Original Article

Family Health Survey and e-Mamta : Data Validation Exercise in Districts of Western India

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Abstract

Background : The Health and Family Welfare Department of Gujarat, has introduced a 'Mother & Child' name based tracking information management system called "e-Mamta" in collaboration with the National Rural Health Mission and National Informatics Centre.

Aims and Objectives : To do household survey of selected Anganwadis / Corporation and validate its records with family health survey register. To verify and validate the survey records with data entered in e-Mamta software.

Materials and Methods : Data validation of two districts namely Surat and Valsad was done by Community Medicine Department. For both districts, two PHCs "one best performing and the other worst performing" were decided to be taken on the basis of TT coverage. For data collection, all the houses of selected Anganwadi of Rural and Anganwadi of Corporation area were covered. Survey team members were faculty/resident Doctor and Health Worker. The data obtained in survey form was tallied with the entries in both Family health survey register and e-Mamta software. Missed entries and wrong entries in e-Mamta software were then identified.

Statistical Analysis : Data from survey forms was entered in excel software and frequencies/percentages were calculated.

Results : More than 80% of members' entries have been made in the family health survey record register of Surat (87.82%) and Valsad (81.93%) districts. e-Mamta software records of Surat district was showing 80.63% entries while it was 78.14% in the Valsad district rest of the entries were missed.

Conclusion : The records of family health survey register which were entered in e-Mamta software showed a gap of 14.5-24.5%.

Key words : e-Mamta, Data validation, Family health survey, Records.

The Mother and Child Tracking System (MCTS) is a centralized web-based application launched by the Ministry of Health and Family Welfare in India to provide reliable data for effective decision-making through name-based tracking of each client[1]. More than 4.06 crore pregnant women and 3.3 crore children have been registered in the system since its inception[2]. Few experiences of MCTS implementation have been documented in the states of Gujarat (e-Mamta)[3], Tamil Nadu (Pregnancy and Infant Cohort Monitoring and Evaluation System — PICME)[4], Rajasthan[5] and Chhattisgarh.

The Health and Family Welfare Department of Gujarat, has introduced a 'Mother & Child' name based tracking information management system called "e-Mamta" in collaboration with the National Rural Health Mission (NRHM) and National Informatics Centre (NIC). e-Mamta technology seeks to improve the lives of poor people by providing them timely services by involving Health Care Workers and people themselves[6].

"e-Mamta" was introduced by Government of Gujarat for the first time in India. This system generates facility-wise reports and provides real-time information[3].

The system aims at registering individual pregnant women, individual children in the age group 0-6 and adolescents along with their full details to ensure

Editor's Comment :

- There is need to update the records timely so that services among vulnerable population should not be delayed.
- Identification of the wrong entries in the e-Mamta software should be done on time and removed from the software after confirmation at different levels so as to avoid hurdles in smooth functioning of system.

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complete service delivery of Antenatal Care (ANC), Child birth, Post Natal Care (PNC), Immunization, Nutrition and Adolescents services and to track the left outs[7].

In Gujarat, thousands of Rural Health Workers, trained by the National Rural Health Mission (NRHM), go door-to-door collecting information on pregnant women, infants and sends it using their mobile phone to State Rural Health Mission (SRHM), the Government body, which collates the data into a centralised repository. This data is then used to alert Rural Health Workers through SMS to make sure they reach out to the pregnant women and mothers regarding immunisation dates or medicines to be taken[8].

Our country is having the problem of poor record making. With the help of this technology (e-Mamta) we can keep record of each beneficiary; both women and child that will help in improving delivery and quality of services to beneficiaries. Microplanning can be done efficiently and all health workers can be given specific time bound targets each month which will ultimately help in correct and fast decision making. Looking to our aim of reducing the maternal mortality it is now to possible to track each pregnant women. Similarly the objective of reducing the infant and child mortality can be achieved with this ambitious online technology.

With this background study was planned to see how this recording system of family surveys and online e-Mamta is functioning.

Aims and Objectives

(1) To do household survey of selected Anganwadis / Corporation and validate its records with family health survey register.

(2) To verify and validate the survey records with data entered in E-Mamta software.

(3) To identify missed and wrong entries in e-Mamta software.

Materials and Methods

Data validation work was assigned by Hon'ble Minister of Health & Family Welfare, Government of Gujarat to Community Medicine Departments of all Government Medical Colleges of Gujarat. Preliminary meeting for planning the research was held at Ahmedabad which was attended by Professor & Head and one Assistant Professor from Community Medicine Department of six Government Medical Colleges of Gujarat.

Responsibility for data collection in areas geographically closet to each Medical College was given. Each college has to cover two regions namely one where the medical college is located and the 2nd which is most remote and distant in that region.

It was decided in the meeting to identify PHCs on the basis of performance of Tetanus Toxoid (TT) coverage in Antenatal Women taking it as alternate indicator of Reproductive and Child Health (RCH) services.

