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Parental thoughts after the Codroipo case: the other side of the story

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Abstract

Background. *To address vaccine hesitancy and to build public trust, many factors need to be considered in the process of planning consistent public health interventions. After uncertain vaccinations of the Codroipo case, hesitant parents were surveyed about own beliefs and trusted sources of information.*
Methods. *A semi-structured phone survey was conducted between December 2017 and February 2018, collecting also age and educational level of respondents.*
Results. *The most trusted sources of information of the 258 surveyed parents were pediatricians (27.2%), general practitioners (25.4%) and institutional channels (12.1%). Highly educated parents trusted self-study of the scientific literature and expressed doubts about vaccine effectiveness more than others (p=0.0018).*
Conclusion. *Despite the underlying improper vaccination issue undermined public trust, healthcare professionals and institutional channels maintained their role as trusted sources of information. Educational patterns emerged among doubtful parents should be considered by public health policies to effectively tackle vaccine hesitancy.*

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Introduction

Public health issues get constant coverage on social and mass media (1-3), while prevention policies are debated more and more in spite of evidence-based guidance (4, 5). In fact, public health interventions need also an effective communication management to reach their goal, and moreover it has to be tailored according to different media (4). This clearly emerged as an issue for healthcare systems in the process of tackling vaccine hesitancy (6), a critical public health concern which has been largely studied in general population as well as in specific groups (7-9). Despite efforts made and different public health policies adopted, coverage is still insufficient and Italy - as other several European countries - is at risk of vaccine-preventable diseases outbreaks (10).

Parents can have different vaccination beliefs and behaviors in relation to their educational and cultural level (11), but they can also be influenced by sources of information and relational networks they feel trustworthy (12), nevertheless the role of their health and vaccine literacy level cannot be overlooked (13-16). The SAGE Working Group categorized vaccine hesitancy behaviors as a continuous spectrum (17), but public health target groups, depending on specific vaccine concerns, personal experiences, political, religious and socioeconomic status, have yet to be identified (18).

Between 2009 and 2015, due to the professional misconduct of a public health nurse, a failure to vaccinate event, known as "the Codroipo case", took place in the Italian Region of Friuli Venezia Giulia (FVG), with a consequent burden of more than five thousand children being found not properly vaccinated (19). After the Codroipo case, during May-April 2017, we had the opportunity to interview parents of those children coming to the clinic for counseling and re-vaccination, collecting initial data about their trust and beliefs on vaccines (20). This helped us to get part of the picture, but we wanted also to gather information from parents whose children were still lacking re-vaccination but who did not access the clinic yet. Our principal aim was to understand parental beliefs toward vaccines and to investigate trusted sources of information; we were also interested in evaluating the association of these beliefs with parental characteristics, such as age and level of education.

Methods

A collaboration between the Local Health Trust (LHT) and the University of Udine was established; we decided to implement a telephone survey during the third wave of phone calls within the extraordinary vaccination campaign that followed the Codroipo case (19). The questionnaire was composed by 12 questions, being based on the one administered immediately after the Codroipo case (20). Six questions investigated trust on vaccines: respondents were asked to express agreement with each item (agree/not agree/missing answer); other questions explored trusted sources of information (multiple choice with up to three options) and agreement between the two parents on having their child vaccinated; data about age and educational level of both parents were collected. The whole questionnaire underwent a pilot phase during early December of 2017, being conducted on an age-representative index group of parents. The total duration of a single telephone survey was calculated in this phase to be around 5-10 minutes.

To select target parents, we excluded children who had already been re-vaccinated from the list of those affected by uncertain vaccination within the Codroipo case. Parents were called on the phone up to four times, tracking any attempt made. To maximize

the response rate, calls were made during both working and non-working days and in different time slots (11 am – 2 pm, 2-5 pm and 5-8 pm during weekdays; 10 am – 1 pm on Saturdays). Semi-structured telephone interviews were conducted by a trained medical student between December 20th, 2017 and February 6th, 2018. During the call, parents were firstly given the invitation to adhere to re-vaccination planned by the LHT; then they were informed about the survey aims, on confidentiality of data and they were also asked for consent to participate. Parents were informed that their participation would be completely free and, more importantly, independent from accepting planned re-vaccination. Procedures performed in this study involving human participants were in agreement with the ethical standards, the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Completely anonymous questionnaires were collected in a distinct database where participants were assigned a progressive number not to be identifiable, in accordance with European regulation (EU-GDPR), assuring participants that neither any personal identifier would have ever been collected nor any personal choice/vaccine status linked to their questionnaire.

Parental level of education was sorted in primary, lower secondary, upper secondary or higher education (Bachelor's level) while trusted sources of information were categorized as follows: institutional sources, Internet and social (social media, websites other than institutional ones), mass media (print media, television, radio), health professionals (physicians, pediatricians, public health professionals, other health professionals) and other sources. Answers were collected and stratified by parental age and educational level; comparisons were made using Chi-square test and the alpha-level was set at 0.05 as guide for significance. Data were analyzed using SAS v9.2 (SAS Institute Inc, Cary, NC, USA).

