A National Journal of Indian Association of Preventive and Social Medicine

HEALTHLINE

pISSN 2229-337X / eISSN 2320-1525

VOLUME : 12 ISSUE: 3 JULY-SEPTEMBER - 2021

For more details visit : www.healthlinejournal.org

HEALTHLINE JOURNAL

A National Journal of

Indian Association of Preventive and Social Medicine managed by IAPSM-GC

Volume 12 Issue 3 (July-September 2021)

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Strategies to Improve Maternal, Infant and Young Child Nutrition under POSHAN Abhiyaan by Involvement of Community Medicine Departments of Medical Colleges in India

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Child malnutrition is a public health problem which transcends generations. Despite improvement in the economic indicators in the country, the problem of under nutrition in children and mothers persists while there is rising trend of overweight and obesity. Coexistence of under nutrition and overweight and obesity referred to as double burden of malnutrition at the individual, household and community level is also on the rise. As per the National Family Health Survey-5 data, nutrition related indicators have worsened in most states. These include stunting (13 out of 22 states and union territories saw an increase), wasting (12 states and union territories saw an increase), underweight (16 states and union territories saw an increase), anaemia (16 states and union territories saw an increase), and obesity (all states and union territories except Goa saw an increase).[1] These figures vary across districts in India with some facing a very high burden. The poor nutritional status of the mother leads to low birthweight babies which impacts the child's adolescence and adulthood stage too and the vicious cycle continues. Malnutrition contributes to about half of the mortality burden among children. [2]

The first 1000 days, which includes the intranatal period of 270 days and the postnatal period of 730 days of life, are crucial for the survival and the future development of the child. Diet plays a key role in the prevention of child malnutrition and reduction in child mortality.[3] The diet of the pregnant mother and the young child should be adequate not only in terms of quantity, but also in terms of frequency, and of diversity. Optimum breastfeeding and complementary feeding practices are essential for the healthy growth and development of the child. The Integrated Child Development Services Scheme and the Health services platform make efforts towards the prevention, early diagnosis, and management of maternal and child malnutrition.[4] The front-line workers, that is the Anganwadi worker (AWW), the Accredited Social Health activists (ASHA) carries out their respective specific tasks such as weight monitoring, nutrition education, provision of iron and folic acid, and calcium tablets, home visits and counselling about breastfeeding and complementary feeding for children and maternal nutrition for pregnant mothers.

The National Nutrition Mission was renamed to Prime Minister's Overarching Strategy for Holistic Nourishment (POSHAN) Abhiyaan in 2018 and it also brought in a newer vision and newer strategies to combat malnutrition in India.[5]It's core principles are

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Khan AM, Chhabra P. Strategies to Improve Maternal, Infant and Young Child Nutrition Under POSHAN Abhiyaan by Involvement of Community Medicine Departments of Medical Colleges in India. Healthline. 2021; 12(3): 03-06.
	DOI : 10.51957/Healthline_278_2021	

convergence, technology, behaviour change communication, and capacity building. The Poshan Abhiyaan emphasizes convergence between various programs such as Anganwadi Services, Pradhan Mantri Matru Vandana Yojana (PMMVY), Scheme for Adolescent Girls (SAG) of this Ministry; Janani Suraksha Yojana (JSY), National Health Mission (NHM) of the Ministry of Health and Family Welfare; Swachh Bharat Mission (SBM); Public Distribution System (PDS); Department of Food & Public Distribution; Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS); Drinking Water & Sanitation of Ministry of Panchayati Raj etc. Community Based Events are being held by the AWW to promote healthy nutrition through behaviour change communication.[6] It's core platforms for intervention are ICDS, Pradan Mantri Matru Vandana Yojana (PMMVY) and National Health Mission (NHM).

The Community Medicine departments of the Medical Colleges have a unique opportunity to play certain key roles in supporting the Poshan Abhiyaan and thus contributing in the efforts to reduce malnutrition in the community. With more than 500 medical colleges across India and the government's vision of one medical college per district, the potential of scale up of MIYCN interventions through the Community Medicine departments is immense. We suggest certain strategies which medical colleges can adopt to contribute towards this mission.

The Community Medicine departments are engaged in teaching and training of medical undergraduates, postgraduates, and delivering comprehensive healthcare services in their field practice areas through the urban and rural health training centres. Research is also an integral part of this, either in the form of the thesis research which is mandatory for the postgraduates and those which are conducted by the faculty from the intra or extramural grants. Maternal, Infant and Young Child Nutrition can be integrated in the functioning of the Community Medicine departments at various points from the classrooms to the community level. The strategies mentioned below can help in capacity building of the medical students as well as in improving the quality of MIYCN services.

Medical undergraduate curriculum

The Competency based curriculum for medical undergraduates which has been implemented since 2019 is an opportunity to identify where in the curriculum MIYCN related competencies can be taught. This new curriculum has newer components such as Integration, Attitude Ethics and Communication module (AETCOM), Electives, Self-directed learning (SDL) etc.[7] It also mandates the development of various curriculum committee and subcommittees and topics to be identified for alignment and integration. This can be a good starting point to deliberate among the various departments especially Pediatrics and Gynaecology and Obstetrics regarding the MIYCN related competencies and where all it can be taught to the medical students. Alive & Thrive India along with certain medical colleges in Uttar Pradesh and Bihar have developed an Integrated MIYCN curriculum for the same.[8] Topics such as breastfeeding and complementary feeding can be integrated with Pediatrics while maternal nutrition can be integrated with Gynaecology and Obstetrics. Maternal and child dietary counselling skills can be inculcated in the AETCOM sessions. Self-directed learning topics can also include MIYCN related components particularly the recommended guidelines and research updates in this field. Interested faculty in the Community Medicine departments can form and coordinate MIYCN committee in the medical college by involving those faculty from Pediatrics and Gynaecology and Obstetrics who are interested in the topic and/or teach these topics in their respective specialty. The family visit related community-based learning for medical students provide a window of opportunity to immerse in experiential learning in real world setting. The teaching learning methods and assessment should focus on skill acquisition among the students. Therefore, more of demonstrations, role

plays, simulation exercises should be used as teaching learning methods and Objective Structured Clinical Examination (OSCE), case based Multiple Choice Questions (MCQ) should be used as assessment methods.

Urban and Rural Health and Training centres

All the Community Medicine departments run urban and rural health training centres which provide preventive, promotive and curative care. It is a point of first contact for the neighbouring community where they receive primary healthcare services. These centres conduct antenatal check-ups and immunization sessions on certain days in a week. In some colleges, adolescent health clinic, geriatric clinic etc are also conducted regularly. Even basic laboratory services are often available. In many places, these health centres are under the local government and the medical colleges have a Memorandum of Understanding (MoU) with them to train their undergraduate and postgraduate students and provide basic healthcare services. Interns and postgraduate students along with other healthcare workers such as nursing staff, laboratory personnel, medical social worker, health inspector, health educator are posted to carry out centre related activities and also train the students. The antenatal check-up days and the immunization days can specifically be utilized to provide MIYCN related services and to provide opportunities to the medical interns and postgraduate students to develop their skills. Skills such as weight and height measurement, classification of malnutrition, and management of malnutrition can be imparted. The students can also learn about cultural factors in dietary practices, about counselling, follow up and referral of malnourished children. Burden of the problem in terms of frequency of malnutrition among the pregnant mothers and the under five children can be studied. Nutrition education talks can be organized at the health centres regularly. Moreover, the frontline workers such as AWW/ASHA can be trained by the postgraduate students. This will serve not only to be a capacity building exercise but also to enhance the quantum and thequality of MIYCN services at these outreach centres. These health centres cover a certain area and/or households as their field practice areas. The medical students, both the undergraduate and postgraduates, conduct community-based family visits on a regular basis. They also visit the AWC, the Village, Health, Sanitation and Nutrition Days (VHSND), the Community-Based Events (CBE). They can be attached to AWC and /or ASHA to observe the home visits and critically appraise these visits to help improve its quality. Observation of home visits, community-based events, interactions with the medical officers, ASHA facilitators, ICDS supervisors and other stakeholders will help in a better understanding of the Poshan Abhiyaan program.

Research

Just as any other domain of research, MIYCN should also be kept in mind when deciding on a new topic of research. The postgraduates can also be offered topics related to MIYCN for their thesis research. The research topics can be related to MIYCN in medical education, quality assessment of MIYCN services, use of technology in ICDS, or coverage surveys. At present, the thrust is on implementation research and quality improvement in MIYCN. Qualitative research methods and Mixed method studies may be more suitable to explore this domain. The research sponsored by extramural funding should focus on studies involving key stakeholders such as government officials in ICDS and district/state health missions. Medical undergraduate students can focus on descriptive studies such as coverage surveys and other estimation studies at the health centres or in the field practice area under the community medicine departments.

Community Medicine departments in the medical colleges across India can leverage their unique strengths in field-based research, policy making, advocacy and intersectoral coordination, to scale up the quantity and quality of MIYCN services under POSHAN Abhiyaan.

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eVIN: Role of Digitization in Improving the Efficiency of Vaccine Logistics System across India

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Abstract:

Electronic Vaccine Intelligence Network (eVIN) is an indigenously developed technology which strives to digitise vaccine stocks and monitor the temperature of the cold chain through a smartphone based application. The platform supports the central government's Universal Immunization Programme by providing real-time information on vaccine stocks, flows and storage temperatures across all cold chain points of the country. This vaccine logistics system has been introduced by the Ministry of Health and Family Welfare and implemented by the United Nations Development programmers. In terms of functionality, eVIN aims to provide an integrated solution to address constraints of infrastructure, monitoring and human resource, inadequate vaccine stocks and related challenges.

Keywords : Digitization, Real Time Temperature Monitoring, Vaccine Logistics

Introduction:

In recent years, vaccines have emerged as a very significant mode of preventive intervention, providing specific protection against many communicable diseases. Various governments in the world have adopted the Universal Immunization Program (UIP) of the World Health Organization (WHO) to ensure coverage of the most vulnerable groups, comprising pregnant women and infants/children by many of these vaccines. In a nation of 1.3 billion people, it is indeed a herculean task to target 56 million pregnant women and children for immunization each year – making it the largest and most ambitious immunization program globally.[1]

The success of the UIP resides in its ability to deliver safe and potent vaccines to its end beneficiaries. To do so, it relies on the vast network of cold chain points spread across the country. In 2015, India launched Electronic Vaccine Intelligence Network (eVIN), a smart, easy-to-use technology aimed at digitizing vaccine stocks in the country. Immunization supply chain - cold chain consists of a series of storage and transport links all of which are designed to keep the vaccine at the recommended temperature from the point of manufacture till it reaches the targeted beneficiary.[2]

Recognizing the need for a smart vaccine logistics system, the Ministry of Health & Family Welfare (MoHFW), Government of India turned towards

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Devgan S, Singh S, Sharma L, Sinha S. eVIN: Role of Digitization in improving the efficiency of vaccine logistics system across India. Healthline. 2021; 12(3):07-13 .
	DOI : 10.51957/Healthline_245_2021	

technology that could ensure vaccines are available at accurate location and time and in the required quantity. Implemented in collaboration with United Nations Development Programme (UNDP), eVIN is a mobile and cloud-based application that allows cold chain handlers to update information on vaccine stocks after every immunization session.[3] These updates are stored on a cloud-based server that facilitates health officials to monitor vaccine stocks and flows. It assists the concerned personnel in decision making, pertaining to course correction, wastage reduction as well as the empowerment of health workers. The aim of this Global Alliance for Vaccines and Immunization (GAVI) supported health systems strengthening project is not just to streamline but also to regularize the network of vaccine flow. This is achieved by ensuring efficient management of the immunization supply chain by the use of authentic real time data.[4]

The goal is to ensure equity in easy and timely availability of vaccines to all children. eVIN has been digitalizing vaccine stocks at all 27,000 vaccine storage centres across all districts of 29 states and 7 union territories of India; facilitating real-time monitoring of storage temperatures by installation of nearly 50,000 temperature loggers, building capacity of nearly 37,000 government personnel for vaccine and cold chain logistic management on eVIN; deploying vaccine and cold chain managers in every district for constant supportive supervision.[3]

Prominent roles of eVIN

The prominent functions of eVIN are temperature monitoring, stock management, vaccine distribution, vaccine management practices as well as catering to beneficiaries.

Temperature monitoring

One of the prominent functions of eVIN is the real time temperature monitoring at various cold chain points. A device connected to the Ice Lined Refrigerator (ILR)/deep freezer, monitors the temperature range in which the vaccines are to be stored. Furthermore, a cloud-based data is generated which can be traced by higher centers to monitor the irregularities in temperature at all cold chain points. Thus, it results in reliable collection of temperature and power data over mobile internet/SMS transmission. An inbuilt alarm system is equipped to send SMS notification to the cold chain handlers, alerting them of temperature excursions above or below the permissible thresholds. It provides a quick overview of cold chain network to understand regional performances with drill down maps to corresponding asset detailing. It further acts as a means to double check the manual temperature recording which is taken only twice a day. Also, an average temperature reading can be visualized through the given course of time, aiding in maintaining data accuracy. Apart from all these benefits, real time notifications are received on temperature breaches, power outages and device failures. Immediate alarm system displayed on cloud-based server prompts corrective actions to be taken at the earliest from lower level (Cold Chain handlers) to the higher level (Medical Officer / District Immunization Officer). Through eVIN, temperature monitoring which was earlier on-off activity practiced only with two readings per day has been converted to a continuous task (real time monitoring) which can be carried out efficiently at each and every level.

A mechanism for cross-checking eVIN and non-eVIN records has been devised to promptly identify the fault in either of the readings. Stem thermometer is being used alongside in the facility for physical inspection and standard protocol, for reading the thermometer sometimes makes it susceptible to false reading. The robust data obtained from eVIN itself stands as a proof of various temperature fluctuations undergone by the certain batch of vaccines. On this basis, a cloud-based data can be generated giving a projected view of the temperature variations subjugated via eVIN. A predictable pattern of cold chain system functioning (cleaning, defrosting,

equipment failure) can be viewed and actions taken on timely basis. Owing to real time recording of temperature, it helps to monitor the guideline protocol compliance being processed by cold chain handlers and in case of mishaps, it can be rectified in a timely manner. Installation of temperature loggers on site has proved even more beneficial in case of remotely located cold chain points. Even on the holidays, the alarm system makes up for assessment which is done through physical monitoring. An hourly notification of separate hot and cold temperature alarms has helped in regular monitoring of Cold chain equipment and prevention of vaccine wastage. A proper functioning of real time monitoring further has strengthened the implementation of "Open vial policy" which has ensured both the quality and potency of vaccines in the Cold Chain Equipment (CCE) by regular monitoring of storage temperatures, equipment health, status of equipment defrosting, reverse cold chain and alternate vaccine delivery system.

Stock Management

The idea behind vaccine stock management in immunization is basically to estimate the quantum of vaccines required to timely immunize the target population. Good stock management practices require accurate consideration of the type of vaccine, the presentation (vial size), the quantity and timely delivery of the vaccine. Considerable improvement can be done on the grounds of maintaining minimum & maximum stocks, as well as addressing stock out or excess stock events. It is important to ensure that the cold chain is not overburdened as well as not under supplied. The minimum stock level of vaccines is the level below which the stock should never drop without having placed an order, which is known as "reorder level".

Overstocking and stock-outs of vaccines may occur because of the lack of real-time vaccine stock visibility, weak inventory and stock-flow record keeping practices; and the absence of distribution planning by qualified personnel. Moreover, the temperature monitoring of CCE is largely dependent on the availability of a dedicated human resource at the Cold Chain Point (CCP). This type of system maintenance poses serious challenges to the quality of recording, reporting and monitoring temperature of CCEs. In addition, there are several issues pertaining to poor record keeping, use of non-standardized stock registers and distribution practices.

Number of facilities having stock-out of any vaccine showed a remarkable reduction by 30% in post-eVIN period ($p<0.001$). 40% less instances of stock-out per facility was observed after eVIN implementation ($p<0.001$). Average duration of stock-out reduced from 13 to 8 days per facility in an observation period of six months in the post eVIN period ($p<0.001$). Maximum reduction in number of days of stock-out/facility was observed for Measles (72%), followed by Hepatitis B (65%) and Pentavalent (62%).[5]

eVIN aids in optimizing stock availability across all warehouses and last-mile stores with the intention of incurring minimal inventory holding costs. One can easily monitor the availability and storage facilities using real time data. In this mobile app, necessary columns which are critical indicators are given in a tabulated manner ensuring their entries to be filled while filling the indent form. Indent form is used to generate indent of vaccines required to conduct immunization sessions or to cover up the demand in case of stockout/minimum stock of vaccines. On the implementation of eVIN, critical indicators (amount demanded, closing balance, total amount received, date of indent, etc.) are not missed thereby increasing the completeness of indent form. A detailed mention of inventory item is captured through eVIN such as batch ID, details of the higher center from which the vaccine has been received and expiry date. Issue voucher is generated enlisting the type of antigen required, its quantity, opening and closing stock, net amount in rupees, updated details mentioning date and person who has

updated the record. Over 2 million transactions are being made on eVIN every month capturing essential information such as vaccine issues, receipts discards and transfers. More than 14,000 data loggers have been installed for real time remote temperature monitoring of cold chain equipment.[6] Thus, a record of inventory issue vouchers, receipts, stock counts and returns are kept safe under this mobile application and receive notifications from time to time on stock changes as and when they happen.

It is a very good method to optimize inventory by cross verifying with the physical count where any discrepancy if found can be easily sorted out at the earliest. In this manner, rebalance stock ensures good service level thereby preventing wastage. The detail of entire inventory is displayed in the form of map where region wise monitoring of stock levels can be done and necessary action can be taken if in case CCP to CCP sharing of vaccine is required. Another advantage which eVIN presents us with is the ability to capture new data in case newer vaccines are introduced (for instance, MR campaign). In these situations, a new column can be created through eVIN and the entire campaign stock record can be managed paralleled with the ongoing immunization sessions.

Another critical finding has been the reduction in avoidable wastage of vaccine doses (unopened vials). The secondary data analysis of UNDP records suggests that the facilities reporting wastage of any vaccine have reduced from 30% in pre-eVIN period to 22.6% in the post-eVIN period, indicating a 25% reduction in wastage of any vaccine due to reasons such as non-usable vaccine vial monitor (VVM), freezing, expiry and broken vials (data source: UNDP reported eVIN and VCCM records). The highest reduction in avoidable wastage was observed for DPT (reduced by 98.7%) and the lowest was observed for OPV (reduced by 21.9%) after the implementation of eVIN.[5]

Vaccine distribution

Another significant impact of eVIN can be seen in its marked reduction in mean replenishment time across all cold chain facilities. Replenishment time is the difference between date of supply received and date of indent raised to the higher center. As a metric of inventory management, order fill rate is quite essential to be noted, which is, the proportion of quantity received to that of quantity indented. This is basically a measure of percentage of demands that were met at the time the order was placed. Although order fill date is not considered to be a true reflection of the improvement in efficiency in vaccine distribution because sometimes it so happens that various instances are recorded which reflect excess distribution by the higher centers in comparison to the actual demand placed by the lower centers, although in reality it is the compensation of previous backlog. In this manner, the true picture of missed opportunities/missed sessions is not depicted. So, a better utilization with the help of eVIN will guide us in recognizing the actual distribution coverage of the given area.

The distribution system is a mix of push and pull across all levels of immunization supply chain. The effectiveness of a distribution system lies in lesser replenishment time, complete order fill rate and minimal expiry of vaccines at stores. In pre-eVIN period, it took seven days in getting supplies from a higher-level store, which has now reduced to three days, even though, order fill rate remained almost unchanged (from 97% in pre-eVIN to 99% in post-eVIN). Furthermore, mean number of days (of vaccine expiry) has reduced from 428 in pre-eVIN to 384 in the post-eVIN, at CCP level signifying that the 'First Expiry First Out' (FEFO) is being practiced.[5]

In India, usually two sessions are conducted in a duration of seven days, and the number of sessions missed are in proportion of the number of Auxiliary Nurse Midwives (ANM) available at a specific health facility. Based upon this information, the number of

sessions missed due to stock-outs used to be calculated for each of the antigens separately. If the number of days of stock-out of an antigen lasted for a minimum of three days, it was assumed that one session was missed. Two sessions were counted missed if the stock-out lasted for a minimum of another four days. Similarly, next session is considered missed if the stock-out lasted for another three complete days and next in another four days and likewise. The sum of missed sessions at a facility was in proportion of the total sessions conducted in the same duration at that facility. Based on the sum of days of stock-outs of vaccines, subsequent missed opportunities were calculated.

The number of beneficiaries missed due to stock-out of an antigen was calculated using Health Management Information System (HMIS) data of the same duration. The average number of beneficiaries vaccinated in a session was generalized from HMIS data for each of the district and was assumed that the same numbers of beneficiaries were vaccinated at the facility as well. The sessions missed were multiplied with the number of beneficiaries vaccinated in a session at a facility.

With the introduction of eVIN, there have been evidences which suggest marked savings in vaccine utilization which can be largely attributed to open vial policy. Proper tracking of the vaccine utilization and daily record upkeep by eVIN has led to significant reduction in utilization of doses that aids in various vaccine supply strengthening measures. The vaccine utilization data of Immunization Division, MoHFW reflects that the utilization has reduced from 3,053 lakh doses in pre-eVIN period to 2,149 lakh doses in post-eVIN period across 12 eVIN states, resulting into savings of approximately 900 lakh (90 million) doses of vaccines.[3] These savings can be attributed to the roll-out of eVIN across 12 states, and other initiatives such as the introduction of open vial policy, effective vaccine management assessments, and continuous follow-up with an improvement plan in place.[5] The roll-out of eVIN has effectively improved the visibility of stock till last cold chain point and has also led to better vaccine management practices such as reduction in vaccine wastage and stock-out events. As we can find out that there occurs CCP to CCP sharing of vaccines at operational level, this effort can be made more streamlined through eVIN which can reduce the horizontal sharing and if the sharing occurs, it more or less compensates the actual requirement of the recipient CCP in terms of replenishment time or order fill date.

Stock Management practices

There has been a significant achievement in terms of stock management practices when it comes to comparison of pre and post eVIN periods. Various parameters in which stock management is required, eVIN has proved quite handy in streamlining all those parameters without any extra input from its end.

As, eVIN registers all the indicators in the different fields by physical count, the completeness of the record increases and missed entries are reduced. In addition, the indent generated from eVIN covers the entire demand/supply of vaccines required to conduct immunization sessions. As a result, a systematic record is maintained containing all the information about inventory details like opening stock, amount received, source of stock, batch number, expiry, closing balance, VVM status, etc. Tallying vaccine-wise stock is further enhanced by carrying out comparison between stock register and eVIN record and another between eVIN record and physical count.

A standard log book register is provided to the cold chain handlers in which session wise vaccine dispensing record is updated after the completion of each session. Thus one can access data digitally as well as manually, in a periodical manner and troubleshoot whenever needed. It also ensures timely upkeep of cold chain equipment by mentioning dates for servicing or replacement.

For stock management, use of standardized stock registers by CCHs has increased from 56% in pre-

eVIN to 97% in post-eVIN period. The updating of vaccine stock register (either daily or weekly) has improved from 54% in pre-eVIN to 81% in the post-eVIN period, reflecting an overall improvement in vaccine management practices.[6]

An essential component of successful vaccine logistics is based upon potent and safe to use cold chain system. The completeness of record keeping was checked against applicable fields of the register. The vaccine stock registers, having more than 90% completeness, has increased from 29% facilities in pre-eVIN period as compared to 75% facilities in the post-eVIN period. The temperature log books, with almost all the fields completed has increased from 28.5% facilities to 69.8% facilities. Similarly, indent registers with almost all fields completed, has increased from 26% facilities to 69% facilities in the observation period. During accuracy check across 12 states, 94% accuracy was observed in the stock registers and eVIN entries. Similarly, 92% accuracy was observed in the physical counting of doses and eVIN entries.[7]

Avenues

Apart from the mobile app, eVIN can help us in realistic estimation of target consumption noted at each CCP, giving us a forecasting view of the number of beneficiaries per area. There are various avenues in which eVIN can indirectly be a guiding light in terms of preparing the micro plan, assess the number of sessions missed, also help in decreasing the number of missed opportunities. Furthermore, monthly/annually pattern of demand can be seen and the estimate to that of actual requirement of vaccines can be assessed.

Though eVIN is conducting Temperature Mapping Study at Primary Vaccine stores before installing their temperature monitoring devices. However, Temperature monitoring study and Temperature mapping study can also be conducted at all PVSs. Technical agencies of GOI may support the states in conducting these studies. Also, a detailed SOPs as per WHO recommendation may be prepared. Engagement of partner agencies for hands on training can also be done.[8]

Challenges

Countrywide implementation of eVIN is an arduous task. As of now, cold chain is catering to a total of 11 vaccines, namely Bacillus CalmetteGuerin (BCG), Hepatitis B, Oral Polio vaccine (OPV), Pentavalent vaccine, Pneumococcal Conjugate Vaccine (PCV), Rotavirus Vaccine (RVV), Inactivated Polio Vaccine(IPV), Measles & Rubella (MR), Japanese Encephalitis (JE), DPT and Td.[9] For keeping the vaccines potent at recommended temperature, India's UIP program has various electrical and non-electrical cold chain equipment. In electrical CCE, India has Walk in Cooler, Walk in Freezer, Ice Lined Refrigerator, Deep freezer etc. In non-electrical CCE India has Cold box and vaccine carrier.[10]Apart from requiring huge amounts of equipment, human resource training remains the biggest challenge as this requires huge input in terms of recruitment and training of the vaccine cold chain handler. Differences in uptake of vaccine are geographical, regional, rural-urban, poor-rich and gender-related. As for example, on average, girls receive fewer vaccinations than boys and higher birth order infants have lower vaccination coverage. Some of the newer challenges in achieving full immunization coverage include limited capacities of staff, particularly in poor-performing states and at the field level and gaps in key areas such as predicting demand, logistics and cold chain management, which result in high wastage rates. India also lacks a robust system to track vaccine-preventable diseases.[11] Any roll out of technology, without training the frontline health workers, can never lead to building up their confidence in the same. Hence, training, sometimes with personal attention becomes an important pre-requisite for the successful roll out of the technology. A continuous electricity supply for uninterrupted and efficient real time monitoring is much needed in order to reap maximum benefits of eVIN app. The program governance has to time and again assess its

implementation as well as operative costs in order to ensure low cost benefit ratios.

Conclusion:

Real time monitoring of the vaccine temperature and stock inventory is a great managerial tool for vaccine program managers. eVIN gives an overview of the entire vaccine distribution pattern and assists in forecasting future needs, stocking and replenishment patterns. Furthermore, any delay due to a specific cause may also be highlighted in eVIN, for which a corrective measures can be sought. This way a contingency plan at the grassroot level can be planned while giving valuable feedback to the administrators.

Given the advantages of eVIN, proper implementation of eVIN can streamline vaccine logistics system. Also, worth exploring are avenues regarding batch recognition, transit tracking and inbuilt order fill rate notifications etc. This technology needs a thorough utilization by our health professionals so that this technology blends into our inbuilt system of robust vaccine management and its functionality can be enhanced that it becomes a daily affair to reach out to this mobile app on the go, whenever required for. This robust system has been used with the requisite customization during the COVID pandemic for ensuring continuation of the essential immunization services and protecting children and pregnant mothers against vaccine preventable diseases.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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A Case Control Study on Socio-Demographic Profile and Risk Factors Associated with Pregnancy Induced Hypertension at a Tertiary Health Care Centre, Hyderabad

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Abstract:

Introduction: Pregnancy Induced Hypertension (PIH) is a significant public health threat. It increases the risk of cardiac failure, renal failure and cerebrovascular accidents. **Objectives :** To study the socio-demographic profile among the study population and to study the factors associated with pregnancy induced hypertension among the study population. **Method :** A Case control study was done among 100 pregnant women attending the tertiary centre. Cases and controls were selected in the ratio of 1:1 with 50 cases and 50 controls. The study participants were selected randomly and interviewed using a pretested questionnaire. Data was be entered in MS excel and analysis was done using Epi info 7.2.2.16. **Results:** Out of the total study participants 64% of the cases and 54% of the controls were Hindu by religion. Majority (72%) of the cases and 54% of the controls were multigravida. Majority (36%) of the cases belong to class II socio-economic status and majority of the controls (36%) belong to class III socio-economic status according to modified B.G Prasad classification. Majority(63%) of the subjects were multi-gravida and 71.2% have parity greater than two. Lower Socio-economic status, Physical Inactivity and History of PIH were found to be significant factors for Pregnancy induced hypertension among the cases. **Conclusion:** Lower socio-economic status, lack of exercise and past history of PIH were found to be significant among the study population. Anemia as a predictor of PIH needs further research as only few studies showed significant association between PIH and anemia. Although association between diet and PIH was present, it was not significant and needs further research.

Key words: Gestational age, Parity, Pregnancy induced hypertension, Risk factors

Introduction:

Hypertension in pregnancy is a common problem encountered in a developing country like India which contributes to major maternal and neonatal morbidity and mortality.[1] They remain among the most significant problems in obstetrics.

Hypertensive disorders in pregnancy includes preeclampsia, eclampsia, preeclampsia superimposed on chronic hypertension, and gestational hypertension. Gestational hypertension is also known as Pregnancy induced hypertension and is defined as new hypertension in a pregnant women after 20 weeks of gestation without the presence of protein in urine or other signs of preeclampsia and blood pressure of 140 mmHg systolic or diastolic pressure of 90 mmHg measured 2 times with at least a 6 hours interval.[2] Although the etiology remains unclear it has a debilitating effect on the mother as well as fetus.

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Akhila K, Kumar P, Kench B. A Case Control Study on Socio-Demographic Profile and Risk Factors Associated with Pregnancy Induced Hypertension at a Tertiary Health Care Centre,Hyderabad. Healthline. 2021; 12(3): 14-19.
	DOI : 10.51957/Healthline_215_2021	

MMR in India is about 113 in 2018 according to the special bulletin on Maternal Mortality in India.[3] As per WHO, World Health Report (2005) says "Make Every Mother and Child Count'' and the major causes of maternal deaths were severe bleeding/ hemorrhage, infections, eclampsia, obstructed labor etc.[4] Hypertension complicates up to 7-10% pregnancies. Severe hypertension increases the mother's risk of co-morbidities. In addition, it causes growth restriction of the fetus, placental abruption, still birth. Regular Antenatal check-ups has greater role in minimizing the morbidity and mortality due to gestational hypertension.

In previous studies socioeconomic status, family history, parity, maternal age, twin-gestation, lifestyle, nutrition, severe anemia and various other factors have been attributed to PIH.[5,6,7] There is existing gap in the knowledge regarding the factors responsible for PIH in this study setting. Fewer studies were conducted in this area. The present study is done at Modern Government Maternity hospital where most of the deliveries occur in Hyderabad to focus upon the factors associated with pregnancy induced hypertension.

