

B R I E F I N G O N

Knowledge, attitudes, and practices of General Practitioners from the Province of Parma (Northern Italy) towards vaccinations in adults ≥ 65 year-old

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Summary. *Backgrounds and aims:* This study aims to characterize attitudes and knowledge towards immunization practice of people aged >65 years for seasonal influenza (SIV), pneumococcus (PNV), and Herpes zoster (ZV) in a sample of Italian general practitioners (GPs). *Materials and Methods:* During 10/2018, a structured questionnaire was emailed to 274 GPs operating in the Province of Parma, Italy. Association between willingness to perform aforementioned vaccines and individual factors was assessed through a multivariate regression analysis by calculating multivariate Odds Ratio (mOR). *Results:* A total of 73 GPs (26.6% of original sample) completed the questionnaire. Knowledge gaps were identified on the targeted vaccination rates for PNV and ZV (31.6% and 21.9% of correct answers), on the formulation of VZ (41.1%), and on the simultaneous immunization SIV/ZV (12.3%). The majority of respondents had high/very high trust on safety and efficacy of assessed vaccines. In multivariate analysis, recommending PNV was associated with having previously received SIV (mOR 5.44, 95%CI 1.08-27.31). In turn, ZV was negatively associated with a self-assessed knowledge gap (mOR 0.07, 95%CI 0.01-0.63). *Discussion:* Despite a generally favorable attitude towards vaccines, GPs exhibited knowledge gaps deserving appropriate intervention. However, lack of association between knowledge status and willingness to vaccinate enlighten the complex interplay between attitudes and personal behaviors. (www.actabiomedica.it)

Key words: healthcare workers, immunization, elderly infections, general practitioner, vaccination recommendation, vaccine hesitancy

Introduction

The National Immunization Program 2017-2019 specifically recommends Seasonal Influenza Vaccine (SIV), Pneumococcus vaccines (PNV), and Zoster-Vaccine (ZV) in people older than 65 years (1,2). The aim of the present study was to evaluate knowledge, attitudes and practices (KAP) among a sample of Italian general practitioners (GPs) towards SIV, PNV and ZV.

Materials and Methods

An anonymous online survey was administered to all 274 GPs from the province of Parma (449,191 inhabitants) during October 2018. All recipients received by email two reminds at day +10 and day +20. The questionnaire was specifically designed, including a total of 26 structured items from similar studies (2-6), and retrieved following information: demographic data; knowledge of official recommendations for SIV,

PNV and ZV; specific attitudes towards aforementioned vaccinations; whether participant had or not received SIV; whether participant had or not performed SIV, PNV and ZV in assisted patients; previous interactions with severe cases of seasonal influenza, pneumococcal infections, zoster infections. Having recommended SIV, PNV and ZV was the outcome variable, whose association with individual factors was initially assessed through univariate analysis (i.e. chi squared test). All factors associated with a proactive status with a p value <0.250 were included in three logistic regression models, calculating correspondent multivariate Odds Ratios (mOR).

Results

A total of 73 GPs completed the questionnaire (response rate 26.6%). As shown in Table 1, the majority of them were males (67.1%), with a mean age of 58.1 ± 9 years, and a mean seniority of 30.4 ± 9.4 years. Participants assisted a mean of 1446 patients (actual range 400 to 1800), with a share of subjects aged ≥ 65 equals to $39.2\% \pm 13.2$ (actual range, 18 to 80%). Significant uncertainties were reported on the targeted vaccination rates for SIV (i.e. 75% of all at risk groups; 32.9% of correct answers), PNV (i.e. 55%, 31.6% of correct answers), and ZV (i.e. 20%, 21.9% of correct answers) as well as on the actual composition of VZ (41.1%). Similarly, only 12.3% of participants correctly reported the possible simultaneous immunization with SIV and ZV. The majority of respondents had high or very trust on safety (possible range 1 to 10; actual scores: 9.1 ± 1.1 , 8.8 ± 1.6 , and 8.2 ± 1.6 for SIV, PNV, and ZV respectively) and efficacy (i.e. 8.9 ± 1.0 , 8.8 ± 1.1 , 8.0 ± 1.0) of assessed vaccines. Severe cases of seasonal influenza were reported by 75.3% of participants, while pneumococcal infections and zoster cases were reported by 32.9% and 26.0%, respectively.

