

Concurrent evaluation of acute flaccid paralysis surveillance in Kashmir: A mixed methods study

Khalid Bashir¹, Mariya Amin Qurieshi¹, Zeenat Kausar²,
Shahzada Muhammad Salim Khan¹

Departments of ¹Community Medicine and ²Anatomy, Government Medical College, Srinagar, Jammu and Kashmir, India

ABSTRACT

Background: Active acute flaccid paralysis (AFP) cases surveillance in children under 15 years is ongoing till reaching eradication of poliomyelitis in the globe. As there is always a high risk of importation of wild poliovirus (WPV) from the endemic countries, accurate surveillance for AFP cases to detect WPV circulation and to maintain our achievement is thoroughly essential. **Objectives:** To evaluate the performance of the AFP surveillance system in Kashmir Valley. To identify gaps, if any, in AFP surveillance. **Materials and Methods:** The Mixed Methods study was conducted in the Kashmir valley from March 2018 to March 2019. An explorative qualitative design using individual, face-to-face interviews with thirty-two (32) different stakeholders from the State, District, Medical Block, and PHC levels. To complement the qualitative study, a quantitative door-to-door survey was done in two Districts, Srinagar and Ganderbal, which consist of five and four Medical Blocks respectively. **Results:** The thematic qualitative analysis approach was used, and the analysis process resulted in five themes. 1. Stakeholders' description of AFP surveillance. 2. Perception and awareness, appraisal of AFP Surveillance among stakeholders 3. Barriers in reporting AFP cases 4. Forging stronger linkages, improved planning in the health system to address gaps in AFP surveillance. 5. Enhancement of activities for sensitive AFP surveillance. In door to door survey of households in different sub-centre areas, a total of n = 1304 families were visited in which maximum (n = 647) families had two <15 years' children. In the survey, only one AFP case was recorded from Sub-Centre Kurag. **Conclusion:** There is a need for sensitive AFP surveillance by working on various factors, including training, behavioural change of health workers, improving reporting of cases, especially efforts are needed for the formation of effective AFP surveillance system by forging cooperation with different segments of the health system.

Keywords: Acute flaccid paralysis (AFP), surveillance, wild poliovirus (WPV)

Introduction

Active acute flaccid paralysis (AFP) cases surveillance in children under 15 years is ongoing till reaching eradication of Poliomyelitis in the globe. As there is always a high risk of importation of wild poliovirus (WPV) from the endemic countries, accurate surveillance for AFP cases to detect wild

poliovirus circulation and to maintain our achievement is thoroughly essential.^[1,2]

AFP surveillance is an essential plan of action used by countries to measure advancements towards accomplishing the global eradication goal. India has been certified polio-free on March 27th, 2014 when no case of WPV was detected for the past three years. However, albeit WPV type 1 transmission remains endemic in only two countries (Pakistan and Afghanistan), nevertheless, 33 countries witnessed outbreaks of circulating vaccine-derived poliovirus during 2019–2020.^[3,4] The adapting and altering epidemiology of AFP mandates a paradigm shift in surveillance and the goal of AFP surveillance in the post-poliovirus era

Address for correspondence: Dr. Khalid Bashir, Department of Community Medicine, Government Medical College, Srinagar, Jammu and Kashmir, India. E-mail: drkhalidbashir.s@gmail.com

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should be not only early detection of poliovirus re-emergence but also identification of prominent non-polio enterovirus (NPEV) or other infectious and non-infectious etiologies of AFP to target new prevention efforts.^[5] The critical role of the AFP surveillance system is to serve as a platform to build integrated disease surveillance system. AFP surveillance systems need to carry on necessary activities to reliably monitor the completion of global polio eradication and to assure that surveillance capacity is transitioned post-eradication to support other health priorities.^[6] As extensive resources are devoted to AFP surveillance, diverse avenues exist for additional diseases to be added using AFP surveillance assets. Integrated surveillance has become a norm in many countries, ranging from adding surveillance for measles and rubella to integrated disease surveillance for outbreak-prone diseases. AFP surveillance can serve as a platform for surveillance of vaccine-preventable diseases and other outbreak-prone diseases.

There is a paucity of studies regarding AFP surveillance in India. No such studies have been done in the Kashmir valley. The study was conducted for concurrent evaluation of AFP surveillance in the Kashmir Valley.

Objectives

1. To evaluate the performance of the AFP surveillance system in Kashmir Valley.
2. To identify gaps, if any, in AFP surveillance.

