Assessment of coverage and analysis of the determinants of adherence to influenza vaccination in the general practitioners of Taranto

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Key words: Influenza, general practice, vaccination, survey, attitude
Parole chiave: Influenza, medicina generale, vaccinazione, indagine, atteggiamento

Abstract

Background. In Italy, the general practitioner (GP) is the operations manager of the campaigns regarding influenza immunization. He/she identifies people eligible for vaccination among the clients, invites them actively and administers the vaccine. The GPs are directly in contact with the target population that should be vaccinated and their opinion about the flu vaccine may ultimately influence the decision of the patient to accept or not the vaccination. This study aims to assess levels of immunization for influenza vaccination among GPs and factors influencing their adherence to the vaccinations recommended for GPs in the province of Taranto (Apulia region, Southern Italy).

Methods. We conducted a cross-sectional study among 471 general practitioners working in the province of Taranto during the February-March period of 2016. We emailed all GPs a self-administered web-based standardized questionnaire. The questionnaire analyzed the self-reported flu vaccination coverage, knowledge, perception and positions of the GPs with regard to the forecasted vaccinations of the in-risk categories among their patients.

Results. A total of 229 (48.6%) GPs participated in the survey. In the 2015/2016 influenza season, the vaccination coverage among the interviewed GPs was 76.4% (n = 175). A patient number ≥ 900 increased the likelihood to have been vaccinated in the 2015/2016 season (OR = 3.3; P < 0.01). Overall only 79.9% prefers to use the adjuvated vaccines on patients > 64 and the 58% of GPs who chose not to get vaccinated considers influenza as a non-risk pathology for a healthy subject.

Discussion. The coverage achieved among the Taranto’s ASL GPs during the 2015/16 season reaches the minimum threshold set by the Minister, but they could implement their knowledge and their participation in relation to the anti-influenza vaccine in order to discard all the wrong or clearly unfounded common beliefs. The best strategy in order to optimize the governance system seems to be the empowerment of primary care physicians, to be fulfilled through actions shared with the Public Healthcare Services based on training, communication and projects supporting vaccine coverage.

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Background

Influenza is a respiratory vaccine-preventable disease that determines about 3-5 million cases of severe illness and 300,000-500,000 deaths annually (1). Influenza can result in severe complications, hospitalization and even death mainly among high-risk groups (very young, elderly or chronically ill people) (2). In particular, every year the World Health Organization (WHO) recommends vaccination for pregnant women at any stage of pregnancy, children aged between 6 months and 5 years, the elderly (≥ 65 years of age), individuals with chronic medical conditions and healthcare workers (HCWs). Vaccination remains the best method to prevent the spread of contagion in the population at risk (3). The immunization of HCWs is recommended in more than 40 countries worldwide (4, 5), especially in environments such as nursing homes or long-term care facilities, where it is essential to minimize the risk of both assistance-related flu illnesses among the elderly with comorbidities, and deaths (6-8).

Based on this evidence, and in accordance with the guidelines of the WHO (9), the Italian Public Health Authorities, as well as in many European countries, offer free seasonal influenza vaccines to all HCWs, setting specific targets for vaccination coverage (VC) to 75%, as a minimum goal, and 95% as an optimal outcome (10, 11).

An internet panel survey conducted by the Centres for Diseases Control and Prevention (CDC) beginning during the vaccinal year 2010/11, estimated that 72% of HCWs received influenza vaccination by the 2012/13 season and VC rate resulted 92% among physicians and 85% among nurses (12).

In Europe, despite decades of efforts to encourage HCWs to be immunized against influenza, vaccination levels remain insufficient (13). A recent survey reported the official VC rates obtained in 10 European countries during three consecutive influenza seasons (from 2008/09 to 2010/11). During the 2010/11 season, vaccination coverage was between 30% and 50% in England, Hungary, Portugal and Scotland. The remaining countries (France, Germany, Norway, Slovenia, Spain and Wales), with the exception of Romania, reported that vaccination coverage ranged between 14% and 28% in 2010/11 (14).