Method:

A Case Control study was done in Modern Government Maternity Hospital, where majority of the deliveries occur in Hyderabad. The target population includes pregnant women attending the health care centre during April-May 2019. Case was defined as pregnant woman diagnosed as hypertensive after 20 weeks(as per standard WHO definition) of pregnancy with systolic blood pressure >140mm of hg and diastolic pressure >90mm of hg without any signs of eclampsia. Control is defined as pregnant women who was not diagnosed with hypertension during pregnancy and selected from the same facility. Admission rate was less during the study period. Hence, 50 Cases were selected during the study period and 50 controls were taken.

Criteria for Physical activity include atleast 30 minutes of activities like walking, jogging etc. excluding routine activities. B.G Prasad classification of socio-economic classification was used to classify the study population as low, middle and high income groups. Bad Obstetric history includes abortion, abruptio placenta, pre-term, still-births, previous caesarian section, medical conditions including diabetes, thyroid etc. Dietary groups were classified as vegetarian and mixed groups, where subjects with exclusive vegetarian diet were considered under vegetarian group and remaining under mixed diet group.

Inclusion criteria for cases were all the pregnant women diagnosed as pregnancy induced hypertension and without any severe complications. For controls all the pregnant women without hypertension were included. Women having severe complications and who haven't given consent were excluded from the study.

Data collection:

Before data collection informed consent was taken from the respondents. A semi-structured questionnaire was administered and all the respondents were interviewed face to face by the researcher. Information was gathered regarding socio-demographic profile, parity, gestational age, age at marriage, diet, family history of hypertension, bad obstetric history, ANC visits and co-morbidities from 100 participants. Thus collected data was entered in MS Excel and analysed using Epi info v.7.2.6.6

Results:

Out of the total study participants 64% of the cases and 54% of the controls were Hindu by religion. Among the study population 42% of the cases and 60% of the controls belong to 21-25yrs age group. Among the cases 36% belong to class II socio-economic status and majority of the controls (36%) belong to class III socio-economic status according to modified B.G Prasad classification. (Table 1)

Majority(72%) of the cases and 54% of the controls were multigravida. Gestational age wasgreater than 36 weeksfor majority of cases

Table 1 : Socio demographic profile of study participants

Variables	Cases(n=50)	Controls(n=50)
	Frequency (%)	Percentage
Religion		
Hindu	32(64%)	27(54%)
Muslim	18(36%)	23(46%)
Maternal age(in yrs)		
<20	7(14%)	10(20%)
21-25	21(42%)	30(60%)
26-30	15(30%)	10(20%)
31-35	4(8%)	-
>35	3(6%)	-
Education		
Illiterate	14(28%)	6(12%)
Primary	3(6%)	5(10%)
Secondary	21(42%)	25(50%)
Intermediate	3(6%)	8(16%)
Graduate	9(18%)	6(12%)
Socio-economic classification		
Class I	5(10%)	3(6%)
Class II	18(36%)	9(18%)
Class III	11(22%)	18(36%)
Class IV	15(30%)	13(26%)
Class V	1(2%)	7(14%)

Table 2 : Frequency distribution of variables related to obstetric conditions

Variables	Cases(n=50)	Controls(n=50)
	Frequency (%)	Percentage
Parity		
Primigravida	14(28%)	23(46%)
Multigravida	36(72%)	27(54%)
Gestational Age		
20-36 wks	8(16%)	12(24%)
>36 wks	42(84%)	38(76%)
History of PIH		
Present	13(26%)	5(6%)
Absent	37(74%)	45(94%)
Bad Obstetric History (BOH)		
Present	13(26%)	9(18%)
Absent	37(74%)	41(82%)

Table 3 : Distribution of various risk factors of pregnancy induced hypertension among Study population

Variables	Cases(n=50)	Controls(n=50)
	Frequency (%)	Percentage
Family history of hypertension		
Present	15(30%)	10(20%)
Absent	35(70%)	40(80%)
Physical activity		
Present	19(38%)	32(64%)
Absent	31(62%)	18(36%)
Diet		
Vegetarian	21(42%)	24(48%)
Mixed	29(58%)	26(52%)
Anemia		
Present	17(34%)	11(22%)
Absent	33(66%)	39(78%)
Co-morbidities*		
Present	41(82%)	43(86%)
Absent	9(18%)	7(14%)

(84%) and controls (76%). History of Pregnancy induced hypertensionwas found to be more in cases compared to controls (OR 3.16, 95% C.I- 1.03-9.6, p=0.037). Among cases, 26% had bad obstetric history while only 18% of the controls had bad obstetric history. (Table2)

Of all the risk factors related to pregnancy induced hypertension, 30% of the cases had family history of hypertension and while only 20% of controls had it.Physical inactivity was found in 62% of cases while it was only 36% in controls. Anaemia was seen in 17% of the cases and 11% of the controls. There was no much difference related to co-morbidities in both the groups. (Table 3)

Of all the risk factors Lower Socio-economic status(O.R-2.92, 95% C.I 1.24-6.86,p=0.02), Physical inactivity (O.R2.9,95%, C.I- 1.28-6.53, p= 0.01)and History of PIH (O.R 3.16, 95% C.I- 1.03-9.6, p=0.037) were found to be significant among the cases. While Family History of hypertension (O.R 1.95,p=0.24), Parity(OR 0.96, p=0.98), Diet(OR 1.92,p=0.15), co-

Table 4: Predictors of Pregnancy Induced Hypertension among the cases

Risk Factors	Odds ratio (95% C.I)	p-value
Lower Socio-Economic Status	2.92 (1.24-6.86)	0.02
Parity	0.98(0.42-2.26)	0.96
Family History of Hypertension	1.95(0.76-5)	0.24
H/O PIH	3.5(1.15-10.6)	0.04
Bad Obstetrics History	2.38(0.87-6.55)	0.14
Physical Inactivity	2.66(1.18-5.98)	0.02
Anaemia	0.68(0.28-1.61)	0.38
Diet	1.92(0.86-4.28)	0.15
Co morbidities (Diabetes Mellitus, Thyroid disorders, Hypertension)	1.34(0.45-3.95)	0.78

morbidities(O.R 1.34, p=0.78) and anaemia (O.R 0.68,p=0.38)although had some association, it was not significant among cases. (Table 4)

Discussion :

The Socio-demographic profile in the present study includes maternal age, religion, education, Socio-economic status. Majority of cases (42%) as well as controls (60%) belong to 21-25 age group. In a study done by Agrawal etal,[6] 55.6% of the cases belong to 15-29 age group.

Regarding their education majority (46%) of cases and 50% controls had secondary education. In a study done by Bharti et al[13] majority of cases(82.8%) and controls (88.2%) were below graduates. In this study 36% of the cases belong to class II socio-economic status and 36% of controls belong to class III socio-economic status according to modified B.G Prasad classification. In the study done by Bharti et al[13] 84.3 % of cases and 85.3% of controls belong to low and middle income groups, which was consistent with present study.

Risk factors considered in this study include socio-economic status family history of hypertension, physical inactivity, diet, parity, Bad Obstetric History, anemia and Co-morbidities. Lower socio-economic status was found to be significant predictor for pregnancy induced hypertension with higher odds (O.R=2.92, p=0.02). A similar observation was seen in another study, where lower socio-economic status was significantly associated with higher blood pressure.[8] Majority (72%) of the cases and 54% of the controls were multigravida. This was similar to the study done by Mehta et.al[13] where about 68% were multi-gravida.

In this study, low physical activity was associated with higher odds of pregnancy induced hypertension and the association was significant (p=0.02). Our study was supported by studies done by Spracklen[9] in Iawo on Physical activity among pre-eclampsia women and another study by Gao on "Impact of Physical Activity During Pregnancy on Gestational Hypertension" found that low physical activity was associated with increased risk of preeclampsia.[10] In addition, some studies have found that regular physical activity during pregnancy increases the rate of placental bed blood flow and decreased risk of pre-eclampsia. Regular exercise during pregnancy enhances placental transfer of oxygen and further reduces the risk of hypertension.[11] In a study conducted by Vineeta Singh et. al lack of exercise was found to be significant predictor for PIH, which was similar to our present study.[12]

History of hypertension in previous pregnancy had significant association with PIH in our study(p=0.04). This was in agreement to a similar study, where history of hypertension in previous

pregnancy was found to be significantly associated with prevalence of hypertension in pregnancy (p=0.001).[13]

Although association between diet and pregnancy induced hypertension exists, it was not significant in our study(p=0.15). This finding was similar to a meta-analysis of cohort studies, where energy intake was higher for pre-eclampsia cases.[14]

In the current study, family history was not found to be significantly associated(p=0.24) withPregnancy Induced Hypertension (PIH). This finding was supported by a study done by Bharti et.al where family history had no significant association with PIH(p=0.455).[13]

An interesting observation was seen between parity and PIH in our study. Parity had no significant association with pregnancy induced hypertension where as per existing knowledge risk of PIH increases as the parity increases. This finding was in agreement with another study, where parity had no significant role in increasing the risk of pregnancy induced hypertension(p=0.163).[13]

In the present study, co-morbidities like diabetes and thyroid and bad obstetric history did not have significant association with pregnancy induced hypertension(O.R=1.34, p=0.78). This was in agreement to another study, in which no statistically significant relationship of hypertension in pregnancy was found with parity, history of abortions, family history.[13]

In the present study anemia had no significant association with PIH. In contrast, a study observed that the mean hemoglobin level of the case group (8.8206±2.53779) was significantly lower than that of the control group (9.7289±2.47033) (p<0.05)[15] and similar observation was found in another study with similar setting.[16]

Strengths and limitations:

This was a Case control study where evidence found will be more profound than cross-sectional studies. As a limitation, as this study was hospital based and limited to single visit of subjects, follow up of the subjects was not possible.

Conclusion: Well documented population level studies regarding PIH were very less in India. In the present study significant predictors of pregnancy induced hypertension were lower socio-economic status, physical inactivity and previous history of hypertension. This study gives added support to the existing literature and preventive strategies should be applied to every pregnant woman as predicting PIH is difficult. Although not significant, association was present between PIH and diet as well as BOH. Hence counselling regarding nutrition and at risk group like BOH needs early diagnosis and prompt treatment. Anemia as a predictor of PIH needs further research as only few studies showed significant association between PIH and anemia. Understanding the predictors of Pregnancy Induced Hypertension is very much essential in clinical practice which will facilitate the prioritization of interventions, implementing policies and allocate the resources accordingly.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Infant and Young Child Feeding (IYCF) Practices among Mothers Residing in Urban Slums of Agartala: A Cross-Sectional Study

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Abstract:

Introduction: Inappropriate child feeding practices is a major contributor of undernutrition and childhood mortalityin India. The optimal infant and young child feeding (IYCF) practices rank among the most effective intervention to improve child health and nutritional status. **Objective :** 1. To study the IYCF practices among mothers residing in urban slums of Agartala. 2. To study the factors associated with exclusive breast feeding and Minimum acceptable dietary intake. **Method :** This was a community based Cross-sectional study conducted among 180 mothers of children <24 months, residing in Urban slums of Agartala. Multistage simple random sampling procedure was adopted, and 'WHO standard questionnaire for IYCF practices' was used to assess the IYCF practices. **Results :** The study showed that the prevalence of exclusive breast feeding under 6 months was 67.39% and 91.70% mothers were continuing breast feeding at 2 years of age. Regarding complementary feeding practices, 67.20%, 73.90% and 58.95% children were having food with minimum dietary diversity, minimum meal frequency andminimum acceptable dietary (MAD) intake respectively. Early initiation of breast feeding was significantly associated with breast feeding practices (p value-0.00). Whereas, increasing age (p value-0.00),higher birth order (p value-0.03) and type of family (p value-0.01) had significant association with MAD intake. **Conclusion:** Study reveals suboptimal IYCF practices in the slums. There is urgent need to strengthen the on-going programs on IYCF practices targeting children with younger age and higher birth order.

Key words : Complementary feeding, Colostrum, Exclusive breast feeding, Feeding patterns, Feeding related behavior.

Introduction:

Adequate nutrition during infancy and early childhood is essential to ensure the growth, health, and development of children.[1] According to WHO, around 45% deaths under 5 years of age are linked to undernutrition[2] and almost one fifth of these deaths can be averted if 90% children are covered with anintervention of optimal Infant and young child feeding(IYCF) practices.[3,4] Hence, WHO and UNICEF have developed the IYCF strategy, which recognizes appropriate feeding practices among children upto 2 years with-early initiation of breastfeeding, exclusive breast feeding for first 6 months and introduction of nutritionally adequate safe complementary food at 6 monthswith continued breast feeding, upto 2 years of age or beyond.[5]

The infant and young child feeding practices has been a public health concern in a developing country

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Das R, Tripura A, Baidya S, Chowdhuri P. Infant and Young Child Feeding (IYCF) Practices among Mothers Residing in Urban Slums of Agartala: A Cross-Sectional Study. Healthline. 2021; 12(3):20-27 .
	DOI : 10.51957/Healthline_223_2021	

like India. From, 2005-06 to 2015-16, the prevalence of Exclusive breastfeeding in the country among children under six months increased from 46% to 55% only.[6] Again, complementary feeding practices varied from state to state, with proportion of children aged 6-23 months who receive a minimum acceptable diet being lowest in Rajasthan and Dadra & Nagar Haveli (3% or less).[6] According to NFHS (National Family Health Survey)-4 and NFHS-5 state report for Tripura the breast feeding and complementary feeding practices in the state has been consistently poor.[7,8] Again, the IYCF practices are least explored in the urban slums of the state,so that evidence based targeted initiatives can be taken to improve the nutritional status of the children. Hence, the study was conducted to assess the IYCF practices among mothers of infant and young children (<24 months) residing in urban slums of Agartala and to study the factors associated with exclusive breastfeeding and minimum acceptable dietary intake.

Method :

This was a community based Cross-sectional study conducted in March-April, 2019 among Mothers of children below 2 years age, residing in the Urban slums of Agartala. The sample size was calculated considering the least prevalence of IYCF practices in urban areas as per NFHS-4 Tripura report as 7.2% for minimum acceptable dietary intake[7], at 5% level of significance and with an absolute precision of 4 and rounded to **180 respondents,** considering 10% non-response rate.

Multi-staged simple random sampling procedure was adopted and in the 1st stage of the sampling from each of the four zones of Agartala Municipal Corporation, one slum was selected by Simple random sampling. (Figure 1) In the next stage of the sampling; 67, 41, 38 & 34 houses were randomly selected from the four slums respectively, using PPS technique (considering population of the selected slums) from the house list of each slum.

Information was collected from the mothers of children bellow 2 years age, who consented to take part in the studyusing a pre-tested interview schedule adopted from WHO standard questionnaire for IYCF practices.[9,10] If the selected house had no mothers with children <2 years or denied consent or were physically or mentally unfit to participate in the study they were excluded, then next to next house was visited till eligible subject was obtained. Information was collected after taking written informed consent from the mothers by trained investigators and all responses regarding feeding habits were recorded by 24 hours recall method except for initiation of breastfeeding, colostrum feeding and prelacteal feeding which were elicited by historic recall and abiding the National ethical guidelines for biomedical and health research involving human participants, ICMR, 2017. Data was entered in SPSS version 25 and statistical analysis was done using Chi-square test and Fishers exact test and p value of <0.05 was deemed as statistically significant.

Operational definitions :[10]

Early initiation of breastfeeding : Proportion of children born in the last 24 months who were put to the breast within one hour of birth.

Exclusive breastfeeding under 6 months : Proportion of infants <6 months of age who are fed exclusively with breast milk.

Predominant breast feeding : Proportion of infants 0–5.9 months of age who are predominantly breastfed (Breastmilk + water / fruit juice)

Breastfeeding : Proportion of infants 0– 5.9 months of age who are breastfed along with cow's milk / formulae milk + water / fruit juice

Continued breastfeeding at 1 year and 2 year : Proportion of children 12–15.9 months and20–23.9 months of age who are fed breast milk respectively

Bottle feeding : Proportion of children 0-23.9 months of age who are fed with a bottle.

Minimum dietary diversity (MDD) indicator : Proportion of children 6–23.9 months of age who receive foods from ≥4 food groups from a total of 7 food groups, namely, dairy products, legumes and

Figure 1: Flow chart showing the sampling procedure.

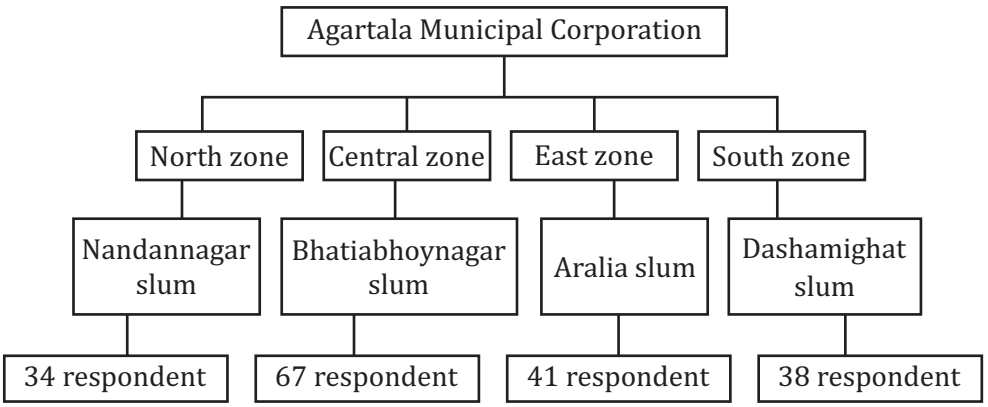


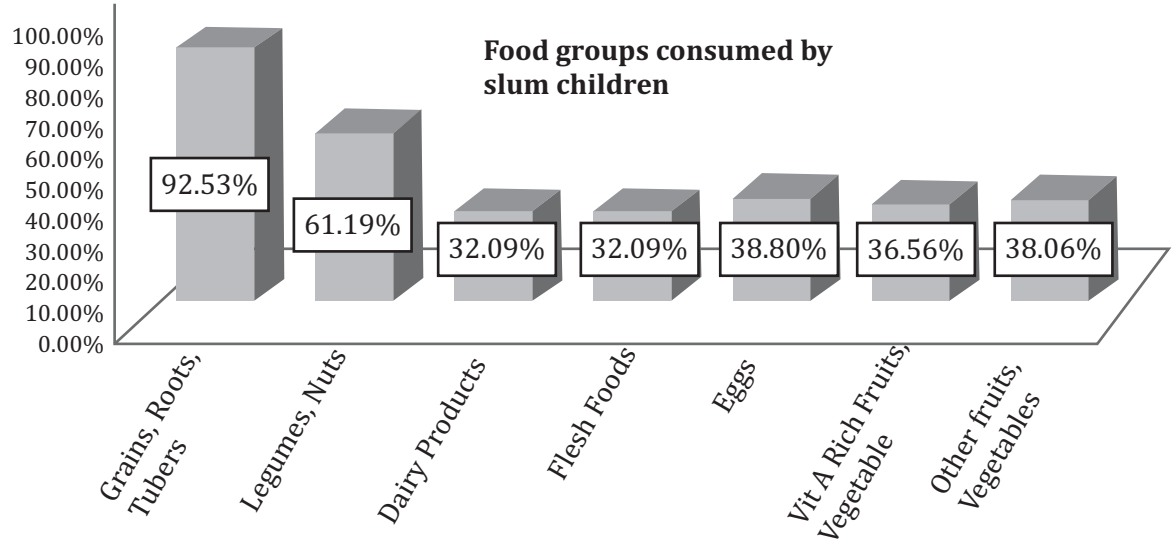
Table 1: Breast feeding practices in the urban slums

Breast feeding practices		Frequency (%)
Early initiation of breastfeeding (n=180)		49 (27.2)
Pre-lacteal feeding (n=180)		33 (18.3)
Colostrum feeding(n=180)		154 (85.6)
Type of breast feeding: [For <6 months of age] (n=46)	Exclusive breast feeding	31 (67.4)
	Predominant breast feeding	10 (21.7)
	Breastfeeding	5 (10.9)
Continued breast feeding	At 1 year [between 12-15.9 months] (n=30)	28 (93.3)
	At 2 year [between 20-23.9 months] (n=48)	44 (91.7)
Ever breast fed (n=180)		179 (99.4)
Age appropriate breast feeding (n=180)		171 (95.0)
Bottle feeding (n=180)		57 (31.7)

Table 2 : Complementary feeding practices in the urban slums

Complementary feeding practices (age 6-23 months)		Frequency (%)
Age at weaning (n=134)	4 or 5 months	3 (2.2)
	At 6 months	49 (36.6)
	At 7 months	49 (36.6)
	At 8 months	15 (11.2)
	≥ 9 months	18 (13.3)
Minimum dietary diversity (n=134)	Present	90 (67.2)
Minimum meal frequency (n=134)	Present	99 (73.9)
Minimum acceptable dietary intake (n=134)	Present	79 (58.9)

Figure 2: Food diversity pattern among slum children between 6months to <2 years (n=134)



nuts, flesh foods, eggs, vitamin A rich fruits and vegetables, cereals and tubers, and other fruits and vegetables.

Minimum meal frequency (MMF) indicator : Proportion of children aged 6–23.9 months who receive solid, semi-solid, or soft foods the minimum number of times:

a. For **breastfed** infants: 6-8.9 months ≥2 times 9 - 23.9 months ≥3 times

b. For **non-breastfed** children 6-23.9 months ≥4 times

Minimum acceptable diet (MAD) indicator : Proportion of children aged 6–23 months who receive MDD as well as MMF according to the definitions mentioned above.

Results:

The present study included 46 (25.55%) children of<6 months age, and 134 children were between 6 months to <24 months age. 29.44% children were between 18 to <24 months of age. Majority of the children were male (62.8%) and Hindu by religion (78.33%). Most of the mothers were housewives (97.2%), belonging to joint family (66.1%) with upper lower socioeconomic status (59.4%) [as per Modified Kuppuswamy socioeconomic scale updated for the year 2019].[11]

Table 1 shows the breastfeeding practices in the slum area. The study revealed that only 27.20% children had early initiation of breastfeeding and prelacteal feeding was given to 18.3% children. However, colostrum was given to 85.6% of the children. The prevalence of exclusive breast feeding was 67.39% among children < 6 months age. >90% mothers were continuing breast feeding at 1 year & 2 years of age.

Table 2 shows the complementary feeding practices among the children. In majority of the children weaning was done at 6-month (36.60%) and 7-month (36.60%) age. Overall 67.20% children received at least 4 food groups out of the 7 food groups (MDD) in last 24 hours(Table 2). Regarding the food diversity pattern (Figure 2) the study revealed that 92.53% children between 6 months to <2 years age (124/134) were given rice grains in last 24 hrs. This was followed by legumes (pulses-61.19%), and milk (60.45%). However, flesh foods, eggs, fruits and vegetables were given to in <40 % children; showing their poor consumption pattern.

Table 3 shows that no socio-demographic factors were found to be significantly affecting the breast-feeding practices. However, 70% infants with early initiation of breastfeeding were exclusively breast fed and it was statistically significant (p value-<0.05).

Table 4 shows that the age of the children was significantly associated with MAD intakeand MAD intake increased with age (p value- 0.00). Again, majority children with birth order of 3 or more(30%) were having less MAD intake and higher birth order was significantly associated with poor dietary intake (p value- 0.03). Beside, children belonging to nuclear family were more adequately fed (73.80%) compared to children of joint family (52.2%) and it was also statistically significant. (p value- 0.03). (Table 4)

Discussion:

The present study assessed the IYCF practices in urban slums of Agartala. The study revealed poor practice of early initiation of breastfeeding in urban slums. However, a study conducted in Berhampur showed that 81.6% children had early initiation of breastfeeding.[12] The present study finding was also low compared to studies conducted by Chowdhury SR et al[13] and Dasgupta A et al[14] respectively. The present study showed, prelacteal feeding was given to 18.3% children whereas colostrum was given to 85.6% children. A study conducted by Rajesh D et al [15] showed prelacteal feeding was given to 34% and colostrum was given to 64% infants. A study conducted in Kolkata slums [14] showed prelacteal feeding was given to 31.4% and colostrum was given to 70.9% infants. The present study showed that the prevalence of exclusive breast feeding was 67.39% which was higher compared to studies conducted in Odhisa,[12] Mangalore[16] and Kolkata[14] where 44.35% to 66.75% children <6 months age were exclusively

Table 3: Factors affecting exclusive breast feeding

Variables		Exclusive breast feeding		p value
		Yes (n=31)	No (n=15)	
Gender of child	Male	17(60.70%)	11(39.3%)	0.33*
	Female	14(77.8%)	4(22.2%)	
Religion	Hindu	23(67.6%)	11(32.4%)	0.36*
	Muslim	8(66.7%)	4(33.3%)	
Birth order	1	16(64.0%)	9(36.0%)	1**
	2	14(73.7%)	5(26.3%)	
	>3	1(50.0%)	1(50.0%)	
Community	General	13(61.9%)	8 (38.1%)	0.27**
	SC	13(76.47%)	4(23.52%)	
	OBC	5(62.5%)	3(37.5%)	
Education of mother	Primary or bellow	8(61.53%)	5(38.46%)	0.21*
	Middle school	11(57.89%)	8(42.1%)	
	High school and above	12(85.71%)	2(14.29%)	
Occupation of the mother	Housewife	30(68.2%)	14(31.8%)	1**
	Working	1 (50%)	1(50%)	
Type of family	Nuclear	13(68.4%)	6(31.6%)	0.90*
	Joint	18(66.7%)	9(33.3%)	
Socio-economic status (Modified Kuppuswamy scale)	Upper & Upper middle	6 (75%)	2 (25%)	0.82*
	Lower middle	5 (71.42%)	2(28.58%)	
	Upper lower & lower	20(64.51%)	11(36.66%)	
Early initiation of breastfeeding	Present	7 (70%)	3 (30%)	0.00**
	Absent	8 (22.2%)	28(77.78%)	

* p value calculated using Pearson's Chi square test

** p value calculated using Fisher's Exact test

breast fed. However, the study finding is lower compared to the study conducted in Behrampur.[12] Hence, the present study revealed better practices regarding prelacteal feeding and colostrum feeding compared to other studies, whereas the practice of exclusive breast feeding was poor. This may be due to the fact that most of the deliveries were institutional deliveries and hence, good practice of no prelacteal feeding and colostrum feeding could be initiated, but exclusive breast feeding practice could not be continued in the household settings of the slums with mothers having low educational status and less motivation.

The present study showed good practice of continuing breast feeding at 2 years age compared to the study conducted in Kolkata slums[14] where 43.3% children had continued breastfeeding up to 2 years.

The present study failed to establish any association of breastfeeding practices with socio-

Table 4 : Factors affecting minimum acceptable dietary intake

Variables		Minimum acceptable diet		p value
		Yes (n=79)	No (n=55)	
Age group	6-12 months	15(40.5%)	22(59.5%)	0.00*
	12-18 months	24(54.5%)	20(45.5%)	
	18-24 months	40(75.5%)	13(24.5%)	
Gender	Male	50(58.8%)	35(41.2%)	0.96*
	Female	29(59.2%)	20(40.8%)	
Religion	Hindu	61(57%)	46(43%)	0.36*
	Muslim	18(66.7%)	9(33.3%)	
Birth order	1	51(56.7%)	39(43.3%)	0.03*
	2	25(73.5%)	9(26.5%)	
	3 or more	3(30%)	7(70%)	
Community	General	26(52%)	24(48%)	---
	SC	21(51.2%)	20(48.8%)	
	ST	5(100%)	0	
	OBC	27(71.1%)	11(28.9%)	
Education of mother	Illiterate	5(55.6%)	4(44.4%)	0.56**
	Primary School	12(42.9%)	16(57.1%)	
	Middle School	27(65.9%)	14(34.1%)	
	High School	20(57.1%)	15(42.9%)	
	Higher Secondary	12(75%)	4(25%)	
	Graduate and above	3(60%)	2(40%)	
Occupation of the mother	Housewife	78(59.5%)	53(40.5%)	0.34**
	Working	1(33.33%)	2(66.67%)	
Type of family	Nuclear	31(73.8%)	11(26.2%)	0.01*
	Joint	48(52.2%)	44(47.8%)	
Socioeconomic status (using Modified Kuppuswamy scale)	Upper	2(66.7%)	1(33.3%)	0.80**
	Upper middle	7(50%)	7(50%)	
	Lower middle	18(64.3%)	10(35.7%)	
	Upper lower	48(60%)	32(40%)	
	Lower	4(44.4%)	5(55.6%))	

* p value calculated using Pearson's Chi square test
** p value calculated using Fisher's Exact test

demographic factors unlike studies conducted in Kolkata[14] and Berhampur.[12] However, the present study highlighted that early initiation was a significant determinant of exclusive breast feeding showing the possible role of awareness regarding importance of breast feeding behind it.

Regarding dietary diversity pattern the present study revealed that majority children between 6 months to <2 years age were given rice grains followed by legumes and milk. Similar finding was obtained from NFHS-4 India report, where foods made from grains were the most consumed complementary food items and foods made from beans, peas, lentils, and nuts followed by fruits and vegetables rich in vitamin A were the least consumed food items. [6]

The present study showed 58.95% children had MAD intake. The study finding is higher compared to NFHS-5 where 13.5% children in urban areas of Tripura had MAD intake. [8] This may result from the several initiatives taken by the Government at Anganwadi center level to improve the child's nutrition in slum areas. The study finding is also higher compared to other studies conducted in Mangalore,[16] Odhisa[12] and Kolkata[14] where 18.7%-46% children had MAD intake. The present study showed that increasing age, lower birth order and type of family were significantly affecting the MAD intake. However, a study conducted by Dhami MV et al[17] on IYCF practices from NFHS-4 data found that significant higher household wealth index was significant determinant of better complementary feeding practice in North East India.

Conclusion:

The present study revealed suboptimal IYCF practice in the slums with average practice of exclusive breastfeeding and minimum acceptable dietary intake. In order to bridge the practice gap IEC activities on breastfeeding, and complementary feeding diversity and frequency, should be reinforced; especially targeting mothers with younger children, high birth order and joint family.

Acknowledgement : The authors would like to acknowledge the Multipurpose Worker, Anganwadi Worker and ASHA worker for helping in carrying out the project in the slums of Agartala.

Declaration:

Funding: Nil

Conflict of Interest: Nil

Reference:

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Role-play for Interns Posted at a Rural Health Training Center attached to a Medical College of a District Located in Western India: A Learning about Communication

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Abstract:

Introduction: Effective communication is essential for medical professionals. Role-play is widely used as an educational method for learning about communication in medical education. This paper shares experience and process of role-play and explores students' and faculties' experiences on the same. Aim: To utilize role-play for developing competence in specific skills associated with medical interviewing and communication by Interns posted at a Rural Health Training Center attached to a Medical College. **Objectives:** 1. To explore attitudes of interns towards communication skills learning. 2. To obtain the feedback of interns and faculties towards identifying key elements for improvising guidelines for effective role-play within learning context. **Method:** Medical students undergoing internship participated in the role-play session as part of their communication skill programme. Before and after the training sessions and acting, students participated in discussion regarding role plays and good communication skills. Reports prepared by students on their experience were thematically analyzed. **Results:** 98% of students reported that role-play was helpful in learning. Students reported the key aspects of effective role-play as; opportunities for observation, rehearsal and discussion, realistic roles and alignment of roles with other aspects of the curriculum. Faculties opined that the role-play was well accepted by the students. There remains future scope to improvise upon the guidelines to overcome the challenges encountered. **Conclusion:** Role-play was valued by students in the acquisition of communication skills. Guidelines drawn for effective role-play included adequate preparation, alignment of roles and tasks with level of practice, structured feedback guidelines and acknowledgment of the importance of social interactions for learning. Regular courses on effective communication should be included in the medical school curriculum.

