

ORIGINAL ARTICLE

Knowledge and attitudes on influenza vaccination among Italian physicians specialized in respiratory infections: an Italian Respiratory Society (SIP/IRS) web-based survey

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Keywords

Influenza • Influenza vaccination • Health-care workers

Summary

Introduction. Influenza epidemics are one of the main causes of morbidity and mortality worldwide. Influenza vaccination is considered the most important public health intervention to prevent seasonal influenza infection. European health authority policies focus on patient protection by vaccinating both these subjects and their care-givers, including health-care workers (HCWs). The aim of this survey is to investigate knowledge about influenza vaccination and intention to get vaccinated among Italian HCWs who take care patients with respiratory disease.

Methods. An anonymous web-based survey was addressed to members of the Italian Respiratory Society (IRS).

Results. Among the 1,776 IRS members who have been invited to the survey, 144 (8.1%) completed the survey (97 men; median age 59 years; 85.4% Respiratory Disease). The vast majority recommended vaccination to all their patients (81%). More than

two thirds of respondents considered influenza vaccination safe for immunocompromised patients. More than 50% of respondents underwent seasonal influenza vaccination in 2015 and 68% declared the intention to undergo vaccination in 2016 epidemic season. Reasons for having vaccination mainly referred to 'protect oneself from influenza' (63%), 'protect patients' (31%) or household members' (6%). The main reasons for vaccination refusal were 'lack of time' (45%), 'concerns about side effects' (22%), 'do not get influenza easily and/or not afraid of influenza infection' (22%) and 'disagreement with indication of vaccination for HCWs' (9%).

Conclusions. The promotion of better knowledge and attitude towards influenza vaccination among Italian specialists remains an unmet goal and should be addressed by appropriate multifaceted interventions.

Introduction

Influenza is one of the main causes of morbidity and mortality worldwide, especially among elderly and patients with chronic medical conditions [1]. Influenza epidemics represent a public health problem in Europe causing an increase in lost productivity and health-related costs due to complications especially among high risk patients [2, 3]. Influenza vaccination is considered the most important public health intervention to prevent seasonal influenza transmission and infection [2]. European guidelines and health authority policies for influenza focus on protecting high risk patients vaccinating both these subjects and their care-givers, including health-care workers (HCWs) [4].

A recent meta-analysis confirmed that influenza vaccination among HCWs is effective in preventing mortality and influenza spread [5]. Despite several efforts have been made over the past decade to promote influenza vaccination programs, vaccination levels among HCWs are still unsatisfactory worldwide [6]. For this reason,

we aimed at investigating knowledge about seasonal influenza vaccination among Italian physicians who take care patients with respiratory disease, as well as intention to get vaccinated themselves and prevalence of vaccination in HCWs population.

Methods

An anonymous web-based survey was designed by a task-force of the Italian Respiratory Society (IRS) including respiratory diseases and infectious diseases specialists. The questionnaire was available through web link pages and included multiple-choice questions (Tab. I). Respondents were allowed to give their reasons for having or not seasonal influenza vaccination as free additional text. The results are reported as mean \pm IQR or proportion (%). Fisher's exact test was employed to compare categorical variables and continuous variables between groups, respectively. IBM SPSS software was used to statistical analyses.

Tab. I. Web-based survey questionnaire and results.

1. Demographics	
Male	97 (67.4%)
Median age	59 (47 – 66)
Respiratory disease	123 (85.4%)
Internal medicine	12 (8.3%)
Infectious disease	9 (6.3%)
Employed at academic institutions	30 (20.8%)
2. Working place and Italian region where the activity takes place	
Northern Italy	53 (36.8%)
Central Italy	31 (21.5%)
Southern Italy	60 (41.7%)
3. What is the percentage of time that you spend in contact with patients?	
More than 50%	117 (81.2%)
Less than 50%	27 (18.8%)
4. Did you undergo influenza vaccination last year (2015-2016)?	
Yes	79 (54.9%)
No	65 (45.1%)
5. Are you planning to have vaccination or have you already did it this year (2016-2017)?	
Yes	99 (68.7%)
No	45 (31.3%)
6. Do you incur the risk to get influenza by vaccination?	
Yes	29 (20.1%)
No	115 (79.9%)
7. Is it safe for immunosuppressed patients to undergo vaccination?	
Yes	120 (83.3%)
No	24 (16.7%)
8. Can influenza vaccination be dispensed in association with anti-pneumococcal?	
Yes	142 (98.6%)
9. What kinds of influenza vaccinations are available in your countries?	
Trivalent injectable influenza vaccine	59 (40.1%)
Quadrivalent injectable influenza vaccine	70 (48.6%)
Others	15 (11.3%)
10. Is influenza vaccination mandatory at your jobsite?	
Yes	7 (4.9%)
No	137 (95.1%)
11. How do you consider communication about influenza vaccination from your hospital or institution?	
Excellent	19 (13.2%)
Good	62 (43.0%)
Not sufficient	63 (43.8%)
12. Do you recommend influenza vaccination to all your patients at the right time?	
Yes, I recommend vaccination to all my patients without contra-indications	117 (81.2%)
No, I recommend influenza vaccination only to high risk patients	27 (18.8%)
13. What is the main reason for you to have influenza vaccination?	
<i>NB. Only 104 respondents (72.2%)</i>	
Protect oneself 63%	63 (60.6%)
Protect my patients 31%	32 (30.8%)
Protect household members 6%	6 (5.8%)
Others	3 (2.8%)
14. What is the main reason for you to refuse to have influenza vaccination?	
<i>NB. Only 31 respondents (21.5%)</i>	
Lack of time	14 (45.2%)
Concerns about side effects	7 (22.6%)
No fear of influenza infection	7 (22.6%)
Disagreement with indication of vaccination for health-care workers	3 (9.6%)

