

## SHORT ARTICLE

# Investigating the Landscape of Injection Practices: A Multi-Level Examination within Surat, Gujarat, India

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### ARTICLE CYCLE

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### ABSTRACT

**Background:** Unsafe injection practices pose significant risks to both patients and healthcare providers, constituting a critical issue in global healthcare ensuring the safety and appropriateness of injection practices is imperative. **Aim & Objective:** This study aimed to comprehensively assess the safety of injection practices across various healthcare facilities. **Methodology:** A Descriptive survey was conducted during March to December-2021. Non random Purposive sampling technique was adopted to select health care facilities. Total 26 healthcare facilities were selected from Government & private sectors. The study areas were OPDs and indoor wards. An observational checklist used to collect data. Data analysis was done using SPSS-28. **Results:** A comprehensive assessment revealed commendable adherence to injection safety practices. No deficiencies were found in the availability of resources and materials necessary for injection practices in hospitals. However, certain areas for improvement were identified. Interestingly, the practice of using a fresh pair of gloves for injections was unnoticed in 33% of government facilities and 45% of private facilities, suggesting a possible lapse in infection control protocols. **Conclusion:** While the healthcare facilities of Surat exhibit commendable adherences to certain aspects of injection safety, there remain opportunities for enhancement. Addressing implementing regular training programs for healthcare providers are crucial steps toward optimizing injection safety practices and ensuring the well-being of both patients and providers.

### KEYWORDS

Injection practice, Injection safety, Safe injection, Injection technique, Quality care

### INTRODUCTION

Injections administrating stand as one of the most ubiquitous healthcare procedures worldwide. Each year, estimated 16-20 billion injections are administered across the world.(1) Based on The World Health

Organization (WHO) report, around 20 lacs cases of needle related accidents occur among health staff each year all over the world.(2) These injuries, often stemming from improper techniques during medical procedures, pose a threat to spread of blood related pathogens

among health staff and patients.(3). Indeed, it is imperative to prioritize safety measures in injection practices and mitigate the associated risks to prevent accidental transmission of blood-borne threats. Providing prophylactic care and implementing stringent safety protocols are vital steps in safeguarding both healthcare providers and recipients.(4,5)

By prioritizing safety measures and promoting adherence to best practices, healthcare systems can enhance patient outcomes, protect healthcare workers, and contribute to public health efforts to prevent the spread of blood-borne infections.(6). To mitigate this threat, it is imperative to adhere to stringent safety protocols of infection prevention. Several factors impact the danger of transmission of infections during the faulty injection practices. Moreover, healthcare providers' awareness about faulty injection practices and the availability about comprehensive training programs play pivotal roles in reducing the risk of transmission. Ensuring the availability of sterile equipment, promoting proper waste management practices, and providing adequate training and resources to healthcare providers are essential steps toward enhancing injection safety and safeguarding the health of both patients and healthcare workers. (6,7). SIGN has played a pivotal role in raising awareness, advocating for policy reforms, and implementing best practices to enhance injection safety across diverse healthcare settings. SIGN's efforts have been instrumental in advancing the global agenda for injection safety and promoting equitable access to safe and quality healthcare services for all.(8). Between 2000 and 2010, there was significant progress in reducing unsafe injections in poorer countries. These regions succeeded by implementing injection safety programs, improving healthcare, and raising awareness.(9) Between 2000-2001, Oman's Ministry of Health conducted a survey at 78-80 government health facilities to assess injection practices. While most hospitals met standards, areas needing improvement were identified. This included boosting awareness of the Ministry's injection safety policy among healthcare providers, which is crucial for safe injections.(10)

## MATERIAL & METHODS

**Study design & Study Type:** Present study was a descriptive type research design conducted in Government, Municipal & private sectors health care facilities of Surat city

**Study Setting:** This study was conducted at outpatient department and indoor department of selected health care facilities of Surat city where injection procedure were frequently performed.