Results

Letting out those exempted for medical reasons, children still lacking re-vaccinations after the Codroipo case were 1,310 at the beginning of December 2017. Further analysis revealed 260 of them had already been vaccinated in other clinics within the FVG Region, while the parents of additional 97 had already expressed the clear refusal to adhere to re-vaccination, and the available records of 183 had no contact number. Excluding all of the former from our list, families to be contacted within the third wave of phone calls for the LHT extraordinary vaccination campaign resulted to be 770. A total amount of 1,605 phone call attempts were made in 18 days. Half of the families were reached (49.6%), but in many cases this was not possible due to the fact that the available phone number was wrong (210: 27.3%) or no answer was obtained (178: 23.1%). A total of 258 parents (67.5%) accepted to participate in our survey. Parental mean age was 41.4±7.0 years (median 41) for mothers and 44.2±7.3 (median 45) for fathers; the majority of them had an upper secondary level of education (144 mothers, 56.5%; 155 fathers, 61.8%), followed by lower secondary education level (48 mothers, 18.8%; 55 fathers, 21.9%), Bachelor's level or higher (47 mothers, 18.4%; 30 fathers, 12.0%) and primary education (16 mothers, 6.3%; 11 fathers, 4.4%).

Their most trusted sources of information resulted to be pediatricians (27.2%), general practitioners (25.4%) and institutional channels (12.1%). Trusted sources of information did not differ according to maternal or paternal age. As educational levels within couples were not significantly different (k=0.41), we decided to use the educational level of mothers as a proxy of both. When linking trusted sources of information with parental level of education, data showed parents with the lowest educational level trusting friends (10.6%)

Table 1 - Most trusted sources of information according to parental level of education.

Most trusted sources of information*						
Category	Source of information	Overall	Primary education	Lower secondary education	Upper secondary education	Higher education
		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)
Health professionals	Pediatricians	205 (27.2)	12 (25.5)	43 (29.9)	117 (27.5)	33 (24.3)
	General practitioners	191 (25.4)	13 (27.7)	40 (27.8)	111 (26.1)	27 (19.9)
	Physicians	75 (9.9)	2 (4.3)	15 (10.4)	42 (9.9)	16 (11.8)
	Other health professionals	70 (9.3)	4 (8.5)	22 (15.3)	36 (8.5)	8 (5.9)
Institutional channels	Institutional channels	91 (12.1)	2 (4.3)	6 (4.2)	61 (14.3)	22 (16.2)
Mass media	Television	19 (2.5)	4 (8.5)	3 (2.1)	11 (2.6)	1 (0.7)
	Print media	12 (1.6)	2 (4.3)	1 (0.7)	9 (2.1)	0 (0.0)
	Radio	8 (1.1)	2 (4.3)	4 (2.8)	2 (0.5)	0 (0.0)
Internet and social	Websites other than institutional	33 (4.4)	0 (0.0)	1 (0.7)	24 (5.6)	8 (5.9)
	Social media	2 (0.3)	0 (0.0)	0 (0.0)	1 (0.2)	1 (0.7)
Family members and friends	Family members	9 (1.2)	1 (2.1)	3 (2.1)	4 (0.9)	1 (0.7)
	Friends	19 (2.5)	5 (10.6)	6 (4.2)	5 (1.2)	3 (2.2)
Other sources	Scientific literature	17 (2.2)	0 (0.0)	0 (0.0)	2 (0.5)	15 (11.0)
	Other	2 (0.3)	0 (0.0)	0 (0.0)	1 (0.2)	1 (0.7)
Total	*(Missing = 21)*	753 (100.0)				

*up to three answers allowed.

Table 2 - Beliefs about vaccines according to parental level of education.

Parental belief about vaccines		Overall	Primary education	Lower secondary education	Upper secondary education	Higher education	p-value°
		Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	Freq. (%)	
Vaccines are a fundamental practice to ensure my child's health	Agree	206 (80.8)	13 (81.3)	44 (91.7)	110 (76.4)	39 (83.0)	
	missing	28 (11.0)	1 (6.3)	3 (6.3)	19 (13.2)	5 (10.6)	0.3578
	Total	255	16	48	144	47	
I think that some vaccines are useful, while I don't understand why others are offered	Agree	119 (46.7)	7 (43.8)	19 (39.6)	66 (45.8)	27 (57.5)	
	missing	24 (9.8)	6 (37.5)	5 (10.4)	12 (8.3)	1 (2.1)	**0.0018**
	Total	255	16	48	144	47	
I thought that vaccines are dangerous for my child's health	Agree	13 (5.1)	2 (12.5)	0 (0.0)	7 (5.0)	4 (8.5)	
	missing	52 (20.7)	5 (31.3)	8 (17.0)	27 (19.2)	12 (25.5)	0.1949
	Total	251	16	47	141	47	
Vaccines are useful, but I am very worried about side effects	Agree	145 (56.9)	6 (37.5)	28 (58.3)	84 (58.3)	27 (57.5)	
	missing	44 (17.3)	3 (18.8)	5 (10.4)	33 (22.9)	3 (3.4)	**0.0160**
	Total	255	16	48	144	47	
I didn't consider the issue	Agree	9 (3.5)	0 (0.0)	2 (4.3)	6 (4.2)	1 (2.1)	
	missing	13 (5.1)	2 (12.5)	3 (3.4)	7 (4.9)	1 (2.1)	0.6914
	Total	253	16	47	143	47	