Materials and Methods

The mixed methods study was conducted in the Kashmir valley from March 2018 to March 2019. Ethical approval was obtained from the Institutional Review Board (IRB) vide Letter No. __135/ETH/GMC/ICMR_____ dated _19-03-2016_____ and informed written consent was taken from all participants”. An explorative qualitative design using individual, face-to-face interviews with different stakeholders from the State, District, Medical Block, and PHC levels. [Table 1] Kashmir Valley consists of 10 districts and each district is further divided into medical blocks of multiple sizes (2-10 medical blocks).

To complement the qualitative study, a quantitative door-to-door survey was done in two districts, Srinagar and Ganderbal, which consist of five and four medical blocks, respectively.

From each medical block of these districts, one sub-centre area was chosen for study, twenty percent of the population of the

Sub-center area was surveyed for children less than 15 years for AFP surveillance, and information was gathered on the pre-formed questionnaire, which contained questions related to AFP surveillance and vaccination of OPV. Only those households were considered for survey who had children less than 15 years for the surveillance, in case of non-availability of children of this age group, next household was taken for the survey.

Data collection

In-depth interviews were conducted with stakeholders at all levels. Interviews were arranged by fixing prior appointments with the participant. An interview guide focusing on the specific areas of interest was developed beforehand to facilitate the interviews and was used to ensure participants’ opinions were investigated fully during interview, each interview started with some “background mapping questions”, which provided an opportunity to probe and gain deeper insights on the major issues of the topic being studied. In this study, in-depth interviews were held with thirty-two (32) important stakeholders, which were audio-recorded after written informed consent was obtained from the respondents. The maximum duration of one interview was recorded to be 2 hrs, while a minimum of 45 minutes.

Analysis

The thematic qualitative analysis approach was used, all interview recordings were transcribed verbatim, the process of transcribing, reading, and rereading transcripts was continued till emerging key ideas, concepts, and themes were identified and made into a list. Voice recordings having Urdu or Kashmiri content were translated and transcribed verbatim into English. Transcripts were assigned in word files, and data analysis started as a process of carefully scrutinizing data by placing it into inductively created code structures, categories, sub-themes, and themes. The process of theme identification involved many stages.^[7] 1. Acquaintance with the data 2. Coding 3. Discerning themes 4. Analyzing themes 5. Delineating and naming themes: 6. Write up.

Results

Five themes were generated and each of these themes included many sub-themes as shown in Table 2.

Theme 1: Stakeholders’ description of AFP surveillance

The key respondents revealed an external context of AFP surveillance. It got reflected from their discussions, the current AFP surveillance system is focusing on governance, planning, finance, human resources, logistics, information sharing. The discussion with respondents revealed the importance of a sensitive AFP surveillance system and its impact on the global eradication of polio. The key respondents’ discussion resonated with efforts towards achieving sensitive AFP surveillance, various measures were discussed by the respondent.

Table 1: Details of interviewed stakeholders

Qualitative in-depth interviews (n=32)	Interviewee/Stakeholder
State Level (n=2)	SMO, SEPIO*
District Level (n=10)	DIO*/Deputy CMO*
Block Level (n=10)	BMO*
PHC Level (n=10)	Medical Officer

*Surveillance Medical Officer (SMO), State Extended Program Immunization Officer (SEPIO), District Immunization Officer (DIO), Chief Medical Officer (CMO), Block Medical Officer (BMO)

Table 2: Themes and subthemes generated from qualitative data analysis

Themes	Sub-themes
1. Stakeholders' description of AFP surveillance	Current description of AFP surveillance in Kashmir Valley. Impacts of AFP surveillance. Achieving sensitive AFP surveillance.
2. Perception and awareness, appraise of AFP Surveillance among stakeholders	Knowledge of AFP surveillance. Knowledge of investigation of AFP. Reasons for not detecting AFP cases.
3. Barriers in reporting AFP cases	Inertia of previous practices. Lack of awareness. Lack of monitoring. Lack of training.
4. Forging stronger linkages, improved planning in the health system to address gaps in AFP surveillance	Forging stronger linkages. Intersectoral coordination, Roping in private practitioners, Motivation of health personnel,
5. Enhancement of activities for sensitive AFP surveillance.	Need for enhancement of surveillance activities Strengthening of AFP surveillance system

"..... we have addressed challenges regarding AFP surveillance, devised strategies, reporting line has improved, the system was not doing quite well."

