



A DESCRIPTIVE CROSS-SECTIONAL STUDY ON INJECTION SAFETY PRACTICES DURING MEASLES RUBELLA CAMPAIGN IN ONE OF THE RURAL DISTRICTS OF A DEVELOPING COUNTRY- INDIA.

Community Medicine

Beenish Mushtaq* Lecturer, Department of Community Medicine, SKIMS Medical College, Bemina, Jammu and Kashmir, India.*Corresponding Author

Yasmeen Jan Associate professor, Department of Community Medicine, SKIMS Medical College, Bemina, Jammu and Kashmir, India.

Ashfaq Ahmad Bhat Associate professor, Department of Community Medicine, SKIMS Medical College, Bemina, Jammu and Kashmir, India.

ABSTRACT

Background: A safe injection is one that does not harm the recipient, does not put the health care worker at risk and does not result in waste generation that is dangerous for the community.

Material and Methods: Descriptive Cross sectional study was done in a Rural District from were 25 schools which include Government, Private schools and Madrasas were taken up for observing Injection Safety Practices in the MR campaign. Three visits were made in a week and each block would be chosen randomly with an attempt to cover at least two to three schools in one visit. Injection safety Practice in terms of washing hands before giving injections, wearing of gloves, checking expiry dates & Vaccine Vial monitors (VVM) on the vials, using fresh Auto-disabled syringes (ADS) for every child, destroying needles immediately by hub-cutter and use of color coded boxes for disposal were noticed.

Result: A total of 25 schools were visited. Auto-disabled syringes were inadequate in 36% private and 25% Religious schools. 20% of Government schools, 45.5% Private schools and 25% religious schools had inadequate reconstitution syringes. Regarding injection safety practices 12% schools were not noting time of reconstitution of vaccine vials. In more than 90% schools recapping of needles were not done.

KEYWORDS

Safe injection, Campaign, Measles-Rubella, Vaccine Vial Monitor, Auto-Disabled Syringes.

INTRODUCTION:

Injections are the most commonly used medical procedures with majority (90-95%) administered for curative purpose and 3% for immunization purposes.[1] World health organization (WHO) established an international alliance, the safe injection global network (SIGN) and as per them safe injection is defined as one that neither harms the recipient nor the provider and does not result in waste generation that harms the community. In order to achieve safe injection practices, it is important to assure availability of sufficient quantity of sterile devices, auto-disabled syringes (ADS) and mobilizing qualified health care personnel. Unsafe injection practices especially when injections are used on a large scale in campaigns has resulted in transmission of hepatitis B, Human immunodeficiency viruses (HIV), Hepatitis C and other blood borne diseases.[2] Measles Rubella campaign is a public health initiative of Government of India to eliminate Measles by 2020, and to control Rubella/Congenital Rubella Syndrome. Poor coverage of measles vaccine and shift in the age incidence of Rubella towards adolescents and young adults with low Rubella vaccination coverage has led to outbreak of Congenital Rubella Syndrome & Measles in India. Government of India has decided to administer Measles Rubella vaccine campaign in the country in a phased manner covering all children in the age group of 9 months to 15 years to achieve high population immunity.[3] It is a second opportunity to vaccinate children who were left out due to vaccine failure or failure to vaccinate.

High population immunity will then be sustained by follow up campaigns and incorporation of MR vaccines in routine immunization schedule.[4] For the current MR campaign to be effective it is important that no child is left behind. Because India accounts for 37% burden of global measles deaths the success of vaccination will have tremendous effects. [5]

There is dearth of documented information and studies on injection safety especially when they are to be administered on a large scale in case of campaigns; hence this study was carried out among health care workers administering MR vaccines to school children during MR campaign with the objective to determine whether health care providers were satisfying the condition for safe injection in terms of availability of sterile injectable equipments, proper disposal and trainings provided to the staff.

MATERIAL AND METHODS:

Type of the study: Cross-Sectional Descriptive study over a period of 6 months from June 2018 to November 2018.

Study Area: Due to feasibility, District Pulwama of Kashmir Division was selected for the study

Study-population: District Pulwama has three blocks. Block Pulwama, Block Pampore and Block Rajpora. For MR campaign almost three visits were made in a week. Each block would be chosen randomly and an attempt was made to cover at least two to three schools in one visit. A total of 25 schools in three different blocks were covered in 23 visits. In case of refusal by a school next school in near vicinity were MR campaign was going on would be taken up for the study. A pre-designed & pre-structured questionnaire was used to collect information regarding practices about safe injections and waste disposal management.

Practice of washing hands before giving injections, wearing of gloves, checking expiry date & vaccine vial monitor (VVM) on the vials, using fresh Auto-disabled syringes (ADS) for every child, destroying needles immediately by hub-cutter and use of color coded boxes for disposal was noticed. The procedures of injection practices were observed by "No interference Phenomenon". The data was collected, analyzed and interpreted and appropriate statistical test were done. Prior to the study institutional ethical clearance was obtained.

