

The value of vaccination: results of an Italian survey among Medical Doctors, Policy Makers and General Population

CHIARA CADEDDU⁽¹⁾, MARIA ROSARIA GUALANO⁽¹⁾, GIUSEPPE LA TORRE⁽²⁾, WALTER RICCIARDI⁽¹⁾

ABSTRACT

BACKGROUND: In the Italian context, evolving toward the abandonment of compulsory vaccination, the maintenance of adequate levels of coverage appears as essential. The promotion of a good vaccination knowledge, supported by strong scientific evidence, and the collaboration of all the involved stakeholders, appears hence fundamental. The aim of this survey was to understand why vaccination is not appreciated for its real value by different stakeholders.

METHODS: In collaboration with other Italian Universities and Health Districts, in Summer 2011 we submitted a survey of 17 questions to a convenience sample of Italian Medical Doctors, Policy Makers and General Population. The main questions analyzed the importance of vaccination for health, actions to attain vaccination value and consequences of a free choice policy.

RESULTS: Of the 173 stakeholders interviewed, 78% of Medical Doctors, 82% Policy Makers and 46% General Population believe that vaccination is important for health. The most important actions suggested for strengthening vaccination were information about its efficacy and safety and studies on its impact on Public Health, according to most of General Population and of Medical Doctors and Policy Makers, respectively. According to 60.4% Medical Doctors, 72.8% Policy Makers and 56.3% General Population the abolition of compulsory vaccination would lead to a reduction of vaccinees in all the Italian regions.

CONCLUSIONS: Our study confirms the need for a thorough "education in vaccination". Among stakeholders there are still doubts that hinder the decision process about vaccination policies and programmes. On the other hand, a call for an "Alliance" for promoting and implementing vaccination to its full potential would be favoured, as sustained by a right understanding and attitude towards vaccines.

Key words: Vaccination, Knowledge, Attitudes, Behaviour, Survey

(1) Institute of Hygiene, Università Cattolica del Sacro Cuore, Rome, Italy; (2) Department of Public Health and Infectious Diseases, Sapienza University of Rome, Rome, Italy

CORRESPONDING AUTHOR: Chiara Cadeddu, MD - Institute of Hygiene - Università Cattolica del Sacro Cuore L.go F. Vito 1, 00168 Rome - Phone: +39 0635001525 - Fax: +39 0635001522 - E-mail: chiaracadeddu@yahoo.it

INTRODUCTION

Vaccination is one of the most efficient and reliable provision of Public Health for the primary prevention of infectious diseases and beneficial not only for individuals subject to this practice, but protective on the entire community, giving immunity indirectly to non-vaccinated people by the so-called phenomenon of "herd immunity" (1).

The discovery and introduction of vaccines

as immunoprophylaxis had a profound influence on the epidemiology of infectious diseases and vaccines have emerged as a major tool for reducing mortality and morbidity. The use of vaccination has led to results often sensational, such as the elimination of smallpox, declared eradicated by the World Health Organization (WHO) on May 8th 1980 (2).

The decrease of the incidence of many infectious diseases was in fact significantly correlated

with increased levels of vaccine coverage, and the scientific literature leaves no doubt about the effectiveness of vaccines in general and their usually high cost/effectiveness (3-6).

However, one of the greatest obstacles to investment in vaccines is that, unlike therapeutic drugs whose effectiveness is shown in the short-medium term and on the single individual, the beneficial impact of vaccination on health can only be seen in the long term and on large cohorts of populations (7).

In addition, more and more information is provided for misleading the public about the ineffectiveness and lack of safety of vaccines and this information, even if not adequately supported by scientific evidence, are conveyed through the new means of communication, especially internet, spreading everywhere without any control.

