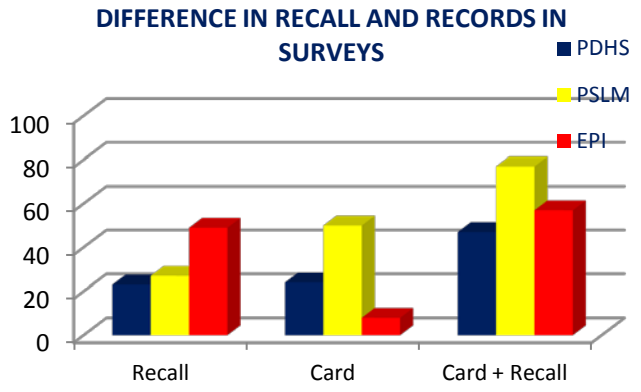
ACCURACY OF CHILD IMMUNIZATION RECORDS

Approximately 78% (PSLM 2010-11) of children between the age of 12 to 23 months are reported as fully immunized, although this coverage varies from 43% in Balochistan to 85% in Punjab. Immunization coverage is measured based on mother's recall and vaccination records and is reported in large national surveys. There is considerable variation between the results of these surveys. This brief describes the reasons for these variations.

Exploring differences between surveys

The Pakistan Social and Living Measurements (PSLM) Survey is conducted biennially (and sometimes annually). The Pakistan Demographic Health Survey (PDHS) was last conducted in 2006-7 and the EPI Coverage Survey was also conducted in 2006. While each these surveys recruited using a similar methodology that was based on a sampling frame provided by the Federal Bureau of Statistics, the results of immunization coverage have varied widely between these surveys and have confounded program and policy makers.

The difference stems from how the question is asked. While surveyors are supposed to ask the mothers about their recall of immunization and to verify if the immunization is recorded on a vaccination card, what actually happens varies between surveys. The PDHS team insisted on asking only the mother about the vaccination whereas in PSLM, report from any member of the household was accepted. Additionally, although the record of vaccination must be verified by inspecting the card, in practice, a report by the interviewee that a card exists – without necessarily verifying this report by asking to see the card – suffices as a record of vaccination. Understandably the recall rates were higher when household members other than the mother were asked to "guess" if the child is vaccinated. Also in surveys such as the EPI Coverage Survey where the team insisted on inspecting the vaccination card, actual reports of cards was much lower than when the survey teams merely took the word of household members about this.



Verification of Records in Pakistan

A research study was carried out in District Dadu by the Sindh EPI program and Research and Development Solutions where mothers' recall of vaccination of their child was compared against vaccination cards and to the record of vaccination maintained by the vaccinator or the local health facility.

649 households with at least one child between the ages of 6 to 36 months were recruited using cluster randomization. A BCG scar was used as the "gold standard" for a child having received BCG vaccination; 85% of children had such a scar. Among all children, 67% of the mothers could recall the child receiving a BCG vaccination and 75% of mothers of children with a BCG scar could recall the vaccination. Fewer children (23%) had been vaccinated according to their vaccination cards or by facility/ vaccinator records (30%). The kappa statistic which depicts accuracy of the agreement between mothers and the scar was 43%, suggesting that mothers' recall was only moderately accurate. There was extremely low agreement between record on a vaccination card (kappa: 10%) and at facility records (kappa: 12%).

The study also looked at coverage of different antigens by using mothers' recall, vaccination cards and records at the facility or the vaccinator.