Key words: Attitude, Communication skills, Interns, Role-play

Introduction:

Effective communication is essential for medical professionals. Most complaints about doctors relate to poor communication, not clinical competence.[1] Good communication is key determinant of patient satisfaction and concordance,[2] yet doctors often misunderstand what information patients want and use language that is unclear.[3-6] The traditional approach to professional apprenticeship like role modeling and mentoring has long been a powerful tool. This approach alone is no longer sufficient for the development of a medical professional. The domains of attitude, communication and ethics therefore need to be taught directly and explicitly throughout the undergraduate curriculum. Good communications and counseling techniques can be

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Misra S, Parmar N, Chawda B. Role-play for Interns posted at a Rural Health Training Center attached to a Medical College of a district located in Western India: A learning about Communication. Healthline. 2021;12(3):28-36.
	DOI : 10.51957/Healthline_237_2021	

taught and practiced to increase clinical competence.[7]

The Graduate Medical Regulations, 2019 (GMR) mentions one of the roles of an "Indian Medical Graduate" (IMG) as; communicator.[8] In order to ensure that training is in alignment with the goals and competencies, Medical Council of India (MCI) has designed a structured longitudinal programme on attitude, ethics and communication in form of AETCOM module.[9] In the recent competency-based curriculum reforms in the form of Curriculum Implementation Support Program (CISP) for undergraduate medical curriculum also; to communicate effectively with the patient, family and community is envisaged as the core competency.[10] Role-play is an important method to develop communication skills in medical students.[11-16]

This paper documents an observational and report-based study exploring internship medical students' experience of role-play, focusing on acquisition of patient-centered interviewing skills. The study aims to identify key elements for development of guidelines for maximizing benefits of role-play within learning context.

Aim: To utilize role-play for developing competence in specific skills associated with medical interviewing and communication by Interns posted at a Rural Health Training Center attached to a Medical College.

Objectives: 1. To explore attitudes of interns towards communication skills learning. 2. To obtain the feedback of interns and faculties towards identifying key elements for improvising guidelines for effective role-play within learning context.

Method:

Internees posted at the Rural Health Training Center (RHTC) attached to the Medical College participated in role-play activities. They are posted at RHTC for one month as part of their rural health training programme under department of Community Medicine. This programme was devised and implemented in 2016 and 2017 with one entire batch of Internees for one year.

Role-play: Role-play is used as a training method to acquire knowledge, attitudes and skills in a range of disciplines,[17] cross-cultural training,[18-19] business and human resources.[22-21] Despite its widespread use, role-play is fairly consistently defined in the education and training literature. Van Ments (1989) defines role-play as: "one particular type of simulation that focuses attention on the interaction of people with one another."[22] As there are different ways of role-playing; Maier (2002) suggests that role-play method be selected according to whether the educational goal addresses knowledge, attitudes or skills. In the acquisition of knowledge, role-plays can be valuable to observe and then discuss. For attitude development especially that which focuses on change of affect, then role-plays should be loosely structured so that players experience emotions spontaneously. While for skills acquisition, repeated opportunities with feedback is critical.[23] Educational theory: Of the many theories described, Kolb & Fry (1975) mentions four "learning environments" in their theory of experiential learning[24] – Affectively-oriented (feeling), symbolically-oriented (thinking), perceptually-oriented (watching), and behaviorally-oriented (doing). Schon's (1983) work on reflective practice is also relevant in role-play.[25]

Role-play activities in the current Communication Programme: For acquisition of patient-centered interviewing skills structured role-play with feedback to the learners; using concepts drawn from Kolb & Fry[24] of experiential learning and encouraging reflective practice as mentioned by Schon (1983) were utilized.[25] The approach in which students played their role as a medical student in a way they are expected to perform in real clinical encounters.

Before starting the session, students were asked questions regarding importance of good communication skills and their prior experiences of role-plays in the group. The responses were recorded by a note keeper. A two hours interactive lecture was taken on good communication skills while interviewing patients and evidence for patient centered interviews, giving and receiving feedback

and making presentations. Followed by this a video on the importance of good communication and patient interviewing was shown to the students and then discussion and reflective practice by the students took place as shown in Table 1.

Table 1: Communication Programme in Internship

Topics covered in sessions:	Educational methods:
• Evidence for patient-centered interviewing.	• Lectures
• Skills for communicating with patients	• Small group discussions
• Non-verbal	• Role-play–observation: interviewing, facilitating feedback
• Verbal	• Interviews with simulated patient actors and volunteers
• Giving and receiving feedback	• Videotape review
• Making presentations	• Written reflections

Thereafter, the steps followed were: Step 1. The students were encouraged to identify/discuss a topic based on the common health problems observed by them while examining patients at the PHC outpatient department (OPD) as small group discussions as shown in Table 2. Step 2. Add details & Step 3. Assign Roles; the students set up role playing scenarios in detail for it to feel real. It was made sure that everyone was clear about the problem that they were trying to work through, and that they knew what they wanted to achieve by the end of the session. Once they had set the scene as shown in Table 2, they identified the various fictional characters involved in the scenario based on the situation selected and divided themselves to play the role of medical practitioner, patients or observers. Step 4. Act out the Scenario; the role was rehearsed in front of the teachers. After the feedback, role-play was then enacted in the public viz; at the PHC during the Village Health & Nutrition day or in the streets of the villages or at the Anganwadi centers. Step 5: When they completed the role-play, discussion took place on what they had learned from the scenarios, so that all those involved could learn from the experience. Individual feedback was offered by trained facilitators supported by a checklist as shown in Table 3. Step 6. Written summaries of observations and conclusions from everyone who were involved in the program was obtained.

Each role was allocated 5 days of preparation, 15-30 minutes in role-play and 30 minutes of feedback. Part of the feedback process involved a brief period in which written reflection on performance was encouraged. Teachers convened and discussed issues that emerged in the role-plays as well as checked on the "role-play" process. Individual feedback was given to the interviewer using structured guidelines. During the entire process the students learnt other skills required for a health professional like; building rapport with and mobilizing people, team building and working in a team, leadership, time management, interaction with health-related departments like panchayat and frontline workers like Accredited Social Health Activists and other health functionaries, delivering health talks etc. Immediately after the session, students were asked to write their reflections related to the role-play experience. Qualitative data was thematically analyzed based on the reports prepared by 12 batches of students posted during the year. Students completed the reports as part of their usual session evaluation. The study has been approved within the department requirements for course evaluations as part of Internship Logbook. The key concepts identified are presented in this paper. As the nature of research was innovation in education that took place as part of the regular curriculum, the same was exempted from ethical review by the Institutional Review Committee.

Results:

A total of 136 Internees from 12 batches, each batch comprising of 10-12 students, posted for one month at RHTC attached to the Medical College completed the Internship Communication Programme and submitted the reports. Pre-session discussion was held touching upon: The students'

Table 2: Patient role/Case scenarios & Task of the Interviewer

1.	Role-play on Counseling High Risk Groups for Prevention and Control of Hiv/Aids; worker of a call center; a pregnant woman; a case of thalessemia major; a truck driver	You are a medical officer at a PHC; Find out why the patient has come to the clinic today and what does he/she expects from the consultation, ask some questions about background information such as the patient's family and personal relationships and his/her occupation.(This can also be helpful to identify the patient's worries or concerns about the visit) Take care to explore all the patient's difficulties early. Counsel/solve problem the patient for control and prevention of the public health problem that you explored.
2.	Role-play on Counseling a couple for Family Planning: a couple with one child; a newly wedded couple; an unmarried teenage girl	
3.	Role play on creating awareness amongst Public against Malaria, Dengue & Chikungunya (use of bed-nets and other environmental measures)	
4.	Role play on Prevention and Control of Protein Energy Malnutrition (PEM); Creating awareness and counselling on Diet	
5.	Role-play on Importance of Vaccination: a health worker of a village explaining importance of vaccination to public; a quack managing vaccine preventable diseases and the health care worker removing myths and false believe against vaccination	
6.	Role play on Prevention and Control of Tuberculosis	
7.	Role play on Prevention and Control of Heat Stroke for farmers	

Table 3: Task for observer

Use the checklist to identify which skills the interviewer uses in the consultation. Facilitate the feedback process. The following points provide a structure for feedback. The following questions may be helpful in staying focused on your task and ensuring a balance.
• Observer asks the interviewer: Can you briefly state how you felt during the interview? Can you describe two aspects of the interview that worked well?
• Observer asks the role-play patient: Can you identify two communication skills that the interviewer used that were effective?
• Observer provides specific feedback on two skills that s/he observed worked well.
• Observer asks the interviewer: Can you identify two aspects of the interview that you would do differently if you could repeat the interview?
• Observer asks the role-play patient: Can you identify two communication skills that the student could have used to improve the interview?
• Observer provides feedback on two skills that could have improved the interview.
• Observer summarizes the feedback on things that worked well and things to improve.
• Interviewer receives written feedback from observer and role-play patient.

Table 4: Advantages of Role- play Performance (Reflections by students)

Opportunity for rehearsal
"The most important thing was the in-built rehearsal"
"It enabled me to use my skills directly and assess their effects on other people..."
"First-hand experience – to understand the difficulties in communication which are hard to get without actually doing it"
Importance of preparation
"Enabled me to use my communication skills in a way much more relevant to the way in which I will need them in real consultations. Also, the role plays each included a psychosocial aspect which was useful to practice eliciting."
To receive feedback
"It's good to receive constructive criticism and be made aware of your behavior"
Importance of Group discussion
"Group discussion afterwards (as well as individual feedback) allows us to learn from other people's experiences too."
Improving Communication skills
"Helped in development of communication skills, instructiveness and confidence building".
"We improved our communication skills, ignited the minds of villagers, this helped better bonding with them."
"Highlighted aspects of non-verbal communication."
Others
"It's an effective mode of community interaction and entertaining and effective awareness method."
"Role-play changes your perspective on subjects and can open up new avenues of thinking"
"On field confrontation of the problems faced by people".
"It puts you in a real-life situation where you can practice what you know but still it is a role-play so if you make mistakes it is okay" you can learn from them".

free comments before administration of the program including: learning about negotiation, presenting, public speaking, interviewing aspects, acting out scenarios for group discussion of ethical or other controversial issues and developing dramatic skills. A few said "It (role-play) is a pleasant and practical way of learning and evaluating your capabilities." "Can be amusing and interesting because it brings to life situations which may be encountered..."You behave differently when you are being observed "was mentioned by one of them. Post-session: 98% of students reported that role-play had been helpful for learning. Examples of a range of students' free text comments were: "Fun and Learning goes Hand in Hand"; "Role Play – In Front of Common Public for the first time was exiting"; "Was a 'finishing touch' to our posting at PHC"; "Creating awareness and counselling about PEM (protein energy malnutrition) was an amazing experience"; "It is a change from usual way of learning that some may find refreshing"; "It also made me realize how difficult it can be to keep an interview flowing – I'll definitely need more experience!", In a student's own words, "Our role-play was based on the environmental measures for the prevention of mosquito bite and propagation and thus prevention of malaria. We chose this theme due to 3 main reasons which are all interconnected; High Extreme

misconceptions and unawareness in community; Incidence of malaria in this season and; Prevention is better than cure "

Advantages of role-play performance as perceived by the students are tabulated in Table 4. They are classified as opportunity for rehearsal, importance for preparation, receiving feedback for improvement, group discussions, improving communication skills and others.

Some of the ways in which Role –play can be unhelpful as described by the students were: "Was not real hence some emotions were over acted, would not have been the same had it been done for real"; "It's unrealistic as the person you're talking to doesn't have a real illness, so they will react differently to real patients"; "You can never take it seriously as you know the people you're interviewing and so the way you act is not representative of how you would with a real patient."

Suggestions for improvement of the programme given by internees: At the end of the programme suggestions were invited from the internees to improve the programme. Some of them include; its better where possible to work with students who are less well known to you. One student mentioned, "Much better doing it with people you don't know "Others were related to the answers to the question on unhelpful aspects of role play as mentioned above.

Students' responses to being asked for ways in which role-play can be made more effective:

A few mentioned that a video of their own role play if prepared can be helpful to them as they can view and reflect back on what they performed. A few mentioned, "Videotaping is very useful as can see how your own performance is seen by others" Some of the slogans prepared by them and used during role-play were: "Machhar ki chhutti…malaria se mukti!!!!!" (get rid of Malaria by getting rid of Mosquitoes); "Rasi mukavo bhai rasi mukavo" (Vaccinate your child brother, vaccinate your child). Important verbatim from faculty include: "The experience of using role-play to teach students about communicating has met with success, as 98% of students reported that the role-play had been helpful in improving their communication skills"; "Introducing role-play to our internship programme met with least resistance and/or anxiety from some students"; "Creating roles that reflect real life experiences with appropriate levels of challenges to be faced. Relating the role-play to the broader contexts in which students are learning is needed"; "Writing reflections on the experience can be added"; Like most educational methods, role-play on its own probably contributes only a little to the development of patient-centered interviewing skills"; "There are challenges involved in operationalization viz; it requires more time and effort from faculty, at least in the initial phases of guideline development".

Discussion :

Good communication skills are essential in medical practice to develop confidence in patient care. It enhances quality of care, helps in improving compliance and in building a healthy doctor–patient relationship. The domains of attitude, communication and ethics therefore, need to be taught directly and explicitly throughout the undergraduate curriculum. Good communications and counseling techniques can be taught and practiced to increase clinical competence.[7]

After participating in the sessions, in this study almost all students and faculty reported role-play as valuable. The programme has now become part of the one-month long internship curriculum at RHTC. Our findings are in agreement with various studies published in medical literature.[26-27] Findings from UK are published by Debra and Tanya,[26] who in their study reported that 96.5% students found role-plays to be helpful in learning communication skills. Wright et al.[27] in their study from southern US, found that the fourth-year medical students do not differ from first-year medical students in terms of attitudes toward communication skills training, but they have significantly higher confidence scores about communicating with patients. This highlights the need of a longitudinal program to teach professionalism to medical students. The AETCOM[9] module introduced in the undergraduate curriculum

in India by MCI to teach these skills, is designed to be taught right from first year and shall be continued to be taught till the final year of the course in form of a longitudinal program. Best teaching practices and evaluation methods to improve the skills of medical students, to communicate optimally with patients, families, and health team members is envisaged in the GMR, 2019 in India. [10]

Higher positive attitude score in learning communication skills are documented from a study conducted in southern India by Sheela Haveri at al.[28] Anjali Choudhary and Vineeta Gupta[29] reported that about 88% of the students in the sample from north India were convinced of the importance of learning communication skills for effective practice. In a study from New Delhi by Joekes et al.[30], where students received a curriculum that included communication skills training integrated into a "professional development" vertical module, noticed that students receiving the professional development training showed significant improvements in certain communication skills.

Our findings are different from a study by Stevenson and Sander,[31] who reported that "role-play and student presentations" are the least preferred teaching method by 32% of new medical students. Of these students, 75% believed it to be ineffective while 25% reported personal reasons (e.g. embarrassment) for their response.

Based on faculty and student feedback, considering principles set out by Knowles et al.[32], agreeing on guidelines for effective use of role-play to develop patient-centered interviewing skills mentioned by Debra Nestel and Tanya Tierney[26] and using essential communication skills adapted from Kalamazoo Consensus statement,[33] we plan to develop guidelines to suit our context viz: Stating clear aims and objectives about task and roles; Creating roles that reflect real experiences and appropriate levels of challenges; Relating the role-play to the broader contexts in which students are learning; Acknowledging potential difficulties in role-play; Emphasizing the importance of social interactions for learning; Providing sufficient time for preparation for roles; Highlighting benefits from playing all roles; Using structured feedback guidelines that explores interviewers' feelings, identifies effective skills and those that require development, seeks feedback from interviewer and "patient", achieves a balance in what has worked and what needs development; Responding to student preferences for working with friends; Writing reflections on the experience; Ensuring that the tutors are enthusiastic; Providing opportunities for debriefing; Summarizing experiences; Using audiovisual recording devices for playback.

Structured feedback directed students to think about what had taken place in each role-play as well as the value of role-play before and after participating in the session. This prompted students to draw on their prior experience – an important component of adult learning as well as promoting reflection-on-action. The role-play guidelines draw attention to the need for good exchange between participants in order to have successful role-play.

Like most educational methods, role-play on its own probably contributes only a little to the development of patient-centered interviewing skills. However, as part of the broader communication programme at the Medical College studied, that uses a wide range of methodologies addressing knowledge acquisition, attitude and skills development, role-play appears to be beneficial. For this reason, it is difficult and, in some ways, unreasonable to try to evaluate the impact of singular educational method. It is also important to recognize that students learn in different ways and that role-play may be a preferred method for students who learn through concrete experiences.

Limitations:

One of the limitations of this study is that it evaluated single medical school, which may not represent the IMG as a whole. More information about individual students may provide clarity. Therefore, caution should of course be exercised in extrapolating results to all students in all medical

schools. Further studies should aim to determine attitudes of medical students in all medical schools of India to get higher generalizability. Eliciting the views of teachers in facilitating role-play work would also provide an additional perspective.

Conclusion & Recommendation:

Role playing is an effective method to develop the skills of initiative, communication, problem-solving, self-awareness, and working cooperatively in teams, and these are above all the learning of mere facts, will certainly help young people/students to be prepared for dealing with the challenges of the Twenty-First Century. We have provided a practical foundation for the use of role-play as an educational method in the broader context of simulations. Role-play was valued by students in the acquisition of communication skills. The experience thus gained might help the institute to implement and evaluate the longitudinal programme developed by Medical Council of India (MCI) on attitude, ethics and communication in form of AETCOM module. Guidelines for effective role-play include; adequate preparation, alignment of roles and tasks with level of practice, structured feedback guidelines and acknowledgment of the importance of social interactions for learning. Regular courses on effective communication should be included in the undergraduate curriculum.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Optimizing HIV Counseling: Effects of Personalized, Reinforced Key Messages Among Antenatal Clinic Attendees

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Abstract:

Introduction: Antenatal HIV counseling is an opportunity to educate HIV negative women to remain protected from infection. However, it needs to be optimized to achieve the desired effect. **Objective:** To evaluate the effect of reinforcement of key messages during the antenatal HIV counseling. **Method:** In a PPTCT clinic 202 pregnant women who had already received pretest HIV counseling were assessed for retention in knowledge in four key domains of HIV knowledge using an 8 point scoring system (Non-Intervention group Score B). In another 200 newly recruited pregnant women, intervention was interactive group counseling, assessment (Intervention group Score A), personal reinforcement session and reassessment during post counseling (Intervention group Score B). Impact of intervention was determined by comparing the scores between and within groups using factorial and repeated measures ANOVA respectively. **Results:** Non-Intervention group Score B was 4.4 (SD± 1.7), compared to 6.5 (SD± 1.6) in Intervention group, where more than 80% answered all questions correctly in each domain. Women in Intervention group had a mean Score of more than 6/8 even when they returned beyond 3 weeks for post test counseling. Despite the intervention, educated women retained the knowledge better than uneducated counterparts. **Conclusion:** Intervention of key messages reinforcement improved comprehension and retention in knowledge, and sensitized participants for prompt collection of reports. Women with less education would require customized key messages delivery to help them comprehend the information. The 8 point scoring system used in this study can serve as in-house quality check for antenatal counseling in PPTCT clinics.

Key words: ANOVA, Group Counseling, Health education, PPTCT

Introduction:

Mother to Child Transmission of HIV is the most common route of HIV transmission to children and contributes to 3.8% of all new HIV infections in India. Regular antenatal (ANC) HIV screening is offered to all pregnant women in a bid to achieve Elimination of Mother to Child Transmission of HIV.

HIV prevalence among pregnant women in India is as low as 0.24% and hence majority of the pregnant women test negative in HIV screening.[1] However, pregnant women continue to be at risk of acquiring HIV during pregnancy [2] or later in life. While much of the emphasis is on women who test HIV positive, effective pre and post test counseling in other

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Samudyatha U, Rathore M, Kosambiya J. Optimizing HIV Counseling: Effects of Personalized, Reinforced Key Messages Among Antenatal Clinic Attendees Healthline. 2021; 12(3):37-44 .
	DOI : 10.51957/Healthline_251_2021	

pregnant women is envisaged to provide them comprehensive knowledge of HIV/AIDS, routes of transmission, HIV prevention strategies including condom use and partner testing, benefits of screening and facilitate them to make an informed decision to screen for HIV.[3] Thus, HIV screening with effective pre and post test counseling of pregnant women is an opportunity to educate them regarding HIV/AIDS

More than 95% of pregnant women undergo HIV screening and avail PPTCT (Prevention of Parent to Child Transmission of HIV) counseling services in Gujarat. However, only 28.5% women of reproductive age group have comprehensive knowledge regarding HIV in the state.[4] Thus, it is important to assess the effectiveness of pre and post test counseling in influencing pregnant women's HIV related knowledge and behaviour. Repeated counseling sessions have been reported to have sustained effect on reduction of self reported high risk behaviour among serodiscordant couples.[5] In settings with high turnout of pregnant women, manpower and time constraints may force the health system to provide less importance to counseling of pregnant women who test HIV negative. Hence, it becomes important to optimize the quality of pre and post test counseling sessions, which are regularly conducted during routine antenatal HIV screening.

This study aimed at assessing the effectiveness of existing methods of pretest counseling in imparting HIV related information to pregnant women. The study also determined how adding an intervention, in the form of interactive group counseling followed by individual counseling with key messages reinforcement improved the comprehension and retention of knowledge regarding HIV among pregnant women.

Method:

The study was conducted in the PPTCT clinic attached to the antenatal clinic Government Medical College, Surat, a tertiary care hospital in South Gujarat, which receives pregnant women from urban and rural areas of South Gujarat. Routine activities in the PPTCT clinic include pre test group counseling, registration and blood collection for HIV screening and other routine antenatal blood tests. The screening test result is provided from the next day onwards in the PPTCT clinic itself, followed by individual post test counseling.

In the first phase of the study, the PPTCT counselors were informally interviewed regarding HIV screening uptake by the pregnant women. The impact of counseling was planned to be assessed in two aspects: a) Knowledge regarding HIV, using an 8 point scoring system, (Table 1) and b) Number of days after which the pregnant women returned to collect their report and post test counseling. The 8 point scoring system (maximum score achievable is 8) was designed to assess whether the key messages in four broad topics viz., Routes of transmission of HIV, myths about HIV, methods to prevent HIV and benefits of HIV screening in pregnancy were communicated to and comprehended by pregnant women effectively. The instrument was face validated before use.

In second phase, over five days, a total of 202 beneficiaries who had already received pre test counseling through existing techniques and had returned to PPTCT clinic for post test counseling were interviewed (here after referred to as Non-Intervention group). They were recruited consecutively, after written informed consent. Their demographic profile and educational status were collected. The score they achieved in the 8 point scoring system was recorded as "Non- Intervention group Score B".

In third phase, 200 new PPTCT clinic attendees were recruited in a similar manner after written informed consent (hereafter designated as Intervention group). Steps of intervention included:

a. Group counseling with the investigator addressing the participants in groups of 7-10 in local language with aid of a PowerPoint presentation. PowerPoint presentation consisted of pictorial and written description about HIV, routes of transmission, misconceptions,

Table 1 : Scoring system to assess the knowledge of the pregnant women

A.	Can you name some routes of HIV transmission that you know of? (0.5 points for each for correct answer, total = 2) 1. Sexual route 2. Mother to Child (pregnancy and lactation) 3. Unsafe blood transfusion 4. Unsafe injection practice
B.	Do you think HIV spreads by the following routes? (0.5 points for each for correct answer, total =2) 1. By touching 2. By having food together 3. Through insect bites 4. By using common toilets
C.	How do you prevent acquiring HIV? (1 point for mentioning each, total = 2) 1. Use of condoms 2. Having an uninfected sexual partner and knowing partner's HIV status
D.	What is the need of HIV screening in pregnancy? (1 point for each, total =2) 1. To know HIV status of self and start treatment if required 2. To prevent mother to child transmission of HIV Maximum score = 8 (2 in each domain)

prevention and need of HIV screening in pregnancy. The participants were invited to interact with the investigator.

b. Personal interview to collect their demographic profile and educational status. Knowledge of participants immediately after the pretest counseling was assessed using the 8 point scoring system and documented as "Intervention group Score A". Evaluation using 8 point scoring system was done by an independent investigator who was not involved in the counseling.

c. Personalized key message reinforcement by showing the participants the PowerPoint presentation again and asking them to repeat the key messages that were displayed, as they understood them. They were assisted and encouraged by the researcher to get the key messages right, in case of any difficulties. The participants were encouraged to collect their reports the next day onwards.

d. When the participants returned for their reports, they were interviewed and retention of knowledge was assessed using the same 8 point scoring system and documented as "Intervention group Score B". The number of days after which they returned for the post test counseling was also recorded. They were then given the test report with post test counseling.

It was hypothesized that knowledge regarding HIV would be influenced by the Intervention. Additionally, the educational level of the participants and the gap between the pre and post test counseling could also have an effect on the retention of knowledge. In order to test these hypotheses, Score B of Non- Intervention group was compared with Score B of Intervention group, with Intervention as main effect and education and time gap between pre and post test counseling as interaction effects, using factorial ANOVA. Further, Score A of Intervention group was compared with Score B of the same group, with educational level and time gap between pre and post test counseling as interaction effects, using repeated measures ANOVA.

Privacy was ensured during the individual counseling. Time taken for each activity was also recorded.

Table 2 : Educational profile and gap between pre and post test counseling in Non-intervention and Intervention group

Variables		Non-intervention group (%) n=200	Intervention group (%) n=202	Total n=402
Educational level	Illiterate	27 (13.4)	28 (14.0)	55 (13.7)
	Primary school	93 (46.0)	88 (44.0)	181 (45.0)
	Secondary school	64 (31.7)	67 (33.5)	131 (32.6)
	Higher secondary and above	18 (8.9)	17 (8.5)	35 (8.7)
Gap between pre and post test counseling	1 week	57 (28.2)	156(78.0)	213 (52.9)
	2 weeks	34 (16.8)	20 (10.0)	54 (13.4)
	3 weeks or more	111 (55.0)	24 (12.0)	135 (33.5)

In the Non-Intervention group, the score at the time of post test counseling (Score B) was 4.4 (SD± 1.7), compared to 6.5 (SD± 1.6) in Intervention group.

Table 3 : Score B in participants who returned for post test counseling in Non- Intervention and Intervention groups

Gap between pre and post test counselling	Score B (Mean± SD)	
	Non- Intervention group (N=202)	Intervention group (N=200)
1 week	4 ± 1.5	6.5 ± 1.6
2 weeks	3.9 ± 1.3	6.2 ± 1.5
3 weeks or more	3.2 ± 1.5	6.1 ± 1.7
	F = 7.755, p=0.001	F= 0.988, p=0.374

Results:

Majority of the participants had primary school education in both the groups. There was no significant difference in proportions of different educational levels (Table 2) among the participants in the two groups (Chi Square=0.244, df=3, p=0.97).

Informal interview of PPTCT counsellors revealed that while there was nearly no refusal for HIV screening among pregnant women, there was a delay in them returning to collect their report. This was evidenced by the fact that in the Non-intervention group, the majority of participants returned for post test counselling three weeks or later. In the intervention group, however, the majority of participants returned within a week for post test counselling. (Table 2)

In the Non-Intervention group, the score at the time of post test counseling (Score B) was 4.4 (SD± 1.7), compared to 6.5 (SD± 1.6) in Intervention group.

There was a significant difference between the mean Score B of the two groups (F=134.354, p=0.000) which was not affected by the interaction of the Intervention with Educational level (F= 0.293, p=0.830) or with gap between pre and post test counseling (F= 0.080, p=0.924). Thus, the retention of knowledge was higher in intervention group than

Figure 1: Scores of participants with different educational status in Non- Intervention and Intervention groups.

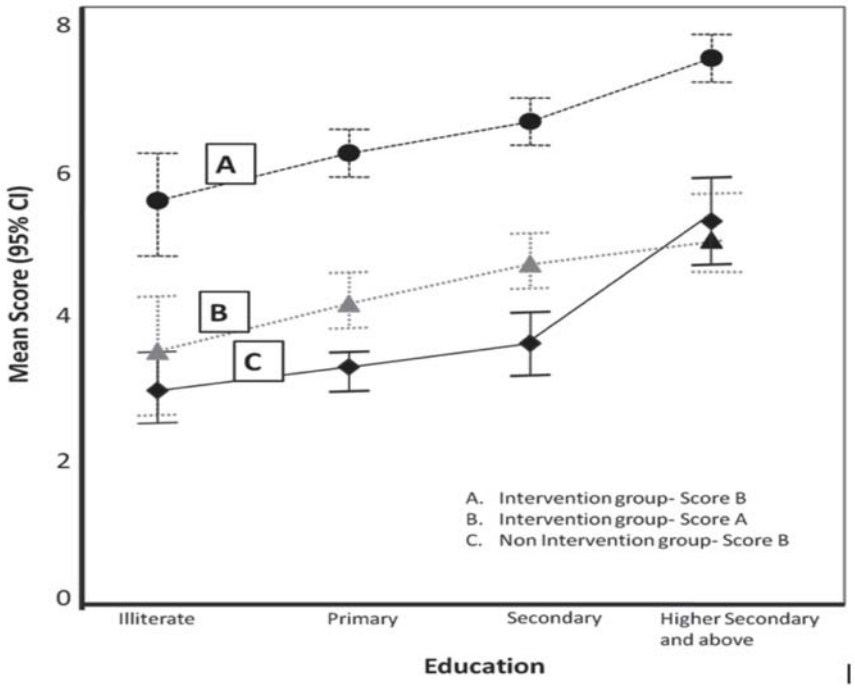

Table 4 : Participants answering all the questions correctly in four key domains at various points of assessment

Domain	Non-Intervention Group Score B	Intervention Group Score A, (immediately after intervention)	Group Score B (after reinforcement sessions, during post test counselling)
Routes of transmission of HIV	101 (50%)	134 (67%)	164 (82%)
Reject myths about HIV	99 (49%)	148 (74%)	160 (80%)
Measures for prevention of HIV infection	67 (33%)	132 (66%)	176 (88%)
Benefits of HIV testing	71 (35%)	140 (70%)	184 (92%)

the Non-intervention group, regardless of the educational level of participants or gap between pre and post test counseling.

In Non-Intervention group, post hoc test of one way ANOVA showed that, the retention in knowledge (Score B) was significantly lower among participants who came three weeks or beyond for post test counseling, compared to those who came within a week or two. On other hand, in Intervention group, the mean score B of those who returned in one week, two weeks and three weeks or later, did not differ significantly (Table 3).