Moreover, some scientific studies, often fraudulent and devoid of scientific validity, contribute to cast doubts on the safety of vaccine: this is the case, recently ended, of the British gastroenterologist Wakefield, who published in 1998 the results of his study in which he hypothesized a correlation between the trivalent measles-mumps-rubella vaccine (MMRV), inflammatory bowel disease (IBD) and autism. In this story the media played a crucial role: newspapers, magazines, television and radio in many countries reported and amplified the news, with important repercussions on public opinion and public health consequences. There was a decrease in the number of vaccinations in the USA, Great Britain and other parts of Europe, and a subsequent sharp increase in cases of measles in these countries. In 2010, the General Medical Council, the British equivalent of the Italian Ordine dei Medici, recognized Dr. Wakefield guilty of conducting research with methods ethically questionable and scientifically invalid, and the prestigious scientific journal *Lancet* withdrew the article published (8).

Episodes like this contribute to the creation of myths about vaccinations, beliefs fuelled by misinformation that, although totally empty of scientific foundation, help to generate a climate of distrust among general population and, paradoxically, even among health professionals, leading to dangerous consequences on individual and collective health. The attitude of distrust has been further revealed during the recent A/H1N1 pandemic flu, when health officials expressed a very poor adhesion to vaccination and resistance to promotion of vaccination campaigns (9-11).

In the Italian context, which gradually evolves toward the abandonment of compulsory vaccina-

tion, the maintenance of adequate levels of coverage appears as essential and to achieve this goal is fundamental the promotion of a good vaccination knowledge, supported by strong scientific evidence, and the empowerment and collaboration of all the involved stakeholders, from politicians to general population.

In this context, we conducted a knowledge, attitudes and behaviour (KAB) survey in order to find out which is the real value of vaccination for Italian health care professionals, policy makers and general population.

MATERIALS AND METHODS

In collaboration with other Italian Universities (Turin, Milan, Udine, Florence, Rome Tor Vergata, Second University of Naples, Catanzaro, Palermo) and Health Districts (Bolzano, Perugia, Potenza, Taranto), from August to October 2011 we submitted this pilot survey, composed by 17 multiple choice questions, to a convenience sample of Medical Doctors (MD), Policy Makers (PM) and General Population (GP) of Northern, Central and Southern Italy. MD comprised academic professors, researchers and residents. The questionnaire was designed by one of the Authors and was anonymous. It was composed of different parts accounting for:

- knowledge about vaccination in general, including its efficacy and safety (2 questions);
- attitudes towards vaccination as an important mean of prevention and ways of promoting it (3 questions);
- importance of vaccination for health and impact on health structures (number of entries to Emergency Department, hospitalizations, etc.) (1 question);
- the anti-vaccination movements (AVM) (2 questions);
- personal and institutional behaviour towards vaccination (4 questions);
- most important categories to be involved in more effective vaccine policies and initiatives to promote vaccination (2 question);
- major obstacles to the diffusion of vaccination (1 question);
- consequences of the potential abolition of compulsoriness for paediatric vaccinations in Italy (1 question).

Questionnaires were delivered by email or personally and were asked to hand it back to Università Cattolica in Rome by e-mail or by ordi-

nary mail. Everyone who filled in the questionnaire was also asked to sign the authorisation of anonymous data processing and use, which is legally mandatory in Italy.

Data were then collected in three different databases (MD, PM, general population) and processed separately in order to make a descriptive analysis of the KAB of all the people interviewed. Frequencies and percentages were calculated for the answers given for each of the questions. Statistical analysis was carried out using the statistical software SPSS12.0.

RESULTS

One hundred and one MDs (30% General Practitioners - GPs, 18% free-choice paediatricians - PLS, 16% academic professors, 36% researchers and residents in Public Health), 22 PM and 50 citizens were interviewed.

Among MD, 27.9% came from the North of Italy, 40.5% from the Centre and 31.6% from the South and Islands. PM were mainly from Northern Italy (40.9%), from Southern and Islands (36.4%) and from the Centre (22.7%), while population was mostly composed by southerner or islander (60%) and from the Centre (24%) or the North (16%) of the country.

Mean age was 49.5 years for MD (Standard Deviation - SD: 10.4), 48.5 years for PM (SD: 9.2) and 44.3 years for general population (SD: 14.1).