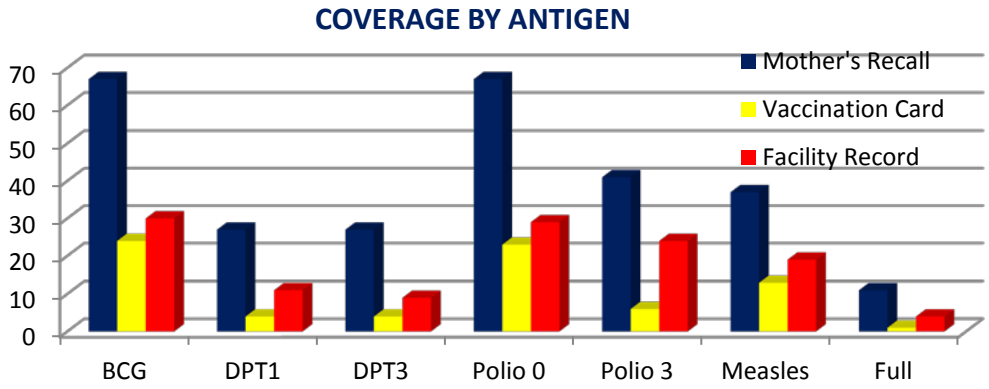
Eleven percent of the children were fully immunized by mothers' recall. The highest coverage of any antigen was for BCG, polio zero and polio 1 and was 67%. Mother's recall matched vaccination cards only 23% and facility records 24% of the times on average.

BCG and polio zero are given immediately at birth and have the highest coverage. DPT1 which is given 6 weeks later dropped by less than half, but surprisingly not polio

SALIENT POINTS AND RECOMMENDATIONS

- Poor record keeping means that many children are vaccinated, but this vaccination is seldom recorded on cards or facility records.
- Mother's recall is only moderately accurate a measure for recalling vaccination of their children
- Supplementary Polio campaigns influence record and recall.
- Record keeping can only improve if data from vaccinator records are analyzed and used in management of the immunization program.
- Use of immunization data would require these data to be present as computerized databases, either by directly entering vaccinators paper forms into computerized databases or using phone based devices to directly enter vaccinations by vaccinators into data servers.
- During surveys, mothers' recall may be the best available option but how this question is asked will have to be standardized across all surveys that use this measure for surveys results to be cross comparable.

which is also given at the same time. In fact all polio and DPT vaccines are given simultaneously and yet coverage for polio is more than twice as high as DPT reflecting perhaps the heightened importance being placed on polio. It is important to remember that the study looked at the records of routine immunization although supplemental polio campaigns may have augmented the memory of some mothers as is reflected in the results.



These findings suggest that vaccinators do not fill vaccination cards at the time of immunization nor do they keep records of vaccination at facilities. Under the circumstances one must wonder if the vaccinators report 80-90% coverage for routine immunization, who then are the children they are vaccinating. Another important aspect which is highlighted by the results is whether the vaccinators are reporting the actual denominator.

Conclusion

In Pakistan, the primary issue in immunization is the low level of record keeping on vaccination cards. Even though the vaccinator is providing immunization services to the child, he does not record it on the vaccination card left at households or even his own facility records. This raises several problems: 1) if only a third of vaccinations are recorded then how is coverage of 80-90% reported from routine immunization, i.e. who are the other children and 2) because coverage is low and polio cases persist, there is a need for supplemental immunization campaigns at great costs.

In part this poor documentation of immunization is due to the fact that vaccinator records are on paper and it is difficult to analyze them to ensure their accuracy. This may be addressed by improving data management using electronic databases which can either be done by entering all vaccinator records into a computerized database or even having vaccinators directly enter their routine work directly into phone based devices that upload data to data servers directly. This option is relatively inexpensive and will improve efficiency of managing immunization in districts considerably.

The other issue is measuring coverage in community surveys. Currently mothers' recall is used as the gold standard with supporting evidence from vaccination cards. This study shows that mothers' recall is accurate 75% of the time but is probably the best available option for surveys. However, the way each survey asks the question varies and so do results. Standardizing survey techniques so that only mothers are asked the question and that the vaccination cards are actually inspected in all surveys would considerably enhance the point estimates.

This study shows that the issue of recording immunization is a management problem that would require improved oversight on vaccinators to record their activities more carefully. This can be helped by using electronic records and by analyzing data from vaccinators to provide feedback for better oversight.

COVERAGE BY ANTIGEN

Antigen	Mother's Recall (%)	Vaccination Card (%)	Facility Record (%)
BCG	67	24	30
DPT1	27	4	11
DPT2	27	4	10
DPT3	27	4	9
Polio 0	67	23	29
Polio 1	67	24	29
Polio 2	63	21	25
Polio 3	41	6	24
Measles	37	13	19
Measles booster	14	2	9
Fully Vaccinated	11	1	4

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