In Intervention group, it was observed that the mean score B (6.5±1.6) was higher than mean Score A (4.5± 1.8), (F= 163.92, p=0.000) and this was not affected by the interaction terms- educational level

(F=2.031, p=0.111) or gap between pre and post test counseling (F= 1.664, p=0.192). Thus, an increase in mean score was seen in participants of all educational groups and regardless of the gap between pre and post test counseling. However, score B was higher among those with a higher level of education (F=7.073, p= 0.000). (Figure 1)

The percentage of participants answering all the questions correctly in four key domains at various levels of assessment is given in Table 4.

Discussion:

The first of the four prongs of Prevention of Parent to child transmission is primary prevention of HIV among women of reproductive age group. [6] WHO notes that in usual research constrained settings, much of the focus during antenatal HIV counseling sessions is on those who test HIV positive.[7] Acceptance of HIV screening by pregnant women is influenced by several factors such as the effective health education and communication they receive. [8] Interestingly, while the uptake of HIV screening among pregnant women ranges between 65%-100% in India, [9] there exists a missed opportunity, to capacitate HIV negative women to remain HIV uninfected during pregnancy and later in life.

In this study, the educational tool was designed in a PowerPoint presentation, with pictorial and written descriptions along with the narrative by the investigators. The intervention was designed in such a manner that the participants had an opportunity to interact with the researcher at three different points – firstly, as a part of interactive session during the group counseling, secondly, during the individual reinforcement session and thirdly, during post test counseling. While the group counseling lasted for 8-10 minutes, the average extra time required for the knowledge assessment, individual counseling and reinforcement of messages was 5-6 minutes per participant. On the second visit, post test counseling for HIV negative women with re assessment lasted for about 5-8 minutes. The time given to the pregnant women to clear their queries can be a constraint in resource limited settings[10], but our experience in this study showed that in the presence of two counsellors and one lab technician, careful planning and integration of other antenatal services, such as other routine blood tests with HIV screening can be done to avoid delays in a centre that caters to nearly 140-150 clients per day.

In a study from Tamil Nadu, the authors opined that group counseling achieved "small gains" in HIV knowledge. [11] In a study assessing the counseling services for pregnant women in tertiary hospitals of Delhi, it was noted that 58% of HIV negative women who received group pre test counseling felt that it was useful. In the mean time, 94% felt that individual counseling was useful but only 57% of HIV negative clients had received it. [10] In this study it was noted that during the group counseling, very few women came up with questions. However, during the individual counseling and reinforcement that followed, 25% of the women discussed their doubts and apprehensions regarding HIV. In the intervention group, there was an increase in scores from a mean of 4.5/8 immediately after the group counseling to 6.5/8 after reinforcement session (assessed on a later date when the participants returned for post test counseling). Thus the individual counseling sessions with reinforcement of key messages improved the comprehension and retention of knowledge.

Further, it was noted that women with less education did not comprehend the messages given in group counseling as good as the other participants, evidenced by their lower Score A, assessed immediately after the group counseling. After they received the reinforcement session, their knowledge assessed through score B when they returned for post test counseling had increased significantly, but remained lower than other educational levels.

Reinforcement sessions with individual counseling ensured that higher proportions of participants comprehended the information, and could recollect the information when they came for post test counseling at varying points in time. In other studies in India, 48-62% of pregnant women did not

know any means of preventing mother to child transmission of HIV. [12,13] In this study, it was noticed that most participants in Non- intervention group could not satisfactorily explain how HIV screening could "help their baby". In the intervention group, the benefits of HIV screening were stressed upon during the group counseling and individual reinforcement sessions. The proportion of women confidently explaining the benefits of HIV screening rose from 70% immediately after group counseling to 92% after having received the individual counseling and reinforcement sessions. Among these participants, nearly 78% collected the reports and attended the post test counseling within one week. Moreover, regardless of when they returned for post test counseling, the participants had a mean score B of more than 6/8. This was unlike the Non-intervention group, where more than half the participants returned 3 weeks later or beyond to receive their test reports and post test counseling. The mean score B was lower (3.2/8) in such participants.

Though couple counseling for HIV is considered acceptable,[14,15] counseling and HIV screening of male partners have not been widely adopted as a strategy in regular antenatal screening in India. In this study also, the researchers felt that much more emphasis and reinforcement on partner testing would be required to actually translate knowledge to action.

It is important to promote condoms as measures to prevent HIV and not merely as contraceptives among heterosexual couples. [16] In this study, after reinforcement sessions, 88% participants could name consistent condom use and partner testing as means to protect them from HIV.

In this study, other factors that may have an influence on knowledge of HIV such as parity, years of marital life or access to social and mass media were not considered, because this tertiary care hospital receives a heterogeneous group of antenatal women, and hence studying too many different factors could not have helped in decision making. Limitation of the study was that the behavioural change in these participants could not be assessed or documented. Such studies are warranted in future.

Conclusion:

The 8 point scoring system used in the study evaluated whether the clients understood the key messages provided by the counsellor and retained them. The benefits of meaningful counselling were not evidenced in pregnant women receiving counselling through existing methods. The intervention of key messages reinforcement, which took an extra time of 5-6 minutes per participant, improved the comprehension and retention in knowledge in the Intervention group. Nevertheless, even in the Intervention group, comprehension was lower among those with less education. Reinforcement sessions must concentrate on partner testing, condom promotion and allying fears about HIV transmission. It is important to gauge the quality of counseling activities that are provided through PPTCT units and periodically measure its efficacy through such in house evaluation strategies.

Acknowledgement:

We thank the Department of Obstetrics and Gynecology of Government Medical College, Surat for giving us permission to carry out the study in PPTCT Clinic attached to the Department OPD. We are grateful to the cooperation of the staff at PPTCT Clinic. We also thank Dr Rajesh Gopal, Additional Project Director, Gujarat State AIDS Control Society for giving permission for the study.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Psychiatric Health Problems and Health Seeking Behavior of Men Who Have Sex with Men (MSM) in Agra city, Uttar Pradesh

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Abstract:

Introduction: Researches had shown that Men who have Sex with Men (MSM) have higher chances of having psychiatric disorder as compared to heterosexual men. Ongoing homophobia, stigma and discrimination have negative effects on mental health of MSM. Many MSM do not seek care from mental health provider because of fear of discrimination **Objectives:** This study was carried out to assess psychiatric health problem among MSM and also assess their health seeking behavior. **Method:** The Snowball sampling technique was used. First participants were recruited through a non-profit peer group. Further participants were subsequently referred by participants from their peer circles. Data obtained from total 52 MSM using pretested questionnaire and General health questionnaire (GHQ-28) was analyzed using MS Excel. **Results:** Two-fifth (40.38%) of MSM had self-reported psychiatric health problem. While on GHQ, 57.69% of MSM were found to have psychiatric health problem with GHQ score of ≥24. MSM who were completely homosexual and who were victims/doer of violence with sex partners had significantly higher chances of having psychiatric health problem.57.15% MSM sought treatment for their psychiatric problem from an Allopathic doctor. Rest of them either went for a self treatment (28.57%) or not taken any treatment (14.28%). 75% MSM reportedly sought treatment from private health facility. Better facility, cost effectiveness, someone known recommended were most commonly cited reason for preferring a mental health provider. **Conclusion:** High prevalence of psychiatric health problems was found among MSM who engage in higher-risk sexual behavior. MSM require access to mental health screening services.

Key words : Health seeking behavior, Mental health, Men who have sex with men, Psychiatric health problem

Introduction:

Mental Health of Men who have sex with men (MSM) has received increased attention in recent years.[1,2] MSM experience significant mental health disparities, including depression, anxiety, distress and trauma.[3-6] As compared with heterosexual men, rates of depression and distress are estimated to be 17% higher among MSM,[7] and rates of post-traumatic stress disorder (PTSD) is twice among MSM compared with heterosexual men.[8,9] Meyer's sexual minority stress model was the first to specifically posit that mental health problems in LGBT populations arise from minority stress.[8,9] Accordingly, mental health problems are consequences of distressing environments, including stigma, prejudice and discrimination ,which result in negative psychological outcomes including expectations of rejection, hiding and concealing,

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Khan IA, Chaudhary SS, Misra SK. Psychiatric health problems and health seeking behavior of men who have sex with men (MSM) in Agra city, Uttar Pradesh. Healthline. 2021;12(3):45-51 .
	DOI : 10.51957/Healthline_241_2021	

internalised homophobia or homonegativity and problematic coping strategies. Psychiatric health issues may thus contribute to the propensity for MSM to engage in risky sexual behavior and may affect the degree to which they might benefit from STD and HIV prevention programs.[10-13] The gross stigmatization of homosexuality and discrimination has affected their psychiatric health seeking behavior. With this background, the present study was conducted to assess the psychiatric health problems and health-seeking behavior among MSM residing in Agra city of Uttar Pradesh.

Method:

This descriptive observational study was conducted among MSM population residing in Agra district of Uttar Pradesh, India between August 2018 and January 2020. The inclusion criteria for the participants of the study were: 1)Self reported same-sex sexual orientation in last 1 year; and 2) 18 years or older at the time of interview. Participants were recruited through the snowball sampling technique. The first participant was recruited through a non-profit peer group. Further participants were subsequently referred by the participants from their peer circles. The exclusion criteria included: 1) Self reported HIV positive status since experience of HIV diagnosis increases guilt and other psychiatric issues associated with their sexual behavior. This has a propensity to create bias in the interviews. Also, HIV positive individuals (especially recently diagnosed) have special psychosexual and mental health needs from general MSM people. 2) Critically ill or suffering from end stage disease; 3) Lack of willingness to participate in the study. Data collection was done from September 2018 to November 2019. A total of 52 MSM participated in the study. The proforma schedule used for quantitative assessment were pretested, predesigned and structured. A mixed questionnaire was used in the study where closed ended questions were asked to assess their sexual practices and health seeking behaviour and open ended question was kept to explore self-reported psychiatric illness and the reasons for prefering a health care facility. Before start of the interview, the participants were explained about the purpose of the study and sensitive nature of the questionnaire. Informed consent was taken and confidentiality was assured. Also, Goldberg 28 point's general health questionnaire (GHQ)[14] used as self reporting screening procedure to detect respondents suffering from psychiatric illness. Psychiatric morbidity likely to be present if GHQ threshold score is above 24 out of a maximum possible score of 84.GHQ score if found to be less than 24 than it translates to absence of any psychiatric health problem among them. Information collected on the study schedule was transferred on pre-designed classified tables and analyzed according to the aims and objectives and represented by tables analysed through MS excel. Ethical clearance for the study was taken from the Institutional Ethical Clearance Committee, Sarojini Naidu Medical College and Hospital, Agra.

Results:

Self-reported psychiatric health problems: When asked about the occurrence of any psychiatric health problems during the past 1 year, 40.38% of MSMhad

Table 1: Distribution of respondents by self reported presence of any Psychiatric health problems in past one year (N=52)

Self-reported Psychiatric health problems in past one year	Number of respondents n (%)
Present	21 (40.38%)
Absent	31 (59.61%)
Total	52 (100%)

Table 2: Distribution of respondents by presence of psychiatric health problem by using Goldberg 28 point's general health questionnaire

Psychiatric health problem by using Goldberg 28 point's GHQ	GHQ score	Number of respondents n(%)
Present	≥24	30 (57.69%)
Absent	<2422	(42.31%)

Table 3 : Association of various risk factors with presence of any psychiatric health problem by using GHQ score

Risk factor		Psychiatric health problem		Total	P#
		Present (GHQ ≥24) n(%)	Absent (GHQ <24) n(%)		
Sexual identification	Completely homosexual	13 (59.09%)	9 (40.91%)	22	**0.0418*** when df=1
	Mostly homosexual	15 (68.18%)	7 (31.82%)	22	
	Sometimes homosexual	2 (25%)	6 (75%)	8	
Sexual preference	Insertive/Active Only	2 (28.57%)	5 (71.43%)	7	0.4677 when df=2; 0.0936 When df = 1
	Receptive/Passive Only	9 (56.25%)	7 (43.75%)	16	
	Both Insertive & Receptive	19 (65.51%)	10 (34.49%)	29	
Number of sexual partners	≤5	8 (57.15%)	6 (42.85%)	14	0.9611 when df=1
	>5	22 (57.89%)	16 (42.11%)	38	
Sex with a man for monetary or other benefits	Yes	7 (63.64%)	4 (36.36%)	11	0.653 when df=1
	No	23 (56.10%)	18 (43.90%)	41	
Marital Status	Yes	4 (57.14%)	3 (42.85%)	7	0.9747 when df=1
	No	26 (57.77%)	19 (42.22%)	45	
Victim or doer of Violence With sex partners	Yes	15 (88.23%)	2 (11.77%)	17	**0.0019*** when df=1
	No	15 (42.85%)	20 (57.15%)	35	

#Chi-square test *Statistically significant

Table 4: Health seeking behavior in relation to psychiatric health problems among men who have sex with men

Health care seeking parameters		Number of respondents n(%)
Treatment received from (n=21)	Doctor (Allopathic)	12 (57.15)
	Doctor (Ayurvedic)	0 (0.00)
	Self treatment	6 (28.57)
	No treatment	3 (14.28)
Type of health care facility (n=12)	Government	3(25)
	Private	9(75)
Reasons for preference (n=12)	Better facility	3(25.00)
	Cost effective	3(25.00)
	Someone known recommended	3(25.00)
	Trustworthy and well qualified doctor	2(16.60)
	Near to residence	1(8.40)
Satisfaction with health care facility (n=12)	Satisfied	9(75.00)
	Non-Satisfied	3(25.00)
Disclosure of sexual behavior to health care provider (n=12)	Yes	8(66.66)
	No	4(33.34)
Reason for nondisclosure of sexual behavior to health care provider(n=4)	Fear and stigma associated with homosexuality	4(100)

self-reported about presence of any psychiatric health problems during past 1 year while 59.61% reported not suffering from any psychiatric health problem during past 1 year. (Table1)

Psychiatric health problems by using Goldberg 28 point's general health questionnaire (GHQ)[14]: Goldberg 28 point's general health questionnaire was used as screening procedure to detect respondents suffering from psychiatric illness. Psychiatric morbidity is likely to be present at GHQ threshold score ≥24 out of a maximum possible score of 84, which was found in 57.69% of our study population. Rest 42.31% of respondents had GHQ score less than 24 which translates to absence of any psychiatric health problem among them. (Table 2)

Risk factors for psychiatric health problems: Table 3 shows the association of various risk factors with psychiatric health problems among MSM during the past 1 year. A significantly higher proportion of "completely homosexuals" (MSM who had all their sexual encounters with men) (59.09%) and "mostly homosexuals" (MSM who had most of their sexual

encounter with men) (68.18%) had a psychiatric health problems at the time of interview in comparison to "sometimes homosexuals" (MSM who almost had a proportionate sexual encounter with both males and females)[15-17] (25%) When completely and mostly homosexual combined group was compared with sometimes homosexual group, observed differences were found to be statistically significant ($\chi 2$ =4.1399, df = 1, P = 0.0418). It is also observed that majority (88.23%) of MSM who were victim or doer of violence with sex partners had psychiatric health problems; while among MSM who were not victim/doer of violence with sex partners, only 42.85% had a psychiatric health problem ever or at the time of interview. These results were found to be statistically significant (χ^2 =9.653, df =1, P =0.0019). Though MSM who had more than 5 sexual partners, were unmarried, had sex with a man for monetary or other benefits and who played "both active and passive roles" had higher chances of psychiatric health problem during the last 1 year in comparison to their counterparts but this was statistically not significant.

Health seeking behavior : Table 4 shows that the majority (57.15%) of respondents sought treatment from an allopathic doctor for their psychiatric health problem. Rest of the respondents either went for a self-treatment (28.57%) or had not taken any treatment (14.28%). The majority (75%) of MSM opted for a private health facility for their psychiatric health problems. All sought treatment from qualified doctor as reported by respondents. Better facility, cost effectiveness, someone known recommended were the most commonly cited reason among MSM for preferring a particular doctor or health care facility. Reasons like trust worthiness/ well-qualified and near to residence were also mentioned for choosing a particular doctor or health care facility. On being asked about the overall satisfaction with the health care facility where they had received treatment for their psychiatric health problem; only 25% were reportedly unsatisfied with the health care facility and the most common reason for their dissatisfaction at health facility was bad behavior of staff. Another question which was asked to study participants was: Have you disclosed your sexual behavior to the psychiatric health care provider or not? 66.66% (8 out of 12) of the respondents had reportedly ever disclosed their sexual behavior to his psychiatric health care provider (HCP). When further asked about the reason for not disclosing their sexual behavior to psychiatric HCP, all (4 of them) told that they didn't disclose it out of fear and stigma associated with homosexuality.

Discussion:

Present study has found that two-fifth (40.4%) of MSM self-reported about presence of any psychiatric health problem during past one year while according to National Mental Health Survey of India in 2015-16 lifetime prevalence for any mental morbidity among general population was found to be 13.7%. Another report by World health organization has also revealed that 7.5% of the Indian population suffers from some form of mental disorder. Similarly, studies conducted by Fergusson, et al[18] in New Zealand, Herrell et al[18] in Chicago and Sandfort TG et al[2] in Netherlands has established that prevalence of mental health problems among MSM is much higher than the general population. In India, study by Sivasubramanian M et al[1] has also found that gay and bisexual individuals in Mumbai had very high risk of Psychiatric health problems.

Goldberg 28 point's general health questionnaire was used in our study to assess psychiatric health problems among respondents and it was observed that 57.69% of the MSM have some psychiatric health problem (GHQ ≥24). Nearly similar results were found by Deb S et al[19-20]in Kolkata where 63.9% of the MSM crossed the threshold GHQ score of 24 signaling a high risk of psychiatric illness in this group. On analysis we found that 9 (17.29%) more individuals were found to have some psychiatric health problem on Goldberg 28 point's general health questionnaire (30 of 52; 57.69%) in comparison to self-reported mental health problem (21 of 52; 40.40%) and this extra yield signifies the role of screening program for assessment of psychiatric health problems among

men who have sex with men on a regular basis.When an analysis was done to find selected sexual behavior determinants of psychiatric health problems among MSM, it was found that MSM who were either completely or mostly homosexuals and who were victims or doers of violence with sex partner had significantly higher chances of having psychiatric health problem in comparison to their respective counterparts and these results were statistically significant. The current study also found that prevalence of psychiatric health problems (GHQ score≥24) was almost equal among married and unmarried MSM (57.14% v/s 57.77%) however, the observed difference was not statistically significant.

The present study has found that only 57.15% of MSM took treatment for their mental health problem while rest 42.85% took no treatment from any health professional among which two third (28.57%) went for self treatment while one third (14.28%) absolutely sought no treatment. This shows that treatment seeking behavior for mental health problem is quite poor. This also reflects that many MSM don't take their mental health seriously or hesitate to discuss their mental health issues at health facility probably due to fear of stigma and discrimination associated with it. Another probable reason for poor mental health seeking behavior may be due to scarcity of mental health experts as well as sub-optimal utilization of available mental health services in India and this issue among MSMs need to be re-addressed. Present study has also found that none of the participant took treatment for their mental health problem from an Ayurvedic doctor.

In the present study, only one-fourth reportedly had taken treatment from a government health facility; so it seems that either the MSM don't have trust in available government psychiatric health facilities or there may be geographic or cultural inaccessibility at government psychiatric health facilities for MSM. In the present study all those respondents who sought treatment for a psychiatric health problem, all were reportedly treated by a qualified doctor. Better facility, cost effectiveness, someone known recommended were the most common cited reason for preferring a particular doctor/health facility for their psychiatric health problems. It was not surprising to found that, no MSM preferred his family doctor for treatment of their mental health problem probably due the fear of disclosing his sexual orientation/behavior with his closed one and other family members.

In the present study 75% respondents said that they were satisfied by the treatment for their psychiatric health problem which they received at that health care facility. One-fourth of them were dissatisfied with the treatment they received. Most common reason for dissatisfaction was bad behavior of staff. Probable reasons for such high level of dissatisfaction with mental health care facility might be due to long duration of treatment or due to lack of sufficient time by the doctor due to overcrowding and limited number of mental health experts at the health care facility.

Rate of disclosure at a mental health facilities was found to be high, probably due to the fact that they were more talkative and uninhibited due to their psychiatric health illness and so they got overwhelmed and discussed about their sexuality and sexual behavior more frequently and comfortably while in physical and sexual health facilities they just got symptomatic treatment most of the time keeping in view that heteronormativity solely exists.20 Four out of twelve MSM who had not disclosed about their sexual behavior to their psychiatric health care provider narrated that they (all 4) didn't disclosed it out of fear and stigma associated with homosexuality.

Conclusion:

This study highlights that's significant proportion of MSM population had suffered from psychiatric health problems. Application of psychiatric screening test in the form of Goldberg GHQ-28 helped in identifying hidden undiagnosed or asymptomatic psychiatric cases among them. Health- seeking behavior of MSM community was quite unsatisfactory. The high rate of psychiatric health issues and gaps in treatment seeking behavior indicated an urgent need to increase mental health awareness among MSM population.

Recommendation:

MSM community requires geographic, economic as well as cultural accessibility to mental health screening programs, psychiatric counseling and behaviour therapy through trained mental health care professionals. The high rate of psychiatric health issues and gaps in treatment seeking behavior indicates an urgent need to increase mental health awareness among MSM population. As many MSMs fears disclosing their sexual behavior, telephonic psychiatric counseling even at government mental health facilities can be beneficial. Training of medical and para-medical professionals about psycho-sexual health issues of MSM is needed to improve the mental health care of MSM.

Limitation of study:

Confounding factors, as family history of mental disorder, broken family, orphan, alcohol or substance use, financial conditions, other stress factors prone to cause mental illness may need to be studied. A small sample size for close end questions is also the limitation of the study.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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A Cross Sectional Study on Assessment of Health Profile of Policemen Serving at Ahmedabad City, Gujarat

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Abstract :

Introduction : Policemen are one of the important cadres for positive pace of development of any nation. They can work optimally if, they are physically and mentally fit. **Objective :** To assess socio-demographic and health profile, determinants of ill health and their correlates with work profile of male policemen at Ahmedabad city. **Method:** Study was carried out at Police headquarters, Ahmedabad where policemen from all over district reported for work. Calculated sample size was 416. List of all policemen was obtained, participants were selected through simple random sampling, and personal interview was carried out at Police Headquarters of the city. **Results :** The mean age of study participants was 42.50±9.32 years. In context to BMI, total75.3% policemen were either overweight or obese. Policemen with tobacco addiction were 186(45%).Of total, 11.29% and 7.69% were hypertensive and diabetics respectively. Around three-fourth (74%) policemen complained of perceived stress. **Conclusion:** Two thirds of the total participants were overweight or obese. Factors like improper dietary habits, presence of disease, disturbed sleep and tobacco addictions among Policemen had a significant association with their work profile. Majority were under perceived stress and its consequences.

Key words: Addiction, Health profile, Obesity, Policemen, Sleep, Stress

Introduction:

It is increasingly recognized that a healthy workforce is a prerequisite for the success of economic and social policy. It is also a necessary condition for the achievement of sustainable development. One particular profession which takes care of the very social fabric that holds our nation together in peace is the police force.[1]

The main job of policemen is to maintain law and peace in society.[2] Health is a way of functioning within one's environment. It is largely affected by work conditions so workplace environment plays an important role in man's total environment.[3]

Police work has been recognized as a dangerous occupation. They perform specialized work involving exposure to violence, which can affect their health directly or indirectly.[4] They work under high-risk and uncontrolled environments, engage in extended driving, and often need to make on-the-spot decisions in complex and ambiguous situations.[5]

Good sleep quality and adequate sleep duration (i.e., 7 to 8 hours in a 24-hour period) are necessary for good health.[6] The Policemen work routinely for 12 hours or more per day, sometimes which may extend to nonstop work for a couple of days at the police station.[7] Policemen are one of the several risk

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Solanki S, Shukla R, A Cross Sectional Study on Assessment of Health Profile of Policemen Serving At Ahmedabad City, Gujarat. Healthline. 2021;12(3): 52-59.
	DOI : 10.51957/Healthline_240_2021	

groups for Non-Communicable Diseases(NCDs) as they have irregular diet, suffer from disturbed sleep pattern and have habits of Tobacco consumption.[8]

They face strong job demands besides being constantly under political and media scrutiny, many of those demands cannot be met adequately. There are many professional and legal strictures that circumscribe the policing response, which can lead to frustration and this overload with job demands causes strain and stress in individual police officers.[9]

The health of the policemen thus becomes very important as it could also affect the well being of the community he is serving.[1] Due to paucity of literature on policemen of Ahmedabad City, present study was planned with objective to assess health profile of male police officer serving at Ahmedabad city.

Objectives:

1) To assess the overall health profile of male police officers serving at Ahmedabad City.
2) To assess various determinants of ill health factors among male police officers and correlate them statistically with their work and demographic profile.

Method:

A Cross Sectional study to assess the health profile of policemen was planned at Ahmedabad City, Gujarat. Permission of Institutional Ethics Committee and The Assistant Commissioner of Ahmedabad Police was obtained before initiating the study. From the appellate authority of police for Ahmedabad region, the permission was received to carry out the research among Police Sub Inspector (PSI) and subordinate official ranks i.e., Assistant Sub Inspector (ASI), Head Constable (HC) and Constable. Accordingly, the study was carried out amongst officers at Police Headquarters, Ahmedabad where around 3000 police officers of above mentioned rank reported daily who are serving at different police stations. Alist of all male police officers reporting at Ahmedabad Police Headquarters was obtained.

Based on findings of similar study carried out at Mumbai by Almale B. D. et al. [7], p was taken as 48%, q as 100-pwhich is 52%, allowable error E as 10% of p which is 4.8, applying the formula: $[(1.96)^2pq/ E^2]$ for sample size calculation,[10] the final calculated sample size came to 416.

From the list of all male police officers, the required numbers of participants were selected using simple random sampling method. Police officers who had served for less than 3 years were excluded from the study. In case a selected police official could not be contacted on day of visit, one more attempt was made to include participant in the study. After two consecutive efforts, the next immediate police official in the master list was selected.

The study duration was 3 months from September 2019 to November 2019. Data were collected by administering a self-designed pre-structured questionnaire. The questionnaire included sociodemographic profile, personal history including addiction history, perceived stress related questions, history of preexisting disease and its treatment and details of duty hours. Measurements in examination included height, weight, waist circumference, hip circumference and blood pressure. Pilot testing of the questionnaire was done amongst 10% of sample size i.e., 42 participants before initiation of study.

Data entry was done in MS Excel and Analysis was done using IBM Statistical Package for Social Sciences for Windows version 20.0 Armonk, NY-IBM Corp. Data analysis included measurements of central tendency, measurements of dispersion, frequency and chi-square.

Results:

The mean age of study participants was 42.50±9.32 years, mean height and weight being 170.63± 0.5 cm and 74.23± 10.5 kg respectively. Out of total policemen,331(79.6%) had more than 10 years of work experience while 85(20.4%) had work experience of 3 to 10 years.

Table 1 : Socio-Demographic Profile of study participants(n=416)

Variables	Subclass	Frequency(%)
Age (in completed years)	21 to 30	36(8.7)
	31 to 40	149(35.8)
	41 to 50	121(29.1)
	51 to 58	110(26.4)
Education	Secondary	73(17.5)
	Higher Secondary	148(35.6)
	Graduate	186(44.7)
	Post Graduate	9(2.2)
Religion	Hindu	394(94.7)
	Muslim	22(5.3)
Type of Family	Joint	159(38.2)
	Nuclear	257(61.8)
Marital Status	Single	6(1.4)
	Married	410(98.6)
Socioeconomic Status* (Modified B.G. Prasad Classification)	Class 1	216(51.9)
	Class 2	177(42.5)
	Class 3	18(4.3)
	Class 4	5(1.2)

*AICPI September 2019=322[11]

Among the policemen who were interviewed for the study, 247(59.4%) were Constables, 87(20.9%) were Head Constables,65(15.6%) being ASI and 17(4.1%) were PSIs.

Field Duty was performed by 343(82.5%) participants, 54(13%) had desk-work while 19(4.6%) policemen had both field and office duties to be accomplished during their postings. Frequency of change of shift was monthly for 395(94.9%) policemen and daily for 21(5.1%).

Mean Waist and Hip circumferences of participant male policemen were 94.41 ± 9.63 cm and 93.75± 8.51 cm respectively. According to the commonly accepted standards[12] almost half (206; 49.5%) of the participants had Normal Waist Hip Ratio, while other 210(50.5%) participants had Increased Waist Hip Ratio.

Mean Body Mass Index(BMI)of participants was 25.52±3.67 kg/m^2. As per Asian BMI Classification.[13], 80 (20%) participants were found to be overweight and 230 (55.3%) were found to be under obese category. Mean Systolic blood pressure was 128.36±7.01 mm Hg while mean Diastolic blood pressure was 80.62±3.66 mm Hg.

Almost half, 219(52.6%) participants were on a Vegetarian diet, 177(42.5%) were Non-vegetarians and 20(4.9%) were Eggetarians. Among the total study subjects, 224(53.8%) had the habit of eating

fast food during duty hours amongst which 143(63.8%) consumed fast food at least once a week.

Majority participants 373(89.7%) had 9 to 16 work hours per day. As shown in figure 1, disturbed sleep was found in 325 (78.2%) policemen out of which 249(76.6%) had 1 to 10 days of night duty per month and 76(23.4%) had between 11 to 20 days of night duty per month.

Most of the policemen 410 (98.6%) reported of having extra duty hours among which, extra duty hours ranging from 8 to 12 hours per week were reported by 371 (90.4%) participants. Both day/night shifts were performed by 379(91.1%) policemen while 37(8.9%) had only day-time shift in the present routine.

Details about co morbidities suffered by participants and treatment taken currently are given in Table 2.

The most common disease found among policemen was hypertension (11.29%) followed by diabetes(7.69%).Gastrointestinal and Psychiatric diseases were the least common.