Vaccination was recognized as a safe and efficacious mean of prevention by almost the whole sample (99% MD, 100% PM, 74% citizens). About the question regarding ways of implementation of prevention policies, answers given by PM were different compared to those of general population: PM would mostly offer free-of-charge vaccination only to risk groups (65%), while general population would rather invest in free universal vaccination (65%). However, both PM and general population expressed the need to be more informed about vaccines (65% PM, 51.1% citizens).

Vaccination is perceived by MD as less important than a healthy diet for their patients' health (83% vs 77.8%), but as more important than hand washing and physical activity (64.6% and 68.4%, respectively). By contrast, PM recognized the overall importance of vaccination vs the other abovementioned practices (81.8% vs 77.3% healthy diet, 54.5% hand washing and 59.1% physical activities), differently from general popu-

lation, 45.5% of whom considered very important to be vaccinated, instead of following a healthy diet (85.4%), washing hands (67.4%) and doing physical activity (63.6%).

Many people are still not aware of the existence of AVM: in particular, this is true for 25.5% of MD, 40.9% of PM and 79.6% of general population. About the importance to be vaccinated for health care workers (HCW), only 41.6% of MD answered that it is more important than for patients, in comparison with 56.4% and 2% who answered respectively that it is equally or less important. Different reasons were sustained among those who do not trust in vaccination (Table 1).

TABLE 1

ANSWERS TO THE QUESTION "WHY YOU DO NOT AGREE WITH THE SENTENCE "VACCINATION GIVES IMPORTANT ADVANTAGES?"			
	MD (%)	PM (%)	GP (%)
Disease is not prevented	33.3	22.2	28.5
Mutant strains	26.7	22.2	14.3
Unsafety	13.3	22.2	25
Serious adverse events	6.7	22.2	3.6
No sufficient or clear information	-	11.1	25
Other	20	0.1	3.6

PM are the category which thought mostly that National government do not invest enough in prevention through vaccination (57.2% vs 29% MD and vs 17% citizens), while MD and PM are those who mostly believe that vaccination may reduce the number of entries to Emergency Department, of medical consultations and hospitalizations (54% and 54.6% respectively vs 36.8% of general population).

Eighty-five percent of MD believe that GPs and PLS are those who could have the major potential initiative power and ability for the promotion and working-out of more efficacious vaccination policies, followed by media (75.8%) and clinicians (49%). Media are indicated by 90.9% of PM and by 76.1% of general population as the best intermediary to do it, before GPs and PLS (76.2% of PM), pharmaceutical industry (70.2% of general population), individuals and associations (68.2% of PM) and universities (65.2% of general population).

TABLE 2

INITIATIVES RECOGNIZED AS THE MOST POTENTIALLY EFFICACIOUS FOR THE ADOPTION OF VACCINATION POLICIES AT A NATIONAL AND REGIONAL LEVEL			
	MD (%)	PM (%)	GP (%)
Information/documentation about efficacy and safety of vaccines	52	50	40.8
Studies about the cost reduction obtainable thanks to vaccination	29	45.5	22.9
Studies about the health impact of vaccination on general population	56.4	54.5	35.4
Clinical trials extended to a larger sample of individuals	39.6	27.3	24.4
Exhaustive studies of pharmacovigilance	43.4	31.8	30.2

Table 2 shows the initiatives recognized by the sample as the most potentially efficacious for the adoption of vaccination policies at a national and regional level.

The lack of conviction and collaboration among physicians was identified as one of the greatest obstacle to the development of more efficacious vaccination policies and to a greater diffusion of vaccination by 45.5% of MD, 33.3% of PM and 23.3% of general population. Other factors recognized as relevant obstacles were the scarce information about vaccines effectiveness and indirect advantages (33% MD, 28.6% PM, 29.5% general population) and the risk of adverse events (39% MD, 38.1% PM, 37.8% general population).