RESULTS:

Table 1: Distribution of schools visited for MR Campaign:

Location of the school	Type of the School			Total
	Government	Private	Religious	
Rural	7 (38.9%)	9 (50.0%)	2 (11.1%)	18
Urban	3 (42.9%)	2 (28.6%)	2 (28.6%)	7
Total	10 (40.0%)	11 (44.0%)	4 (16.0%)	25

Table1: Shows distribution of schools visited during the MR campaign. A total of 25 Schools were visited. About 40% of schools that were visited during the campaign were Government schools out of which 42.9% were in urban areas. A total of 44% private schools were visited and out of them 50% were in rural areas. 16% of religious schools were also visited during the Campaign.

Table 2: Availability of logistics for MR campaign at the session site:

	Type of the School			Total	Significance
	Government	Private	Religious		
Adequate AD syringes	10 (100.0%)	9 (81.8%)	3 (75.0%)	22 (88.0%)	.301
Inadequate AD syringes	0 (0.0%)	2 (36.0%)	1 (25.0%)	3 (12.8%)	
Total	10	11	4	25	.293
Hub cutter available	10 (100%)	10 (90.9%)	3 (75.0%)	23 (92.0%)	
Hub cutter not available	0 (0.0%)	1 (9.1%)	1 (25.0%)	2 (8.8%)	
Total	10	11	4	25	
Adequate Reconstitution syringes	8 (80%)	6 (54.5%)	3 (75.0%)	17 (68%)	.435
Inadequate Reconstitution syringes	2 (20%)	5 (45.5%)	1 (25.0%)	8 (32%)	
Total	10	11	4	25	

Table 2: Shows availability of logistics for MR Campaign. Auto-Disabled syringes were inadequate in 36% private schools and 25% religious schools. None of the Government school had inadequate supply of auto- disabled syringes. In 9.1% Private schools and 25% Religious schools hub cutter was not available. All the government schools had availability of hub cutters. 20% of government schools, 45.5% private schools and 25% religious schools had inadequate reconstitution syringes.

Table 3: injection safety practices at the session sites:

	Type of the School			Total	Significance
	Government	Private	Religious		
One vial reconstituted at a time	10 (100%)	9 (81.8%)	3 (75.0%)	22 (92.0%)	.301
More than one vial reconstituted	0 (0.0%)	2 (18.2%)	1 (25.0%)	3 (12.0%)	
Total	10	11	4	25	.301
Time of reconstitution noted	10 (100%)	9 (81.8%)	3 (75.0%)	22 (92.0%)	
Time not noted on the vial	0 (0.0%)	2 (18.2%)	1 (25.0%)	3 (12.0%)	
Total	10	11	4	25	
Vaccinator recapping the needle	1 (10.0%)	1 (9.1%)	1 (25.0%)	3 (12.0%)	.682
Not recapping the needle	9 (90.0%)	10 (90.9%)	3 (75.0%)	22 (88.0%)	
Total	10	11	4	25	
Used syringes cut using Hub-cutter immediately	10 (100%)	9 (81.8%)	1 (25.0%)	20 (80.0%)	.006
Used syringes not cut using hub cutter	0 (0.0%)	2 (18.2%)	3 (75.0%)	5 (20.0%)	
Total	10	11	4	25	

Table 3: Shows injection safety practices at session sites. In 18.2% private schools and 25% religious schools more than one vial was reconstituted at a time. In 100% of government schools only one vial was reconstituted at a time. A total of 12% of schools were not noting time of reconstitution of the vaccine vials however 18.2 % private schools and 25% religious schools, time of reconstitution of the vaccine vial was not noted on the vial. In 90% government, 90.9% private and 75% religious schools vaccinators were not recapping the needle immediately. In 18.2% private schools 75% religious schools vaccinators were not recapping the needle immediately. In 18.2% private schools, 75% Religious schools hub cutter was not immediately used to cut the syringes.

Table 4: Availability of potent vaccine at session sites:

MR vaccine and diluents within date of expiry	Type of the School			Total	Significance
	Government	Private	Religious		
Yes	10 (100%)	10 (100%)	4 (100%)	24 (96.0%)	.515
No	0 (0.0%)	1 (9.1%)	0 (0.0%)	1 (4.0%)	
Total	10	11	4	25	.251
MR vaccine vials with VVM in unusable stage	0 (0.0%)	2 (18.2%)	0 (0.0%)	2 (8.0%)	
MR vaccine vials with VVM in usable stage	10 (100%)	9 (81.8%)	4 (100%)	23 (92.0%)	
Total	10	11	4	25	

Table 4: Shows potency of vaccines during MR Campaigns. In 100% of Government & Religious schools MR vaccines and diluents were within date of expiry. However in 9.1% private schools vaccines& diluents were not within date of expiry. In 18.2% private schools MR vials VVM was in unusable stage. However in none of the Government & Religious schools MR vaccine vials VVM was in unusable stage.