Various forms of tobacco addictions were present in 186 (44.8%) policemen, out of which 31

Figure 1: Prevalence of disturbed sleep and role of nightshift duty on same among study participants (n=416)

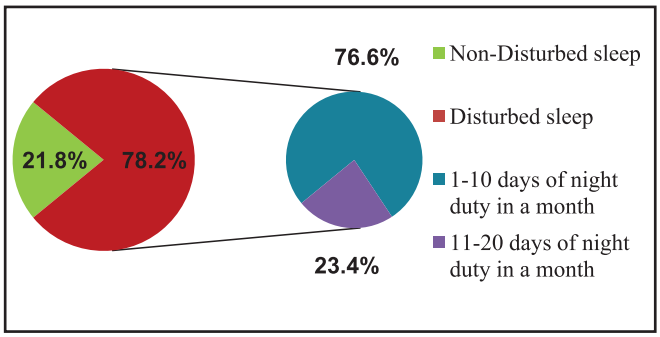


Figure 2: Tobacco Addiction details among policemen (n=416)

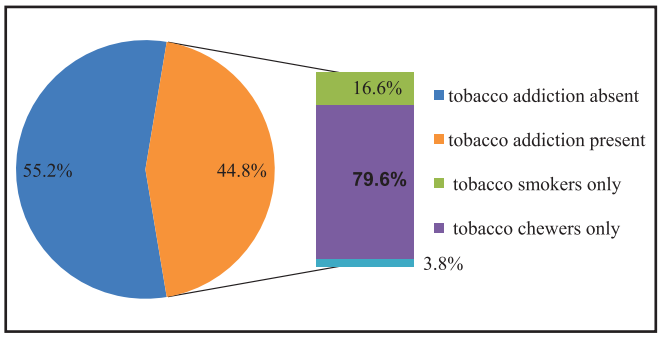


Table 2 : Disease profile and Treatment Status of study Participants (n= 125; 30%)

Disease*	No. of Policemen with the disease (%)	No. of Policemen with Ongoing treatment for disease present (%)
Hypertension	47 (11.29%)	33 (70.2%)
Diabetes	32 (7.69%)	24 (75.0%)
Musculoskeletal	30 (7.21%)	13 (43.3%)
Skin disease and Hair problem	13 (3.12%)	6 (46.1%)
Dental	11 (2.64%)	1 (9.0%)
Respiratory	7 (1.68%)	5 (71.4%)
Ophthalmic	5 (1.20%)	1 (20%)
Gastrointestinal	2 (0.48%)	2 (100%)
Psychiatric	2 (0.48%)	1 (50%)

*-Multiple Responses for disease were allowed

Table 3 : Disease profile and Treatment Status of study Participants (n= 125; 30%)

Perceived impact on lifestyle variables		Designation at the time of study				Total	Chi Square Value (P value)#
		Constable	Head Constable	ASI *	PSI*		
Tobacco Addiction	Yes	99	42	41	4	186	**14.54 (0.002)**
	No	148	45	24	13	230	
Fast food consumption habit	Yes	162	32	25	5	224	**34.16 (0.000)**
	No	85	55	40	12	192	
Exercise	Yes	153	49	43	10	255	1.64 (0.650)
	No	94	38	22	7	161	
Diseased Condition	Yes	59	24	35	6	124	**22.54 (0.000)**
	No	188	63	30	11	292	
Work affects family life	Yes	169	59	54	13	295	6.065 (0.108)
	No	78	28	11	4	121	
Perceived Consequences of Stress	Yes	90	37	35	10	247	6.63 (0.084)
	No	157	50	30	7	169	
Disturbed Sleep	Yes	201	59	50	15	325	**8.01 (0.046)**
	No	46	28	15	2	91	

#Yates Correction ***ASI = Assistant Sub Inspector** ***PSI = Police Sub Inspector**

(16.6%) had addiction for only tobacco smoking type, 148 (79.6%) had addiction of only tobacco chewing type, while 7 (3.8%) had both forms of tobacco addictions as shown in figure 2.Out of total participants with tobacco addictions,105 (56%) reported "stress" as a reason for intake of tobacco while 81 (44%) reported observing and following habits of "peers" as their reason for intake of the same.

Table 3 shows statistical significant association between designation of police officers at the time of study and perceived impact on lifestyle variables such as tobacco addiction, fast food consumption habit, diseased condition and disturbed sleep. All the above mentioned risk factors were more commonly seen in lower ranking personnel (Constable and Head Constable).

Majority of policemen 335(80.5%) did not play any sports, while 81(19.5%) played sports like cricket, volleyball, football and kabaddi. Upto 60 minutes of sports activity was found in 24 (29.6%) of participants while 57 (70.4%) had more than 60 minutes of Sports activity.Those who played sports daily were 13 (3.1%), 68(16.3%) played sports as per their convenient days in a week.

During the last one year, 23 (5.5%) policemen suffered from lower limb injury, 14 (3.4%) had upper limb injuries, 13 (3.1%) had head and neck injuries while 3 (0.7%) had torso injuries as shown in figure 3. 406 (97.6%) participants were living with their families while 10 (2.4%) were living away from their home. Among total policemen in the study, 295 (70.9%) said that their work did impact their family life while 121 (29.1%) said their work did not impact family life.

403 (96.9%) participants undertook medical checkups last year, out of which 368 (88.5%) had undergone checkup once in previous year. 374 (89.9%) of total participants stated Government requirement as a reason for medical checkup.Figure 4 shows exercise details of policemen, maximum police officers were doing other exercises like yoga and brisk-walking followed by running. Cycling was found to be the least common exercise among policemen.

Figure 3: Distribution of Study Subjects according to anatomical site where injury was sustained during last one year(n=53)

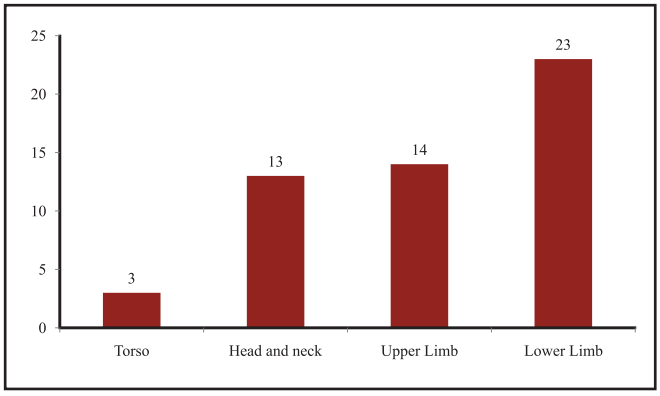
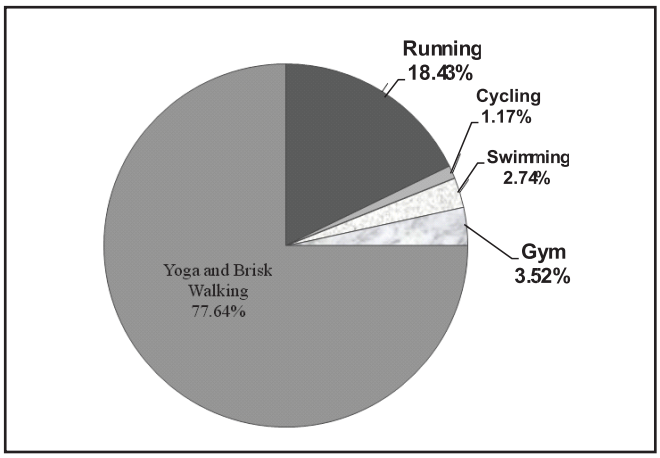


Figure 4 : Distribution of study participants according to the type of exercise preferred by them (n=255)



Discussion:

A total of 416 randomly selected male policemen were included as participant in present study. Maximum participants were in age group of 31 to 40 years (35.8%). The mean age of study participants was 42.5 ± 9.32 years which is in accordance with Study on Policemen at Delhi [2] and Pondicherry.[8] Almost half (46.9%) of the participants had graduate or above education. In the present study, 44.7% were graduates which is similar to the study at Delhi[2] (47.3%) while another study at Mumbai [7] showed 49% participants with higher secondary education. Type of family as Nuclear family was found in most (61.8%) participants. 98.6% participants were married in the present study while 91% policemen were married in the study at Mumbai.[7] Most participants (94.5%) belonged to Class 1 and 2 of modified BJ Prasad Classification for Socioeconomic status.

Maximum policemen were of constabulary rank (59.4%) in the present study while Delhi [2] and Pondicherry[8] Police Studies showed 79.3% and 67% constables respectively. Duty hours were 9-16 hours per day in most policemen (89.7%) in present study while the same being 12-16 hours per day in 56% policemen of Mumbai.[7]

Mean Body Mass Index (BMI) in the present study was 25.52 ± 3.67 kg/m^2 which is in line with Delhi [2] Policemen showing mean BMI 25.6 ± 3.6 and Kolkata [14] with mean BMI of 24.08 ± 2.8. Overweight (BMI >23) policemen were 20% and Obese (BMI >25) category were 55.3% in present study which is very similar to Pondicherry [8] study showing overweight 25.3% and Obese 51.6%.

Mean height and weight of policemen in the current study were 170.63 ± 0.54 cm and 74.23 ± 10.50 kg which were nearer to the findings of Kolkata[14] (172.77 ± 4.93cm, 71.94 ± 9.37 kg) and Delhi[2] (172.7 ± 6.6 cm, 76.6 ± 11.9 kg) respectively.

As per a WHO report,[15] a healthy waist hip ratio for men is 0.9 or less. Present study found higher mean waist hip ratio of 1.0 ± 0.03 similar to study in Delhi (0.99 ± 0.06)[2]

Tobacco addiction was found in 45% policemen in present study which is much higher than Delhi[2] (33.5%), Pondicherry[8] (23%) and even higher than Gujarat State Tobacco addiction (38.7%) among adult men.[16] Addiction was more common in participants having field duty compared to those having only office duty. Also, addiction was more common amongst lower cadre of participants. Possible reason may be their work in field duties.

More than quarter (30%) participants suffered from one or more co-morbidities. Amongst that hypertension was most common. A meta-analysis in India [17] showed the prevalence of hypertension in urban west India to be 35.8% in general population

while present study showed much less prevalence of 11.29% among policemen. Possible low prevalence in policemen may be due to their apparently healthy status at time of selection.

Mean systolic blood pressure was 128.36 ± 7.0 while a study among police personnel done at Chennai [18] had mean systolic blood pressure 128.3 ± 18.8 and Kolkata[14] showed mean systolic blood pressure 130.81 ± 13.43. Mean Diastolic blood pressure in present study was 80.62 ± 3.66 which is lower as compared to Chennai [18] (85.5 ± 12.5) and Kolkata[14](82.08 ± 7.06). Prevalence of Diabetes was 7.6% in police officers of present study which is lower than Delhi [2] (12%), Kerala [1](12.5%), Mumbai [7] (12.7%) and Pondicherry (33.6%).[8]

Due to high workload almost three quarter of participants (70.9%) informed that work stress affected their family life. 74.03% participants were under stress as per current study which is slightly higher than Pondicherry Police(69.5%).[8] And the work stress lead to various health related consequences like acidity, headache, peptic ulcer and insomnia.Most participants (61.3%) had habit of regular exercising which is necessary to remain physically fit.

Statistical association was obtained between current designation and lifestyle habits like tobacco addiction and fast food consumption. These lifestyles were more common amongst lower cadre of policemen. Similarly, disturbed sleep and presence of co-morbidity was also more common amongst policemen of lower cadre. Possible reasons may be due to field work and stress to meet expectations of senior police officers.

Conclusion:

Present study showed high prevalence of Overweight and Obesity amongst male policemen of Ahmedabad city. Factors like Improper dietary habits, presence of disease, disturbed sleep and tobacco addictions amongst Policemen had a significant association with their work designation. Majority suffered from perceived stress and their consequences.

Recommendations:

Periodic and more frequent Health checkups need to be carried out. A Holistic counseling approach which includes dietary counseling, stress management and de-addiction sessions are required. The Government needs to review health profile after certain specified fine interval and shall try to maintain a balanced work schedule for the protectors of the city.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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A Study of Needle Stick Injuries among Nursing College Students in a Tertiary Care Hospital in Chengalpattu District, Tamil Nadu

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Abstract :

Introduction: Needle stick injuries (NSIs) are the most potential occupational hazards among nursing personnel with possible transmission of blood borne pathogens. As nursing students are in the learning stage, they might be at higher risk of acquiring the injuries.**Objectives:** Todetermine the prevalence of needle stick injuries and to assess the awareness, attitude and practices followed with regard to NSIs. **Method:** An online cross-sectional study was conducted from October to December 2020 among 175 students in a nursing college in Chengalpattu district Tamil Nadu, using a pretested semi- structured questionnaire, adopting universal sampling technique. Data was analyzed using SPSS version 23. Categorical variables were summarized as Percentages and chi square test was used for statistical analysis. **Results:** The overall prevalence of needle stick injury among nursing college students was 16%.Final year studentsweremore exposed to the injuries(35.7%). Majority (96.57%) of the students were aware about universal precaution guidelines, 57% of students were aware about the diseases transmitted by NSI, 97.71% were aware about safety devices and 67.43% of students were aware about the post-exposure prophylaxis in management of NSIs.Among the students, 71.43% had used gloves regularly, 72% were immunized against Hepatitis B, only 25.71% of students attended Integrated Counselling Testing Centre(ICTC) and more than half of the students always practiced recapping needle after giving injections. **Conclusion:** Majority of the students in this study were aware about NSIs, their attitude towards NSIs was agreeable. The practices reported though assessed through online survey was found to be deficient.Periodic education and training need to be done to avoid injuries in future.

Keywords: Needle stick injuries, Nursing students, Post exposure prophylaxis, Recapping, , Universal precaution guidelines

Introduction:

Needle Stick Injuries (NSIs) are the most common occupational hazards occurring among health care workers.[1]Needlestick injuries as defined by the United States National Institute of Occupational Safety and Health are injuries caused by needles such as hypodermic needles, blood collection needles, intravenous (IV) stylets, and needles used to connect parts of IV delivery systems. [1]World Health report 2002 had reported that among 35 million health care workers, 2 million health workers were exposed to needle stick injuries every year. [2] The developing countries have reported higher exposure to NSI and about 75% of injuries were not being reported.[3] More than 20 different

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Ramya M R, Geetha M, Lakshmi N, Jawahar S S. A study of Needle Stick Injuries among Nursing college students in a Tertiary care hospital in Chengalpattu district, Tamil Nadu. Healthline. 2021;12(3):60-67 .
	DOI : 10.51957/Healthline_235_2021	

pathogens have been reportedto be associated with NSIs of which Hepatitis B and C and Human Immunodeficiency Virus (HIV) infection are most serious infections occurring among health workers. [4] The transmission rate of Hepatitis B due to NSIs vary from 6 to 30%, and those of Hepatitis C and HIV are 3% and 0.3% respectively. [5] The Ministry of Health and Family Welfare of Government of India had recommended that the healthcare providers must be aware of the safety precautions that must be followed for the prevention of NSIs. Adequate training of health workers and effective reporting system is made available in all health facility.[3] Safe practices while handling sharps and needles play a major role in safety of health workersThere are limited data about prevalence of NSI in India. [3] When compared with other health professionals, the nursing students are more prone to get needle stick injuries since they start learning to give injections, starting IV line, taking blood samples andalso have higher exposure to sharp needles or instruments. Hence this study was planned among nursing students of a nursing college in Chengalpattu district, TamilNadu.

Objectives:

1. To determine the prevalence of needle stick injuries among the nursing students in a tertiary care hospital in Chengalpattu district, Tamil Nadu
2. To assess theirawareness, attitude and practice related to needle stick injuries among the study population.

Method:

An online cross-sectional study was conducted from October to December 2020 among BSc.Nursingstudents of Karpaga Vinayaka College of Nursing, Chengalpattu district,TamilNadu.All nursing students from first to final years were included in the study. Those students who were included in the pilot study were excluded from the study. The sample size was calculated using the formula $n=Z^2pq/d^2$ (where Z=1.96 at 95% confidence); a similar study done by Devaki T et al, [8] reported prevalence of needle stick injury of 62.42%, with an allowable error of 12% of p. The sample size thus yielded was 168 which was approximated to 175. Totally there were 190 nursing students(1^{st}year 49, 2^{nd} year 43, 3^{rd} year 50 and 4^{th} year 48 students) in our college, of which pilot study was done among 10 randomly selected students. About 175 completed forms were received from 180 students and Universal Sampling Technique was used. A pilot study was done among 10 students to check the feasibility of the questionnaire and thus apretested semi- structured questionnaire consisted of the following such associodemographic data, about occurrence of any needle stick injuries, questions related to the awareness of needle stick injuries, attitude towards needle stick injury and the practices they followed while handling the needles or sharp instruments were included. The study was conducted after obtaining the necessary clearance from the Institutional Human Ethics committee and after getting the permission from the head of the nursing institutions. The Google survey form with questionnaire was shared with the students through social media. The first part of the Google form consisted of statement of purpose for collection of data and then the informed consent form. The participation was voluntary and the participants were given a choice to exit the study at any point of the survey.Confidentiality was maintained. Data was entered in Microsoft Excel 2016. Analysis was carried out by using Statistical Package for the Social Sciences (SPSS) version 23. Descriptive statistics such as mean, standard deviation (Mean ±Standard Deviation) and percentage were used. Chi square test was used for statistical analysis to find out any association between variables. P value < 0.05 was considered as statistically significant.

Results:

A total of 175 completed responses were received. About 57.6% of students were aged 20 years and below,42.4% were above 20 years. The

mean age of the students was 20.21 (±1.408). Majority of the students were female with (92%) and 8% were males.

The overall prevalence of needle stick injuries among nursing college students were 16%.The prevalence was 16.33%, 7.89%, 15.56% and 23.26% among first, second, third- and fourth-year students respectively. There was no statistically significant association between year of study and sustaining needle stick injury (Table 1). Among 28 students who had sustained needle stick injury, 85.7% students had informed about their injury to their higher authority and 78.6% students had injury

Table 1: Distribution of needle sticks injuries among nursing college students based on the year of study (n=175)

Year of study	Sustained any needle stick injury		Chi square (p value)
	Yes (n=28)	No (n=147)	
1st year (n=49)	8 (16.33%)	41 (83.67 %)	3.552 (0.314)
2nd year (n=38)	3 (7.89 %) *	35 (92.11%)	
3rd year (n=45)	7 (15.56 %)	38 (84.44%)	
4th year (n=43)	10 (23.26 %)	33 (76.74%)	

*Yates correction applied

Table 2 : Distribution of needle sticks injuries reported by nursing students (n=175)

Prevalence		1st year (n=49)%	2nd year (n=38)%	3rd year (n=45)%	4th year (n=43)%	Total (n= 175)%	Chi-square (P value)
Ever administered injections	Yes	19 (14.3)	35 (26.3)	38 (28.6)	41 (30.8)	133 (76)	53.213 (0.000)
	No	30 (71.4)	3* (7.14)	7 (16.6)	2* (4.6)	42 (24)	
Informed about needle stick injury (28)	Yes	6 (25)	3* (12.5)	6 (25)	9 (37.5)	24 (85.7)	4.782 (0.572)
	No	2*(50)	0	1* (25)	1 *(25)	4 *(2.3)	
How many times sustained NSI (28)	Once	8 (36.4)	2*(9.2)	6 (27.2)	6 (27.2)	22 (78.6)	13.261 (0.350)
	Twice	0	1* (20)	1*(20)	3*(60)	5 (17.9)	
	More than twice	1* (100)	0	0	0	1 (3.5)	

*Yates correction applied

Table 3: Awareness regarding needle stick injuries among nursing students(n=175)

Awareness regarding Needle Stick Injuries (NSI)		1st year (n=49)	2nd year (n=38)	3rd year (n=45)	4th year (n=43)	Total (n= 175)	Chi-square (p value)
Know about universal precaution guidelines	Yes	46 (27.2)	37 (21.9)	44 (26)	42 (24.9)	169 (96.57)	1.503 (0.682)
	No	3* (50)	1* (16.7)	1* (16.7)	1* (16.7)	6 (3.43)	
Diseases transmitted by NSI	HIV/AIDS	17 (30.9)	14 (25.5)	12 (21.8)	12 (21.8)	55 (31.43)	7.902 (0.793)
	Hepatitis B	6 (28.6)	5 (23.8)	5 (23.8)	5 (23.8)	21 (12)	
	Hepatitis C	1* (100)	0	0	0	1 (0.57)	
	All of the above	25 (25.5)	19 (33.3)	28 (28.5)	26 (26.5)	98 (57)	
Aware about safety devices	Yes	47 (27.5)	37 (21.6)	44 (25.7)	43 (25.1)	171 (97.71)	1.735 (0.629)
	No	2* (50)	1* (25)	1* (25)	0	4 (2.29)	
Aware about post exposure prophylaxis in management of NSIs	Yes	24 (20.3)	29 (24.6)	36 (30.5)	29(24.6)	118 (67.43)	12.199 (0.007)
	No	25 (43.9)	9 (15.8)	9 (15.8)	14 (24.6)	57 (32.57)	

*Yates correction applied

only one time. (Table 2) About 109 students responded that needle stick injury was due to careless attitude followed by 60 students replied that lack of experience, 34 students marked being over-burdened and 11 students responded that stress as the reasons for needle stick injury in which multiple responses were received. The common reasons for occurrence of needle stick injury are shown in figure1.

Among 175 nursing students, 169 (96.57%) students knew about the Universal precaution guidelines, 98 (57%) students had answered that HIV, Hepatitis B and Hepatitis C are transmitted by Needle stick injury, 171 (97.71%) students were aware about the safety devices, 118 (67.43%) students were aware about post-exposure prophylaxis in the management of needle stick injury. There is a statistically significant difference found between year of study and awareness about post exposure prophylaxis in management of NSIs. The distribution of awareness about needle stick injury has been shown in Table 3.

Among 175 nursing students, 147 (84%) had agreed that needle stick injury transmits infection, 101 (57.71%) students had agreed that needle stick injury is preventable, 171 (97.72%) students had agreed that reporting about needle stick injury to

Table 4: Attitude regarding needle stick injuries among nursing students (n=175)

Attitude regarding needle stick injuries		1st year (n= 49)	2nd year (n= 38)	3rd year (n= 45)	4th year (n= 43)	Total (n= 175)	Chi-square (p value)
Needle stick injury transmit infection	Agree	41 (27.9)	33 (22.4)	37 (25.2)	36 (24.5)	147 (84)	3.406 (0.756)
	Disagree	1*(11.1)	3*(33.3)	3*(33.3)	2*(22.2)	9 (5.14)	
	Not sure	7 (36.8)	2 (10.5)	5 (26.3)	5 (26.3)	19 (10.86)	
Needle stick injury is preventable	Agree	25 (24.8)	20 (19.8)	31 (30.7)	25 (24.8)	101 (57.71)	7.897 (0.246)
	Disagree	1(14.3)*	3 (42.9)	0	3(42.9)*	7 (4)	
	Not sure	23(34.3)	15(22.4)	14(20.9)	15(22.4)	67 (38.29)	
Reporting of needle stick injury is important	Agree	47 (27.5)	38 (22.2)	43 (25.1)	43 (25.1)	171 (97.72)	11.002 (0.088)
	Disagree	0	0	2 (100)	0	2 (1.14)	
	Not sure	2 (100)*	0	0	0	2 (1.14)	
NSI is fatal	Agree	23(23.7)	28(28.9)	25(25.8)	21(21.6)	97 (55.43)	9.371 (0.154)
	Disagree	3 (30)*	2 (20)	1 (10)*	4 (40)*	10 (5.71)	
	Not sure	23 (33.8)	8 (11.8)	19 (27.9)	18 (26.5)	68 (38.86)	

*Yates correction applied

higher authority was important, 97 (55.43%) students had reported that needle stick injury was fatal. The distribution of attitude about needle stick injury has been shown in Table 4.

Among 175 nursing students, 125 (71.43%) students regularly wore gloves.Most of the students (62%) didn't wear gloves due to the non-availability, 24% students reported that the patients were so serious and wearing gloves might delay the service and 14% replied it was time consuming as the reasons for not wearing gloves. About 126 (72%) students were immunized against Hepatitis B before needle stick injury. Only 26 (14.86%) of students had done blood investigation after havingneedle stick injury, 19 (10.86%) students had taken treatment for needle stick injury. Among the various measures taken for immediate management of needle stick injury, 77.1% of the students responded that they used to wash the injured area with soap and running water and 24.5% responded that they used to clean the area with spirit swab has been shown in figure 2.About 34 (19.43%) students had received TT injection after acquiring the injury. 45 (25.71%) had attended ICTC counselling. 90 (51.43%) students always practiced recapping needle after giving injections. The distribution of practices done to prevent the needle stick injury has been shown in Table 5.

Discussion:

This study was done to determine the prevalence of needle stick injuries and to assess the awareness, attitude and practice of needle stick injuries among the nursing students. About 76% of the nursing

Table 5: Practice regarding prevention of needle stick injuries among nursing students (n=175)

Practice regarding prevention of needle stick injuries		1st year (n=49)	2nd year (n=38)	3rd year (n=45)	4th year (n=43)	Total (n=175)	Chi-square (p value)
Wear gloves regularly	Yes	37(29.6)	23(18.4)	34(27.2)	31(24.8)	125(71.43)	2.998 (0.392)
	No	12 (24)	15 (30)	11 (22)	12 (24)	50 (28.57)	
Immunized against Hepatitis B before needle stick injury	Yes	36 (28.6)	26 (20.6)	34 (27)	30 (23.8)	126 (72)	0.682 (0.877)
	No	13 (26.5)	12 (24.5)	11 (22.5)	13 (26.5)	49 (28)	
Blood investigation done after needle stick injury	Yes	7 (26.9)	4 (15.4)	5 (19.2)	10(38.5)	26(14.86)	3.473 (0.324)
	No	42 (28.1)	34 (22.8)	40 (26.8)	33 (22.1)	149(85.14)	
Taken treatment for NSI	Yes	3 (15.8)	3 (15.8)	6 (31.6)	7 (36.8)	19 (10.86)	3.071 (0.381)
	No	46 (29.5)	35 (22.4)	39 (25)	36 (23.1)	156 (0.89)	
Received vaccination after NSI	Yes	9 (26.5)	6 (17.6)	10 (29.4)	9 (26.5)	34(19.43)	0.643 (0.887)
	No	40 (28.3)	32 (22.6)	35 (22.8)	34 (24.1)	141(80.57)	
Attended ICTC counselling	Yes	13 (28.9)	6 (13.3)	15(33.3)	11 (24.4)	45 (25.71)	3.345 (0.341)
	No	36(27.7)	32(24.7)	30(23)	32(24.6)	130 (74.29)	
Recap needle after injection	Yes	28 (31.1)	24 (26.7)	18 (20)	20 (22.2)	90 (51.43)	5.503 (0.138)
	No	21(24.7)	14(16.47)	27(31.76)	23(27.05)	85(48.57)	

Figure 1: Common reason for needle stick injury

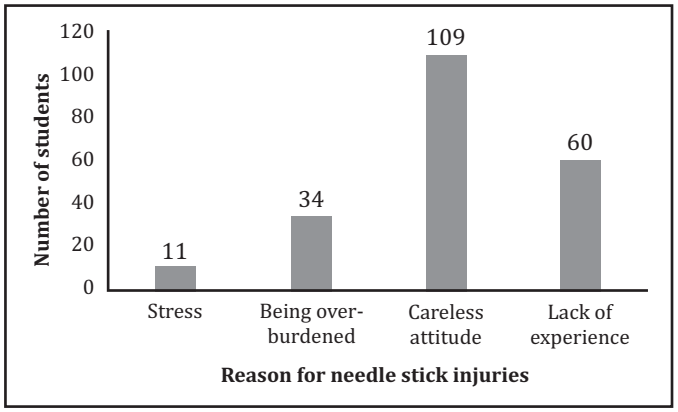
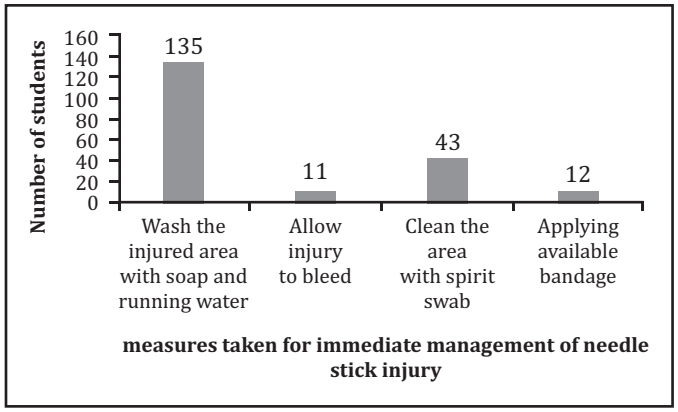


Figure 2: Measures taken for immediate management of needle stick injury



students had administered injections to someone and the prevalence of needle stick injury among nursing college students were 16% in this study with majority of them being final year students. Similar studies done by Devaki T et al and Rajesh J et al reported that 56% and 29.7% of nursing students had sustained needle stick injury. [8, 11] Various studies among different groups of health care worker had reported higher prevalence of NSIs compared to our study. [4-7, 10] The occurrence of needle stick injury was comparatively less in our study as majority of the students had followed the preventive measures for needle stick injury.

About 96.57% of students knew about universal precaution guidelines.But in a similar study done by Gupta D et al, only 21.6% of students knew about the

guidelines [5] which was found to be better in our study. Around 57% of the students knew that HIV/AIDS, Hepatitis B and Hepatitis C were the common diseases transmitted by needle stick injury.Whereas in a study by Gogoi J et al among health care workers, 100%, 98.9% & 67.8% knew HIV/AIDS, Hepatitis B virus and Hepatitis C virus as common diseases associated with needle stick injury. [4]Similar studies among health workers had reported less knowledge when compared with the present study. [5, 9, 10] About 97.71% of students were aware about safety devices, which was higher when compared with a study done by Gupta D et al, only 27.6% of students were aware about safety devices, [5]A higher awareness among our study participants could be attributed to the periodic training regarding safety measures.Regarding post exposure prophylaxis (PEP) 67.43% of students were aware about it. Similar findings were also reported by Gupta D et al.[5]

Wearing gloves is said to be the basic preventive measure against needle stick injury.And so, in this study, 71.43% of students had responded that they wore gloves and remaining students said due to non-availability of gloves they did not wear it regularly. [10] Thus, when compared with other studies, [3, 5, 10] this study participants were found to be more aware about the preventive measures which might be due to the online survey responses. In the present study more than half of the students (72%) were immunized against Hepatitis B which was found to be high when compared with previous studies.[5,6,10] Only 10.86% of students had taken treatment for needle stick injury, among them 36.8% were final year students. In a study done by Sriram, 82% of health care workers had taken treatment after needle stick injury. [3] This difference might be because of the differences in the study population as students are least concerned about the treatment.In this study only 19.43% of students had taken tetanus toxoid injection. In Prasuna J et al study, 62.5% of students had received vaccination after injury, this difference would be because in our study, majority of the students used gloves while handling sharp instruments and needles. [6]In this study, 51.43% students used torecap needle after injection, among them 31.1% of first year students used to recap the needle. When compared with other similar studies the finding were found to be comparable.[2,5,7,9,10] In the current study, 77.1% of the students informed that they used to wash the injured area with soap and running water if they had any injury.When comparing the findings with other studies, study participants had taken proper care if they had any injury.[9,10]

Blood borne infections can be prevented by following the infection control guidelines such as proper hand washing, wearing personal protective equipment's, training the health workers, biomedical waste management and proper surveillance system on hospital acquired infections.

Conclusion:

The present study reveals that the prevalence of needle stick injuries among nursing students was less which may be due tounder reported cases or unnoticed injuries. Majority of the students in our study were aware about the diseases transmitted by needle stick injury, the safety devices, about the post exposure prophylaxis, the attitude towards the injuries were agreeable, but the practices followed was not much satisfactory.

Recommendation:

Since the present study was an online survey, the responses found might not be truthful and satisfactory, so a hospital based cross-sectional study is recommended to assess the actual knowledge and practices they follow in the hospital. Periodical refresher training and updating the universal precaution guidelines are recommended for the students to reduce the needle stick injuries in future and improve safer needle use practices.