"..... we have neighboring countries, polio is not eliminated there, we cannot lower guard. AFP surveillance has to be continued, sensitive and robust AFP surveillance is important, AFP surveillance has a larger impact in polio eradication."

"..... We move to districts, we keep on interacting with health professionals, we have certain limitations and weakness, due to which we miss AFP cases, and we are working towards achieving sensitive AFP system."

Theme 2: Perception and awareness, appraisal of AFP Surveillance among stakeholders

It was revealed by the respondents, there is a lack of knowledge of AFP surveillance among Medical officers, they do not report all AFP cases. Reasons highlighted by the respondents for poor AFP detection include inertia of past practices, lack of cooperation and comprehensibility, and lack of attitude. Pertinently, most of the respondents did not know the case definition of AFP, there was a lack of acceptability of AFP surveillance among some respondents, only a few respondents had ever identified or seen suspected AFP and completed reports.

"...A case of sudden onset weakness is suspected as AFP. I don't remember the exact duration of weakness, one week or two weeks duration. We confirm it by the pediatrician and it is to be reported to higher authorities."

"..... If you see a patient has a problem like diarrhea and is sick, febrile, all that, we suspect AFP.".....We don't know AFP Surveillance guidelines; we miss cases (AFP). We don't take stool samples in every weakness case, we may follow up these cases, but we don't take stool samples."

".....In AFP cases stool samples are to be taken in matchboxes, and then to be sent in the cold chain."

"We take 40-grams stool in two containers when AFP case comes, containers which we have in our laboratory; we send it to higher authorities."

"A stool specimen, an adequate sample is to be collected within 14 days of paralysis onset, two samples in two weeks then sent to a laboratory for investigation."

"..... we haven't received reports of three stool specimens (AFP cases) which we have sent way back and parents of cases ask for reports. We have heard there are incentives for doctors, we haven't received any incentives, doctors get disheartened."

".....reporting of AFP cases, not all cases get reported for sure, only 50% cases get reported. The reason for this is non-cooperation from Medical Officers and as well as pediatricians, also private practitioners don't report (AFP) and it's our responsibility to make them accountable for reporting, give strict directions to them."

"..... We have one Medical officer in the OPD, he is overburdened, he may miss cases, another reason is lack of interest (in AFP reporting)."

Theme 3: Barriers in reporting AFP cases

There is the inertia of previous practices; health professionals do not feel pressed for AFP surveillance. The reasons counted for the non-reporting of cases by respondents were lack of awareness of AFP surveillance, lack of training, lack of monitoring by internal and external agencies.

"... We miss AFP cases due to lack of knowledge, awareness, sometimes to such an extent, certain Medical officers feel reporting AFP is reporting polio."

"... We have done a lot, we did workshops, but feedback is not that good as it should have been. I think lack of seriousness is the reason."

"I haven't seen them coming, no one comes here. I have been working as a Medical officer for the last six years. I haven't seen any agency coming to us for monitoring."

"... They need to give on-the-job training to health professionals. In my tenure as BMO, I haven't seen them (Internal and external surveillance agencies). I suggest, they should come for monitoring."

"...I haven't done any training in AFP surveillance. When the mind doesn't know eyes can't see. You need to train us in AFP surveillance?"

.... I have attended training in AFP surveillance one year back, we need to be trained more."

Theme 4: Forging stronger linkages, improved planning in the health system to address gaps in AFP surveillance

The need to build up links to achieve effective AFP surveillance was suggested by respondents in their discussions, they opined

to rope in private practitioners for reporting, motivate medical officers for reporting AFP by providing incentives, make improvements in monitoring and supervision. Respondent discussions resonated with the need for intersectoral coordination.

“..... We have to build links with ASHA workers ANM, Medical officers and private practitioners, be after them for reporting AFP, and supportive supervision from monitors of surveillance can build a stronger linkage with health personnel.”

“.....private practitioners are not being asked to report AFP cases. As in the case of USG (ultrasonography), they are asked to fill forms under PCPNDT ACT. Pediatricians and private practitioners should be asked to report cases on formats.”

“..... We need to give recognition and appreciation to districts that are leading in AFP reporting, by way of certificates/ mementos that will drive more enthusiasm for reporting cases.

“..... They need to be sensitized regarding AFP surveillance, provide them checklists of AFP surveillance. They should be given some incentives for case detection, which can be a motivation for them.”