Results

Among the 1,776 IRS members who have been invited to participate to the study, 144 (8.1%) completed the survey (97 men; median age 59 years, IQR 47 - 66). A total of 19 out of 20 Italian regions were covered. Among the respondents, 123 were respiratory diseases, 12 internal medicine and 9 infectious diseases specialists. Thirty respondents (20.8%) were employed at academic institutions. The majority of the respondents reported to recommend influenza vaccination to all their patients who do not have contra-indications (81%), while the remaining (19%) reported to advice on vaccination only high-risk patients. More than two thirds of respondents considered influenza vaccination safe even for immunocompromised/immunosuppressed patients. A total of 29 (20%) participants affirmed that vaccination can cause influenza. Co-administration of pneumococcal and influenza vaccine was considered a reasonable strategy for almost all respondents (99%) and 49% of respondents were aware of quadrivalent vaccine availability in Italy. More than 50% of respondents underwent seasonal influenza vaccination in 2015 and 68% declared the intention to undergo vaccination in current epidemic season. Reasons for having vaccination were reported by 72% of the vaccinated respondents and mainly refer to 'protect oneself from influenza' (63%), 'protect patients' (31%) and 'protect household members' (6%). The main reasons for vaccination refusal were 'lack of time' (45%), 'concerns about side effects' (22%), 'do not get influenza easily and/or not afraid of influenza infection' (22%) and 'disagreement with indication of vaccination for HCWs' (9%).

Discussion

The present survey shows a general good understanding of the indications for influenza vaccination among Italian physicians taking care patients with respiratory diseases. However, a subgroup of respondents showed inadequate understanding on important issues, as vaccination safety. Lack of knowledge and concerns about safety may affect vaccination rate. Despite these limitations, vaccination rate in this population is higher than previously reported.

The response rate of this survey was lower than expected and, despite the target population was mainly made of specialists dealing with respiratory infections, our assumption is that the issue being addressed might not be of interest for most of the invitees. This scenario is even more alarming in consideration of the large amount of efforts spent by health authorities to change the attitude of HCWs and the public toward influenza vaccination [7]. The survey highlights that influenza vaccination is a common recommendation, at least for high risk groups of patients. The relatively high rate of respondents affirming that vaccination can cause influenza reveals that unreasonable concerns about side effects are common even among specialists. No difference between

this group and other respondents was observed in term of age, working place and vaccination rate. A further statistical description was not possible due to the small sample size. Inadequate knowledge among HCWs on such an important issue as vaccine safety may result in false information to patients, thus possibly affecting the success of vaccination campaigns [8]. These results emphasize the strong need to target HCWs with an appropriate training which has been missed in Italy over the past decades. Specific information and proper tailored educational programs need to be improved by health authorities and institution in consideration that almost 44% of participants rated communication strategies about influenza vaccination as rather unsatisfactory. The 2016 statement for the prevention of influenza edited by the Italian public health authority strongly recommends influenza vaccination among HCWs as a cost-effective measure to reduce infection among medical personnel and prevent morbidity and mortality among high risk group of patients [9]. Despite these recommendations, vaccination coverage rates seem to be very low in Italy and across Europe [10]. A cross-sectional survey carried during two 2007/2008 influenza seasons in several European countries confirmed that the coverage rates among HCWs were generally low, ranging from the lowest rate of 6.4% in Poland to 26.3% in Czech Republic; in Italy, the vaccination coverage rate among HCWs was about 12% [10]. Differently, in this survey more than the half of participants had seasonal influenza vaccination in 2016 resulting in a coverage level far better than previously reported. Consistently with this report, the majority of respondents declared the intention to undergo vaccination in that season and up to 90% would recommend it to colleagues. Vaccination coverage rate presented here is still suboptimal but higher than the rate reported by previous experiences [10, 11]. As already noted by Blasi and colleagues in a similar experience, this may be due to the high prevalence of pulmonologists in this population [12]. Specialists dealing with respiratory infections may be more sensitized towards influenza vaccination than other colleagues.