Limitation of the study:

A pretested semi-structured was used for assessing the knowledge of the needle stick injuries. The knowledge questionnaire needed to be modified for assessing the complete knowledge about the

NSI.The practices found in the study results was done by online survey which was self-reported by the study participants which leaded to memory-based answers and was not directly observed by the investigator and might not exactly reflect actual practices. Since it was an online survey, an element of subjective bias or recall bias could be possible.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Factors Influencing Treatment of Animal Bite and Prevailing Practices Regarding Wound Care among Cases Attending Referral Hospital of Ahmedabad City, Gujarat

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Abstract:

Introduction: In rabies endemic country like India, where every animal bite is potentially suspected as rabid animal bite the treatment should be started immediately. **Objective**: To study socio demographic profile, delay in seeking treatment and wound treatment at home among the animal bite cases. **Method**: Records of Animal bite cases from January-June 2016 were analyzed and 155 patients (12.5%) with animal bite were interviewed, after taking their informed verbal consent. **Results**: Total 1225 cases, 836 (68.2 %) were males and 389(31.8%) were females. Among them 1121 (91.5%) were category II bites and 558(45.6%) patients had missed one or more doses. There was statistically significant association between age groups and the doses missed and between gender and the doses missed. Among the 155 interviewed, 100(64.5%) were males and 55(35.5%) were females. About 90(58%) came to health facility within 24 hours of the bite. About 50 (32.3%) subjects missed to take the dose on scheduled date after taking the first dose. Only 61(39.4%) performed correct wound treatment at home. Association between action taken for wound treatment and gender was statistically significant. Association for delay in taking the next doses after the first dose and age group was statistically highly significant. **Conclusion**: Most cases of animal bite were dog bite cases. More than half reached the health facility within 24 hours. More than half treated the wound incorrectly at home.

Key words: Animal bite, Referral hospital, Wound treatment

Introduction:

Rabies is a zoonotic disease, caused by the rabies virus, of the Lyssavirus genus, within the family Rhabdoviridae. Domestic dogs are the most common reservoir of the virus, with more than 95% of human deaths caused by dog-mediated rabies. The virus is transmitted in the saliva of rabid animals through the wound (e.g. scratches), or by direct exposure of mucosal surfaces to saliva from an infected animal (e.g. bites).[1]

As per World Health Organization, with the exception of Antarctica, rabies is endemic on all continents. Of the tens of thousands of deaths occurring annually due to rabies, 95% of cases are reported in Asia and Africa. In Asia, the highest incidence and deaths are reported in India. But estimates of burden have always been uncertain due to the absence of reliable data especially in Middle East and Central Asia. [1] In urban areas the disease is mainly transmitted by dogs, being responsible for

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Puwar B. Factors Influencing Treatment of Animal Bite and Prevailing Practices Regarding Wound Care among Cases Attending Referral Hospital of Ahmedabad City, Gujarat. Healthline. 2021; 12(3): 68-76.
	DOI : 10.51957/Healthline_254_2021	

96% of animal bite cases. [2] Animal bite cases if managed appropriately and timely the disease is preventable to a large extent. In this regard post exposure prophylaxis treatment (PEP) is of prime importance.[2]

In rabies endemic country like India, where every animal bite is potentially suspected as rabid animal bite the treatment should be started immediately. People who present late after possible rabies exposure should be evaluated and treated as if the event had occurred recently.[1] Post exposure prophylaxis is a three pronged approach. Rabies vaccine is given to people at high risk of rabies to protect them if they are exposed. It can also prevent the disease if it is given to a person after they have been exposed. Rabies vaccine is made from killed rabies virus. It cannot cause rabies.[2]

In India NTV (Neural Tissue vaccine) was used in the past. Now Active immunization is achieved by administration of safe and potent Cell Culture Vaccine. [2] As per the current regimen (Thai Red Cross Schedule) 2-2-2-0-2, Which involves injection of 0.1 ml of reconstituted vaccine per ID site (intra dermal) and on two such ID sites per visit (one on each deltoid area, an inch above the insertion of deltoid muscle) on day 0, 3, 7, 28. The day 0 is the day of first dose administration of intra dermal rabies vaccine (IDRV) and may not be the day of rabies exposure/ animal bite.[2]

The wound of animal bite must be cleaned properly as the rabies virus enters human body through wound. Since rabies virus can persist and even multiply at the site for a long time wound toilet is must even if the patients reports late. [2] Rabies in dogs is still common in many parts of the world, and the vast majority of human rabies cases worldwide come from being bitten by rabid dogs.[3] Thus to understand the factors that play a role in seeking treatment and what practices are adopted in the community for wound care, the study was undertaken.

Objectives:

1. To study socio demographic variables of animal bite cases, reason for delay in initiation treatment and the practices related to wound care after animal bite

2. To correlate various socio demographic variables with completion of treatment and reasons for delay in treatment

Method:

Animal bite cases visiting the Referral hospital were studied from January to June 2016. Information available from the register of the hospital was collected and analyzed. It was planned to interview 10% patient and taking 2.5% non response rate total 12.5% patients were conveniently selected to understand other factors, after taking their informed verbal consent. In patients who presented after 24 hours of animal bite, the reasons for delay in initiation of treatment were inquired Patients were followed till they came for the last dose. All the patients were informed about the date of next dose during the interview. Category of bite was taken as assigned by the treating medical officer. All the patients were provided injection tetanus toxiod intramuscularly; wound dressing and ARV (Anti rabies vaccine) injection intradermally as per the standard treatment regimen. Additionally anti rabies serum was provided to category III patients.

Results:

Analysis of 1225 records of patients showed that 836 (68.2 %) were males and 389(31.8%) were females. Most common age group was 15 to 60 years and mean age was 28.77 years with Standard Deviation of 18.6 years. Most common category of bite was II and 557(45.6%) patients had missed one or more doses. On analyzing further, number of doses missed revealed that 229(41.11%) missed one dose and 152(27.29 %) missed two and 176(31.60%) missed three doses. (Table1).

Table 1: Distribution of characteristics of all animal bite cases (N=1225)

Variables		No. (%)
Gender	Male	836 (68.2)
	Female	389 (31.8)
Age Group	0-14	346 (28.2)
	15-45	626 (51.1)
	46-60	182 (14.9)
	>60	71 (5.8)
Category of bite	I	3 (0.2)
	II	1121 (91.5)
	III	101 (8.3)
Any dose Missed	Yes	557 (45.5)
	No	668 (54.5)
No. of Missed doses (N=557)	1	229 (41.1)
	2	152 (27.3)
	3	176 (31.6)

There was statistically significant association between age groups and the doses missed and same was true for gender and the doses missed. Males have missed doses in higher proportion than the females. Also when the association was done for age group and the number of doses missed it was not significant statistically. And also same was true for gender and number of doses missed. (Table2)

Details of interviewed patients:

Of 155 interviewed patients 100(64.5%) were males and 55(35.5%) were females and their mean age was 28.66 with SD of 17.64. Minimum age was 2 years and maximum age was 80 years. About 13 (8.4%) were illiterate. It was found that 154(99.4%) had dog bite and only one was bitten by other animals like monkey. Majority, 143 (92.3%) had category II bite, 3 (1.9%) patient had category I bite and 9 (5.8%) patient had category III bite. In more than half, right side of the body was affected and most common site (139) was lower limb with 89.1%.

Further it was found that 120 patients (77.4%) had single and 35(22.6) % had multiple bites and similarly 144(92.9%) had superficial and 11(7.1%) had deep bites. About 91(58.70%) came to health facility within 24 hours of the bite for treatment. About 50 (32.3%) subjects missed to take the dose on scheduled date after taking the first dose. Most common reason for delay in seeking treatment was

Table 2 : Association between doses of vaccine missed and other variables

Variable				Chi Square, p value
Age group (Years)	Doses Missed		Total	
	Yes	No		
0-14	152(43.9)	194(56.1)	346(100)	7.01, 0.07
15-45	301(48.1)	325(51.9)	626(100)	
46-60	81(44.5)	101(55.5)	182(100)	
>60	23(32.4)	48(67.6)	71(100)	
Gender	Doses Missed			
Female	153(39.33)	236(60.67)	389(100)	8.66, 0.003
Male	404(48.3)	432(51.7)	836(100)	
Age group (Years)	No of Doses Missed			3.90, 0.6
	1	2	3	
0-14 (n=152)	58(38.16)	44(28.95)	50(32.89)	
15-45(n=301)	132(43.9)	74(24.6)	95(31.6)	
46-60(n=81)	29(35.8)	27(33.3)	25(30.9)	
>60(n=23)	10(43.48)	7(30.43)	6(26.09)	
Gender	No of Doses Missed			
Female(n=153)	67(43.79)	41(26.79)	45(29.41)	0.70,0.7
Male(n=404)	162(40.00)	111(27.48)	131(32.42)	

ignorance (86%) and in remaining the reasons were busy, to attain some function and holiday at centre.

In immediate treatment of wound at home, about 33(22%) people washed the wound with only water and 28(18%) used soap and antiseptic in cleaning the wound. About 61 (39.35%) did nothing before visiting the hospital, Apart from this; various other items were applied on the site of bite by rest of them like tobacco(7,4.52%, snuff (4, 2.58%), chilli powder (16,10.32%), and in few others even talcum powder, turmeric, lime (chuna), toothpaste and tea were used. Thus only 61(39.4%) took correct action and rest as per the myths prevalent in the society. Of all, 126(81.3%) received all doses and completed vaccination and 29(18.7%) missed doses and had incomplete vaccination. (Table 3)

Table 3: Distribution of Socio demographic variables in interviewed animal bite cases (n=155)

Variables	Males (n=100)	Females (n=55)	Total (n=155)
Age group (Years)			
1-14	28(68.29)	13(31.71)	41(26.5)
15-60	51(60)	34(40)	85(54.84)
46-60	17(85)	3(15)	20(12.90)
>60	4(44.44)	5(55.56)	9(5.8)
Education			
Illiterate	10(76.92)	3(23.08)	13(8.4)
Just literate	6(60)	4(40)	10(6.5)
Primary	26(59.09)	18(40.91)	44(28.4)
Secondary	16(69.57)	7(30.43)	23(14.8)
Higher Secondary	16(55.17)	13(44.83)	29(18.7)
Graduate and above	19(73.08)	7(26,92)	26(16.8)
NA(age less than 7yrs)	7(77.77)	3(33.33)	10(6.4)
Delay in initiation of treatment after the bite(n=64)	1 to 3 days	37	57.81
	3 to 5 days	24	37.50
	More than 5 days	3	4.69
Doses missed(n=155)	Yes	50	32.3
	No	105	67.7
Number of dose missed	2nd Dose (day3)	10	20
	3rd Dose(day 7)	14	28
	4th Dose(day 28)	26	52
Wound care at home	Correct	61	39.4
	Incorrect	94	60.6

Table 4: Association of various factors with delay in starting the treatment and wound care

Variables			Chi Square	p value
Delay in seeking treatment	**Yes**	**No**		
Gender				
Female (n=55)	27(49.09)	28(50.91)	2.140	0.144
Male(n=100)	37(37)	63(63)		
Age group(years)				
0 to 14 (n=41)	16(39)	25(61)	6.35	0.09
15 to 45(n=85)	35(41.2)	50 (58.8)		
46 to 60 (n=20)	12(60)	8(40)		
>60 (n=9)	1(11.11)	8(88.89)		
Wound care	**Incorrect**	**Correct**		
Gender				
Female (n=55)	27(40.09)	28(50.91)	4.769	0.029
Male (n=100)	67(67)	33(33)		
Age group(years)				
0 to 14 (n=41)	27(40.09)	14(34.15)	1.91	0.59
15-45(n=85)	48(56.5)	37(43.5)		
46-60 (n=20)	14(70)	6(30)		
>60 (n=9)	5(55.56)	4(44.44)		
Delay in taking doses after 1st dose	**Yes**	**No**		
Gender				
Female (n=55)	17(30.90)	38(69.10)	0.071	0.79
Male(n=100)	33(33)	67(67)		
Age groups				
0 to 14 (n=41)	20(48.78)	21(51.2)	10.80	0.012
15 to 45(n=85)	20(23.5)	65(76.5)		
46 to 60 (n=20)	5(25)	15(75)		
>60 (n=9)	5(55.56)	4(44.4)4		

When association was done for delay in taking the next doses after the first dose and other variables, it showed statistically highly significant relation with only age group and no statistical association with other variables like gender .(Table 4)

Discussion:

This study was conducted in a referral hospital by analyzing 1225 records of animal bite cases. There were 68.2 % males and 31.8% females. A similar finding was observed in the studies done by Gogtay et al, Vyas et al and Ganasva et al. [4,5,6] Most common age group in our study was 15 to 60 years (66%) whereas a study by Naik et al in Puducherry found that maximum numbers of respondents were aged 30 – 44 years.[7] Mean age in our study population was 28.77 years with SD of 18.6 whereas study by Vyas et al in Ahmedabad city found mean age of cases as 19+20.2 years.[5]

Most common category of bite was II (91.7%) in our study and study by Piyush Jain and Garima Jain also supported the similar finding [8] and also study by Naik et al in Puducherry found Category II (58.3%) as most common [7] whereas the study by Gogtay et al, Vyas et al found category III as more common type of bite. [4,5]

In present study, 45.6% of patient had missed one or more doses. Adults in the age group 15 to 60 years have missed doses in higher percentage than other age groups. Same way males have missed doses in higher proportion than the females. And this was statistically significant. This can be explained by active population is working and getting a dose of vaccine may affect their work and wages and also males are more commonly going outside for work and are the earning members of family.

This study also conducted detailed interview of about 155 victims and among them about 5.8% were illiterate and 28.4% were educated up to primary level. Study by Ganasva et al in Maharastra found that 15.4% of the patients were illiterate and 29.8% patients were educated up to primary level.[6] Our study showed that 99.4% had dog bite and the same finding was shared by studies by Gogtay et al and Sudarshan et al. [4,9]

In present study most common site of bite was lower limb with 89.1%. and same was true in the study by Vyas et al, and Piyush Jain and Garima Jain[5,8]Also study by Naik et al found that in 75% cases lower limb was most common site of the bite[7] and same was found in a study by Kabeta et al in Ethopia[10]In a study by Venkatesan et al in Tamilnadu found that most common site of bite was lower limb (53.3%) followed upper limb (27.6%), and trunk (8.6%).[11]

In this research about 58% patients came to health facility within 24 hours of the bite for treatment and rest 32% after 24 hours and similar finding was shared by Liu et al where 35.3% of animal bite victims went to the centre after more than 24 hours after exposure.[12] whereas the study by Naik et al found that all the animal bite victims had received rabies immunization within 24 hours of bite and Ganasva et al found that 80% had reported within 24 hours of dog bite to the ARV Clinic.[6] Kabeta et al found that half of the cases presented to the health center within 3 days.[10] As per the study by Esmaeilzadeh et al, 85.9% patients came within 24 hours of the animal bite. [13] In our study, about 32.3% subjects missed to take the dose on scheduled date after taking the first dose. Most common reason for delay in seeking treatment was ignorance about the treatment (86%).

In this study, about half of the subjects did nothing before visiting the hospital, but Piyush Jain and Garima Jain found 16% of victims did not took any primary home management measures.[8] In our study, only 39.4% took correct action for wound treatment which was washing the wound with soap and water or applying antiseptic and rest of the patients (60%) applied various items on the wound like tobacco, snuff, chilli powder, talcum powder, turmeric, lime (chuna), toothpaste and even tea. In a study by Sudharshan et al about 40% of bite victims

did not wash their wounds with soap and water [9], whereas Piyush Jain and Garima Jain found that 80% had applied chilly and oil paste on the wound before visiting the centre.[8] Naik et al found that 16.6%, had applied oil or turmeric over the wound only two third of the victims had cleaned the animal bite wound with soap and water immediately following the bite.[7] Venkatesan et al found that 36% victims cleaned the wound by using soap and water and 21% cases applied irritants such as onion, ash, lime etc. on the wounds.[11] whereas Liu et al found that only 18.8% victims cleaned their wounds with water and soap or water only.[12]

In this study, delay in seeking treatment had no statistical significance with gender, age group and category of bite whereas it was statistically significant with education level (P=0.007). Similar to our findings Esmaeilzadeh et al also found that delay in the initiation of anti-rabies PEP was not significantly related to the age group and the sex of the subject.[13] But Liu et al found initiation of PEP was associated with age class.[12]

Present study found that gender was statistically significantly associated with wound treatment (P= 0.02) and same was supported by Liu et al. as they found that wound treatment was related to gender. [12]

Current study found no association between the wound treatment and other variables like age group, education and category of bite but the study by Liu found that for wound treatment, those who were male, aged 1–14 years, were without college education, tended to treat the wound improperly and it was statistically significant.[12]

Conclusion:

Most cases of animal bite were dog bite cases. More than half reached the health facility within 24 hours. About one third missed to take the dose on scheduled date. Males missed the doses more than females. And elderly patient delayed taking next dose after the first dose of the vaccine. Ignorance about the treatment is the main reason of delay. More than half treated the wound incorrectly at home and males practised incorrect wound treatment more than the females. Common items applied on wound were tobacco, chilli powder and turmeric on wound.

Recommendations:

Increase Awareness about the early initiation of treatment for animal bite and about the correct method of wound cleaning at home after the bite. Also it is important to clear the myths regarding applying of various items on the wound.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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A Time Log Study of Activities of Medical Officers Working at Urban Health Centres of Ahmedabad City, Gujarat

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Abstract:

Introduction: Medical Officer (MO) of an Urban Health Centre (UHC) is responsible for implementing all activities grouped under Health and Family Welfare delivery system in UHC area. While RBSK MO of UHC works under Rashtriya Bal Swasthya Karyakaram (RBSK). **Objective:** To assess various activities carried out by MBBS MOs and RBSK MOs at UHCs with proportion of time spent on each of activities. **Method**: The study was conducted at randomly selected 12 UHCs from randomly selected 3 zones of Ahmedabad city. Data regarding activities of MBBS and RBSK MOs were collected using predesigned matrix time log sheet wherein the MOs had to fill up their activities on 15 minutes slots for 2 weeks. Data were entered and analyzed using MS Excel. **Results:** Effective working time per day was 7 $\pm$ 1/2 hours &6$\pm$1 hours for an MBBS & RBSK MO respectively. Majority of time spent per day by the MBBS MO was in conducting general OPD (mean 149 minutes) followed by preparing/checking reports. While, for RBSK MO, it was in health checkup at Anganwadis & Schools(118& 93 minutes respectively) followed by preparation of reports. Both MOs spent maximum time towards clinical work (48.51% by MBBS& 68.45% RBSK MOs) followed by administrative work (33.73% by MBBS & 18% by RBSK), field visits (11.5% by both), CME/workshops/trainings (2.02% by MBBS and0.66% by RBSK) and other activities (4.2% by MBBS and 0.8% by RBSK). **Conclusion:** Frequency of various major activities was as per the recommendations for most of the MOs. However, many of them were not able to cover all the activities mentioned under guidelines.

Key words: Medical officer, RBSK, Time log, Urban Health Centres

Introduction:

In health care, usually there are no time based written standards for job processes.[1] And most of the health care personnel have more than one job to perform. To provide quality services, it is important for a person to use time with discretion to perform all jobs effectively. So time log study is one tool which can be used to assess the situation. It helps to study the activities of a person and importantly to discover activities which lead to accomplishment of goals.[2] It helps a person to know which the time wasters are and how to make better use of time to effectively do the job.

The Medical Officer (MO) of an Urban Health Centre (UHC) is responsible for implementing all activities grouped under Health and Family Welfare delivery system in UHC area.[3] He is solely responsible for the proper functioning of the centre

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Bhatt G, Patel A. A Time Log Study of Activities of Medical Officers Working at Urban Health Centres of Ahmedabad City, Gujarat. Healthline. 2021; 12(3): 77-83 .
	DOI : 10.51957/Healthline_216_2021	

which includes providing comprehensive health care to patients and community, implementation of activities under various national health programs and administrative work (managing human resource, supplies and finance).[3] Under RBSK (Rashtriya Bal Swasthya Karyakaram), to promote child health screening and early intervention services, in children from birth to 18 years of age, a mobile health team consisting of two Doctors (AYUSH) one male and one female along with other staff has been suggested.[4]They also work at UHCs.

On literature review, no such study could be found, which depicts activities of MOs, working in public health system. In that view, we proposed to carry out a time log study of activities of MBBS MOs and RBSK MOs working in UHCs of Ahmedabad city with following

Objectives:

1. To assess various types of activities carried out by the MBBS MO as well as RBSK MO of UHC.
2. To determine the proportions of time spent by the MOs for various activities.
3. To study the effective working hours of the MOs.
4. To assess views of MOs on the usefulness of time log sheet for process improvement in health care.

Method:

The study was conducted in Ahmedabad city which is divided into 6 municipal zones; the zones are further divided into wards. Each ward has one UHC. When the study was conducted (2016), a total of 61 (at present 77)[5] UHCs were functional in the city. Each UHC had one MBBS MO and one RBSK MO (AYUSH) (at present two RBSK MOs).

Study population & sample size:

A total of 122 MOs were there in the system at time of study. Taking 20% of study population as a sample, 24 MOs working in UHCs were interviewed to study time log of their activities.

Out of the 6 zones, 3 zones were selected randomly using lottery method. From each zone, 4 UHCs were selected, again by lottery method. So, a total of 12 UHCs and 24 MOs (including MBBS and RBSK MOs) working at selected UHCs were taken.

Inclusion criteria: MOs who completed minimum six months of service at UHC and who was willing to participate were included in the study. While MO who had not completed six months of service in an UHC at time of interview and who was unwilling to participate were excluded.

Data Collection:

Data was collected using predesigned pretested matrix time log sheet wherein the Medical Officers were instructed to fill up their activities in the sheet on 15 minutes slots, from 9 am to 5 pm for 2 weeks (12 working days). These sheets were then collected, on 4^{th}, 8^{th}, & 12^{th} day. So a total of 3 log sheets were used (each containing slot for 4 days). Along with that, a sheet for the details of extra working (out of the regular working hours)was also given, which were filled up only in case of such work. At the end of 2 weeks, all MOs were given a blank sheet to write their views on usefulness of such time log exercisefor process improvement.

Ethical consideration:

1. Proposal was approved by Institutional Ethical Committee (IEC).
2. Permission from the local health authority (Medical Officer of Health, Ahmedabad Municipal Corporation) wasobtained before starting study.
3. Data were collected after obtaining written consent of Medical Officers.

Data analysis:

Data was analyzed using MS Excel 2007 to find outthe mean effective working time for MOs, various activities carried out by MOs, mean time spent onmajor activitiesand also proportions of time spent for various activities. Few of the important activities

i.e. monitoring of Village Health and Nutrition Day (VHND), attending Antenatal clinic, staff review meeting, report preparation, screening at Anganwadis, schools, delivery points etc.which were carried out few days in a week were also assessed for their frequency and time spent on that during each time. Qualitative assessment was done regarding their views on such exercise for process improvement.

Results:

Study covered 20 MOs out of total of 24 consisting of 12 MBBS MO and 8 RBSK MOs as, there were two vacant posts of RBSK MOs and two RBSK MOs were not responsive. The effective working time per day for MBBS MO was 7 +/- 1/2 hours, while that of RBSK MO was 6+/- 1 hour.

Majority of time spent by the MBBS MO was in looking after the general OPD (149 minutes), after which they spent majority of the time in preparing/checking reports (40 minutes). Staff review meetings (32 minutes) took up the third major time spent followed by finance management (18 minutes). Around 13 minutes of time spent towards non assigned activity like social media, news paper reading, and telephone. Proportion of time spent on various activities have been shown in figure 1. General OPD was carried out by all MOs daily while other major activities of MBBS MO, were quite varied in frequency as well as mean time spent towards each. (Table 1)

Majority of the time spent by the RBSK MO was in health checkup and screening of children at Anganwadi centres (118 minutes), followed by school health programmes (93 minutes), followed by preparing of reports (50 minutes) and visit to delivery points (48 minutes).Proportion of time spent on various activities have been shown in figure

Table 1 : Detail of few Major activities which were performed few days a week by MBBS MOs (n=12)

Activity	No. of MOs performed that activity during study period (%)	Frequency		Mean time spent in minutes	Range of time spent (in minutes)
		Min.	Max.		
Checking/preparing of reports	11 (91.7)	Once a week	Every day except Sat	71	30 to 125
Staff review meeting	12 (100.0)	Once a fortnight	Every day except Sat	67	30 to 150
Finance management	8 (66.7)	Once a week	Every day except Sat	68	30 to 135
Supervision of vaccination programme	6 (50.0)	Once a fortnight	Four times in a week	83	40 to 180
Solving staff issues	8 (66.7)	Once a fortnight	Four times in a week	42	23 to 90
Meeting with official	11 (91.7)	Once in fortnight	Every alternate day	94	15 to 180
VHND visit	10 (83.3)	Once in fortnight	Twice a week	54	35 to 75
ANC clinic	4 (33.3)	once a fortnight	Every day except Sat	67	15 to 125

Figure 1 : Activities carried out by MBBS Medical Officer of UHC with proportion of time spent on each

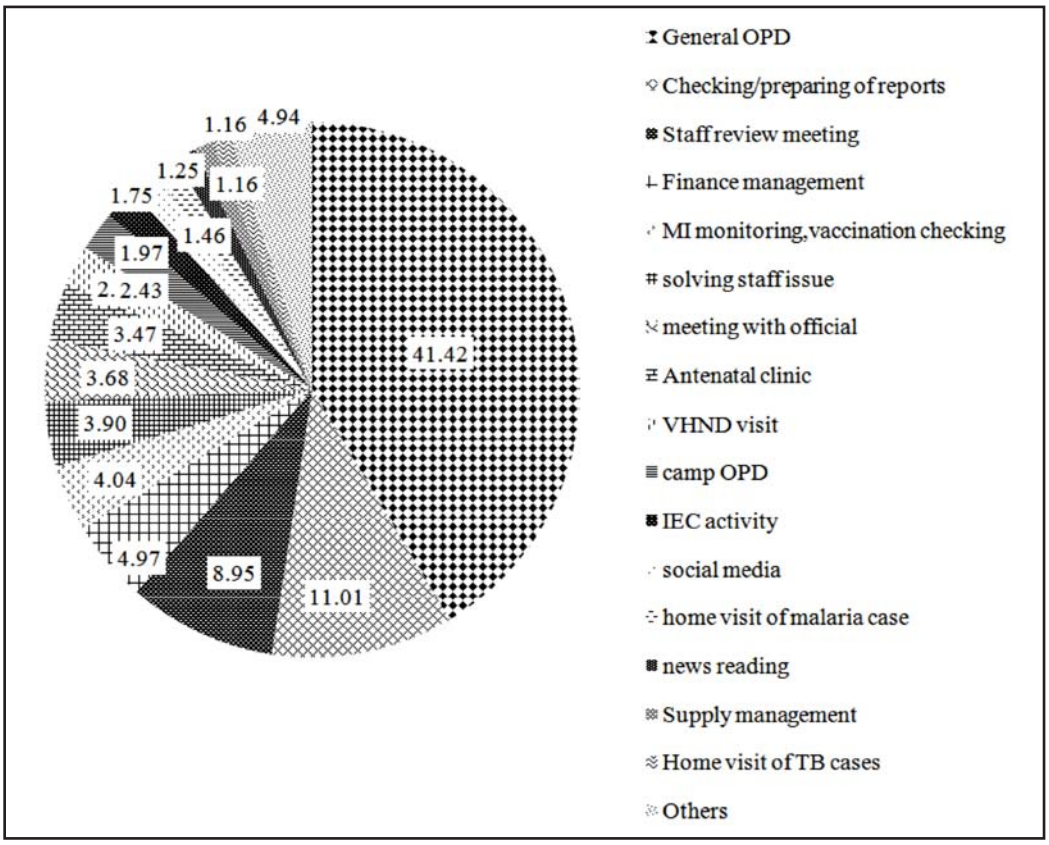


Figure 2 : Activities carried out by RBSK MO of UHC with proportion of time spent on each

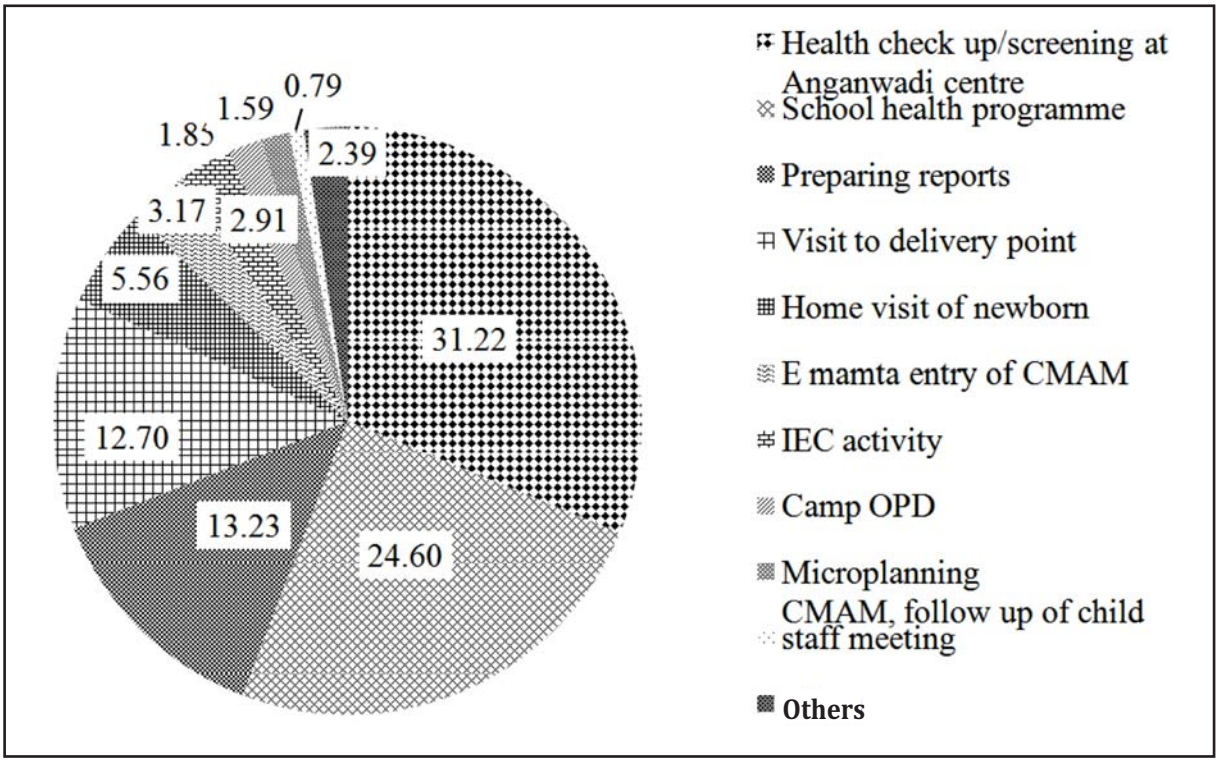
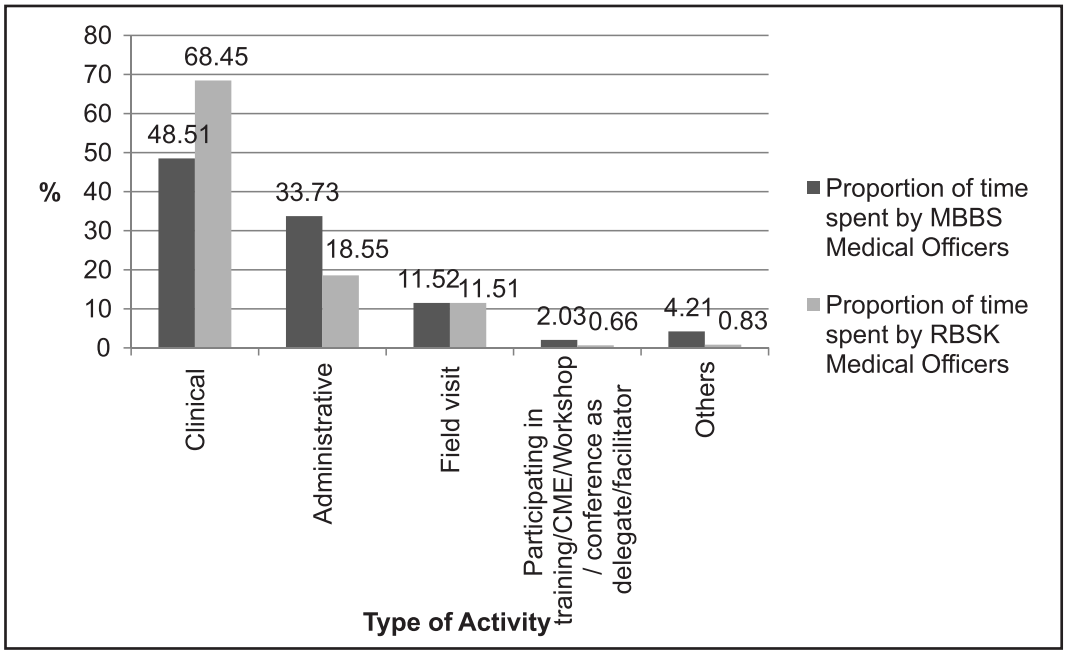


Table 2 : Details of Major activities of RBSK MO (n=8)

Sr. no.	Activities	No. of MOs performed that activity during study period (%)	Frequency		Mean time spent in minutes
			Min	Max	
1	Health check up/screening at Anganwadi centre	5 (62.5)	Every alternate day	Every day	219
2	School health programme	5 (62.5)	Once a week	Every day	213
3	Visit to delivery point	8 (100.0)	Once in fortnight	Every day except Sat	88
4	Preparing reports	7 (87.5)	Once in fortnight	Every alternate day	86
5	Home visit of newborn	3 (37.5)	Once in fortnight	Every day except Sat	109

Figure 3 : Comparison between proportions of time spent on various categories of activity by MBBS and RBSK MOs



2.In RBSK MOs, all activities were quite varied in frequency as well as mean time spent towards each. Except for visit to delivery points, no activity was conducted daily. (Table 2)

Others include: Indoor/Daycare Activities, Discussing new guidelines, Telephone, Satcom, Training as facilitator, delegate in conference, CME as facilitator, Polio camp, MI microplanning, Medical checkup of health staff, home visit of maternal death, delivery, meeting with NGO partner

Others include: Attending telephone, Meeting for treatment of a child in hospital, solving staff issues, as delegate in training, supply management, discuss new guidelines with staff, meeting with officials.