SIV was reportedly recommended by 98.6% of participants, and 60.3% had received SIV in the previous winter season, whereas PNV recommendations were reported by 84.9%, and ZV by 65.6%. While 98.6% and 93.3% had performed SIV and PNV among their patients, none of them had previously vaccinated any patient for ZV (this vaccine was administered only

by doctors of the local health unit), but 95.9% planned to vaccinate against zoster in the future.

Among the reasons for avoiding vaccine recommendations, the most frequently reported was the lack of information (5/11, 45.5% for PNV and 19/25, 76.0% for VZ), followed by doubts on the vaccine efficacy (27.3% and 12.0% for PNV and VZ, respectively).

In the multivariate analysis, recommending PNV was associated with having previously received SIV (mOR 5.44, 95%CI 1.08-27.31), and a proactive attitude for VZ (mOR 13.67 95%CI 2.41-77.64), while ZV was positively associated with familiarity with zoster cases (mOR 6.61, 95%CI 1.11-44.43), and recommending PNV (mOR 19.36, 95%CI 2.60-139.61), while it was negatively associated with a self-reported knowledge gap of the respondent (mOR 0.07, 95%CI 0.01-0.63).

Discussion and conclusions

In conclusion, we identified a generally positive attitude towards SIV, PNV and ZV, that was associated with significant knowledge gaps, particularly on the targeted vaccination rates (1,2). Similar uncertainties were reported for the actual composition of ZV: as such vaccine is based on a live but weakened strain of Varicella Zoster Virus, ignoring its formulation may elicit misbeliefs on its actual recommendations (i.e. history of neoplasia, high-dose steroidal therapy, immunodeficiency etc.) (7,8). Similarly, the lack of information on simultaneous SIV and PNV immunization may improperly inflate patients' interactions with Vaccination Services, with eventual unnecessary costs and discomforts for the recipients (9,10).

Our survey is one of the first Italian studies about this topic and, despite the small sample size, can have a potential interest for several reasons. Firstly, there is a significant lack of evidence on the KAP towards vaccinations in the elderly (2,6,9,11-13). Second, our results confirm that in some Healthcare Workers, the attitude towards vaccinations results from a complex interplay of individual and educational factors, not fully included in the Health Belief Model (3,14,15). However, our results are limitedly generalizable because of the characteristics of the sample. Moreover,

Table 1. Characteristics of 73 General Practitioners (GPs) from the Province of Parma participating to our survey (2018) (Notes: SIV = seasonal influenza vaccine; PNV = pneumococcal vaccines; ZV = Zoster Vaccine)