Results about the opinion of MD about the possible effects of the elimination of compulsoriness for paediatric vaccination in Italy are shown in Figure 1.

The answers given by PM and general population to the abovementioned question were as follows: reduction of the number of vaccinees all over Italy (72.8% PM, 56.3% general population), reduction of the number of vaccinees only in some regions (22.7% PM, 12.5% general population), increased number of vaccinees all over Italy (4.2% general population), increased number of vaccinees only in some regions (4.5% PM), no rebound (12.5% general population), don't know (14.5% general population).

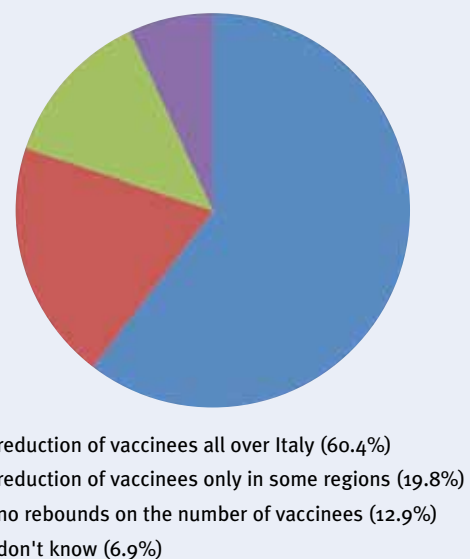
DISCUSSION

Our survey found that MD, PM and general population are still not completely aware of the great value and potential of vaccination. Moreover, opinions were different for most of topics among the three categories examined, making more difficult the chance of integrating and sharing views and attitudes for the creation of an alliance for vaccination strategies composed by the major stakeholders. However, all the answers given by both MD and PM and general population underline the problem of misinformation about vaccination and all that turns around it, from the efficacy of vaccines to their side effects to herd immunity. The misinformation appears hence diffused not only among general population, but also among HCW, those who should vouch for the value of vaccination.

Firstly, it is not reassuring the fact that not all the MD and only 74% of general population recognize vaccination as a safe and efficacious mean of prevention. This scenario is sustained by what happened for A/H1N1 vaccination in Italy as well as in other countries, when MD showed a resistance to be vaccinated and to advice their patients to get immunized (12-14).

FIG. 1

MD OPINION ABOUT THE POSSIBLE EFFECTS OF THE ELIMINATION OF COMPULSORINESS FOR PAEDIATRIC VACCINATION IN ITALY



Another important finding regards the importance of vaccination for one's health: for MD it is less relevant than a healthy diet but the thing to be noticed is that they still do not think the hand washing as a primary measure for the reduction of transmission of diseases and for everyone's health. The hand washing had just viewed an increase in practice among HCW and population in conjunction with the pandemic flu, maybe favoured by the media advertising pressure, but after that its high significance as preventive tool seems to be already forgotten (15). Similar was the opinion of general population, who even placed vaccination at the bottom of the importance among the four practices asked to be scored. On the contrary, PM seem more sensitive than MD and general population to the beneficial effects of vaccination for health, and this is relevant as could have useful rebound on the allocation of money in public health preventive measures. At the question about investments in prevention policies, PM showed a concrete awareness of the lack of economical resources and so opted for giving free-of-charge vaccination only to risk groups. This is in contrast with the wish of general population, who would like a universal free-of-charge offer, impossible in a period of limited funds as the one we live in today. Anyway, the answer about possible ways of investment in prevention shared both by PM and general population is the need for more information about vaccination, which is probably also the reason why there are still groups of population so sceptical about this mean of prevention. Additionally it is probably the same scepticism arisen from disinformation that brought to the appearance of AVM, today known by three out of four MD, more than a half of PM and approximately 21% of general population.

