

Research Article

Global polio switch and introduction of inactivated polio vaccine in routine immunization: are medical interns aware?

Kalpak S. Kadarkar*, Rajeshree S. Dhok, Mohan K. Doibale

Department of Community Medicine, Government Medical College, Aurangabad, Maharashtra, India

Received: 02 April 2016

Accepted: 07 May 2016

***Correspondence:**

Dr. Kalpak S. Kadarkar,

E-mail: kalpaksk@gmail.com

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Health care providers play important roles in parent/caregiver acceptance. They need to provide strong support for BOPV, IPV (Inactivated polio vaccine) and multiple vaccine injections. They must be prepared to answer parents or caregiver questions. Aim of this study to assess knowledge, awareness and perception of medical interns regarding OPV switch, IPV introduction, Polio eradication, factors demanding switch and multiple vaccine delivery at single visit.

Methods: A cross-sectional study was carried out among interns medical college in February 2016. They were requested to complete questionnaire regarding polio eradication, OPV switch, IPV introduction, need of switch and multiple vaccine delivery.

Results: 90.63% of interns had an idea about planned introduction of IPV vaccine in routine immunization. 2/3rd of interns had an idea about switch from TOPV to BOPV. Only 43.75% interns answered that direction of switch from TOPV to BOPV. Only 26.56% interns correctly said that there is need of multiple vaccines at single visit but 67.19% did not feel any need of that. Study highlights low level of awareness regarding switch, IPV introduction in RI and also many misconception regarding multiple vaccine delivery system.

Conclusions: All these gaps are to be managed quickly through proper and timely training regarding recent advances in public health, CMEs, interactive sessions and forum where all doubts and aspects of IPV, BOPV and multiple vaccines can be clarified.

Keywords: Multiple vaccine delivery, BOPV, VAPP, VDPV, Salk vaccine

INTRODUCTION

The polio eradication and endgame strategic plan 2013-2018 for the first time brings together a comprehensive approach to completing polio eradication. The innovative tactics, strategies and tools those are to be incorporated by this plan will enable the programme to interrupt WPV transmission and also in parallel to address the risks associated with VDPVs (Vaccine derived polio virus). This fundamental shift in approach makes the most of the recently-developed bivalent OPV (BOPV) and new inactivated polio vaccine (IPV) options at a time when immunization and surveillance performance are expected

to be at their strongest thus improving the probability of success.¹

Between 17 April and 1 May 2016, every country in the world currently using oral poliovirus vaccine (OPV) must withdraw the trivalent vaccine (TOPV) and replace it with the bivalent vaccine (BOPV). This will continue to protect infants from poliovirus types 1 and 3 while withdrawing the type 2 component, thereby mitigating the risk of seeding new type 2 circulating vaccine-derived poliovirus (cVDPV2).² IPV vaccine is going to be introduced in routine immunization schedule from April 2016 in Maharashtra state of India. In Maharashtra and seven other states, IPV is to be administered

intradermally (0.1ml) at 6th and 14th week of age of child while in rest of the states of India IPV is to be administered intramuscularly (0.5 ml) at 14th week only.³

WHO recommends at least one dose of IPV must be introduced, given in addition to OPV, to protect against type 2 polio virus and to boost population immunity.⁴

As interns are the budding doctors and important work force for hospital attached to teaching institutes, their knowledge and perception about recent advances in issues related to public health largely affect a performance of that institute in particular public health program.

Aim of this study to assess knowledge, awareness and perception of medical interns regarding OPV switch, IPV introduction, Polio eradication, factors demanding switch and multiple vaccine delivery at single visit.

METHODS

This cross-sectional study was carried out among medical interns of government medical college, Aurangabad in February 2016 to assess knowledge, awareness and perception of them regarding OPV switch, IPV introduction, Polio eradication, factors demanding switch and multiple vaccine delivery at single visit.