Theme 5: Enhancement of activities for sensitive AFP surveillance

The respondents reflected the need for increased sensitivity of the existing AFP surveillance system in Kashmir Valley, they noted the importance of training health professionals, supervision, strengthening of AFP surveillance by improving health services management, inter-sectoral collaboration, and political mobilization. The state health system and the national polio surveillance project (NPSP) AFP surveillance unit should update the knowledge of the health care workers at the operational levels on AFP surveillance. The information documents required for quality AFP surveillance should be promulgated and their judicious use is ensured, strengthened management capacity, improved mobilization of health professionals, all these measures can increase the sensitivity of AFP surveillance.

“..... We train people at the helms in the Blocks, Districts, and unfortunately, they get transferred frequently, which leads to gaps. Recently trained Deputy CMO got transferred and one medical officer got elevated to Deputy CMO, she doesn't know the job.”

“..... They need to share information on AFP surveillance, by training and materials. District health administration needs to do regular visits to hospitals, motivate health professionals. Awareness, training, sharing written information on AFP surveillance can sensitize health workers regarding surveillance. Improved coordination can improve surveillance; motivation by repeated sensitization can bring change in attitude, which can mobilize health professionals in reporting AFP cases.”

Out of the thirty-two (32) respondents, 24 (75%) knew the target age group for AFP. A total of 16 and 22 respondents knew when to follow up an AFP case and when an AFP case should be

notified/reported and investigated, respectively. Twenty (62%) respondents were trained in AFP surveillance and almost all respondents said they need training on AFP surveillance.

A total of thirteen hundred and four (n = 1304) families having children under 15 years of age were surveyed in a quantitative door-to-door survey in two districts (Srinagar, Ganderbal). A total of 19 (1.4%) families had 4 (four) children in a family, 90 (6.9%) families had 3 (three) children in a family, 647 (49.6%) families had 2 (two) children in a family and 548 (42.0%) families had 1 (one) child in a family. In the survey, n = 1 child was detected having suffered from AFP as per case definition in the last year or during the survey period. [Table 3]

Discussion

Surveillance for AFP is a fundamental cornerstone of the global polio eradication initiative. Active surveillance (with visits to health facilities) is a critical strategy of AFP surveillance systems for highly sensitive and timely detection of cases. The present study explored the current description of AFP surveillance in Kashmir valley from the in-depth one to one interactions with the stakeholders, these interactions reflected, the surveillance system is focussing on logistics, management, information sharing, the current surveillance system's key stakeholders are well aware of the importance and maintenance of sensitive AFP surveillance. Furthermore, the study revealed stakeholders are well aware of certain shortfalls and they are working towards achieving a sensitive AFP surveillance system. Health professionals especially at the primary care level are supposed to be knowledgeable about the surveillance system so that they can pick up the reporting and investigation of suspected cases of AFP. Poor knowledge among health professionals weakens the performance of the system. Lack of knowledge on the AFP target population implies that the focus is not representative of the target population, hence missing some cases and under-reporting of AFP cases occurs.

Table 3: Details of the surveyed children (under 15 years of age)

Variables	Number of children n (%)
Families surveyed (n=1304)	
Families having 4 children	19 (1.45)
Families having three children	90 (6.90)
Families having two children	647 (49.61)
Families having one child	548 (42.02)
Demographic & investigation details of AFP case detected in survey (n=1)	
Healthcare sought at G.B Panth Pediatric hospital	
Age	(2 Years)
Sex	Male
Residence	Kurag (Ganderbal)
Investigations done	2 stool samples taken
Part affected	lower limbs
Immunization status	Immunized as per age
Follow up done by health officials	yes

Similar findings were reported in South Africa by Dube *et al.*,^[8] where there was poor knowledge among health workers on AFP surveillance. This is consistent with findings by Pomerai *et al.*^[9] who reported low knowledge on AFP surveillance among health workers in the Bikita district. The AFP surveillance system, therefore, becomes unrepresentative and might not be reporting all suspected cases due to a lack of knowledge. There is, therefore, a need to engage more with health professionals including health workers at the grassroots level of primary care, and to educate them in AFP surveillance. In our study lack of knowledge, lack of training in AFP surveillance was the reason for missing AFP cases and non-reporting cases of AFP. The respondents in our study reflected that all AFP cases are missed due to these reasons, all cases do not get reported, which means the system is not fully sensitive. Dube *et al.*^[8] in Mpumalanga, South Africa, reported the system was not sensitive although case detection met the WHO target. Therefore, there is a palpable and persuasive need to make primary health care providers acceptably trained in AFP surveillance to make surveillance enterprising. Furthermore, they have a direct and critical role in AFP surveillance as they are fundamentally having first contact with AFP cases as primary health care providers.