Not all the MD of our sample believed that getting themselves vaccinated is more important than to vaccinate general population: as also found by other Authors (16), in fact, if HCW get immunized, they probably do so primarily for their own benefit and not for the benefit to their patients. This is a relevant misconception about vaccines, that recently appeared stronger during the diffusion and recommendation for pandemic flu vaccination (17). In order to reduce this disinformation, education should be improved, and organizational barriers should be bridged with sustainable, structural changes to allow flexible and workplace vaccine delivery (16, 18). The lack of information among general population also emerged in the statement that vaccination is

able to potentially reduce the number of entries to Emergency Department and of physician consultations, as demonstrated by the only 36.8% of general population agreeing with this sentence.

Opinions of MD were shown to be different from those of PM and general population with regard to the major potential initiative power and ability for the promotion and working-out of more efficacious vaccination policies: MD were more trustful in GPs and PLS for this duty, while PM and general population looked at the media as the most effective tool, probably for their universal diffusion and the more and more current sharing of information through the web (19).

About the question regarding the initiatives recognized as the most potentially efficacious for the adoption of vaccination policies at a national and regional level, the need for information and documentation about efficacy and safety of vaccines and for studies about the health impact of vaccination on general population demonstrated again the claim for more information about vaccination. This fact was also confirmed by the answers given by all the three categories interviewed to the identification of the greatest obstacle to the development of more efficacious vaccination policies and to a greater diffusion of vaccination. Another obstacle, indicated mostly by MD, was the lack of conviction and collaboration from physicians, showing that there is awareness that opinion of MD towards vaccination is very disparate. In this context, future vaccination programmes including targeted education and vaccine delivery for HCW would be useful to cross the abovementioned obstacle (20).

When MD, PM and general population were asked to give an opinion about the possible effects of the elimination of compulsoriness for paediatric vaccination in Italy, the most shared thought was the reduction of number of vaccinees. This is not surprising, as in 1998 a considerable difference between the coverage achieved for compulsory (diphtheria, tetanus, polio, hepatitis B) and for recommended (pertussis, Hib, measles, mumps and rubella) vaccines has already been shown in Italy (21). The situation has fortunately improved from 2003, but there are still differences between one region and another, and this heterogeneous scenario would probably be repeated in case of an elimination of compulsoriness. The problem that should be considered by policy makers before opting for this decision is the one shown from the

results of our survey: the general lack of information about vaccines and vaccination in general. Many studies demonstrated in fact that the most common reason for non compliance to vaccination is the refusal of parents, very often derived from lack of or wrong information (22-25). One of the possible solutions, that could open the way to the elimination of compulsoriness in a longer future as well, would be the improvement of immunization rates among children whose parents either are open to vaccination but encounter barriers to obtaining vaccines or hesitate because of fears and concerns about safety. In order to achieve this goal health care professionals, health care organizations, and regional and national policymakers all would share great responsibility. As Douglas S. Diekema says in his recent article published on *New England Journal of Medicine* (25), this solution seems to be the most effective tool to increase vaccine coverage, as parents who oppose vaccination on the basis of personal beliefs will probably remain opposed despite the best efforts of clinicians and public health experts.

Another issue to be considered in this field is the lack of information. As outlined by Monti et al. (26), the information on influenza vaccination A/H1N1 received broad media attention during the pandemic period. This information was usually correct, but sometimes it failed to show clear messages, especially concerning potential side effects. This lack of information seems to be the main responsible for the low uptake of vaccination in healthcare workers, as well as in the general population. We must not forget that the

social impact of an epidemics of a given infectious diseases could be considerable, even more in case of pandemics (27).

Finally, we have to consider that, according to Fletcher, also sharing of best practices from vaccination schedules might rationalize vaccine development, as well as streamline the introduction of novel vaccines into the national immunization programs, and facilitate the evaluation of the impact of new vaccines not only in single Member States but also in Europe (28).

In conclusion, if in assessing the value of vaccines different perspectives could be taken into account, we must recognize that, despite the potential availability of vaccines, according to limited economic health resources, the Governments will not be capable to finance all vaccines produced by drug companies. In this context it will be more and more important in the next future not only considering the emerging and re-emerging infectious diseases issue (29), but also how to better allocate resources, especially in the field of public health interventions (30).

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