Post sensitization assessment of knowledge attitude and practice regarding clinical sample collection, storage and transportation among Health care workers at a tertiary care Hospital in central Madhya Pradesh

Authors
Dr Nidhi Sharma\(^1\), Mrs. Hirdesh Kumari Gupta\(^2\), Dr Kiran Tripathi\(^3\)
\(^1\)Asst Prof. Department of microbiology, GMC Datia
\(^2\)Tutor Department of Microbiology, Datia
\(^3\)Prof & Head Department of Microbiology GMC Datia

Introduction
Specimen collection plays an important role in getting timely and accurate results of investigation required for diagnosis. If there is any error in delivery of the sample from patients to laboratory, which might be due to improper collection, untimely collection, poor transportation, it will lead to error in diagnosis\(^{(1)}\) and most of these mistakes are human and mostly at pre-analytical level which are avoidable. Among them HCW play an important role who provide first hand bedside care and their action have a direct role in positive patient outcome as it affects sample quality which is processed in laboratory
It is therefore important to develop systems and routine to enhance knowledge, attitude and practice among health care workers regarding proper sample collection, storage and transportation\(^{(2)}\)

Materials and Method
A cross sectional study was conducted among the health care workers of a tertiary care hospital in Central Madhya Pradesh to assess their knowledge regarding safe and proper sample collection and transportation. Total 15 health care workers participated in this study. A pre session questionnaire was designed to enquire their knowledge regarding collection of sample, its timing, storage, transportation and report turnover time. A special mention was given to sample collection in case of tuberculosis and also about disinfection.
Consent was taken from participants to taking part in this questionnaire study. The mean time for completing that questionnaire was 10 minutes. Confidentiality was assured to participants and strictly maintained during this study.
A session of 45min to enhance their knowledge in above mentioned all aspects was taken.
A post session questionnaire with same questions was distributed and their knowledge after session was checked in 10 min.

Result
Pre - session
Gross deficiency was found among the healthcare workers regarding KAP in the area of proper sample collection techniques, handling of sample, transportation and storage of sample, dealing with blood spillage and in general disinfection.
About 27% health care workers have the knowledge regarding proper ways to collect sample. Only 7% HCW know when to collect sample. 27% HCW have the idea of how to store sample and about 13% regarding their transportation. Only 27% HCW know when to expect report of test or the time taken to process the samples. About 47% HCW have the knowledge about how to take sample, when patient has suspicion of having tuberculosis. And about 50% HCW have the general idea of what to do in case of blood spillage and disinfection.

**Post session**

There was significant increase in knowledge of how & when to take sample i.e. 58% & 60% respectively which is almost more than double of pre session. Regarding storage of sample almost 80% gave correct answer. 60% of people now had knowledge of when to expect report. There was 3 times increase in knowledge of how to transport sample. 90% people had knowledge of processing of tuberculosis sample. The knowledge of blood spillage handling increase a little less i.e only 10%. Overall training doubled the knowledge of HCW.

| S.N.O | NAME          | POST         | PRE TEST SCORE | TOTA L | POST TEST SCORE | TOTA L |
|------|---------------|--------------|----------------|--------|-----------------|--------|
|      |               |              | 1  2  3  4  5  6  7  8  9  10 |        | 1  2  3  4  5  6  7  8  9  10 |        |
| 1    | Sumit kumar   | Attender     | Y N N N N N Y N N N | 2      | Y Y N Y N Y N N N N | 4      |
| 2    | Deepak Tiwari | OPD Attender | Y N N N N N N N N | 1      | Y Y N N N N N N N | 2      |
| 3    | Dheeraj Tiwari| OPD Attender | Y N N N N N N N N | 1      | Y N N N N N N N N | 1      |
| 4    | Arun Kumar    | Attender     | Y N N N N Y N N N | 2      | Y Y N N Y Y N N | 4      |
| 5    | Sheetal Raikwar| lab Attender | Y Y N N Y Y Y N N N | 5      | Y Y N N Y Y Y Y Y | 5      |
| 6    | Bholu Kumar   | Lab Technicia n | Y Y N N Y Y Y N N N | 6      | Y Y N N Y Y Y Y Y | 6      |
| 7    | Devaki Manjhi | Lab Attender | Y Y N N Y Y Y N N N | 5      | Y Y N N Y Y Y Y Y | 5      |
| 8    | Chandra Bhargava | Matron     | Y N N Y N N N N N N | 2      | Y Y N Y Y Y Y Y | 8      |
| 9    | Harimohan Sharma | Staff Nurse | Y N N N Y N Y Y N N | 4      | Y Y N Y Y Y Y Y Y N | 8      |
| 10   | Priyanka Shukya | Staff Nurse | Y Y N N Y Y Y N N N | 4      | Y Y Y Y Y Y Y Y Y Y | 10     |
| 11   | Manisha Pante | Staff Nurse | Y Y N N Y Y Y Y N N | 4      | N Y Y Y Y Y Y Y Y | 9      |
| 12   | Sonam Patil  | Sister Incharge | y N Y N Y Y Y N N N | 4      | Y Y Y Y Y Y Y Y | 10     |
| 13   | Anil Baghel  | Lab Technicia n | N N N N N N N N N N | 1      | Y Y N Y Y Y Y | 7      |
| 14   | Silvia Leonardi | Staff Nurse | N N N N N N N N N N | 1      | Y Y N Y Y | 8      |
| 15   | Anil Sharma  | ECG Technicia n | N N N N N N N N N N | 1      | Y Y N N N Y | 3      |