° p-value considered as significant when <0.05 and reported in bold

and television (8.5%) more than parents with highest educational levels; higher education was associated with self-study of scientific literature (11.0%) and institutional website access (16.2%). Complete data on trusted sources of information are reported in Table 1.

As shown in Table 2, most parents (80.8%) believed vaccines to be fundamental to ensure their child's health, even though half of them were afraid of their possible side effects (56.9%); the latter belief was less frequent among parents with low educational level (p=0.0160). Doubts about vaccine effectiveness emerged from 46.7% of respondents; particularly from parents with a degree (p=0.0018). Most couples (94.4%) were concordant about having their child vaccinated, while there was no agreement between the two only in nine cases.

Discussion and Conclusion

We had a satisfactory parental participation in the survey, even if actual availability of valid phone numbers within records was suboptimal. Aggregating the proportion of preferences given to healthcare professionals and institutional channels, more than 82% of choices confirmed the trust in official sources of information (20, 21) regardless of the underlying improper vaccination issue. In this sense, engaging with and listening to stakeholders, being transparent about decision making, being honest and open about uncertainty and risks (18) may have played an important role in maintaining confidence.

Even if public health practice is being asked to change the way to communicate to foster effectiveness (21), these results support the fact that general population still consider healthcare professionals and services as trustworthy. Nevertheless, differences emerged when comparing groups of parents with different educational levels, with two parental profiles emerging: highly educated parents who directly search for scientific literature and lowly educated parents who rely on friends and television.

Parents considering vaccination an obsolete or dangerous practice were a small but not negligible number, confirming what emerged from our first survey (20). Furthermore, concerns about possible side effects of vaccines were also confirmed (20), but this belief was much less represented among lowly educated parents; this fact demonstrated how opinions can be influenced in both ways by socio-cultural determinants (22). On the contrary, highly educated parents raised doubts about vaccine effectiveness, suggesting that the lack of personal experience with vaccine preventable diseases (17) may have stronger negative effects in terms of complacency among them.

The sampling methods adopted for this survey is a limitation of this study, in particular not being able to interview already clearly refusing parents. Other limitations include a possible desirability bias, due to the concomitant invitation to adhere to re-vaccination planned by LHT, which may have had an effect on the honesty of participants. However, the findings from this survey allowed the completion of the analysis performed after the Codroipo case (19-20), which is quite unusual and worth to be studied.

As public trust is the result of combined psychological, social and political factors, patterns emerged from the present analysis should be considered when counseling patients one-on-one, as well as when planning public health interventions to effectively address the vaccine confidence gap (18, 24-26).

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Keypoints:
Parents exposed to the Codroipo case still consider healthcare professionals and services as trustworthy.
Parental concerns about vaccines are confirmed to vary according to educational level.
Public health intervention tackling vaccine hesitancy should be tailored according to parental educational level.

Riassunto

Le opinioni dei genitori esitanti dopo il caso di Codroipo: il resto della storia

Premesse. Per affrontare l'esitazione vaccinale e guadagnare la fiducia da parte della popolazione generale, ci sono diversi aspetti da considerare quando si pianificano interventi di salute pubblica. Dopo le dubbie vaccinazioni che hanno caratterizzato il caso di Codroipo, i genitori esitanti sono stati intervistati per indagare le loro opinioni e le fonti informative nelle quali ripongono maggiore fiducia.

Metodi. Tra dicembre 2017 e febbraio 2018 è stata condotta un'indagine telefonica semi-strutturata che analizzava opinioni e fonti informative fidate dei genitori esitanti, raccogliendo anche dati sull'età e il livello d'istruzione dei partecipanti.

Risultati. I 258 genitori intervistati identificano nei pediatri (27.2%), nei medici di famiglia (25.4%) e nei canali istituzionali (12.1%) le fonti informative più fidate. I genitori con un livello di istruzione più alto tendono ad affidarsi maggiormente all'approfondimento autonomo della letteratura scientifica e ad essere più scettici nei confronti dell'efficacia vaccinale rispetto agli altri (p=0.0018).

Conclusioni. Nonostante l'evento occorso che ha minato la fiducia da parte della popolazione, i professionisti sanitari e le fonti istituzionali hanno mantenuto il loro ruolo di canali informativi fidati. Tra i genitori più scettici rispetto al tema delle vaccinazioni, sono emersi pattern riferibili al livello di istruzione che dovrebbero essere tenuti in considerazione per un più efficace contrasto al fenomeno dell'esitazione vaccinale.

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