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Study of various storage conditions on the pharmaceutical products and its implementation at retail store

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Abstract

The survey conducted to determine the various storage condition written on the labels of pharmaceuticals products and its implementation at retail pharmacy shop revealed that there are large number of storage condition mention on the pharmaceuticals product with lots of ambiguity in actually understanding and implementing it the loss of potency during improper storage condition may impact the efficacy and safety of pharmaceuticals products and ultimately with the patient life. It became the moral responsibility of pharmacist at retail outlet to follow the required storage condition mention on the pharmaceuticals products to insure that quality is not compromise.

Keywords: Storage, storage condition

Introduction

Storage of pharmaceuticals product among the pharmacist is most important therefore, Adequate method to assure that this responsibilities are meet must be developed and implement. The pharmaceuticals are to be stored under the specific condition. The stability of product retained with in the specific limit, throughout its period of storage and use. There are the several condition which cause major impact on their quality of pharmaceuticals product such as temperature, humidity, air quality, high temperature, light. Pharmacist of should be stored under the suitable condition appropriate to the nature and stability of the product concerned. Particular protection from contamination, sunlight, U.V rays, moisture, segregation.

Different storage temperature

Freezer: -25 °C to -10 °C

Cold: 2 °C to 8 °C

Cool: 8 °C to 15 °C

Different storage condition on pharmaceuticals product

Storage of tablet: Store in a cool and dark place, protected from light and moisture.

Storage of capsule: Store in a cool and dry place, protected from light.

Storage and emulsion: Store in a cool place.

Storage of ointment: Store in well closed container protected from direct sunlight.

Storage of oral drop: Store in cool, and dry place protected from light.

Storage of injection: Store below 30 °C.

Storage of vaccine: Store in 2 °C to 8 °C do not freeze.

Aims & Objectives

The proper storage of pharmaceutical products in pharmacy till it reached to the patient is very critical and important. The loss of potency during storage may influence the efficacy and safety of pharmaceuticals. Pharmaceutical products require controlled storage and transit conditions in order to ensure that their quality is not compromised. Storage is an important aspect of the total drug control system. Proper environmental control (i.e., proper temperature, light, and humidity, conditions of sanitation, ventilation, and segregation) must be maintained wherever drugs and supplies are stored in the premises.

The present study was under taken to know the various storage conditions written on the labels and its implementation at retail pharmacy shop with following objectives:

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- To determine the awareness about different storage conditions those are mentioned on the pharmaceutical products.
- To know whether it is possible for the retail pharmacist to fulfil all the storage conditions written on the labels.
- To determine whether pharmacist advice the patient about storage of drug products.
- To determine whether according to pharmacist there is the sufficient space to store the drug below 25°C
- To know the different condition to store the vaccines preparation.
- To determine whether any improper sealing or packaging of pharmaceuticals product in pharmacy.

Methodology

This study was exploratory, descriptive as well as causal and it was necessary to design a suitable methodology for undertaking systematic & scientific study. The methodology designed for this research work was as follows:

Survey research design method was used for the study, which involves the collection of data from a sample of individuals through their responses to predetermined questions. A structured questionnaire was used for collection of data. Retail pharmacies from Mominpura region in Nagpur were selected for the survey. A random convenience sampling method was used to collect the primary data. The sample size selected was 20 retail pharmacy stores representing the region.

Universe of the study: The Retail Pharmacy Store from Mominpura region in Nagpur.

Sampling Unit: The Retail Pharmacy Store.

Sample Size: Sample size of 50% of the Retail Pharmacy Store in Mominpura region in Nagpur were selected for the purpose of this research work.

Sampling Technique: Random Convenience method for the sampling was used. Sources of Data:

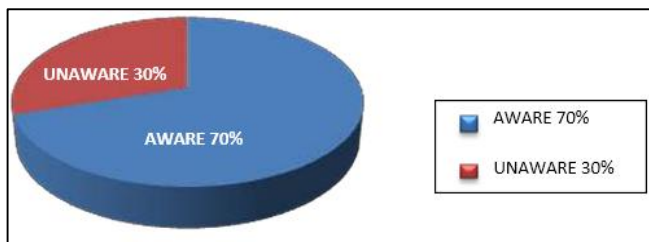
Primary Data: Primary Data was collected from different Retail Pharmacy stores with the help of structured questionnaire in the Mominpura region in Nagpur. A sample @ 50% was chosen by Random convenience sampling method.

Secondary Data: Secondary data was collected from reports, Govt. Publications, reports, Journals, IPG, & such other authentic sources like reference books.

Tools of Research: Pre-designed Questionnaire & Pre-structured interview Schedules was canvassed for collecting primary data from different levels of Retail Pharmacy stores.