| S.NO | MODE OF SAMPLE         | PRE TEST | POST TEST |
|------|------------------------|----------|-----------|
| 1    | How to collect sample  | 12       | 26.6      |
| 2    | When to collect sample | 1        | 6.7       |
| 3    | Storage of sample      | 4        | 26.7      |
| 4    | Transportation of sample | 4       | 13.3      |
| 5    | Processing time of sample | 4       | 26.7      |
| 6    | Collection of sample in TB patients | 7  | 46.7 |
| 7    | Handling of blood sample | 6        | 50        |
Discussion
Specimen collection plays an important role in getting timely and accurate results of investigation required for diagnosis. If there is any error in delivery of the sample from patients to laboratory, which might be due to improper collection, untimely collection, poor transportation, it will lead to error in diagnosis (1) and most of these mistakes are human and mostly at pre-analytical level which are avoidable. Among them HCW play an important role who provide first hand bedside care and their action have a direct role in positive patient outcome as it affects sample quality which is processed in laboratory.
It is therefore important to develop systems and routine to enhance knowledge, attitude and practice among health care workers regarding proper sample collection, storage and transportation (2)

| Characteristics | N (%) |
|-----------------|-------|
| Gender distribution |       |
| Male            | 53.3% |
| Female          | 46.2% |
| Distribution of participants |       |
| Nurses          | 40%   |
| Technicians     | 20%   |
| Attendants      | 40%   |
| Age groups (in years) |       |
| 21-30           | 60%   |
| 31-40           | 30%   |
| 41-50           | 10%   |
| Educational qualification |       |
| Bsc /diploma   | 30%   |
| MLT             | 60%   |
| Level of experience |       |
| <than 5 years   | 70%   |
| 5-10 years      | 15%   |
| 10-15 years     | 15%   |

In our study 8 (53.3%) were male and 7 (46.2%) were female. while study done by Chandak, poonam et al (3) and mythri H1, Arun A2 and K.R. Kashinath (4) showed a higher percentage of female as compared to males.
In this study nurses were (40%), technicians were (20%) and attendant were (40%), while study done by mythri H1, Arun A2 and K.R. Kashinath (4) showed that nurses were (53.9%), technicians were (11.7%) and attendant were (34.4%).

Majority of participants (60%) were in the age group of 20-30 years, (30%) were in the age group of 31-40 years and (10%) were in the age group of 41-50. Similar study done by mythri H1, Arun A2 and K.R. Kashinath (3,4)
Majority of participants (60%) had done MLT and (30%) had done BSc/Diploma. Similar study done by Chandak, poonam et al (3) where diploma holders were 89.9% and MLT were 10.1% While unlike our results study done by Mythri H1, Arun A2 and K.R. Kashinath (3,4) where MLT participants were (11.7%) and diploma/BSc were (53.9%). None of the participants were post graduate.
In this study 70% were less than 5 years of experience, 15% were between 5-10 years, and 15% were between 10-15 years. Similar study done by mythri H1, Arun A2 and K.R. Kashinath (3,4) while study done by B. Sandeep et al (5) showed the increase of knowledge only 32%.
In our study the knowledge regarding how & when to collect the sample, storage of sample, when to expect report, how to transport sample and processing of sample was increased by 70% .Similar study done by Chandak, poonam et al (3) while study done by B. Sandeep et al (5) showed the increase of knowledge only 32%. In our study the knowledge regarding blood spillage handling increased only 10% while study done by B. Sandeep et al (5) showed the increase of knowledge 30%.
Over all training double the knowledge of HCW very few study on this.

Conclusion
Key to patient care is correct diagnosis and most of the error at pre analytical phase (46% - 68% of total error) i.e before the sample is analyzed. Analytical and post analytical errors are less frequent (2). It is there for important to train HCW, who form the root of health care system at regular intervals this enhance knowledge significantly. Further training session can be give to junior
residents and clinicians who direct HCW and in turn affect sample quality.

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