

A Review on Counterfeit Medicines

Systematic Review on Substandard and Counterfeit Medicines

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Abstract: When customers receive a fake medicaments, they are subjected to major factors lead to risks. They undergo more than just a trouble; as they become casualty of fake remedies and all are put chance of harmful results from unwilling medicaments or low-grade formulations. Additionally, customers may lose trust in health care experts including their doctor and chemist, and potentially current medicaments or the medicinal field in general. Fake or low grade (poor quality) medications are dangerous to people; not only to the particular in terms of the health side effects experienced, but also to the people in terms of business connection, financial results and the effects on world pandemics. It is essential for distributor, retailer and customers to be aware of new trends in forging in order to best prepare for encounters with dubious preparations. Furthermore, this is a problem that needs to be constantly solved with on national and international policy levels. The Ministries of Health and all shareholders involved in this problem must ensure that all medicaments meet the batch or determined international grades and national grades.. It is important, that's why, multi-skilled procedure be used to regulate this issue which affects the international society and constantly endangered the health of millions of citizen especially in growing nations.

Index Terms: Forging drugs, Patients, Investigation, Pharmaceutical products

I. INTRODUCTION

The WHO defines counterfeit drugs as one which is intentionally and illegally mislabeled with respect to determine and/or origin¹. Forging of commercial products is an ancient practice which increases in many countries and is inspired mainly by the tremendous profits to be made. Business in spurious drugs appears to be broad expansion internationally, affecting both developed and under developed countries. The enlargement of forging drugs is highly noticeable in those countries where the Preparation, entrance, circulation, supply and sale of drugs are less regulated and less implemented. In 140 million population of India there are huge market for Pharmaceutical products, and such way indirectly increase the risk factor of forging of medicines. Now a days whole world suffering in pandemic situation and leads to demolition of other sectors, In such a way Pharmaceutical company's lives in golden era at the present time, but same time counterfeiting of medicines or substandard medicinal business also increase in India. This is the biggest problem rise in last few decades. Forging of medicines increase the risk of patients life. In present study the cases of counterfeiting of medicine is surprisingly increases in India, and our defensive mechanism get failed to control it or stop it. Because drug counterfeiters are often able to make product in such a way similar in terms of color, shape and appearance & it can sometimes very sensitive scientific means so it is very difficult to identify the counterfeit product. A fake drug may contain in suitable amount of API or none API may be incorrectly treated in the body for eg. absorption in the body, or may contain ingredients that are absent on the label. Some methods may verify helpful in combating the forging drug problem.^{[1] [2] [3]}

II. COUNTERFITED PHARMACEUTICAL PRODUCTS CONTENTS^[4] :-

- Products without active ingredients
- Product with or without correct or incorrect ingredients
- Products with dummy packaging
- Relabeled expired medicine with the purpose to extend the shelf-life
- Product with missing manufacturer address or details
- Expired ingredients or whole product
- Drug without manufacturing and expiry date
- Medicine without any kind of specified ingredient which labeled on product

III. DANGER EFFECTS OF COUNTERFEIT MEDICINES

This kind of pharmaceutical product may be inactive bcz, it does not contain proper API. The product may be risky bcz, it may be contains too much API or chances of contain any unknown hazardous ingredient.

The medicine may have been prepared or placed in an insufficient environment that does not have the proper scale up in place to ensure that the medicine are safe or unsafe.

- i. **Death:** Disease suffering patient already in trouble and various complication, in that time proper treatment with accurate dose of drug may save the life of patients, so in consideration of accuracy the chances of major error in counterfeit medicines, it may be increase than normal dose or it may be decrease than normal dose, in both cases the deathful effects can be common, and patient may lead to death.^[6]

- ii. **Economic loss:** Huge forging of drug may leads to a result of economic loss. There are so many example pf pharmaceutical firms get lose of huge amount of money because of their product get counterfeit and sold at lowest prices..Pharma-filed directly shows financially impact on both individual and national economy. It affect the individual finances bcz, there are increased cost of treatment. The time, money and patient health are also loss in counterfeiting medicines. ^[7]
- iii. **End organ damage:** Many time ingestion of fake drugs may lead to damage the liver, kidneys, heart and the central nervous system. The liver is responsible organ to metabolite the drug and kidney is responsible organ to exist the drug from body. In both case drug directly contact with sensitive organ if in case of fake drug that poison may affect the body organs and finally it can get damaged in during treatment. ^[8]
- iv. **Loss of belief:** Therapeutic or adverse effects of forging drug may leads to loss of belief in the health system and the system of drug control and their implementation. The prestige of the real product is spoiled and the pharmaceutical firms which spend enormous assets in the modifying novel products sustain economically. Patients may lose belief in the health care profession. ^[8]
- v. **Treatment failure:** The use of counterfeit drug may result of treatment failure or even death can be often. extent of counterfeiting is challenging for a number of cause. Other collaborated health risks consist antibiotic resistance. The problem of fake and forging drug is very important in medicine bcz of the associated health risks. Therapeutic failure may be associatedwith the use of fake drugs without active ingredient leading to loss of belief by the patients. The condition is so poor that even when patients are treated with original antibiotics and anti- malarial, they no more respond due to resistance caused previously by taking forged and fake drugs. ^[9]
- vi. **Toxicity:** Another measure challenge is the management of target or most insecure groups of patients with high risk of toxicity or adverse effects and therapeutic failures which can lead tosever effect on body. They are the infants, adults, specially pregnant women and those with kidney or liver dysfunction. The sale of fake and forging drugs in these patients would be clinically injurious and death rates will be enhanced. ^[10]