In Italy there were many studies that have described the low adherence to influenza vaccination among physicians and other HCWs, with VC still far from the targets set by the Ministry of Health (15-18). During a survey performed among the medical residents of 18 Italian Universities, 11.9% reported to have been vaccinated against influenza during the 2011/12 season (19). An audit among almost 2,000 Apulian HCWs revealed an overall vaccination coverage of 24.8% for influenza (including both 2009/10 and 2010/11 seasons) (16).

However, all the available data refer mainly to hospital and residential settings and the research concerning influenza vaccination coverage, knowledge and attitudes among primary care providers, is still limited and did not take into account the Italian context yet (20-22).

In Italy, the general practitioner (GP) – on behalf of the Public Health Organization - is the operations manager of the campaigns regarding influenza immunization. He/she identifies people eligible for vaccination among his/her clients, invites them actively and administers the vaccine. The GPs are directly in contact with the target population that should be vaccinated and their personal opinion about the flu vaccine may ultimately influence the decision of the client to accept the vaccination or to refuse it (23, 24).

This study aims to assess levels of immunization for influenza vaccination among GPs and factors influencing adherence of GPs to vaccinations in the province of Taranto (Apulia region, Southern Italy).
Materials and methods

We carried on a cross-sectional study among 471 general practitioners working in the province of Taranto during the months of February-March 2016.

We invited all GPs by email, sending them an explanatory letter introducing the study and its objectives along with a link to a self-administered web-based standardized questionnaire.

The GPs’ e-mail addresses were provided by the practitioners themselves, on a voluntary basis, on the occasion of the delivery of preliminary flu vaccine start-doses of the seasonal vaccination program. The survey questionnaire was made available for a one month period (March 2016), and a reminder was sent at the midpoint of the period.

The questionnaire was divided into three sections: the first one to collect anonymously the respondents’ socio-demographic and professional data (gender, age, district area, number of patients, whether they held a specialist qualification or not); the second section to investigate if the doctor herself/himself had actually received an influenza vaccination in the 2014/15 and 2015/16 seasons and to know the determinants of adherence or rejection of the vaccination planned by the immunization program for HCWs. Finally, in the last section, the knowledge, perception and positions of the GPs, with regard to the forecasted vaccinations of the categories at risk among their clients, were investigated.

Quantitative variables were identified as medians of the samples, with the related interquartile range, while qualitative variables were expressed as proportions with 95% confidence interval. We compared the vaccination coverage achieved in the 2014/2015 and 2015/2016 seasons with z-score test. We assessed the possible correlations within the explored variables by defining double-entry contingency tables and calculating Chi-Square ($\chi^2$) and Odds Ratio (OR) with 95% Confidence Intervals (CIs). The variables considered in univariate analyses were evaluated in a logistic regression model to study the relationship between the vaccination choice of GPs and the explanatory variables, while adjusting for confounding factors and effect modification, if needed. OR with 95% CI was used to evaluate the strength of an association. The significance level was considered when $p$<0.05. Analyses were performed by using STATA SE 14 for Mac OS.

Results

A total of 229 (48.6% of those invited) GPs participated in the survey (Table 1), 79.5% of them (n=182) were male, median age was 59.6 (p25-p75 = 57-63; range 40-69). 53.7% (n = 123) of the GPs who responded to the questionnaire didn’t have a specialization title, 30.6% (n = 70) was specialized in a clinical disciplines, 10% (n = 23) in disciplines of the surgical area and the remaining 5.7% (n = 13) in disciplines of the area of services.

In Italy, by law, every citizen should be on a GP’s patients list. As a rule, the number of subjects enrolled in a GP’s list must be public and can reach a maximum of 1,500 people; some exceptions are allowed, i.e. in case of scarcity of GPs in a given territory (25). Among the interviewed GPs, 73.4% had a number of patients higher than 900 subjects (Table 1).