Data validation of two districts namely Surat and Valsad was done by Community Medicine Department. For both districts, two PHCs “one best performing and the other worst performing” were decided to be taken on the basis of TT coverage. List of Anganwadis under the identified PHCs was obtained and arranged alphabetically. Random numbers were generated with the help of excel software and one Anganwadi was selected. Similary Anganwadis were selected for all rest of three PHCs. Randomly selected PHCs were Motaponda PHC (Kaprada-Valsad), Timbhi road PHC (Sanjan-Valsad), Shekhpur PHC (Kathor-Surat) and Vadiya PHC (Naladhara-Surat).

e-Mamta software were 75.5%, 75.7%, 83.1% and 85.5% for Timbi road, PHC-Sanjan, Valsad, Motapanda-PHC, Kaprada, Valsad, Vadiya, PHC-Naladhara, Surat and Shekhpur, PHC-Kathor, Surat respectively. Shekhpur, PHC-Kathor 52 (5.3%), Surat showed the highest proportion of wrong entries out of four PHCs.

To get an idea about situation in Municipal Corporation, one additional cluster in corporation area where Medical College is located was surveyed. Ambanagar Anganwadi (very old Anganwadi) of Surat Municipal Corporation was covered.

Data validation survey and cross verification was done.

For doing the data collection, all the houses of selected Anganwadi of Rural and Anganwadi of Corporation area were covered. Survey team members were faculty/resident Doctor of Community Medicine Department and Health Worker (Anganwadi worker/ASHA/Helper/ANM/MPHW). Predesigned questionnaire for collecting the information like names

of all family members in each household/gender/age/ whether beneficiary of RCH 2 (Y/N), summary of type of beneficiary in each household (15-45 years women, lactating women, pregnant women, infant, adolescent (10-19 years), children (1-5 years) /any other remarks was used. Preliminary information regarding selected Anganwadi like Anganwadi number, Name of village, sub-centre, PHC as well as name of Anganwadi worker with her full address including mobile/landline number was also recorded.

The data obtained in survey form was tallied with the entries in both Family health survey register and e-Mamta software. Accompanying Health Worker helped in comparing the survey data with the data records of family health survey register. For comparing the data with online e-Mamta records passwords were obtained from the concerned PHCs.

Missed entries and wrong entries in e-Mamta software were then identified. Data from survey forms was entered in excel software and frequencies/ percentages were calculated.

For the local Anganwadi (Municipal Corporation) it was possible to search each entry on net at UHC (Althan in our case) with more number of visits but for Rural areas visit at remote location it was not feasible so online UID search was even done after field work.

Overall it was not the one day/one cluster working as doing survey of approximately 200 houses & cross checking each & every record in family health survey register on the same day was a lengthy job for Rural remote areas like Valsad district.

Definitions used —

Registered in family health record — Write down the total number of family members in a household, who were registered in family health record (Register no 2) of MPHW and were cross-checked from the same.

Registered in e-Mamta — Write down the total number of family members, who were entered in the e-Mamta software.

Wrong entry — Write down the total number of family members, who were neither present in the same family nor in the village.

Missing entry — Write down the total number of the family members, who were not entered in the software, but found out during our survey.

Results

More than 80% of members' entries have been made in the family health survey record register of Surat (87.82%) and Valsad (81.93%) districts. e-Mamta software records of Surat district was showing 80.63% entries while it was 78.14 % in the Valsad district rest of the entries were missed ie, 19.37% and 21.86% in the Surat and Valsad district respectively. Number of households surveyed and total family members in both Surat and Valsad are also shown in (Table 1).

In Table 2 shows PHCs wise number of household surveyed and total family members. Out of total four PHCs covered one of the PHC showed less than eighty percent registration of survey records in family health survey records. Family health survey records registered in e-Mamta software were 75.5%, 75.7%, 83.1% and 85.5% for Timbi road, PHC-Sanjan, Valsad, Motapanda-PHC, Kaprada, Valsad, Vadiya, PHC-Naladhara, Surat and Shekhpur, PHC-Kathor, Surat respectively. Shekhpur, PHC-Kathor 52 (5.3%), Surat showed the highest proportion of wrong entries out of four PHCs.

Entries of family health survey records missed in e-Mamta software were higher for covered PHCs of Valsad district as compared to PHCs of Surat District (Table 2).

Survey results of Anganwadi of Municipal Corporation showed quite different results. Number of records entered in family health survey records were very less 387 (45.53 %). Further entries of e-Mamta software 322 (37.88 %) were not consistent with the records of family health survey records. Missing entries were 528 (62.1%). One positive thing was that there was no wrong entry in the e-Mamta software records for this Anganwadi (Table 3).