There were 128 medical interns who participated in the study. With assurance of anonymity and confidentiality, a pretested, semi-structured questionnaire was self-administered for collecting the necessary information after obtaining informed consent.

The questionnaire contained question on polio eradication, OPV switch, IPV introduction in Routine immunization (RI), need of switch and multiple vaccine delivery at single visit to child. Correct response for each question was based on facts in document published by global polio eradication initiative (GPEI).⁵

The data were entered and analyzed using Microsoft Excel 2010 and SPSS v.16. Data was expressed in proportion. The study was carried out according to the ethical guidelines for biomedical research on human subjects.

RESULTS

The survey sample consisted of 128 medical interns aged between 22-25 years with mean age of 23.23±0.9 years. There were 63 males and 65 females completing their training period of one year after passing final M.B.B.S university exam. The answers were analyzed by the faculty members conducting the study. Table 1 shows that 90.63% of interns had an idea about planned introduction of IPV vaccine in routine immunization schedule implemented in state of Maharashtra from the

year of 2016. About 2/3rd of interns had an idea about switch from TOPV to BOPV.

Table 2 highlights knowledge of interns regarding switch, direction of switch, need and factors demanding switch. Only 43.75% interns answered that direction of switch from TOPV to BOPV. About 55% interns did not know about direction of switch.

Forty five percent interns correctly mentioned type 2 polio virus as missing virus strain in BOPV. According to 53.13% interns combination of OPV and IPV is better vaccine strategy for polio eradication in current scenario of world. Only 1/3rd of interns knew about type 2 wild polio virus eradication from world. Nearly 54% feel need of two different polio vaccine i.e. IPV and OPV. According to 13.28% interns, IPV does replace OPV in RI schedule which is a wrong answer. Nearly 67% interns said that it is safe for child to receive both IPV and OPV.

As evident from Table 3, only 4 (3.13%) interns knew the year of introduction of IPV in RI in Maharashtra i.e. in 2016. Among rest interns, about halve were unaware and halve given wrong answer. Only few interns 7 (5.47%) knew correct schedule of IPV administration in RI. About 60% gave wrong answer and 35% were unaware about schedule. According to 85% of interns, route of administration of IPV was either intramuscular or intradermal. Thirty two percent interns considered multiple injection of vaccine at one visit are beneficial. About 91.41% interns answered correctly that IPV is beneficial for child. One hundred seven interns marked IPV as safe vaccine which is correct. 52.34% interns correctly said that IPV had side-effects, while 22% said IPV was free from side-effects.

Table 4 focuses on knowledge and perception of interns about multiple vaccine delivery at single visit to child. Only 34 (26.56%) interns correctly said that there is need of multiple vaccine at single visit but 67.19% did not feel any need of that.

Forty five (35.16%) interns said about absence of any evidence about multiple injections of vaccines causing increase in risk of adverse events while 32.03% said about presence of such evidence but did not mention about such evidences.

About 39% interns correctly marked that separating vaccines injections and spreading them out was unsafe while 21.09% thought about separating and spreading of vaccines for safety of child which is wrong.

Fifty three (41.41%) interns were having an opinion that vaccine efficacy remained same even it is given singly or with other vaccines. Nearly same proportion of interns had opposite opinion. 50.78% thought that multiple vaccines given at once would not overwhelm a child immune system.

Table 1: Knowledge about IPV introduction and switch from TOPV and BOPV (n=128).

	Yes (%)	No (%)	Total (%)
Idea about planned introduction of Inactivated Polio Vaccine (IPV) in Routine Immunization	116 (90.63)	12 (9.38)	128 (100)
Idea about switch between trivalent OPV (tOPV) and bivalent OPV (bOPV)	83 (64.84)	45 (35.16)	128 (100)

Table 2: Knowledge about switch between TOPV to BOPV and factors demanding switch (n=128).

