INTRODUCTION

Good documentation practice (GDP) is essential for the integrity of data collection and reporting in the pharmaceutical industry to support the development, registration, commercialization, and life-cycle management of pharmaceutical products. Documentation control and administration are essential components of the organization’s good manufacturing practice (GMP) program. Facilities must have documented systems based on specifications, manufacturing and packaging instructions, procedures, and records for GMP compliance. Specifically, batch-specific manufacturing documentation must be present. These documents must enable the history of each shipment to be traced. Traceability must be possible for a minimum defined period, typically one year after batch expiration.\(^2\)

GDP refers to the principles and processes that ensure that documents related to a product, process, or system are accurate, complete, and consistent. Here are some guidelines for GDP:\(^3\)

- Clarity and conciseness, consistency, accuracy, relevance, approval and sign-off, version control, accessibility and training.

Guidelines for good documentation practices:

- United states food and drug administration Guidelines: Industry guidance on the standardization of data and documentation practices for product tracing.\(^4\)
- WHO Guidelines: Guidelines for effective data and record management.\(^5\)
- ICH Guidelines: Guide to good manufacturing practice for pharmaceutical active ingredients.\(^6\)

Indian Pharmaceutical Market in the United States

The supply of Indian pharmaceuticals to the United States is significant, as India is a major supplier of generic drugs to the US market.\(^7\) According to data from the US FDA, India is the second-largest exporter of drugs to the US, accounting for approximately 12% of the US drug market.\(^8\)

Indian pharmaceutical companies supply a wide range of drugs to the US market, including generic versions of popular brand-name drugs used to treat a variety of medical conditions such as diabetes, heart disease, and cancer.\(^9\) These generic drugs are often more affordable than their brand-name counterparts, making them an important option for patients seeking lower-cost alternatives.\(^10\)
However, the supply of Indian pharmaceuticals to the US market has faced some regulatory challenges in recent years. The US FDA has increased its scrutiny of the quality and safety of drugs manufactured in India, leading to a number of warning letters and import alerts for Indian pharmaceutical companies. This has led to increased regulatory compliance costs for Indian companies and has also impacted their reputation in the US market.\textsuperscript{11}

**USFDA Warning Letters**

During inspections or investigations, the US FDA issues warning letters to pharmaceutical companies when it discovers significant violations of regulatory requirements. These warning letters are formal notices to the company that it is in violation of the law and must take corrective action.\textsuperscript{12}

The procedure for issuing warning letters by US FDA typically follows these steps:

- Inspection or investigation
- Inspection report (form 483)
- Response from the company
- Warning letter
- Follow-up

It’s important to note that warning letters are serious regulatory actions and can have significant consequences for the company’s reputation and business. Companies that receive warning letters are expected to take prompt and effective corrective action to address the violations identified by the FDA.\textsuperscript{13}

**Impact of USFDA Warning Letters**

USFDA warning letters have significant impacts on pharmaceutical companies.\textsuperscript{14} Here are some of the impacts of USFDA warning letters: Reputational damage, sales decline, regulatory scrutiny, compliance costs and legal action.

**MATERIALS AND METHODS**

A comprehensive literature evaluation will be conducted to identify the most frequent documentation deficiencies cited in USFDA warning letters sent to the Indian pharmaceutical industry.\textsuperscript{15} This will provide a framework for the investigation and ensure that all relevant issues are addressed. From the USFDA’s publicly accessible website, warning letters issued to Indian pharmaceutical industries during the study period were compiled. The warning letters will be analyzed to identify the specific documentation shortfalls cited in each letter. The quantitative data collected from USFDA warning letters will be analyzed using statistical tools, and the results of the data analysis will be presented in tables and graphs to provide a comprehensive overview of the most frequently cited documentation deficiencies in USFDA warning letters issued to Indian pharmaceutical industries. The discussion will focus on identifying the root causes of documentation shortfalls and providing recommendations for improving documentation practices in Indian pharmaceutical industries.\textsuperscript{16}

**RESULTS AND DISCUSSION**

Warning letters can be issued by various offices depending on the context and the nature of the warning. Warning letters issued offices to drugs during the study period were categorized (Figure 1) and analyzed for a number of warning letters issued by the individual office.

The above data illustrate during the research period, the Centre for Drug Evaluation and Research [CDER] issued the majority of warning letters.

US FDA inspections on Indian pharmaceutical industries is gradually increasing till 2019 and there is a gradual decrease in the number of inspections due to the pandemic years (2020-2022) and number of inspections in 2022 increased when compared to the pandemic years (Figure 2) and it is expected to increase in forthcoming years (Table 1).

![Figure 1: Warning letters issuing offices in USFDA](image)

![Figure 2: Number of USFDA inspections held at Indian pharmaceutical industries from 2010-2022](image)

![Figure 3: Comparative analysis of warning letters issued to drugs with other products](image)
progressive rise in the number of warning letters for drugs was observed (Figure 3).

A comparative analysis was performed between the number of warning letters issued for drugs and other products and a

The majority of Indian pharmaceutical industries were asked to take voluntary actions against violations cited during the Inspections.

A comparative analysis was performed between the number of warning letters issued for drugs and other products and a

**CONCLUSION**

Documentation deficiencies identified in USFDA warning letters to Indian pharmaceutical companies were analyzed and found destruction of documents, missing of raw data, and inadequate batch manufacturing records (BMR) are frequently
mentioned as the top reasons. These issues can have serious implications for the safety and efficacy of pharmaceutical products, as well as for regulatory compliance. It is crucial for pharmaceutical companies to address these documentation shortfalls and take necessary steps to ensure the completeness, accuracy, and integrity of their records (Table 3). Failure to do so can result in warning letters, regulatory sanctions, and reputational damage. Overall, improving documentation practices is essential for the Indian pharmaceutical industry to maintain its position as a key player in the global market.

ACKNOWLEDGMENT
The authors are grateful to the SRM College of Pharmacy, SRM Institute of Science and Technology, Kattankulathur, Tamil Nadu -603203, India, for providing the lab space and chemicals used in this study.

AUTHOR CONTRIBUTION
All the authors are equally contributed for the preparation of the manuscript, proofreading and docking work.

REFERENCES