The respondents revealed in their discussions certain barriers which have become impediments in the AFP surveillance; like Inertia of previous practices, lack of awareness, lack of monitoring, and lack of training as important barriers towards AFP surveillance. The importance of strengthened monitoring and supervision was similarly highlighted by, Maes *et al.* (2017),^[10] surveillance gaps must be identified and surveillance activities, including supervision, monitoring, and specimen collection and handling, should be further strengthened. AFP surveillance will be required until global certification, oral polio vaccine (OPV) cessation, and beyond. To maintain AFP surveillance of sufficient sensitivity requires the ongoing monitoring of surveillance quality indicators, at all relevant administrative levels to be strengthened. At regular intervals, desk and field reviews of surveillance quality are needed to detect surveillance quality gaps and to target measures to strengthen surveillance. Also, efforts are needed to train and motivate surveillance staff on AFP, and to sensitize clinicians and private practitioners, health workers working in primary care facilities who are likely to see AFP cases. To improve surveillance quality, we need regular supportive supervision of surveillance workers, especially clinicians at health facilities. Effective quality control and maintenance for AFP surveillance require sufficient government commitment to maintaining sensitive surveillance in the future, intersectoral coordination, and also is not possible without the investment of considerable attention and time of state surveillance teams. This is easier in Polio-endemic or recently endemic countries, or in polio-free low-income countries that are still supported by WHO and UNICEF-supported polio teams. Middle- and high-income countries find it much more difficult to maintain AFP surveillance, because there is no external support and also a waning commitment to maintaining surveillance for a disease that has been absent for a long time.

In our study, respondents emphasized forging stronger linkages to improve AFP surveillance, by way of intersect-oral coordination, roping of private practitioners in reporting AFP cases, motivation of health workers towards surveillance, strengthening links will increase commitment to AFP surveillance and scale-up surveillance activities. They suggested higher-level authorities should enhance activities of supervision, training to health professionals, periodical information sharing, and regular sensitization of health workers. The management at all levels needs to be more proactive so that health professionals are mobilized in doing effective AFP surveillance. The revitalization of primary health care providers' frame of mind and operational attitude towards AFP case detection, reporting, and investigation is distinctly needed. We need to widen the ambit of primary health care providers beyond the practicing gaze on primary care only to fill the quivering gaps in the current AFP surveillance in Kashmir. The study done in Italy is vociferously echoing similar findings as seen in our study.^[11] Therefore, reorganizing AFP surveillance by addressing various manifest findings of our study will help in making the AFP surveillance system in Kashmir effective by following AFP surveillance performance indicators suggested by WHO.

Conclusion

In conclusion, there is a need for sensitive AFP surveillance by working on various factors, including training, behavioural change of health workers, improving reporting of cases, especially making efforts for the formation of the effective surveillance system by forging cooperation with different segments of the health system, so that reporting is done timely as per WHO surveillance guidelines.

Summary

This was the first study on AFP surveillance in Kashmir that earnestly recommends the necessity to focus on training, behavioural changes among health care personnel involved in AFP surveillance. Moreover, the significance of primary health care workers in sensitive AFP surveillance was manifested in originality. The consequences of the lackadaisical attitude in AFP surveillance of primary care providers were thoroughly inquired into and discussed. The study necessarily enhanced and augmented the need for mobilization of resources, including human, financial, logistics, laboratory support, training of health care professionals, and other operational resources for sensitive surveillance of AFP.

Author contributions

Khalid Bashir: Conception of the study, Acquisition of data, Design of the study, Data analysis, Review of literature, Drafting the manuscript

Mariya Amin Qurieshi: Conception of the study, Design of the study, Proof reading

Zeenat Kausar: Manuscript editing, Review of literature, Manuscript editing

S. Muhammad Salim Khan: Conception of Study, Design of the study.

Declaration of patient consent

The authors certify that they have obtained all appropriate consent forms. In the form the has/have given his/her/their consent for his/her/their images and other clinical information to be reported in the journal. The understand that their names and initials will not be published and due efforts will be made to conceal their identity, but anonymity cannot be guaranteed.

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Conflicts of interest

There are no conflicts of interest.

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