	Correct (%)	Wrong (%)	Don't know (%)
Direction of switch	56 (43.75)	2 (1.56)	70 (54.69)
Missing virus strain in BOPV	58 (45.31)	37 (28.91)	33 (25.78)
Better polio vaccine for polio eradication in current scenario	68 (53.13)	50 (39.06)	10 (7.81)
Is polio eradicated from India?	103 (80.47)	21 (16.41)	4 (3.13)
Which Wild Polio Virus is already eradicated from world	46 (35.94)	42 (32.81)	40 (31.25)
Need two different vaccines for polio	69 (53.91)	39 (30.47)	20 (15.63)
Does IPV replaces OPV?	99 (77.34)	17 (13.28)	12 (9.38)
Is it unsafe for child to receive both polio vaccine, IPV & OPV?	85 (66.41)	30 (23.44)	13 (10.16)

Table 3: Knowledge about inactivated polio virus vaccine (n=128).

	Correct (%)	Wrong (%)	Don't know (%)
Year of introduction of IPV in RI in Maharashtra	4 (3.13)	58 (45.31)	66 (51.56)
Schedule of IPV administration	7 (5.47)	76 (59.38)	45 (35.16)
Route of administration of IPV	109 (85.16)	8 (6.25)	11 (8.59)
Is it beneficial to give multiple injections of vaccines at one visit?	41 (32.03)	74 (57.81)	13 (10.16)
Is the IPV beneficial?	117 (91.41)	6 (4.69)	5 (3.91)
Is IPV safe?	107 (83.59)	10 (7.81)	11 (8.59)
Does IPV have any side effects?	67 (52.34)	28 (21.88)	33 (25.78)

Table 4: Knowledge and perception about multiple vaccine delivery at single visit (n=128).

	Correct (%)	Wrong (%)	Don't know (%)
Need of multiple vaccines on one visit.	34 (26.56)	86 (67.19)	8 (6.25)
Any evidence that multiple injections of vaccines may increase the risk for adverse events.	45 (35.16)	41 (32.03)	42 (32.81)
Wouldn't it be safer to separate vaccine injections and spread them out?	49 (38.28)	27 (21.09)	52 (40.63)
If child receives multiple injections at the same visit, will the vaccines be as effective if given alone?	53 (41.41)	52 (40.63)	23 (17.97)
Can multiple vaccines given at once overwhelm a child's immune system?	65 (50.78)	46 (35.94)	17 (13.28)

DISCUSSION

The study looks at the awareness, knowledge and perception of our medical college interns about polio eradication, switch from TOPV to BOPV, introduction of IPV in RI and multiple vaccine delivery at single point. Though many of them 116 (90.63%) had an idea about planned introduction of IPV vaccine in RI in Maharashtra state but only 4 out of these 116 interns correctly answered year 2016³ as a year of introduction of IPV in RI. Eighty three (64.84%) interns had idea about switch between TOPV and BOPV but only 56 of these 83 interns correctly mentioned the direction of switch i.e. from TOPV to BOPV.

Nearly 55% interns did not know about direction of switch. This finding highlight a fact that interns were aware about switch and introduction of IPV but they did not know the details about it which might be a hurdle in future while spreading awareness in caretakers of children by health care providers. Knowledge and awareness among health care providers regarding switch, factors demanding switch, direction of switch and polio eradication is necessary to deliver correct message to parents and caretakers of children and also to tackle their worries, anxiety and doubt regarding changes in RI. Only half of interns were aware about combination of OPV and IPV was the better polio vaccine strategy.