In the 2014/2015 influenza season, the VC of the interviewed GPs was 67.7% (n = 155; 95% CI = 61.2 to 73.7), significantly lower ($z = 2.1; p < 0.04$) than in the 2015/2016 season (VC: 76.4%, n = 175; 95% CI = 70.4 to 81.8).

In the univariate analysis, male GPs enrolling ≥900 subjects increased the likelihood to have been vaccinated in
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the 2015/2016 season (P < 0.01; Table 2). The logistic regression confirmed the association between having been vaccinated against influenza, male sex (OR = 2.8; 95% CI = 1.3–5.7; P < 0.01) and ≥ 900 enrolled people (OR = 2.6; 95% CI = 1.3–5.1; P < 0.01).

Regarding the motivational factors self-reported by the GPs who took part in the anti-influenza immunization campaign for HCWs, more than 50% of the 175 GPs who received vaccinations during the 2015/2016 season (53.1% n = 93/175; 95% CI = 45.8 – 60.4) did it for their own health protection. Only 45.1% (n = 79/175; 95% CI = 37.9 – 52.5) did it also to protect the health of their own patients and 35.4% (n = 62/175; 95% CI = 28.7– 42.8) also to protect their friends and family.

On the other hand, among the GPs who chose not to be vaccinated during the same season, 58% (n = 30/51 95% CI = 45.2 – 71.2) considers influenza as a non-risk pathology for healthy subjects, 35.3% (n = 18/51 95% CI = 23.6 – 49) prefers not to be vaccinated in order to avoid possible adverse reactions, while 5.9% (n = 3/51 95% CI = 2 – 15.9) thinks that vaccinations in general might be dangerous for homeostasis of their immune system!

All the interviewed GPs responded that they recommend the anti-influenza vaccination to their patients, but only 90.7% (n = 205 95% CI = 84.9 – 92.9) conducts a counseling meeting prior to the administration and only 79.9% (n = 183 95% CI = 74.3 – 84.6) prefers to use the adjuvated vaccine on patients aged > 64. More than two thirds of the GPs suggest vaccination to all the risk categories identified by the Ministerial directives.

When asked about the opportunity to organize specific educational events regarding vaccination and their will to actively participate, 80.3% (n = 184 95% CI = 74.6 – 85.3) considers them useful and is willing to support this kind of initiatives.

Discussion

A controversial scenario is unveiled by our investigation on the variables characterizing the participation of GPs in the immunization programs, their knowledge and attitudes. And this scenario brings out a number of suggestions to be considered by the National Healthcare System.

The coverage achieved by the Taranto’s GPs during the 2015/16 season reaches the minimum threshold set by the Ministry of Health (11) and this is a positive aspect, especially considering the growth trend compared to the previous season. Without any doubt, the comparison with similar surveys from the literature underlines the importance of this result, since the number is higher than the coverage registered in other countries such as Australia (70.5%), Denmark (63%) and Spain (49.3-58.4%). It ends up being lower only than the coverage in France during the 2009/10 season (78%) when the pandemic emergency probably had a strong influence on the campaign for the seasonal vaccination (20-22, 26).

Overall, such an evident increase, close to 10 percentage points, could be explained by the analysis of the communication phenomena during previous vaccination campaigns; for example, how the media treated the precautionary recall of the adjuvated vaccine due to the suspected association, falsified at a later time, between some deaths and some influenza vaccines in 2014/2015 (27). This had a disastrous effect on last year’s campaign on a trust level even among GPs. The gap observed could be interpreted as a physiological return to satisfactory coverage levels, after a temporary drop due to communicative factors.

The data concerning female GPs are amazing, since their participation in the immunization campaign is by far lower, raising a matter that needs to be further investigated. This result is in line with those reported in the international literature and
could be explained by the greater tendency of women to show adverse reactions and a greater inflammatory response (28, 29).