The generalizability of the study should be carefully considered under the light of several limitations. First, as discussed above, the response rate is lower than expected affecting the reproducibility of the results on a larger scale. Secondly, self-reporting may affect the quality of data presented here. Thirdly, the proportion of the vaccinated physicians among the non-respondents is impossible to be assessed. Fourthly, physicians choosing to answer the questionnaire may have been more motivated towards vaccination, so that a selection bias cannot be ruled out. Finally, the collection of data might miss a part of the vaccination season due to the point-prevalence design of the study. On the other hand, this survey provides a real-life snapshot on the lack of interest among HCWs toward seasonal influenza vaccination. In addition, our analysis has suggested a subgroup among specialists with inadequate knowledge about vaccination safety. A further characterization should be needed in or-

der to provide this population with targeted educational interventions.

Conclusions

The promotion of better knowledge and proper attitude for Italian specialists towards influenza vaccination remains an unmet goal and should be addressed by a multifaceted intervention, including appropriate training and the promotion of proactive attitudes.

Acknowledgements

RT is an employee of the GSK group of companies. AG reports research grant from Boehringer Ingelheim. FB has received research grants from Boehringer Ingelheim, Chiesi, Zambon, and Pfizer, congress lecture fees from Boehringer Ingelheim, Guidotti-Malesci, Menarini, GSK, Chiesi, Pfizer and Novartis, and consultancy fees from AstraZeneca, Menarini, Mundipharma, Novartis, GSK, Teva and Pfizer. SA MM reports travel and congress participation reimbursements from Boehringer Ingelheim, Menarini, Vivisol and Astra Zeneca; personal fees for teaching in training course from Malesci/Guidotti.

Funding for this study was provided by GlaxoSmith-Kline Spa through an unrestricted grant. GlaxoSmith-Kline Biologicals SA was provided the opportunity to review a preliminary version of this manuscript for factual accuracy but the authors are solely responsible for final content and interpretation.

Authors' contributions

Conception and design: FB and AG. Analysis and interpretation: SA, MM, FB and AG. Drafting the manuscript: AG. All authors participated in writing and revising the article prior to submission. All authors read and approved the final manuscript.

References

- [1] Bonmarin I, Belchior E, Lévy-Bruhl D. Impact of influenza vaccination on mortality in the French elderly population during the 2000-2009 period. *Vaccine* 2015;33:1099-101.
- [2] ECDC Technical Report. Seasonal influenza vaccination in Europe: overview of vaccination recommendations and coverage rates in the EU Member States for the 2012-13 influenza season. Available online at: <http://ecdc.europa.eu/en/publications/Publications/Seasonal-influenza-vaccination-Europe-2012-13>
- [3] Yassi A1, McGill M, Holton D, Nicolle L. Morbidity, cost and role of health care worker transmission in an influenza outbreak in a tertiary care hospital. *Can J Infect Dis* 1993;4:52-6.
- [4] Bonmarin I, Belchior E, Lévy-Bruhl D. Impact of influenza vaccination on mortality in the French elderly population during the 2000-2009 period. *Vaccine* 2015;33:1099-101.
- [5] Ahmed F, Lindley MC, Allred N, Weinbaum CM, Grohskopf L. Effect of influenza vaccination of healthcare personnel on morbidity and mortality among patients: systematic review and grading of evidence. *Clin Infect Dis* 2014;58:50-7.
- [6] Ajenjo MC, Woeltje KF, Babcock HM, Gemeinhart N, Jones M, Fraser VJ. Influenza vaccination among healthcare workers: ten-year experience of a large healthcare organization. *Infect Control Hosp Epidemiol* 2010;31:233-40.
- [7] Ohlrogge AW, Suggs LS. Flu vaccination communication in Europe: What does the government communicate and how? *Vaccine* 2018 Apr 24. pii: S0264-410X(18)30525-5.
- [8] Cozza V, Alfonsi V, Rota MC, Paolini V, Ciofi degli Atti ML. Promotion of influenza vaccination among health care workers: findings from a tertiary care children's hospital in Italy. *BMC Public Health* 2015;15:697.
- [9] Italian Ministry of Health. Prevention and control of influenza: recommendations for the 2016-2017 season. Available from http://www.trovanorme.salute.gov.it/norme/renderNormsanPdf?jsessionid=GHZ314fifhZPkmcGJho0EQ___sgc4prdsal?anno=0&codLeg=46769&parte=1%20&serie=
- [10] Blank PR, Schwenkglenks M, Szucs TD. Vaccination coverage rates in eleven European countries during two consecutive influenza seasons. *J Infect* 2009;58:446-58.
- [11] Alicino C, Iudici R, Barberis I, Paganino C, Cacciani R, Zaccaroni M, Battistini A, Bellina D, Di Bella AM, Talamini A, Sticchi L, Morando A, Ansaldo F, Durando P. Influenza vaccination among healthcare workers in Italy. *Hum Vaccin Immunother* 2015;11:95-100.
- [12] Blasi F, Palange P, Rohde G, Severin T, Cornaglia G, Finch R. Healthcare workers and influenza vaccination: an ERS-ESCMID Web-based survey. *Clin Microbiol Infect* 2011;17:1223-1225.

■ Received on March 7, 2018. Accepted on May 27, 2018.

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