Comparison of proportion of time spent on major activities by MBBS and RBSK MOs is shown in figure 3.

Qualitative Component

Views of Medical officers on effectiveness of time log study for process improvement

Out of 20 MBBS MO, only 4 gave their views on usefulness of such study. Majority of them considered this a waste of their times. No RBSK MO responded to this. MBBS MOs responded saying that they already knew on which activities, they were spending more time. It is difficult for them to complete work on time. As per their view, they need more staff in UHC as it seemed impossible for a single MO to carry it out. One MBBS MO mentioned (in her own words)- "For us, Medical Officers working in health department, this time log study is giving update of our work to another hospital/health department. We are doing more managerial work than clinical."

Findings based on interaction with MOs during visits to UHCs:

Half of MOs were not satisfied with their salary. They felt they were getting less pay for the amount of work and efforts, they were putting in.For the areas where inflow of patients was too much, they demanded that more than one UHC be made for the same area. Because MO in such UHC will not be able to carry out other field activities.

Discussion:

In the current study, the effective working time per day for an MBBS MO was 7 +/- 1/2 hours, while that of RBSK MO was 6+/-1 hours. As per standards of Primary Urban Health Centre (PUHC)[3], at least 2 Medical Officer (MBBS) to be present all the time with at least 1 trained in emergency obstetric care. However, in Ahmedabad, timings of UHC are 9 am to 5 pm including lunch break and it usually provides day care facilities. Considering that, effective working time found in our study is appropriate. For emergency care, in Ahmedabad, there are maternity homes, referral hospitals and other tertiary care hospitals run by government as well as private sector.

As Under PUHC guidelines[3], how much proportion of time must be spent by an officer in carrying out a particular activity is not stated except for outreach activities where at least once in fortnight visit is recommended; however, minimum time to be spent there is not suggested. Hence, we cannot conclude if the time spent by them for these activities is appropriate or not. But if they can do all the assigned activity, than we can say it's appropriate. Here, it was observed that most of the MOs could not do all assigned activities during study period.

As per the terms of References of RBSK MO, [6] they have to do daily screening of children at Anganwadi/schools. Here, most of the MOs were doing this activity daily except few who were doing this on alternate day. Home visits of newborn were done by only 3 MOs during study period which may be because in catchment areas of other MOs, no newborns would be there during that period.

It was good to see that both MOs were spending minimal time (4.2% in MBBS and 0.8% in RBSK) on non assigned activities i.e telephone, social media, news reading.

Limitations of this study :

- Non compliance of few medical officers was a drawback. Many of the MOs were not very eager to help out in such a study because they already had a lot of work piled up, to which they didn't want to add more. It took a lot of efforts to convince them to fill up all the forms.
- Ideal would be to observe them working and noting down time for each activity. But because of non feasibility, we have to rely on self administered time log sheet, information provided in that depended upon the interest of MO in study.

Conclusion:

Most of the time of MOs was spent on clinical work followed by administration, field activities,

participation in CME/workshops and others in descending order. Frequency of various major activities was as per the recommendations for most MOs. However, many of them were not able to cover all the activities mentioned under guidelines due to lack of time.

Recommendations:

- As both types the medical officers spent least amount of time in the category of participating in various CMEs/workshop, this has a scope of improvement because in medical profession, these are essential for increasing knowledge and staying updated.
- Similarly, time spent in field work may be increased as many preventive and promotive health activities are carried out in the fields for the well being of the society. If they are carried out for a longer time with more efficacy, it would benefit the entire community.
- Using this as baseline survey, effort may be taken to formulate time guideline for various activities of medical officers of urban health centres including time schedule and frequency for various field activities which will help medical officers to ensure better quality service delivery and may help to alleviate their dissatisfaction towards workload.

Declaration:

Funding: This study was conducted under ICMR STS programme and a grant was received under the same.

Conflict of Interest: Nil

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Evaluation of Perception of Medical and Paramedical Students towards Rapid Antigen Testing Program for COVID-19 in the City of Ahmedabad, Gujarat

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Abstract

Introduction: WHO declared COVID-19 a pandemic on 11thMarch,2020. It was recommended to use standard Q COVID-19 Ag detection test as a point of care diagnostic assay for testing in the containment zones as well as hospitals in combination with the RT-PCR test.Medical students had been involved to carry out the Rapid Antigen Testing (R.A.T) Program. **Objective:** To evaluate perception of medical and paramedical students towards rapid antigen testing program (R.A.T.). **Method:** This was a cross sectional study conducted among Medical/Paramedical students of Ahmedabad, Gujarat participating in R.A.T. This program involved testing of people by standard Q COVID-19 Ag detection test. Patients who tested positive were isolated and counselled for further management. Feedback responses from the students were elicited regarding program effectiveness, utility and students' satisfaction. **Results:** A total of 513 responses were recorded. 72.8% of the students perceived their communication skills to improve with patients. It helped 62.9% students to allay fear and apprehension regarding COVID. About 77.8% of the students were extremely satisfied with the transport facility provided by the authorities. About 53% students were extremely satisfied with personal protective equipment. 36.6% students were extremely satisfied with remuneration. R.A.T. program invited intermediate rating with 34.8% students rating it as 7 or 8 on a scale of 0-10. **Conclusion:** Students reacted positively for the program and reported improvement in their communication skills. Most of the students were satisfied working at the community level during this pandemic and this program provided them unique chance to work at grassroots level. Undergraduate students for the first time were given individual responsibility as a health care worker in society. Hence, eliciting their perception and feedback was useful for all stakeholders.

Keywords: COVID 19, Rapid Antigen Test, Students' perception

Introduction:

WHO has declared COVID-19 outbreak as a "Public Health Emergency Of International Concern'' (PHEIC) on 30th January,2020. On 11thMarch,2020, WHO declared COVID-19 asa pandemic.[1] The causative virus (SARS-COV-2) has a zoonotic source related to bat origin SARS like coronavirus. This disease is highly transmissible through droplet infection. The persons infected by the novel coronavirus are the main source of infection. Direct person to person transmission occurs through close contact.[1]

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Patel H, Patel R, Sood S, Lad D, Malhotra S, Patel P. Evaluation of Perception of Medical and Paramedical Students Towards Rapid Antigen Testing Program for COVID 19 in the City of Ahmedabad, Gujarat. Healthline. 2021; 12(3):84-89.
	DOI : 10.51957/Healthline_239_2021	

The dictum followed by government was: Test-Trace-Isolate. There are two methods of testing: Rapid antigen test and RT-PCR test.[2]To combat the virus, authorities decided for quicker onsite testing by rapid antigen kit in all areas. The Q Covid -19 Ag kit has been developed by Sd Biosensor with a manufacturing unit at Manesar in Gurugram.[3] On validation, the test has been found to have a very high specificity with moderate sensitivity.

It is now recommended to use standard Q COVID-19 Ag detection test as a point of care diagnostic assay for testing in the containment zones as well as hospitals in combination with the RT-PCR test.[1] Medical and paramedical (Dental, Nursing and Physiotherapy) students had been involved to conduct and carry out the Rapid Antigen Testing (R.A.T) Program. To fulfil the requirement of faster screening, authorities set up kiosks where rapid antigen tests were performed.[4] Municipal Corporation has involved medical students by forming teams and sentthem at places in the city to perform the rapid antigen testing for faster detection and timely isolation. This test has been performed free of cost for general population. Among all COVID diagnosed patients 95% patients don't need hospitalization and can be treated at home.Population tested by R.A.T. includes thoseshowing symptoms of COVID-19, High risk contacts of confirmed cases and asymptomatic patients (high risk groups).Students also visited the home isolated patients for their regular follow up.

This study is an earnest attempt to evaluate their perception regarding the effectiveness of R.A.T. Program.

Method:

A cross sectional study was conducted after Institutional Review Board approval in November,2020. This study was carried out under the program initiative of the Municipal Corporation. Undergraduate students of Medicine, Dentistry and Nursing were allotted the duty to conduct the Rapid Antigen Testing, which is a screening test and have come in contact with all sectors of community. This program also involved taking the nasopharyngeal swab of people presenting to the COVID 19 kiosks and testing for the Covid antigen by the ICMR COVID 19 antigen testing kit. Sampling frame is Medical and paramedical students who participated in R.A.T. program. Pertaining to uniqueness of this study we could not get base for sample size calculation. Sampling was done by non-probability sampling. Students who participated in R.A.T. program during October 2020 – January 2021 and gave consent for participation in study were enrolled in this study. Feedback responses were elicited regarding program effectiveness, utility and student's satisfaction via semi structured and predesigned Google forms. Google form questionnaire was created comprising 20 questions to record responses regarding students' perception. Study instrument was semi structured, self-designed questionnaire. This was descriptive study and we used Likert scale in order to scale the responses. Responses of students were recorded and those were analysed at the end of the study using Microsoft excel and statistical package forsocial sciences (SPSS) software version 25. Data were analysed using Frequency and percentage.

Results:

Questionnaire was sent to around 1000 students via email and at the end of data collection phase, total of 513 responses were fully completed while 250 were closed with incomplete information- which were not used during data analysis. Hence, total of 513 responses were analysed. During the R.A.T. program, 48% students had a good experience as a health care provider and 20.7 % had a bad experience. There was a mixed response by the patients and community towards R.A.T. program. Around 22.8% students had a good response and 34% had a bad response from community, while 43.2% students had neither bad nor good response. On a daily basis, percentage of students performing at least 0-30, 31-60, 61-90, 91-120 and more than 120were about 15.6, 45.9, 25.2, 8.9 and 4.4,

respectively. In case the test results were positive, students felt that about 68.1% of the patients cooperated for further treatment and 31.9% were hesitant to follow guidelines and further treatment. Among all the people who come for testing, 62.7% of the students reported that only 0-25% of people were symptomatic, 28% students reported that 26-50% of people were symptomatic, 8.3% students reported that 51-75% people were symptomatic while 1% students reported that 76-100% people were symptomatic who come for testing at their designated center. Likewise,19.6% students reported that 0-25 % of people were asymptomatic, 21.5% students reported that 26-50% of people were asymptomatic, 41.3% students reported that 51-75% of people were asymptomatic and 17.6% students reported that 76-100% people were asymptomatic who come for testing at their designated center.

Figure 1 depicts student satisfaction with R.A.T. program. On evaluating satisfaction among students, satisfaction was maximum (77.8%) for transport facility provided to them by authorities followed by satisfaction with personal protective equipment (53%) and for the training provided to them prior to the program (47.8%). Satisfaction was least for time management of the program (46.8%). While, for satisfaction with remuneration provided to them, we got mixed response.

Figure 2 depicts student satisfaction regarding clinical and communication skills gained through this program. For all the parameters depicted in the figure, students were very satisfied. Highest satisfaction was for improvement in their communication skills with patient (72.8%) followed by satisfaction for helpfulness of this program in eliminating apprehension and fear (62.9%), increased knowledge regarding COVID (62.4%) and learning clinical skills as a student (47.3%).

For 36.4% students the environment was conducive to motivate their work at the center. For 37.3 % students the environment was not conducive.While serving the community amidst the pandemic, 82.8% students felt privileged to be serving the community in this pandemic. while 17.2% students didnot feel so. Around70.8% students would volunteer for screening of rapid antigen testing themselves, whereas29.2%students were not ready to volunteer for screening of rapid antigen testing. R.A.T. program invited intermediate rating from students on a scale of 1-10, where maximum rating reported were 8 (17.6%) and 7 (17.2%). (Figure 3)

Figure 1: Student satisfaction regarding R.A.T. program (n=513)

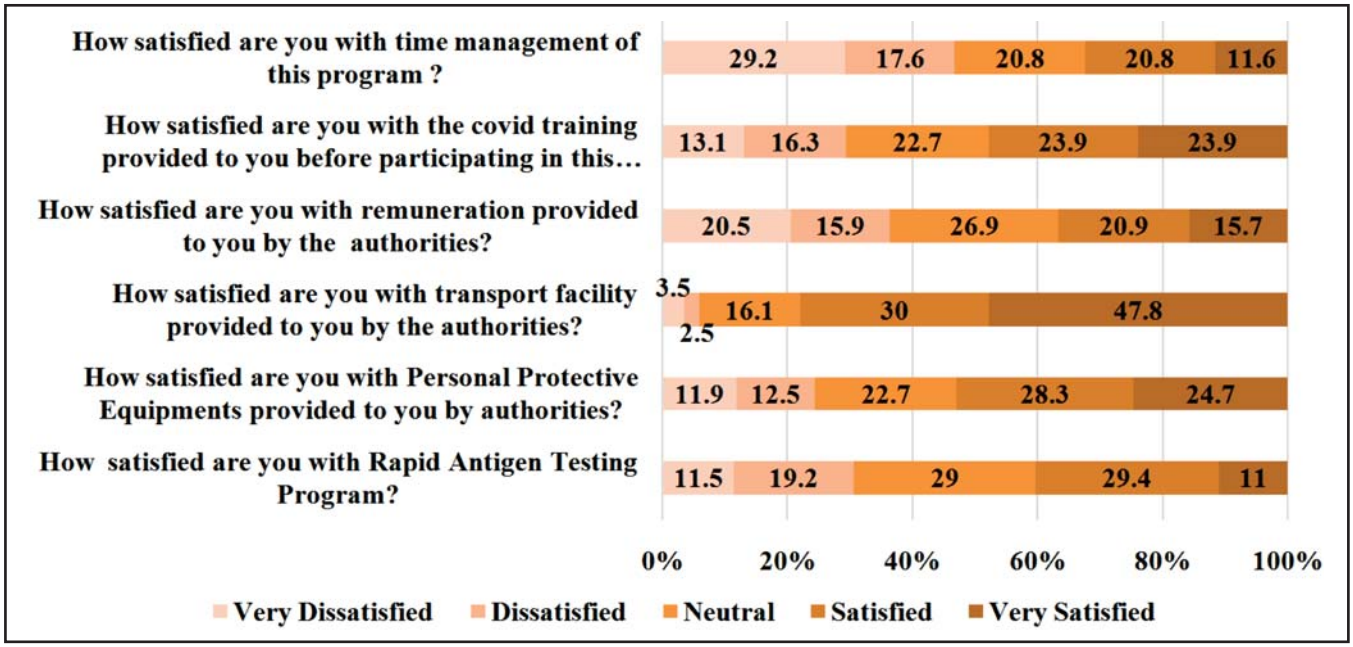


Figure 2: Student satisfaction regarding clinical and communication skills (n=513)

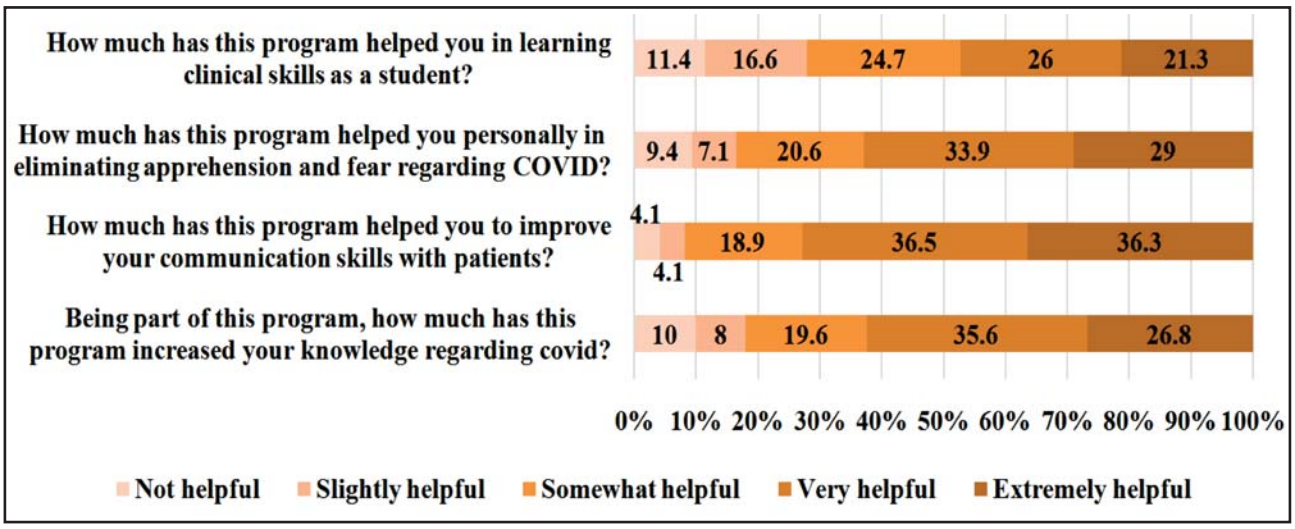
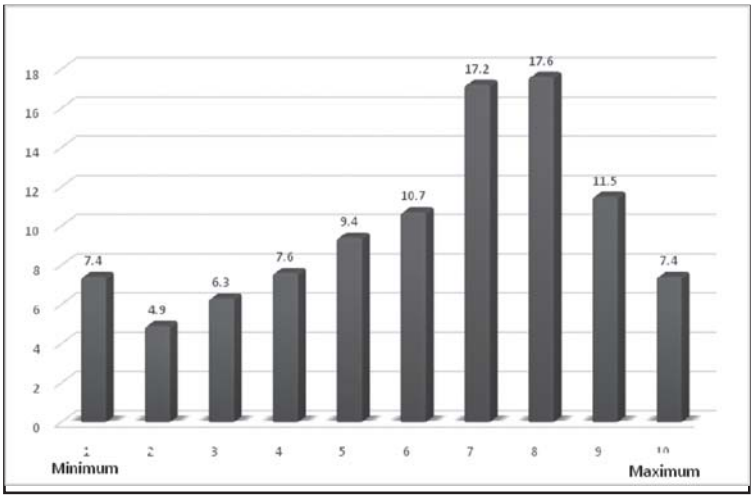


Figure 3: Overall rating of the program by the study participants



Discussion:

During COVID pandemic, allowing medical students to serve in clinical roles may benefit patients overall. There is precedent for this kind of involvement. During the Spanish flu outbreak of 1918, medical students at the University of Pennsylvania cared for patients in the capacity of physicians.[5] In the 1952 polio epidemic in Denmark, groups of medical students were tasked with manually ventilating patients.[6] In the current pandemic, medical schools in the United States, Italy, and the United Kingdom are graduating medical students early on the condition that they serve as frontline clinicians.[7-8]

The American Association of Medical Colleges (AAMC) has instructed medical schools to suspend student clerkships and has recommended that "unless there is a critical health care workforce need locally, we strongly suggest that medical students not be involved in any direct patient care activities".[9-10] But, Studies suggest that Medical students could play a crucial role in the SARS-CoV-2 healthcare response and these types of programs improve knowledge, skills and attitudes which are imperative for medical practice in a pandemic.[11,12]

This program has helped the students in increasing knowledge regarding COVID.During the regular posting of the terms, students would not have

got such a chance. Communication skills of students with patients have improved much due to this program as reported by them. Students gained experience regarding how to react to patients, fear and apprehensions regarding the disease and appropriate counselling which is needed thereafter.

We observed that the sense of purpose or duty was the most important factor that influenced the desire to work during the pandemic as seen in other studies also.[13] The PPE provided by the authorities were of very good quality and students were satisfied with it. The bag included PPE kit, Water bottles, snacks, latex rubber gloves, head cap, face shield and after completing the duty they were provided lunch pack at the college premises. The transport facility of car and driver for one team of three students provided by the authorities was efficient. students were satisfied with remuneration provided to them.

R.A.T. program has helped the students in eliminating their own apprehension and fear regarding COVID. Students were also satisfied with COVID training provided to them before participating in the program. This program was very much beneficial for learning clinical skills as a student. The students were not satisfied with the time management of this program because some times when the duty was over or they had completed a specific number of tests they were not allowed to leave the testing center so they were not happy.

This study was conducted at the time when R.A.T. program was just launched amidst the first wave of COVID in India. During that phase people had fear and hesitation towards the screening program as COVID was a taboo. People feared getting stigmatized in community and society if their test results were positive. If a similar type of study has to be conducted in the deadlier second wave of COVID, it would yield different type of results because stigma towards testing for COVID has decreased. More people are coming to kiosks with an intention of getting diagnosed early and prompt initiation of treatment.

Conclusion:

It was for the first time that such active surveillance was taken up and students reacted favorably to it. They perceived improvement in their communication skills. They also felt this program helped them in eliminating apprehension and fear regarding COVID. Most of the students were satisfied working at the community level during this pandemic and this program provided them unique chance to work at grassroots level. Undergraduate students for the first time were given individual responsibility as a health care worker in society. Hence, eliciting their perception and feedback was useful for all stakeholders.

Recommendation:

Involving medical students in the direct community level screening for disease was successful. Hence, it should be encouraged for other public health emergencies in future where medical students go to community for screening and can help in decreasing the burden for hospitals and health care system.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Age and Gender Variation of COVID-19 Patients Admitted at Tertiary Care Hospital During 2nd wave: Record Based Study (Pilot study)

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Abstract:

Introduction: There is variation in age group and gender of the COVID-19 infected patients being admitted in the hospital with severe to mild symptoms. COVID-19 affected both sex and age range of affected persons was from a newborn to 100-year-old individuals. **Objective**: To study the age group and gender wise distribution of cases admitted during 2nd wave of COVID-19. **Method**: In this record-based study, authors have analyzed the data of COVID-19 patients admitted at Tertiary care hospital, Bhavnagar in the month of April 2021 during the 2nd wave of COVID-19 and a total of 3,347 such patients were recorded. Patients were analysed for age group and gender using percentage. **Results**: It was found that males (55.27%) were affected more than the females (44.73%). The highest number of cases was recorded in the 40-60 years age group (48.4%) while 0-28 days were lowest (0.08%) among the total number of patients. **Conclusion**: There is a relation of COVID-19infection to age and gender since there were more old age people affected in the 1st wave and the trend followed on in the 2nd wave as well with some changes. Males were infected more in almost all age groups and the highest infection was in the 40 - 60 years age group. There can be biological factors affecting this along with immunity playing a part Finding of this study will be helpful to Doctors and researchers in predicting the age and gender pattern of COVID-19 infection which may help in preventing future waves.

Keywords: Age group, COVID-19, Gender, Tertiary care hospital.

Introduction:

Coronavirus is a large group of RNA viruses that scientists first discovered in the 1960s. COVID-19 is an acronym for one type of coronavirus infection, Corona Virus Disease 2019. There are hundreds of types of coronavirus pathogens, among which 3 can be transmitted from animals to humans. The particular one among them is SARS-CoV-2 (beta coronavirus causing COVID-19 in 2019). The novel virus SARS-Cov2 responsible for ongoing pandemic of COVID-19 since March 2020, was first found in China in late 2019 and was then declared as a global pandemic by WHO in 2020. This virus is highly infectious where a person faces symptoms of Flu-like illness to ARDS and has also turned fatal for many. It has challenged the global health systems and sciences, making it hard to survive for many.

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Shah C, Mistry R, Shah D. Age and Gender Variation of COVID-19 Patients Admitted at Tertiary Care Hospital During 2nd wave: Record Based Study (Pilot study) 2021; 12(3): 90-94.
	DOI : 10.51957/Healthline_253_2021	

The number of cases increases in the 2nd wave as compared to the 1st wave with high fatality in a short time interval and at present scenario case are only present in Kerala and other few states of India. It was also more fatal than the previous mutation which shows the variation in infectivity of the virus with its structural change. One of the contributing factors in this infectious change is the immune system of the individual and lack of immunization. The normal human immune system adapts during the foetal to infant stage, matures during adolescence to the adult stage with variability during pregnancy and decreases as the senescence approaches.[1] These fluctuations in the immune system throughout life pose a higher risk for complications in infants, pregnant women, and elderly. There are several components involved in differentiating the immune system based on gender and age. The variation in the level/count of immunoglobulins, CD4 and CD8 cells, B-cells, T-cells among males and females might be causing the variation in COVID-19 cases and deaths.[2-4] MOHFW declared COVID-19 immunization above 50 years of age nationwide in February 2021. So, age limit is a major drawback for higher incidence in younger age group as well as lack of awareness for immunization in older. The requirement of hospitalization after immunization with COVID-19 vaccine is in lower rang.[5] Among these are clinically important issues such as the time intervals between different stages in the progress of the disease needed to estimate the public-health infrastructure which needs to be made available. Also, the issue of long-term health impairment after recovering from hospitals is important.

The COVID-19 positive cases were continuously increasing in India during the second wave observed in June-July 2020, and little evidence was available highlighting the age and gender perspectives of this disease. Therefore, the present study was an attempt to study the association between age and gender among positive COVID-19 cases and it also discussed the possible biological reasons for the variation among different age categories and gender. The present analysis is expected to provide evidence for framing age and gender-specific public health policies and treatment of COVID-19 infections.

Method:

The present study is record based Study - pilot Study based on secondary data extracted from an authorized source, Administrative office of tertiary care hospital, Bhavnagar after getting permission from ethics committee, Bhavnagar. The cases reported between 01- 04-2021 to 30-04-2021 (1 month) were filtered in a separate file. A total of 3,347 records were separated based on age group and gender and data analysis done.

Data analysis

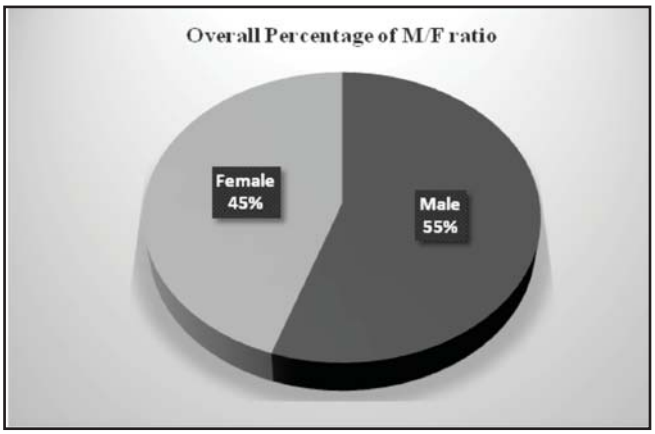
A secondary data analysis was performed for COVID-19 cases in tertiary care hospital of Bhavnagar. Descriptive statistics were used for reporting the mean, median, mode, standard deviation, percentage and count under various categories. The age and gender records for 3347 cases were analyzed.

Results :

Age group	Total Cases
0 - 28 days	3 (0.09)
28 days - 1 year	12 (0.36)
1 - 5 years	6 (0.18)
5 - 12 years	8 (0.24)
12 - 18 years	7 (0.21)
18 - 40 years	622 (18.6)
40 - 60 years	1621 (48.4)
60 - 80 years	973 (29.1)
80 - 100 years	95 (2.84)

The extracted data included 1850 (55.27%) males and 1,497 (44.73%) female patients. (Figure 1)Majority COVID-19 cases (47.14%) were found in the 40-60 years age category. (Table 1) The highest distribution of infected male (25.7%) in 40-60 years

Figure 1: Gender variation of positive cases



of age group and in females also (22.7%) in the same age group. Neonates were the least affected group involving 0.08%. Moreover, the difference between gender among age categories was found in age group of 18-40 years and 60-80 years.(Table 2) The most common age of all COVID-19 patients was 55 years (derived from mode of all age) with mean age (53.80±15.02) and the difference between the mean age of males (53.35±15.07 years) and females (54.32±14.93 years) was also statistically significant ($p<0.001$), with a mean age of COVID-19 infected males being significantly lower than that of the female counterparts.