On the contrary, it is significant that the choice of GPs to be vaccinated is related to a high number of patients on their list, which is in line with the rational indicator of the HCWs that are vaccinated. In fact, the recommendation, other than the protection of the single subject, aims to safeguard all the patients and the community (30). It is very important that the higher the number of patients, the greater the participation in the immunization program.

It is appropriate to consider that the ultimate goal (95% coverage), is still far from today’s results. It would be desirable to register an active and conscious involvement within every GP’s population, since they are directly responsible for administrating the vaccine and covering the population in a capillary manner. The fact that more than 1 in 5 GPs preferred not to vaccinate himself/herself for different reasons such as considering influenza a non-dangerous pathology, trying to avoid adverse reactions, or thinking that the vaccine could even be risky, is a negative motivational factor that could jeopardize anti-influenza immunization programs.

For this reason, involving all the GPs in a series of educational activities, shared and organized by the Department of Public Health, could be a game changer. They could implement their knowledge and their participation in relation to the anti-influenza vaccine in order to discard all the wrong or clearly unfounded common beliefs. This necessity is even more acknowledged since, as of today, more than one third of the GPs doesn’t recommend the vaccination to all the categories mentioned by the Ministerial directives, about 20% doesn’t prefer the adjuvated vaccine with MF-59 for those over 65 and almost 10% doesn’t provide any counseling activity to their people prior the vaccination.

On the other hand, 80.3% of the GPs has stated that they would support this kind of initiatives. For this reason it could be useful to finalize the approval of a territorial-integrated model of primary care district and vaccine services developed within Taranto Local Health Authority. This model has been conceived to optimize the seasonal anti-influenza vaccine campaigns through a multi-disciplinary team composed by representatives of different divisions, that would be in charge of the process in a shared mode, from both operative and formative-informative points of view.

On a local level the approval of an experimental project is currently being evaluated. It aims to implement the adult vaccine registry in order to reduce the gap with the thresholds set by the Health Minister for the anti-influenza vaccine campaign for the general population. This kind of initiatives, that can be carried out also thanks to the distribution of dedicated subsidies, can be seen as an essential instrument to monitor, program and improve the communication dynamics of the vaccine campaigns. They could also be an important vehicle to obtain a stronger engagement and awareness of the GPs regarding their and their patients’ vaccination choices.

This study shows some limitations due to the representativeness of the results on a one company level and to the usage of self-reported coverages. In fact, it cannot be excluded that there could be a misrepresentation caused by the detail that the GPs population that took part in the survey is mainly composed of subjects who are naturally inclined to the anti-influenza vaccination and have a positive opinion about immunization programs. Furthermore, some studies claim that the self-reported coverages in adult subjects represent evaluations that could be overestimated (31, 32).

Despite these considerations, the information gathered gives us useful insights, given the remarkable size of the sample. A
participation quota that is almost half of the population sample, especially considering the sample sizes of other investigations regarding professionals in primary assistance (20-22, 26), represents the strong point of this study.

In conclusion, it can be asserted that the coverage levels reached among the GPs within the Taranto Local Health Authority are reassuring, particularly when compared to surveys conducted among healthcare workers in hospital and residential environments (15-19). A significant part of them considers the anti-influenza vaccine a guaranteed instrument for their own health protection, as well as for their families, friends and patients. Nevertheless, a non-negligible part is still skeptical and is not adequately trained to correctly support the immunization seasonal programs. The best strategy in order to optimize the governance system seems to be the empowerment of primary care physicians, to be fulfilled through actions shared with the Public Healthcare Services based on training, communication and projects supporting vaccine coverage.

### Table 1 - GPs characteristics. Taranto ASL, 2015/2016 season (n = 229).

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<td>Patients number</td>
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<td>≥ 900</td>
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### Table 2 - Determinants of influenza vaccination, Taranto ASL GPs, 2015/2016 season (n = 175).