India declared polio free since March 2014⁶ but still 1/5th of interns were unaware of it or given wrong answer. Awareness regarding eradicated wild polio virus type 2 from world was very low, though it was eradicated in 1999.⁶

One fourth of total interns had a misconception that receiving both IPV and OPV at same time would be unsafe, which need to be addressed as early as possible. Only 69 (53.91%) interns were correctly mentioned the need of two different vaccines for polio while others either unaware or not knew the need properly. About 13% of interns still believed that OPV would be replaced by IPV after its introduction to RI, which is strongly denied by WHO.⁵

As IPV is injectable vaccine which is to be added in RI from April 2016 in Maharashtra state, may create concern and curiosity in parents. To satisfy this, health care providers should be well aware about it. Though many interns correctly knew that IPV is to be administered intramuscularly or intra-dermally (in Maharashtra), very few knew about its schedule and dose. Fifty eight percent of interns did not see any benefit in administering multiple injections of vaccines at one visit, which again a misconception as this technique decrease duration of exposure to vaccine preventable diseases.^{3,5}

More than 80% of interns considered IPV as a safe and beneficial vaccine which is correct perception. Half of interns said IPV had side effect but only 27 of them correctly list out side-effects like pain at injection site, fever, local reaction and allergy etc.⁵ Some of them gave weird answers like gastrointestinal upset and vaccine associated paralytic polio.

Many misconception regarding multiple vaccine delivery at single visit was one of the important reason for decreased uptake of vaccines.^{7,8}

In present study we assessed a knowledge and perception of interns about it. Shockingly, 67.19% interns said there is no need of multiple vaccine at single visit, 35.94% of them said multiple vaccine at single visit may overwhelm a child immune system and 32.03% said about presence of evidence that suggest multiple injection of vaccines may increase the risk of adverse events. Facts regarding this by Global Polio Eradication Initiative (GPEI) clearly denied above concepts.⁵

There were still doubts about efficacy of vaccine when given singly or with other vaccine among interns.

CONCLUSION

This study highlights low level of awareness regarding switch, IPV introduction in RI and also much misconception regarding multiple vaccine delivery systems. The lack of awareness among interns is only tip of iceberg.

The misconception in common public would be even greater and which could be detrimental to success of currently adopted strategy for polio eradication. All these doubts and misconceptions are to be handled as early possible through proper and timely training regarding recent advances in public health, Continued Medical Education, interactive sessions and forum where all doubts and aspects of IPV, BOPV and multiple vaccine can be clarified.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. World health organization. Polio eradication and endgame strategic plan 2013-2018. France: global polio eradication initiative. WHO; 2013:13-4.
2. One month to go until the switch from trivalent to bivalent oral polio vaccine. Available at: <http://www.polioeradication.org/mediaroom/newsstories/One-Month-To-Go-until-the-Switch-from-Trivalent-to-Bivalent-Oral-Polio-accine/tabid/526/news/1362/Default.aspx#sthash.6Ss9gH4v.dpuf>.
3. Switch monitoring and validation module, IMA. Available at: <http://module.ima-india.org/Slides/SwitchMonitoringandValidation.pdf>. Accessed on March 24, 2016.
4. World Health Organization. Who global action plans to minimize polio virus facility-associated risk (GAPIII). France: WHO; 2015;8-16.
5. Polio and introduction of IPV. France: global polio eradication initiative, WHO. Available at: http://www.who.int/immunization/diseases/poliomyelitis/Inactivated_polio_vaccine/Key_mess_FAQs.pdf. Accessed on March 24, 2016.
6. Park K. Textbook of preventive and social medicine, 23rd ed. Jabalpur: Banarasidas Bhanot Publishers; 2015:201-3.
7. Kaaijk P, Kleijne DE, Knol MJ. Parents' attitude toward multiple vaccinations at a single visit with alternative delivery methods. *Human Vaccines & Immunotherapeutic*. 2014;10(8):2483-89.
8. Kadarkar KS, Tiwari SR, Velhal GD. Lot's quality coverage survey technique for assessment of immunization performance and quality in an urban slum of Mumbai. *Int J Community Med Pub Health*. 2016;3:174-9.

Cite this article as: Kadarkar KS, Dhok RS, Doibale MK. Global polio switch and introduction of inactivated polio vaccine in routine immunization: are medical interns aware? *Int J Community Med Public Health* 2016;3:1491-4.