**Study Population:** Health care staff and patients who were associated with injection procedure of selected health care faculties of Surat considered as study population.

**Study Duration:** Present study was conducted between the periods of March-2021 to December-2022 at different health care facilities of Surat.

**Sample Size Calculation:** Sample size was calculated by using OPEN EPI software version 3.01. Total 360 health care staff, 360 patients and 26 health care facilities were selected from different zones of Surat.

**Inclusion Criteria:** Health care staff, patients and health care faculties who gave permission to voluntary participate in the present study and available during data collection were included in the study.

**Exclusion Criteria:** Health care staff, patients and health care faculties who didn't gave permission to voluntary participate in the present study and not available during data collection were excluded in the study.

**Strategy for Data Collection:** A descriptive survey design was used to conduct this study. Nonrandom Purposive sampling technique were used to select health care facilities of Surat. The Revised Injection Safety Assessment Tool-C from WHO was modified with prior permission and utilized for the assessment of injection practices. Total 26 hospitals selected for the study including government, Municipal and private. Questionnaires and observational checklists were used to collect data to assess compliance with safe practices, equipment adequacy, supply availability, and waste disposal. Structured observations focused on facility infrastructure and practices such as injection administration, hand hygiene, material stocks, waste management,

vaccination status, and waste disposal were recorded. Data were analyzed using SPSS-28.

**Ethical Issue & Informed Consent:** Prior to conducting the study, formal ethical permission was obtained from the Sumandeep ethical committee as well as the Government Medical College, Surat. Healthcare professionals choose to engage voluntarily. Patients gave both written and verbal permission. The obtained data's privacy, anonymity, and secrecy were guaranteed.

**Data Analysis:** Descriptive and inferential statistics were used to analysed data by using spss-28.

## RESULTS

Major findings of the study revealed that none of the healthcare providers reported needle-stick injuries in the past 12 months, indicating a 100% safety record in both public and private sectors. Additionally, nearly all providers in both governmental and private facilities had received full hepatitis B immunization, showing a high level of protection against the disease. Interestingly, none of the healthcare providers in either sector had received specialized training on safe injection practices in the past two years, indicating a universal

lack of recent training in injection safety protocols.

The study results also revealed that none of the hospitals attempted to sterilize disposable injection devices. Alcohol-based hand rub was available in all governmental and private facilities. There was no incidence of sterilizable (reusable) needles or syringes used in either public or private facilities. Syringes and needles were consistently taken from sterile packets in both government and private sectors. After injection procedures, all providers immediately disposed of used needles and syringes in appropriate sharps containers in both public and private facilities, with no instances of recapping syringes observed. However, the practice of wearing a new pair of gloves for injections was observed in 67% of government and 55% of private health facilities, indicating a gap in adherence to infection prevention protocols.

Regarding the material & supply, there were consistently available puncture-resistant, leak-proof sharps containers in all rooms where injection procedures were conducted. All the injection rooms had hand washing facilities available. Stock of disposable syringes, needles & gloves were available.

**Table-1: Observed Items reflecting threats to patients, providers and community. (N=26)**

Sr. No	Assessment	Government HCF (n=15)				Private HCF (n=11)			
		Yes(f)	%	No(f)	%	Yes(f)	%	No(f)	%
1	Injection room is available.	15	100	0	0	6	55	5	45
2	Washing Area with water facility in injection room.	15	100	0	0	11	100	0	0
3	Spirit bottle (Alcohol) is available for cleaning hands in injection area.	15	100	0	0	11	100	0	0
4	Enough stock of sharp collection boxes is available in injection area.	15	100	0	0	11	100	0	0
5	Double Scoop recapping is observed.	0	0	15	100	0	0	11	100
6	bins facilities is available as per protocol.	15	100	0	0	11	100	0	0
7	Currently available enough stock of new syringes and needles at facility.	15	100	0	0	11	100	0	0
8	No injection vials with needles attached found in injection area.	15	100	0	0	11	100	0	0
9	Use fresh pair of gloves while doing injection procedure	10	67	5	33	6	55	5	45
10	Enough stock of sharps boxes containers during the previous 6 months	15	100	0	0	11	100	0	0
11	Staff did not have any injection related injury during one year.	15	100	0	0	11	100	0	0