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<td>14.9</td>
<td>0.3 (0.1-0.6)</td>
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<td>&lt; median</td>
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<td>0.8 (0.4-1.5)</td>
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<tr>
<td>≥ median age</td>
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<td>50.9</td>
<td>1.3 (0.7-2.5)</td>
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<td>Specialization area</td>
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<tr>
<td>None</td>
<td>89</td>
<td>50.9</td>
<td>0.6 (0.3-1.2)</td>
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<td>Clinical</td>
<td>55</td>
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<td>1.2 (0.6-2.5)</td>
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<td>2.2 (0.6-12)</td>
<td>1.6</td>
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<tr>
<td>&lt; 900</td>
<td>36</td>
<td>20.6</td>
<td>0.3 (0.1-0.6)</td>
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<td>≥ 900</td>
<td>139</td>
<td>79.4</td>
<td>3.3 (1.6-6.7)</td>
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### Riassunto

Valutazione delle coperture e analisi dei determinanti di adesione alla vaccinazione antinfluenzale nei medici di medicina generale della ASL Taranto

**Introduzione.** In Italia, il medico di medicina generale (MMG) è il referente operativo delle campagne di immunizzazione nei confronti dell’influenza. È il MMG che individua tra i propri assistiti gli eligibili alla vaccinazione, li invita attivamente e somministra il vaccino. I MMG sono in contatto diretto con i soggetti...
per i quali è raccomandata la vaccinazione e la loro percezione nei confronti del vaccino antinfluenzale può influire sulla decisione dei pazienti di riceverla o meno. L’obiettivo del presente studio è valutare la copertura per la vaccinazione antinfluenzale tra i MMG della Azienda Sanitaria Locale (ASL) di Taranto e indagare le conoscenze e i determinanti di adesione o rifiuto dei MMG nei confronti del programma di immunizzazione negli operatori sanitari.

Metodi. Nel periodo di febbraio-marzo del 2016, abbiamo condotto uno studio trasversale tra i 471 MMG che lavorano in provincia di Taranto. Abbiamo inviato via e-mail a tutti i medici un questionario telematico standardizzato auto-somministrato. Il questionario ha analizzato la copertura auto-riferita per la vaccinazione antinfluenzale, le conoscenze, la percezione e le posizioni dei medici in merito alla vaccinazione prevista per i loro assistiti inclusi fra le categorie a rischio.

Risultati. Complessivamente 229 (48,6%) MMG hanno aderito allo studio. Nella stagione 2015/2016 la copertura per la vaccinazione antinfluenzale fra i MMG intervistati è stata del 76,4% (n=175). Avere un numero di pazienti ≥ 900 aumenta la probabilità di essere stato vaccinato nella stagione 2015/2016 (OR = 3,3; P <0,01). Globalmente solo il 79,9% predilige l’utilizzo il vaccino adiuvato negli over 64 e il 58,8% dei MMG non vaccinati ritiene che l’influenza non sia una patologia pericolosa per il soggetto sano.

Conclusioni. La copertura tra i MMG della ASL Taranto nella stagione 2015/2016 ha raggiunto l’obiettivo minimo ministeriale, ma è necessario implementare le loro conoscenze e l’adesione in merito a tutti gli aspetti legati alla vaccinazione antinfluenzale, eliminando convinzioni inesatte. L’empowerment dei MMG, da attuare mediante azioni condivise con i Servizi di Igiene e Sanità Pubblica (SISP), basate sulla convergenza di formazione, comunicazione e sostegno delle coperture, rappresenta la migliore strategia per ottimizzare la governance di sistema.

Acknowledgments
We wish to thank all the general practitioners in the province of Taranto (Apulia region, Southern Italy), both those who took and even those who did not take part in the survey (hoping a future cooperation) and Dr Emma Grimaldi, who revised the English version of the paper.

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