Table 1 — *Summarization of the family health survey records and E-Mamta software records for Surat and Valsad Districts*

District	No of households surveyed	Total Family members	Registered in family health survey record		Registered in e-Mamta software		Wrong entry		Missed entry	
			No	%	No	%	No	%	No	%
Surat	400	1962	1723	87.82	1582	80.63	54	2.75	380	19.37
Valsad	320	1533	1256	81.93	1198	78.14	32	2.09	335	21.86

Table 2 — *PHC wise records in family health survey records and e-Mamta software records for Surat and Valsad Districts*

Village Name	No of households surveyed	Total Family members	Registered in family health survey record		Registered in e-Mamta software		Wrong entry		Missed entry	
			No	%	No	%	No	%	No	%
Motapanda-PHC, Kaprada, Valsad	200	979	803	82.0	741	75.7	2	0.2	238	24.3
Timbi road, PHC-Sanjan, Valsad	199	999	783	78.4	754	75.5	27	2.7	245	24.5
Shekhpur, PHC-Kathor, Surat	200	983	920	93.6	841	85.5	52	5.3	142	14.4
Vadiya, PHC-Naladhara, Surat	121	534	473	88.6	444	83.1	5	0.9	90	16.8

Table 3 — *Family health survey records and e-Mamta software records for anganwadi of Surat Municipal Corporation*

Village Name	No of households surveyed	Total Family members	Registered in family health survey record		Registered in e-Mamta software		Wrong entry		Missed entry	
			No	%	No	%	No	%	No	%
Ambanagar-Anganwadi, Surat	201	850	387	45.53	322	37.88	0	0	528	62.1

Discussion

In our study data validation showed lots of missing and wrong entries in family health survey register as well as online e-Mamta tracking system in both Rural as well as Urban areas.

In 87.82% and 81.93% population of Surat and Valsad districts data was registered in family health survey register while it was 45.53% for Anganwadi of Municipal Corporation.

In 80.63% and 78.14% entries of Surat and Valsad districts respectively were registered in e-Mamta Software while in Anaganwadi of Municipal Corporation it was 37.88%. For Urban area data entries in family health survey register as well as e-Mamta online system both was poor. There were approximately 30.75% wrong entries and 51% missed entries in the surveyed villages of Surat and Valsad districts. There was PHC wise variation in both Surat and Valsad district for family health survey records but PHC wise records were almost similar for e-Mamta online records for both districts.

In a study done by Divya Barot (2015), *et al* family health survey data validation in Sabarkantha district, 98.25% of the population was registered in family health survey register in Rural areas[9]. 85.56% family survey data was registered in e-Mamta Software. There were approximately 30.75% wrong entries and 51% missed entries in the surveyed villages of Sabarkantha district. 30% data entry gap and in Urban areas poor data collection was found in a review case study of UNICEF by Syed S Kazi[10].

In a study done by Nagarajan P (2016) gap leading to underutilization of Maternal and Child Tracking System (MCTS) portal is the unavailability of standard recording registers with the frontline health functionaries. The data columns in Maternal and Child Health (MCH) registers-the basic tool available with Health Care Workers to maintain the records of clients for MCH services - do not match with the information required to be filled in the MCTS portal. Such instances may lead missing and wrong entries and non-clarity in online entering of data. There may be lots of confusion among Health Workers while collecting, recording and entering data[11]. They should be trained well, guided enough with continuous monitoring of their work.

Investigators team in our study faced lots of problems at the time of data validation due to no internet access/ poor connectivity in Rural as well as Corporation Anganwadi. Even staff working there stated lack of internet/poor connectivity as a hindrance to their work. Study done by Nagarajan P (2016) documented that interrupted supply of electricity and slow server speed as two major challenges in remote Rural areas. As per author a dedicated computer assistant with high-speed Internet connectivity is the basic requirement for regular entry and update of the database. Mother and Child Tracking System (MCTS) portal is an absolute online version and it cannot operate if there is no or poor Internet connectivity[11].

With the technology comes the problems of accessing the site, site getting hanged, poor accessibility of internet in remote areas even currently. Some of the problems faced during data validation in our study were, ID & Password we got from the PHC sometimes not working, If ID & password entered wrong more than 3 times, site gets blocked & automatically new

password is generated & we have to inquire for the new password telephonically, no internet access at some PHC's at the time of visit. These problem needs to tackled and staff/workers need to be trained in such aspects.

Feedback was obtained from staff regarding improving recording system. Some of the suggestions were routine use of e-Mamta software in planning of Mamta Day as well as recording of the services and good internet connectivity. Suggestions for improvement in recording system has also been mentioned by Divya Barot (2015) study, emphasizes that family health survey register should be updated at least quarterly, identification of wrong entries of e-Mamta software and subsequent removal after confirmation[9].

We conclude that all family members were not covered in family health survey records, there were deficiencies in records of e-Mamta software. Records entered in e-Mamta were also not 100% accurate there are wrong entries. More deficiencies were found in records of Urban area.

Gap of around 6.4-21.6 % was found in data collected through survey and data registered in family health survey records of Rural districts (Surat and Valsad). The records of family health survey register which were entered in e-Mamta software showed a gap of 14.5-24.5 %.

Records of Anganwadi of Corporation area showed 387 (45.53 %) entries in family health survey records in comparison to survey records. 322 (37.88%) records were entered in e-Mamta software and 528 (62.1%) were missing entries. Good point was there was no wrong entry in Corporation area.

Reasons for missing and wrong entries were due to records not updated timely and accurately and migratory population. There is need to update the records timely so that services among vulnerable population should not be delayed. Identification of the wrong entries in e-Mamta software should be done on time and removed from the software after confirmation at different levels so as avoid hurdles in smooth functioning of system.

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