DISCUSSION:

In the present study a total of 25 schools were visited. 40% of the visited schools were Government, 44% were private and 16% were religious schools. Selection of schools for MR campaign acted as a driver for the campaign as it was convenient for parents as they don't have to take time off from their work. Also the emotional support provided by teachers and peers acted as a positive factor for the campaign. However if school based vaccination needs to be expanded it needs to be further explored and perspective of teachers and students need to be taken care of. [6] As far as availability of logistics for MR campaign 36% private, 25% religious and 9.1% private, 25% religious schools had inadequate auto-disabled syringes and non availability of hub-cutters respectively. Adequate AD Syringes and Hub cutters were available in the government schools. However no statistical significance was seen between availability of logistics and the type of schools. An important component of immunization campaigns is to determine the required amount of injection equipment and their distribution. For each dose of vaccine to be administered, there must be one AD syringe and needle. To avoid short fall of syringes, needles an additional quantity (10%-20%) of contingency materials is usually ordered. The distribution of all materials must be planned according to local requirements to ensure that adequate supplies are available at each immunization site. Because AD syringes can only be used once they prevent the transmission of blood borne pathogens among the vaccine recipients. Their exclusive use in both mass campaigns and routine immunization services virtually eliminates the risk of infection in the vaccine recipient however they do not eliminate the risk of needle stick injuries for health care workers nor do they solve the potential infection problem for the community resulting in improper disposal of such syringes.[7] In our study 18.2% private and 25% religious schools were reconstituting more than one vial at a time. Each vaccinator needs to be instructed on how to correctly reconstitute measles vaccine at a time. Almost 90% of Government and Private schools and 75% Religious schools were not recapping the needles immediately. These findings suggest that the risk of needle stick injuries for health care workers in our study was very high. 100% health providers from government schools, 81.8% private schools and 25% religious schools used hub cutter to destroy the syringes. A strong statistical significance was seen between type of schools and the use of Hub cutter. As far as the availability of potent vaccines at session sites is concerned all the vaccines and the diluents used were within the date of expiry, however in 18.2% private schools MR vaccines were used in stage 3 of the Vaccine Vial Monitor (VVM). These finding from our study suggest that private sectors should be involved in a better way with prior notifications and imparting trainings to the staff of private institutions likely to be involved in mass immunization activities.

CONCLUSION:

The main limitation in this study was that observing the health workers for injection safety practices during MR campaign would create Hawthorn effect (i.e. the behavior of the health workers would be altered) resulting in under estimation of unsafe and irrational injections. While every measles rubella campaign plan will necessarily budget for AD syringes and social mobilization plans however

immunization waste management in these campaigns are often neglected or underfunded. Although waste generated from measles Rubella Campaign contributes a small percentage of total health care waste generated careful consideration must be given to finding appropriate methods of safe disposal. Training of Health care workers regarding safety practices is another important issue that needs to be addressed before undertaking such activities at large. Another obstacle for the campaign was the deficiency in the planning and implementation of IEC activities that had to be carried out aggressively before the launch of the MR campaign. WHO guide on immunization activities suggests conduct of KAP surveys in the community before implementation of supplementary immunization activities (SIA) for the development of the communication message.[8] The lessons learned from pulse polio have to be applied in the MR campaign as well. Careful planning, logistic consideration, supervision and monitoring in order to ensure that all vaccines are administered safely is of utmost importance for the success of such campaigns, Measles Rubella campaigns can serve as a model for promoting injection safety in routine immunization services as well as in curative health services

REFERENCES:

1. World Health Organization. Safety of injections question and answers. In: WHO, eds. Secretariat of the Safe Injection Global Network. Publication No. WHO/EHT/04.06. Geneva: World Health Organization (WHO); 2006: 1-3.
2. Simonsen L, Kane A, Lloyd J, Zaffran M, Kane M. Unsafe injections in the developing world and transmission of blood-borne pathogens: a review. Bull WHO. 1999; 77:789-800.
3. Introduction of Measles. Rubella vaccine guidelines (campaign and routine immunisation)-Operational guidelines. MoHFW, Govt of India; 2017.
4. Lloyd js, Milstien J B. Anti disabled syringes for immunization issues in technology transfer. Bull World health organization 1997; 77:1001-7.
5. Measles-Rubella (MR) vaccination campaign available from [http://vikaspedia.in/health/health_campaign/measles Rubella vaccination Campaign](http://vikaspedia.in/health/health_campaign/measles_Rubella_vaccination_Campaign) last cited on 2018 Nov 13.
6. WHO guide on immunization activities suggests the conduct of KAP surveys in the community before the implementation of supplementary immunization activities (SIA) for the development of the communication message.[8] The lessons learned from pulse polio have to be applied in the MR campaign so as to more acceptability.
7. Paterson P, Sciltz W, Willey M, Larson H. Parents experience and views of vaccinating their children against influenza at the primary schools: Int journal of environmental, Respiratory public health 2018; 15:622.
8. Dabbagh A. Planning and implementing high quality supplementary immunization activities for injectable vaccines using an example of measles and Rubella vaccine: field guide. WHO; 2016. available from [http:// www. who. int/ immunisation disease/measles/SIA-field guide](http://www.who.int/immunisation/diseases/measles/SIA-field-guide). last cited on 2018 Oct 06.