IV. AVAILABLE DATA :-

According to study of Matej Mikulic published in sep 2021 in statista, total number of counterfeit cases in consideration of pharmaceuticals worldwide from 2002 to 2020.This study show exact figures of cases by years in world wide. From 2014 to 2020 the cases of counterfeit surprisingly increases, and we clearly notify the cases was on high peak in 2019, there are 5081 cases noted in 2019 when whole world in pandemic due to covid 19. This is very serious situation and directly affect on our health care system. ^[5]

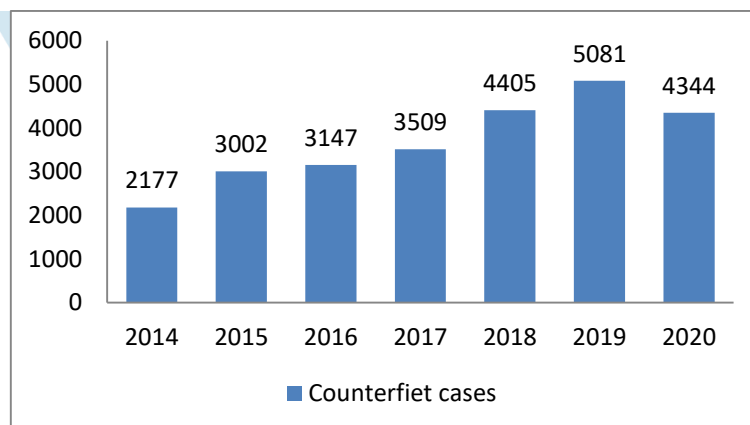


Fig.1 - Graphical Representation of Total number of counterfeit cases concerning pharmaceuticals worldwide from 2014 to 2020

This study indicate the problem of counterfeiting of pharmaceutical product is not only developing countries but also this problem is of under developed countries. Now a days the wave of covid 19 to delta variant to omicron variant the people is in fearing environment and loudly sale of pharmaceutical product is indirectly beneficial of counterfeiting.

According to past and present data of counterfeiting of pharmaceutical products the future of health system is clearly in might risk. Which indirectly affect on health of patients. ^[11]

V. DRAWBACK OF ONLINE PHARMACY:-

Now a days online marketing is best option for people, so the online distribution of counterfeit medicines has been growing during the last decades. in case of pharma filed online pharmacy offer better price with high discount to the patients, and many customer attract for the low cost of medicine available with home delivery, & this is the biggest opportunity for the fraud companies to enter in the market. Networks and social platforms are novel powerful gadgets that arrange criminal groups could utilize to conduct their prohibited businesses. The growth of this hazardous firms world-wide poses a very high risk for the well-being and assurance of unaware consumers. ^[12]

VI. CONCLUSION:-

In this review of counterfeiting of pharmaceutical product we strongly concluded that the cases of counterfeiting is day by day increases bcz of pandemic environment and this is indirectly beneficial for forging companies, The expansion of fake drugs is more noticeable in countries, where the preparation, importation, circulation, supply and sale of drugs are less regulated and less implements. Counterfeits of pharmaceutical product is direct threat to the public health.^{[13][14]}

The vital role to aware to patient as well as public is on printed as well as digital media, this is the responsibilities of drug dealer to maintain the official distributor chain with proper communication with genuine companies, and also inform to FDA if in case of proxy chains. The main problem is the forging drugs are available in cheaper price so they can attract the poor or uneducated people who not aware about it deathful risk. Proper investigation of treatment failure is needed which will help full to find out quality of pharmaceutical product. Proper awareness is also needed for the consumer and dealer to maintain the genuine source of origin of pharmaceutical companies. In many cases the cheaper rate is attractive part of fake product entered in market, so dealer must know about the fixed distributor rate by specific pharmaceutical companies, or contact with companies to find out or identify the genuine supply of product.^{[15][16][17]}

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