Sr. No	Assessment	Government HCF (n=15)				Private HCF (n=11)			
12	Staff had taken any previous training of infection control within one year.	0	0	15	100	0	0	11	100
13	Status of vaccinated staff of hepatitis B vaccine.	15	100	0	0	11	100	0	0
14	Any protocol/policy/SOP of injection safety available.	0	0	15	100	0	0	11	100

## DISCUSSION

The major findings emphasize the adequacy of injection equipment, materials, and supplies in government and private healthcare facilities in Surat city. It was notable that there were no attempts to sterilize single-use injection equipment in either sector, and all syringes and needles were obtained from sealed packets. Additionally, proper disposal of used needles/syringes in sharps containers was consistently practiced, and facilities had adequate access to running water and cleansing soap. An important observation was the absence of written policies or guidelines for injection safety in both private and public health facilities, indicating a critical area for improvement. This study is the first formal assessment of injection safety at the city level in Surat and reveals notable differences compared to previous assessments, such as the 2001 study conducted in Oman, particularly in the inclusion of both government and private health facilities in our study. (10) Furthermore, while the 2001 study concentrated solely on primary care facilities, our research had a broader scope. Comparative analyses with studies from other regions, such as Nigeria and Swaziland, further underscore the positive findings of our study. Unlike these areas, where high rates of unsafe injection practices were documented, especially concerning needle recapping, our study did not observe any instances of recapping. Similarly, needle-stick injuries were not reported by providers in our study, contrasting with the findings of the 2001 study in Oman, where a significant proportion of providers reported such injuries. Nevertheless, it's crucial to acknowledge the limitations of our study, especially its focus on the city level, which prevented the identification of disparities between regions and health districts. (10) Moreover, certain data, such as

needle-stick injuries and hepatitis B immunization status, relied on self-reporting by healthcare providers which could introduce biases into the findings.

## CONCLUSION

The study provides valuable insights into injection safety practices, highlighting areas of compliance and areas for improvement. Findings suggest a general adherence to injection practices outlined by the World Health Organization. Overall, many aspects of injection safety were satisfactory, with adequate supplies, use of single-use syringes, and reasonable practices observed. However, improvements are needed in certain areas like periodic training, written policy & standard SOP for injection practice. Addressing these action points can strengthen healthcare facilities' commitment to ensuring safe injection practices, thereby protecting the health and well-being of patients and healthcare workers alike.

## RECOMMENDATION

Improving the safety and effectiveness of injections calls for a multimodal strategy. To keep current on best practices, healthcare personnel should periodically attend conferences, workshops, and seminars in addition to receiving skill-based training. For injection safety, healthcare institutions need to have documented policies and standard operating procedures (SOP) in place to give unambiguous instructions. In order to reduce dangers, injectable drugs must be used rationally and disposed of properly. Legislators must encourage sincere dedication and participation from communities, service providers, and recipients. Additionally, research is required to comprehend local issues and provide evidence-based solutions in

order to continuously enhance injection safety procedures.

#### **LIMITATION OF THE STUDY**

No prior research conducted on safe injection practice in Surat city. This study was limited to the selected health care faculties of Surat city only.

#### **RELEVANCE OF THE STUDY**

This was the first descriptive survey study from Surat city that attempted to assess safe injection practices from the different health care facilities of Surat city.

#### **AUTHORS CONTRIBUTION**

All authors have contributed equally.

#### **FINANCIAL SUPPORT AND SPONSORSHIP**

Nil

#### **CONFLICT OF INTEREST**

There is no any conflict of interest

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#### **DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS**

Authors didn't use any generative AI and AI assisted technologies in the writing process.

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