Variable	No., %	Mean ± S.D.
Gender		
<i>Male</i>	49, 67.1%	
<i>Female</i>	24, 32.9%	
Age (years)		58.1 ± 9.0
Seniority (years)		30.4 ± 9.4
No. of assisted patients*		1445.6 ± 309.2
Share of patients ≥ 65 year-old		39.2 ± 13.2
Working settings		
<i>Private practitioner</i>	27, 37.0%	
<i>Group of associated GPs</i>	27, 37.0%	
<i>Community Healthcare Center</i>	19, 26.0%	
Knowledge test (No. of correct answers)		
<i>Subjects ≥ 65 year-old should receive trivalent / quadrivalent formulations of SIV</i>	69, 94.5%	
<i>Minimal SIV rates should be 75% among subjects ≥ 65 year-old</i>	24, 32.9%	
<i>Subjects ≥ 65 year-old should firstly receive PCV13 and then PPSV23</i>	57, 78.1%	
<i>Targeted 2018 PNV rate in subjects ≥ 65 year-old is ≥ 55%</i>	23, 31.6%	
<i>Simultaneous administration of SIV and PNV is officially recommended</i>	54, 72.6%	
<i>ZV contains a live but weakened strain of Varicella Zoster Virus</i>	30, 41.1%	
<i>Targeted 2018 ZV rate in subjects ≥ 65 year-old is ≥ 20%</i>	16, 21.9%	
<i>Simultaneous administration of SIV and ZV is possible</i>	9, 12.3%	
<i>ZV is recommended also in subjects naïve for varicella infection</i>	55, 75.3%	
<i>ZV is recommended also in subjects reporting previous zoster</i>	57, 78.0%	
Perceived safety of ... (range 1 to 10)		
<i>SIV</i>		9.1 ± 1.1
<i>PNV</i>		8.8 ± 1.6
<i>ZV</i>		8.2 ± 1.6
Perceived efficacy of ... (range 1 to 10)		
<i>SIV</i>		8.9 ± 1.0
<i>PNV</i>		8.8 ± 1.1
<i>ZV</i>		8.0 ± 1.5
Reported familiarity with cases of ...		
<i>Seasonal influenza</i>	35, 75.3%	
<i>Pneumococcal infections</i>	24, 32.9%	
<i>Herpes zoster</i>	19, 26.0%	
Proactive attitude in patients towards ...		
<i>SIV</i>	72, 98.6%	
<i>PNV</i>	62, 84.9%	
<i>ZV</i>	48, 65.6%	
Reasons for hesitating towards SIV recommendation (No. = 1)**		
<i>Patient-specific</i>	1, 100%	
Reasons for hesitating towards PNV recommendation (No. = 11)**		
<i>Lack of information on the vaccine</i>	5, 45.5%	
<i>Doubts on the vaccine efficacy</i>	3, 27.3%	
<i>Patient-specific</i>	1, 9.1%	
<i>Increasing risk for disorders associated with strains not included in the vaccine</i>	1, 9.1%	
<i>GPs can perform PNV only since 2017 (i.e. lack of opportunity)</i>	1, 9.1%	
<i>Unspecified</i>	1, 9.1%	

(continued)

Table 1 (continued). Characteristics of 73 General Practitioners (GPs) from the Province of Parma participating to our survey (2018) (Notes: SIV = seasonal influenza vaccine; PNV = pneumococcal vaccines; ZV = Zoster Vaccine)

Variable	No., %	Mean ± S.D.
Reasons for hesitating towards ZV recommendation (No. = 25)**		
<i>Lack of information on the vaccine</i>	19, 76.0%	
<i>Doubts on the vaccine efficacy</i>	3, 12.0%	
<i>Herpes Zoster is a not severe disorder</i>	3, 12.0%	
<i>Doubts on the actual length of vaccine efficacy</i>	2, 8.0%	
<i>At the moment ZV is offered only to subjects born in 1953 (i.e. lack of opportunity)</i>	1, 4.0%	
<i>Unspecified</i>	1, 4.0%	
Practices of SIV, PNV and ZV		
<i>SIV received during previous influenza season</i>	44, 60.3%	
<i>SIV performed in assisted patients</i>	72, 98.6%	
<i>SIV not performed in assisted patients but willingness to perform it</i>	1, 1.4%	
<i>SIV not performed in assisted patients and unwillingness to perform it</i>	0, -	
<i>PNV performed in assisted patients</i>	68, 93.2%	
<i>PNV not performed in assisted patients but willingness to perform it</i>	5, 6.8%	
<i>PNV not performed in assisted patients and unwillingness to perform it</i>	0, -	
<i>ZV performed in assisted patients</i>	0, -	
<i>ZV not performed in assisted patients but willingness to perform it</i>	70, 95.9%	
<i>ZV not performed in assisted patients and unwillingness to perform it</i>	3, 4.1%	

* self-reported

** more answers allowed

the share of assisted 65 year-old patients was nearly double that that reported by other studies, potentially inflating the number of respondents who had interaction with severe cases of assessed disorders (10, 16-18). In conclusions, the commitment of public health authorities will require specifically targeted interventions that should stress the role of SIV, PNV and ZV in avoiding more severe clinical cases.

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