Table 2: Age and gender wise distribution of cases

Age group	Male n (%)	Female n (%)
0 - 28 days	2 (0.05)	1 (0.03)
28 days - 1 year	6 (0.17)	6 (0.17)
1 - 5 years	2 (0.05)	4 (0.12)
5 - 12 years	5 (0.14)	3 (0.08)
12 - 18 years	3 (0.08)	4 (0.12)
18 - 40 years	374 (11.1)	248 (7.4)
40 - 60 years	861 (25.7)	760 (22.7)
60 - 80 years	544 (16.2)	429 (12.81)
80 - 100 years	53 (1.5)	42 (1.25)
Total	1850(55.2)	1497 (44.73)

Discussion:

The SARS-CoV-2 virus being a novel virus can infect human race irrespective of age categories and gender.[6] However, there exists individual variations in physiological functions, immune responses and risk factors across gender and age. There fore, the chances of getting infected might vary among gender and different age categories. The present study attempted to explore the category wise (age and gender) proportion of admitted cases. In this study, 3,347 COVID-19 patients' records were extracted and analyzed from the records found from Sir-T hospital to determine the role of age and gender, determining COVID-19 status among Indian population. Various studies across the globe showed that the older males were more susceptible (>50%) in getting infected by SARS-CoV-2. 60.3% of all cases were found to be males in a study among 5,700 hospitalized COVID-19 patients in the U.S.[5] In the present study, the male (55.27%) COVID-19 patients were higher than females (44.73%), and this trend remains consistent among all age categories. It may be due to lack of immunization below 60 years of age as of April, 2021. MOHFW declared vaccination for >60 years of age or lack of awareness for vaccination in older age group. There is reduce hospitalization of older age because of vaccine provided them before 2nd wave and it take 4 weeks to get immunity against corona virus. So, early development of immunization in <18 years of age group would be beneficial to prevent their involvement in the 3rd wave.

Several studies emphasized the higher susceptibility of males to viral infection and produced lower antibodies than women. The higher level of TRL7 (Toll-like receptor 7 - protein sensor of RNA viruses) among women produces high interferon-- which provides higher innate immunity to women.[7,8] In other diseases like cancer and HIV, the women also show greater innate immunity and greater response to vaccines.[15] The child and adult females show high CD4+ T cells and CD8+ T cells and higher CD4/CD8 ratio and proliferating T-cells compared to males. Regardless of age, the females tend to shows higher antibody response, immunoglobin levels and B cells which are further

enhanced by the genetic factors.[1,2] The analysis of present study depicted age-category wise variation in COVID-19 cases. The younger females and older males were at higher risk for getting infected and overall chances of recovery decreases as age increases. This may be because adaptive immunity plays a significant role in response to viral infection, and it declines after a certain age which makes us vulnerable to infections.

The prognosis of COVID-19 can be greatly affected by comorbidities and greater risk of developing critical and mortal conditions among male, elderly (>65 years) and smoking patients has been made evident by a study, which reflects that both age and gender have an important role in the development of COVID-19 infection. In recent studies, males were reported to have increased levels of plasma ACE2 concentration [9] and ACE2 is the receptor, required for cellular entry of SARS CoV-2. [10] The plasma ACE2 level was found to be highly correlated with immune signatures in lungs of males and older persons and less correlated among females and younger persons.[10] So, the chances of infection and death due to COVID-19 was higher among elderly males. This also has been corroborated by the results of the present study, where the chances of being COVID-19 infected were observed to be higher for males with increasing age. Another perspective for higher infection among males of higher ages was X and Y chromosomes-based variations. Both these chromosomes harbours genes which are involved in secreting the immune response elements but in females mosaic form of X chromosomes results in heterogeneous ACE2 allele. Thus, efficient form of ACE2 receptor is present only in half of all cells which limit the infection/ attachment of SARS CoV-2 virus and provides relatively greater protection to females.

Conclusion:

The chances of getting infected with SARS-CoV-2 varies with age-categories and gender. Through this study we derived that there was male preponderance in between male and female in the number of cases admitted in the tertiary care hospital in the month of April. The females of lower age categories (40-60 years) have equal chances of getting infected as males, and as age increases (>60 years) the infection rate also increases. This variation in 2nd wave as compare to 1st wave may be due to lack of immunization below 50 years of age group up to April 2021. Thus, the trend leaned over to males having more susceptibility than females with elderly people getting infected easily compared to younger individuals.

Limitations:

This is a pilot study containing data of only one month of indoor patients in a tertiary care hospital due to which there are constraints. Collecting further data of patients along with other details like co-morbidities could give better generalization of the data and result thus obtained will give a clear view of pattern in the waves affecting the community.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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Knowledge, Attitude and Practice Regarding Dengue in 1st Year MBBS Students of Shree M. P. Shah Govt. Medical College, Jamnagar, Gujarat

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Abstract:

Introduction: Dengue is a mosquito-borne viral disease that has rapidly spread in all regions of WHO in recent years. During 2019, the National Vector Borne Disease Control Programme (NVBDCP) reported more than 100,000 in country and more than 14,000 laboratory confirmed cases of dengue in Gujarat. In hostels of Shree M. P. Shah Medical College, Jamnagar cases of dengue are reported in every season but during the rainy season number of cases gets increased. **Objective:** To assess the knowledge, attitude and practice regarding Dengue and its prevention and control measures among 1st year M.B.B.S students. **Method:** A cross sectional study was conducted among 192 first year MBBS students of Shree M P Shah Government Medical College, Jamnagar in September 2019. A pre-designed, pre-tested, semi structured, self-administered questionnaire was used to collect information. Microsoft excel was used to analyze the data. **Results:** Among study participants 76% knew that dengue is spread by Aedes mosquito, 81.25% said that adult female mosquito bite responsible for dengue, 27.07% knew that clean storage water was the breeding place of dengue mosquito. Social media and newspaper were main source of information. 71.3% study participants were using mosquito coils/mats/repellent/liquid against mosquito. Only 25% were regularly checking for breeding site at hostel/house. **Conclusion:** Majority of 1st year medical graduates had a basic knowledge regarding dengue. But there is still gap in prevention knowledge and practices of personal protective measures and eliminating source of mosquitoes.

Key Words: Dengue, First Year MBBS Students, Knowledge, Attitude & Practice

Introduction:

Dengue is a mosquito-borne viral disease that has rapidly spread in all regions of WHO in recent years. Dengue virus is transmitted by female mosquitoes mainly of the species *Aedes aegypti* and, to a lesser extent, *Ae. albopictus*. These mosquitoes are also vectors of chikungunya, yellow fever and Zika viruses. Dengue is widespread throughout the tropics, with local variations in risk influenced by rainfall, temperature, relative humidity and unplanned rapid urbanization. The incidence of dengue has grown dramatically around the world in recent decades.[1] A vast majority of cases are asymptomatic or mild and self-managed, and hence the actual numbers of dengue cases are under-reported. Many cases are also misdiagnosed as other febrile illnesses.[2]One modelling estimate indicates 390 million dengue virus infections per year (95%

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	Website : www.healthlinejournal.org	Patel H, Kotecha I, Patel B, Mehta J, Parmar D. Knowledge, Attitude and Practice Regarding Dengue in 1st Year MBBS Students of Shree M.P.Shah Govt. Medical College, Jamnagar, Gujarat 2021; 12(3): 95-100 .
	DOI : 10.51957/Healthline_210_2021	

confidence interval - 284–528 million), of which 96 million (67–136 million) manifest clinically (with any severity of disease).[3] Another study on the prevalence of dengue estimates that 3.9 billion people are at risk of infection with dengue viruses. Despite a risk of infection existing in 129 countries [4], 70% of the actual burden is in Asia.[3]In India, dengue is endemic in almost all states and is the leading cause of hospitalization. Dengue fever had a predominant urban distribution a few decades earlier, but is now also reported from peri-urban as well as rural areas.[5,6]

During 2019, the NVBDCP reported more than 100,000 in country and more than 14,000 laboratory confirmed cases of dengue in Gujarat.[7] In hostels of Shree M. P. Shah Medical College, Jamnagar cases of dengue are also reported in every season but during the rainy season number of cases gets increased. In 2019, during and post rainy season large number of cases have been reported in students residing in hostels. During same season numerous breeding places of Aedes aegypti mosquito were found in and around hostels during entomological surveillance. As medicos, we should know about the preventive measures and also supposed to give advice to the people about it. So as to know the knowledge, attitude and practice about dengue and its prevention and control measures in undergraduate students, we carried outKnowledge, Attitude, Practice (KAP) study among first year M.B.B.S students of Shree M P Shah Govt Medical College, Jamnagar.

Objective:

To assess the knowledge, attitude and practice of Dengue and its prevention and control measures among 1st year M.B.B.S students.

Method:

A cross sectional study was conducted in 1st year MBBS students of Shree M P Shah Government Medical College, Jamnagar about their Knowledge, Attitude and Practice (KAP) regarding dengue in month of September 2019 during the practical classes. Ethical approval was taken from the Institutional Ethical Committee before conducting the study. Out of 250 students 192 students were present on the day of study. A verbal consent from the participants was taken. Pre-designed, pre-tested, semi structured, self-administered questionnaire was used to collect information. Integrated Disease Surveillance Programme (IDSP) module 5 was used regarding correct knowledge about clinical manifestation of dengue fever among the study participant.(Case definitions of dengue fever- An acute febrile illness of 2-7 days duration with 2 or more of the following: Headache, Retro-orbital pain, Myalgia, Arthralgia, Rash, Hemorrhagic manifestations Leucopenia). Those study participants who gave response as fever along with two other clinical manifestation were considered as having a correct knowledge regarding dengue fever. Microsoft excel was used to analyze the data.

Results:

In our study out of 192 study participants, 125(65.10%) were male and 67(34.89%) were female. In Figure 1, out of 192 study participants,76% were knowing that dengue was spread by aedes mosquito and 81.25% said that adult female mosquito bite was responsible for dengue. Majority (91.14%) of study participants responded that most common season for spreading of dengue was rainy season. To prevent vector borne diseases, weekly dry day celebration was known by 84.37% study participants. Table 1 shows knowledge about breeding places and clinical manifestation of dengue, 52(27.07%) were knowing that clean storage water is the breeding place of dengue mosquito and 41(21.35%) were having the correct knowledge about clinical manifestation dengue.

Majority of study participants said social media(60.41%) and newspaper(60.41%) were the main source of information which is followed by public health workers/doctors(58.85%), television(51.04%), family members/ friends

(45.83%), radio/FM (17.18%) and other sources(seniors, banners, pamphlets etc.) by 7.3%.

Table 2 shows attitude of study participant regarding dengue for which 185(96.35%) said that dengue is problem in Jamnagar, 89(46.35%) said that dengue is fatal disease, 181(94.27%) said that dengue is preventable.

Figure 2 shows Participant's belief regarding cause of recent increase in dengue cases. Among the study participants, majority (74.47%) of students said that it was due to the lack of knowledge and awareness in people, which was followed by heavy rain fall (42.71%), lack of action by Municipal Corporation (20.31%) and 4.16% responded that we can't say anything.Table 3 shows Personal Protective Measures (PPM) used against mosquito at present. Majority (71.3%) of study participants were using mosquito coils/mats/ repellent/ liquid against mosquito as a PPM which was followed by Screening of windows (56.77%), Wearing full sleeve cloth (44.79%), using mosquito net (39.58%) and using Electric racquet (17.7%).

Table 4 shows that out of 80 study participants who knows correctly about biting time of dengue mosquito, though only 6(7.5%) of them were using PPM during the day time, which was statistically highly significant (Chi square=18.52, p value=0.0001).Table 5 shows that out of 192 study participants, only 48(25%) were regularly checking for breeding site at hostel/house.

Discussion:

In present study out of 192 participants, 76% were knowing that dengue is spread by aedes mosquito which is higher than result obtained by Prashaant K. Bhatnagar et al[8] in north India and Taran et al[9] in Malwa region of India where only 21% and 14.8% of children had correct knowledge respectively. Adult female mosquito bite responsible for dengue were responded by 81.25% which is similar (80%) to the result of study done by Taran et al[9] and in contrast (43%) to the results of Prashaant K. Bhatnagar et al.[8]

In this study 91.14% were saying that most common season for spreading of dengue is rainy season which was higher (67%) than result obtained by Prashaant K. Bhatnagar et al.[8]Among the study participants, 52(27.07%) were knowing that Clean storage water is breeding place of dengue mosquito which was higher (8.3%) than the study results of Ashok Kumar et al [10]in Chennai city and lower (39%) than the study done by Ishwara Prasad KS [11]insullia taluk of Dakshina Kannada district. Only 41(21.35%) students having correct knowledge about clinical manifestation of dengue based on IDSP guideline.[12]Higher proportion of knowledge regarding Dengue, its vector, breeding place in our study may be because study participants were studied biology in their higher secondary and admitted to medical college.

In current study social media(60.41%) and newspaper (60.41%) were main source of information which were 32% and 90% respectively in study of Prashaant K. Bhatnagar et al[8] in North India. 51.04% study participants were replied television as a source of information which was nearer to the study results of Chinnakali et al[13]in North India (54.9%) and Acharya et al[14] in South Delhi (59.27%). Among the study participants 96.35%were responded that dengue is problem in Jamnagar, while study conducted by Vikas Kumar et al[15] in Municipal Corporation of Delhi (MCD) amongst the school teachers, where 85.8% responded that dengue is a problem in Delhi. Dengue is fatal disease said by 89(46.35%) in our study, which was contrast (26%) to the study result of Prashaant K. Bhatnagar et al.[8]Among the study participants, 181(94.27%) responded that Dengue is preventable disease, which was nearer to study results of Prashaant K. Bhatnagar et al[8] (99%) in North India, Vikas Kumar et al[15](87.7%) in Municipal Corporation of Delhi (MCD) and Ashutosh Sharma et al[16](90%) in Mahaveernagar, a Urban Health Training Centre in Kota city, but in contrast to result of Ashok Kumar et al[10] (25.2%) in Chennai city. For the recent increase in cases of dengue, 74.47% were

replied that it was due to the lack of knowledge and awareness in people, while 42.71% believed that it was due to the heavy rain fall, which were 32% and 9%respectively in study of Prashaant K. Bhatnagar et al.[8]In our study 20.31% of study participants said that lack of action of govt. is responsible for increase in case of dengue, which is similar to the results of Prashaant K. Bhatnagar et al[8] in North India(20%) and Alobuia et al[17] in Jamaica (20.4%). For the control of mosquito, 71.3% of study participants were using mosquito coils/mats/ repellent/ liquid which was higher(39%) than the results found by Prashaant K. Bhatnagar et al [8] and lower(88.9%) than the study done by Ashutosh Sharma et al.[16]56.67% of study participants were having screening of windows which is higher than the study results of Ashutosh Sharmaet al(12.52%),[16] JS Poyyamozhi (10.9%)[18] and Vala Mayuret al(8.56%).[19]

In this study out of 192 study participants, 40.40% of study subjects said that dengue mosquito bite during day time which was similar to the study result of Ashok Kumar et al[10], nearer to the result of Prashaant K. Bhatnagar et al(49%)[8] and higher than the result of Ashutosh Sharma et al(15.52%)[16] and Sahana Mohapatra et al(13%).[20]Out of 80 participants who knows correctly about biting time of dengue mosquito, only 6(7.5%) were using PPM during day time which shows lack of practice regarding prevention of dengue. For the breeding site at hostel/house, only 48(25%) were regularly checking, which was lower than the result of Prashaant K. Bhatnagar et al (43%).[8]

Conclusion:

The results of this survey indicate that majority of 1st year medical graduates had a basic knowledge regarding vector of Dengue, its transmission and signs/symptoms. But there is still gap in knowledge of preventive measures and practices of personal protective measures and eliminating source of mosquitoes. That could be addressed through further education efforts.

Limitation:

The study was done only in one medical college and only in first year M.B.B.S students.

Figure 1: Knowledge about characteristics of mosquito transmitting dengue fever

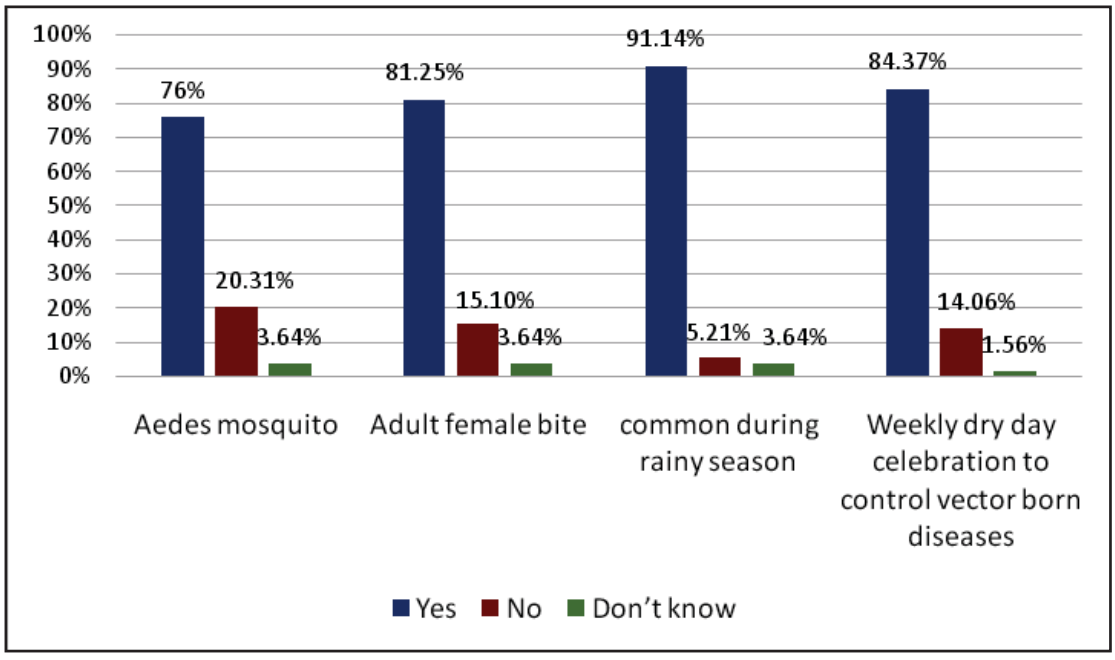

Figure 2 : Participants' belief regarding cause of recent increase in dengue cases

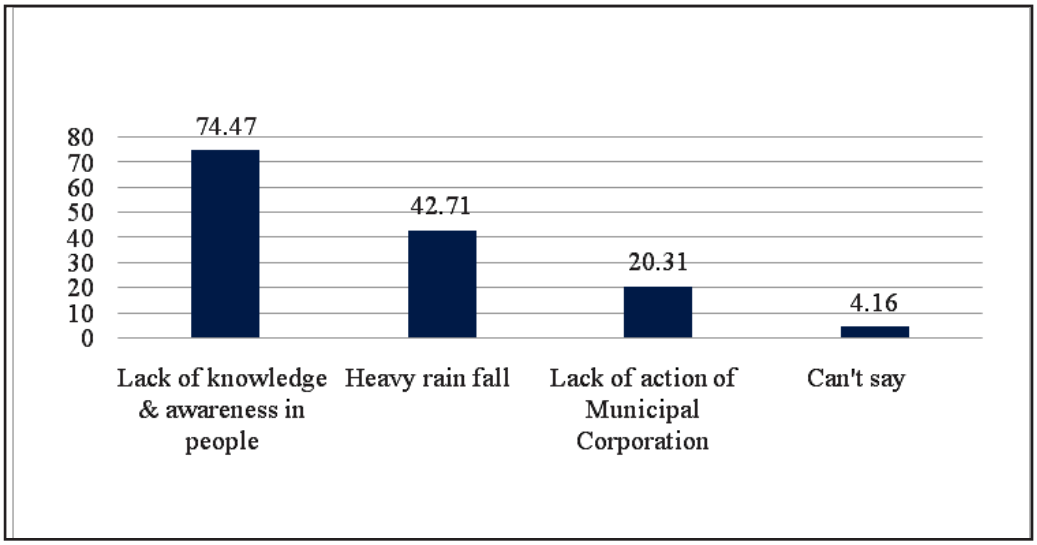

Table 1 : Knowledge about breeding places and clinical manifestation of dengue

Clean storage water is breeding place of dengue mosquito.	**Male n (%)**	**Female n (%)**	**Total n (%)**
Yes	33 (63.46)	19 (36.54)	52 (27.08)
No	89 (65.44)	47 (34.56)	136 (70.83)
Don't know	3(75)	1 (25)	4 (2.08)
Correct knowledge about clinical manifestation of dengue. (Based on IDSP module 5)			
Yes	29 (70.73)	12 (29.27)	41 (21.35)
No	96 (63.58)	55 (36.42)	151 (78.65)

Table 2 : Attitude of study participant regarding dengue

Characteristics	**Male**	**Female**	**Total (%)**
Dengue is problem in Jamnagar	119(64.32)	66(35.68)	185(96.35)
Dengue is fatal disease	59(66.29)	30(33.71)	89(46.35)
Dengue is preventable	118(65.19)	63(34.81)	181(94.27)

Table 3 : Practice about currently using Personal Protective Measures against mosquito

PPM used against mosquito at present	**Male**	**Female**	**Total (%)**
Mosquito coils/mats/repellent/ liquid	85(62.04)	52(37.96)	137(71.35)
Screening of windows	74(67.89)	35(32.11)	109(56.77)
Wearing full sleeve cloth	62(72.09)	24(27.91)	86(44.79)
Use of mosquito net	58(76.32)	18(23.68)	76(39.58)
Electric racquet	27(79.41)	7(20.59)	34(17.7)

Table 4 : Association between knowledge and practice regarding dengue

Time of bite (day time)	Use of mosquito repellent during day time		
	Yes	No	Chi square=18.52 p-value=0.0001
Yes	6 (7.5%)	74 (92.5%)	
No	38 (33.92%)	74 (66.07%)	

Table 5: Practice of study participant regarding regular checking for breeding site at hostel/house

Regular checking for breeding site at hostel/house	Male	Female	Total
Yes	30 (62.5)	18 (37.5)	48 (25)
No	91 (65.94)	47 (34.06)	138 (71.87)
Don't know	4 (66.67)	2 (33.33)	6 (3.12)

Declaration:

Funding: Nil

Conflict of Interest: Nil

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COVID-19 Pandemic: Response by Department of Community Medicine in a Medical College of Mumbai, India

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Abstract:

The role of community medicine in epidemiology and disease outbreaks is significant. Covid-19 pandemic was an opportunity to realize this potential.Here we present the role of Community Medicine department of a Medical College in Mumbai, which was a global hotspot for Covid -19. The responses were initiated in the first week of February, prior to the detection of the first case in the city. With the progression of the pandemic, the roles have changed and adapted accordingly. The activity of Community Medicine department is unique to this specialty and has provided a lifetime experience for its residents andfaculty.Our purpose here is to project the roles depicted in this model so that some of them can be followed by community medicine departments of other colleges and continued post-pandemic too.

Key words: Community Medicine, COVID 19, Pandemic

Introduction:

The term 'Community Medicine' initially appeared in American healthcare in 1920, which represented comprehensive healthcare of an individual.[1] Presently, the scope of community medicine seems to be in the grey area as it overlaps with public health and family medicine. [2]

In India, Community Medicine generally covers services in the field areas of rural and urban health centers, academic activities for medical students, run various specialized clinics (immunization, geriatric, under five, etc.) and screening OPDs. [3]

The role of community medicine in epidemiology and disease outbreaks is significant. Covid-19 pandemic was an opportunity to realize this potential.

COVID-19 response:

The first case of Covid-19 in Mumbai was reported on 11th March 2020. As per directives from the state, the first active response was screening of incoming passengers at International Airport, Mumbai, from 6th March 2020, in collaboration with other medical colleges. Thermal screening was done, travel history obtained and decision for home/ facility quarantine was taken. Anticipating huge traffic on the state emergency helpline number, the capacity was augmented. PG students and interns were deputed at the Disaster management cell for effective risk communication, with average of 2500 calls being attended daily. IEC activities had begun much earlier and are ongoing. Posters made by Patient Education Cell, presentations and demonstrations were being used for spreading

Quick Response Code	Access this article online	How to cite this article :
	Website : www.healthlinejournal.org	Velhal G, Shah A, Varughese C. Covid-19 Pandemic: Response by Department of Community Medicine in a Medical College of Mumbai, India. Healthline. 2021; 12(3):101-105 .
	DOI : 10.51957/Healthline_226_2021	

awareness in the community.As social distancing norms were put forth, there was a gradual shift to digital platform based IEC activities. CMEs were conducted in collaboration with other departments for all healthcare workers (HCWs) even before the first case was detected in the state. Trainings were conducted later in batches.

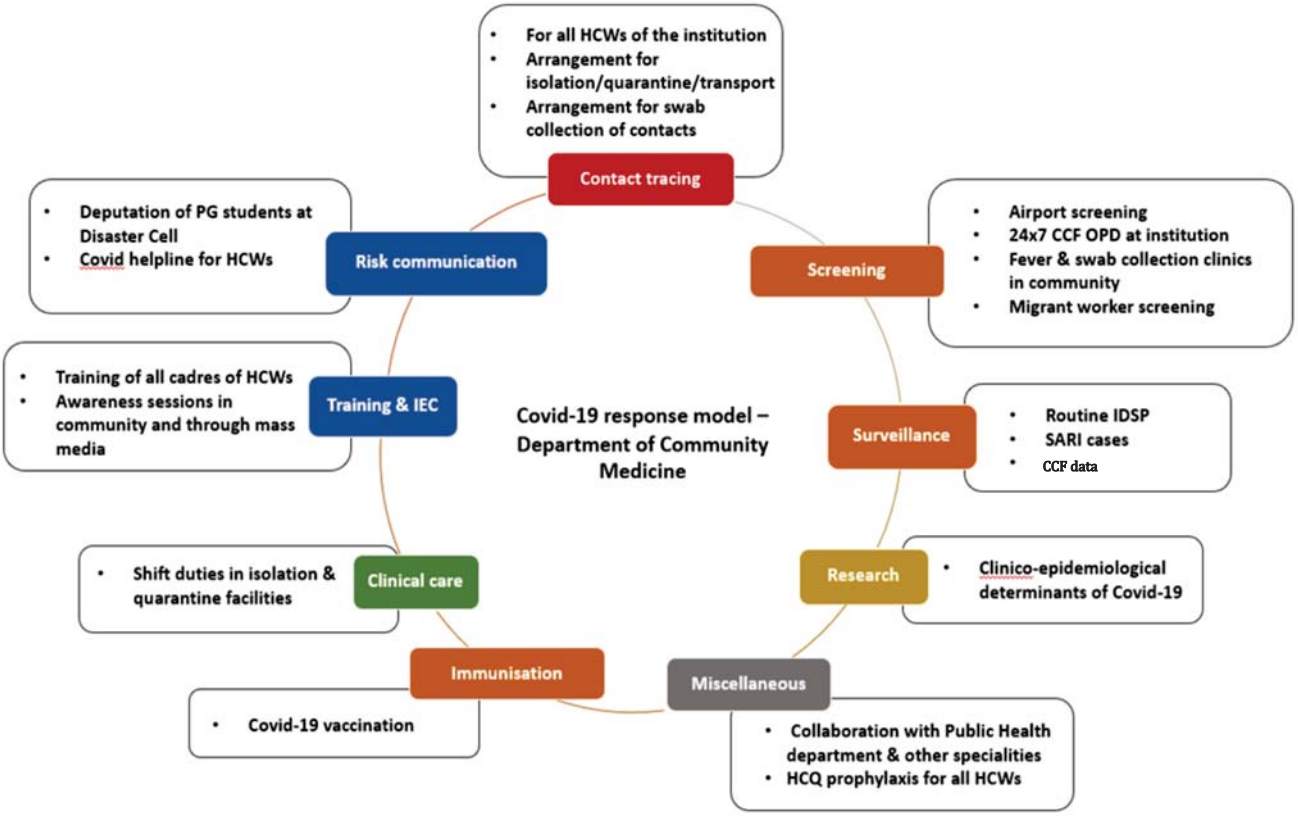
At first, PG students were shunted to a public infectious disease hospital earmarked to treat COVID-19 patients. At the parent institute, a 24x7 cold-cough-fever (CCF) screening OPD with a triage area for symptomatic patients was set up on 21st March in collaboration with other clinical departments. Fever screening and swab collection clinics, in collaboration with the Public Health Department, was started for symptomatic people in containment areas of the city on 5th April. A team comprising Community Medicine specialists, microbiologists and a staff nurse were deployed per area. Three to four areas were covered per day and an average of 60-70 people was screened per area. Since the parent institute is catering to both COVID and non-COVID patients, a preliminary screening of HCWs was conducted for presence of co-morbidities and accordingly deployed for COVID and non-COVID duties. A contact tracing team was established in the department on 9th April, after report of first HCW COVID case on 8th April. The team traced contacts of positive cases telephonically, assessed them, and also arranged for their quarantine facility, transport, and testing. Over time, the contacts have reduced significantly. Responding to state government's policy for sending willing migrant workers back home during lockdown, a screening OPD was begun for providing them with fitness certificates. This facility has been extended for all those who want to travel within the state. As the city soon turned into a global hotspot, many COVID Care Centers (CCC) were created in the city and doctors from all specialties were working in isolation and quarantine wards/facilities in shift duties. Our department also set up a special counselling helpline for our HCWs, along with Department of Physiotherapy and Occupational therapy for answering queries of HCWs of our hospital. It receives a current average of 10-15 calls per day during working hours. On 16th January, 2021, COVID-19 vaccination was also commenced according to the government rules and is ongoing. Research related to epidemiology of COVID-19 and its determinants have been taken up by the department.

Along with the 'COVID activities', the Department runs all its routine services. Manpower management was crucial to avoid interruption of routine services. Academic activities had to be suspended. Physical infrastructural changes had to be brought within the OPD premises adhering to social distancing norms. Patients with chronic illnesses were prescribed medications for a longer duration. Many doctors contracted COVID-19 infection and their contacts had to be quarantined, causing overburden on remaining working doctors. Working in PPE kits added to the fatigue. Hence, skill mixing was adopted, wherein PG students from other specialties were roped in for screening duties and COVID-19 ward duties to fill the gaps. Data management and documentation also required more time and manpower. The contact tracing team had to deal with uncertainties of quarantine periods and ever evolving guidelines. In situations where contact history was hidden, altered or unreliable, appropriate decision making was crucial. Convincing doctors to be quarantined was a challenge due to manpower shortage in their departments. Community-based research became difficult due to the need for social distancing. Doctors going into the community also had to do counselling for allaying fears of the people, while managing their own. Overall, it was a trying period, but a good learning experience.

Discussion:

Our department had initiated responses in the first week of February, prior to the detection of the first case in the city, and is continuing with modifications

Figure 1: Covid-19 response model- Department of Community Medicine in a Medical College



[CCF OPD – Cough-Cold-Fever OPD; HCQ - Hydroxychloroquine; HCWs – Healthcare workers; IDSP – Integrated Disease Surveillance Programme; SARI – Severe Acute Respiratory Illness]

according to the progression of thepandemic. The activities of Community Medicine department is unique to this specialty and has provided a lifetime experience for its residents and faculty. It has provided an opportunity to work beyond specialties in cooperation with other departments. While screening, surveillance, contact tracing are roles that are unique to Community Medicine, we went beyond and performed other administrative and clinical duties. Our purpose here is to project the roles depicted in this model so that some of them can be followed by community medicine departments of other colleges and continued post-pandemic too. We are witnessing a lifetime opportunity to go through large scale experiential learning on containing a pandemic in one of the global hot spots. The relevance and significance of this discipline cannot be overstated during this pandemic. The roles in the aforementioned model would certainly help in widening the perspective of the discipline after the pandemic too.This period has been an eye-opener and will help in strengthening the status of this discipline in the medical field.

Declaration:

Funding: Nil

Conflict of Interest: Nil

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