. Therefore, GPs may be repeatedly exposed to respiratory viruses, particularly the influenza virus, and this motivates them, more than other HCWs, to vaccinate themselves and suggest seasonal influenza vaccination to patients (19, 20). In addition, there is strong evidence that, despite their professions, patients of physicians who are vaccinated have a higher compliance to the seasonal influenza vaccination (22).

In accordance with vaccination coverage for seasonal influenza, vaccination rates for pandemic A(H1N1) influenza were also alarming. Only 20% of the study sample was vaccinated for A H1N1 virus, resulting in a coverage lower than that reported by HCWs (27.3%) and by medical residents working in Western Sicily (41.6%) (8, 16). In any case, vaccination coverage rates for pandemic influenza in other European countries,

such as Netherlands (85% among GPs, 77% among GP-trainees) and France (61.7%), are still higher than those observed in Italy (11, 12).

This finding can be explained by considering that pandemic vaccination in Italy was not assigned to the direct management by GPs, thus reducing their role in the pandemic event and, probably, their vaccination compliance considerably.

Focusing on the acceptance of vaccination, this was associated with three main predictors: "considering themselves as a group at high risk for developing influenza", "male gender" and "a personal experience of influenza immunization in previous seasons".

One of the most important factors involved in the acceptance of seasonal influenza vaccination (2009/2010) was because they "considered themselves as a group at high risk for developing influenza". This evidence has already been reported by other authors for seasonal influenza vaccination (16, 23).

On the other hand, GP trainees did not "consider themselves as a group at high risk for spreading influenza among patients" and protecting patients was not significantly associated with accepting influenza vaccination. In Sicily, a similar finding was observed in resident doctors, suggesting that this linkage could be derived from similar University training between the two groups (16).

In our study, a personal experience of influenza immunization in previous seasons was the main predictor of influenza vaccination uptake.

TABLE 3

BEST FITTING LOGISTIC REGRESSION MODELS, BY AKAIKE'S INFORMATION CRITERION, FOR ACCEPTANCE OF VACCINATION FOR OF 2009-2010 SEASONAL, PANDEMIC A (H1N1) AND 2010-2011 SEASONAL INFLUENZA

	Influenza vaccine uptake					
	2009/2010 Seasonal influenza		Pandemic A (H1N1) influenza		2010/2011 Seasonal influenza	
	Crude OR (95% CIs)	Adj OR (95% CIs)	Crude OR (95% CIs)	Adj OR (95% CIs)	Crude OR (95% CIs)	Adj OR (95% CIs)
Gender						
- females	1	-	1	1	1	-
- males	1.35 #	-	3.66 *	5.58 *	1.60 #	-
Consider themselves as a high risk group for developing influenza						
	1.84 +	2.35 +	1.47 *	-	1.69 ^	-
Influenza vaccination in the previous five years						
- never	1	1	1	1	1	1
- yes, from one to three times	41.54 +	27.6 +	14.7 +	21.36 +	3.58 #	3.71 #
- yes, more than three times	360 +	1063.9 +	17.6 +	16.77 ^	50.17 +	38.08 +

\* $p < 0.05$  ^ $p < 0.01$  + $p < 0.001$  # $p \geq 0.05$

This result is supported by several other reports (7, 8, 11, 16, 22) and has been linked to the finding that vaccination is accepted as a "habit" that it is not usually lost.

According to this consideration, the alarming detection of a decreasing trend in our sample lets us hypothesize that future coverage among GP trainees will continue to be lower than recommended by international Evidence Based Prevention guidelines (3, 13).

Finally, the present study has a major limitation due to the fact that the survey was conducted in a single area (western Sicily) and, as consequence, results may not be generalized to other geographic areas. Moreover, all the data in our survey were self-reported and may be subject to social desirability bias. Regardless of these limitations, this study is the first examining attitudes, behaviours and perceptions towards

influenza vaccination among GP trainees in Italy.

Influenza vaccination among GP-trainees is more a habit than an ethical and professional responsibility. As consequence, future family medical physicians who refuse influenza vaccination typically tend to maintain their behaviours over time. The challenge for the future consists in changing this habit and organizing multidisciplinary learning pathways, with the aim of achieving higher vaccination coverage among GPs, and preventing that GP trainees recommend influenza vaccination according to their own clinical evaluation or leaving patients to their own free will.

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**ACKNOWLEDGEMENTS:** *The authors would like to thank Dr. Luigi Galvano and Dr. Luigi Spicola for their useful technical-scientific support for the organization of this work.*

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