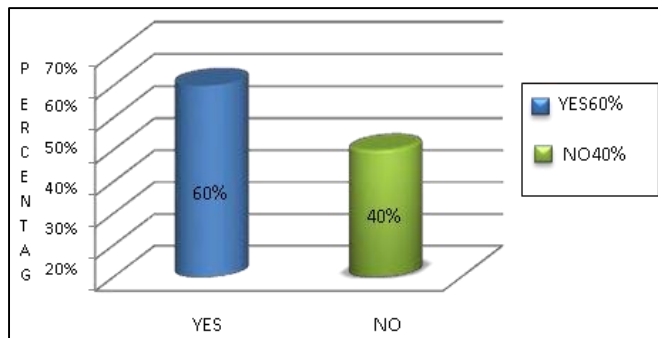
Analysis of data: Analysis of the data was done on the basis of various statistical techniques. The interpretation was done in the form of Tables, graphs, pie charts, figures.

Result and Discussion



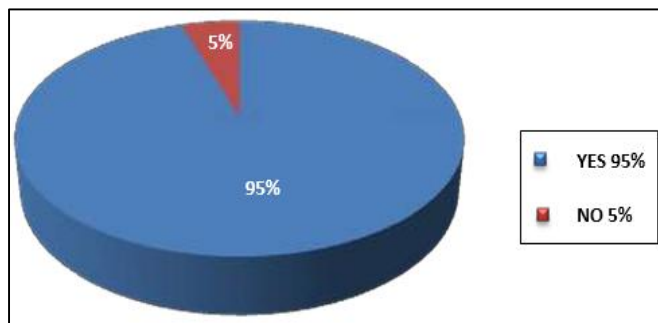
Graph 1: Awareness About Storage Condition

The survey conducted amongst the retail pharmacist about the awareness about the various storage conditions written on the pharmaceutical products showed that as large as 70% of the respondents were aware about different storage condition of drugs product whereas 30% were unaware about the various storage condition of pharmaceutical product largely due to their ignorance about the storage of drug.



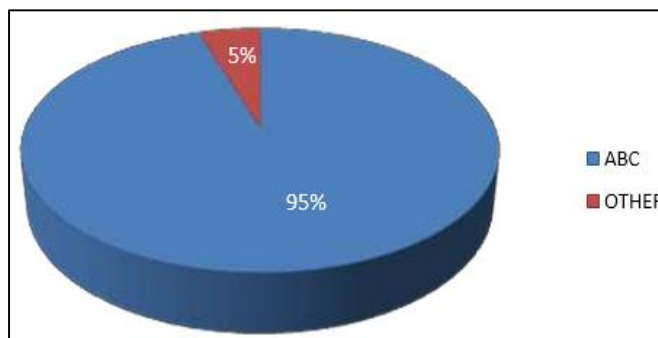
Graph 2: Responses Regarding Following the Storage Condition

The above graph shows that around 60% of retail pharmacist surveyed were adhering the storage condition written on the pharmaceutical product whereas 40% were not able to adhere to the stated conditions.



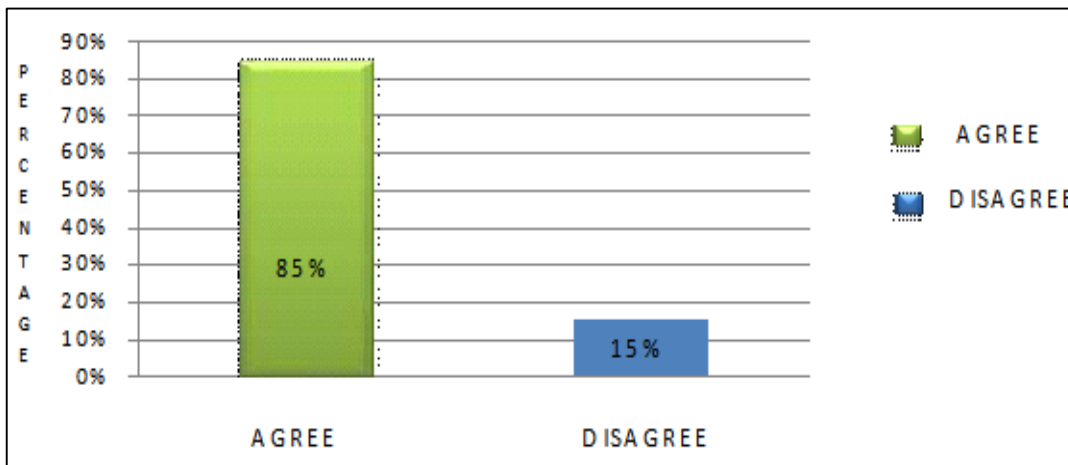
Graph 3: Advice Patient about Storage of P'ceutical Products

The above graph number 3 shows that almost all the pharmacists surveyed i.e. 95% agreed that they advice the patients about the storage of the medicine prescribed to them and only 5% disagreed about it.



Graph 4: Inventory control system in pharmacy

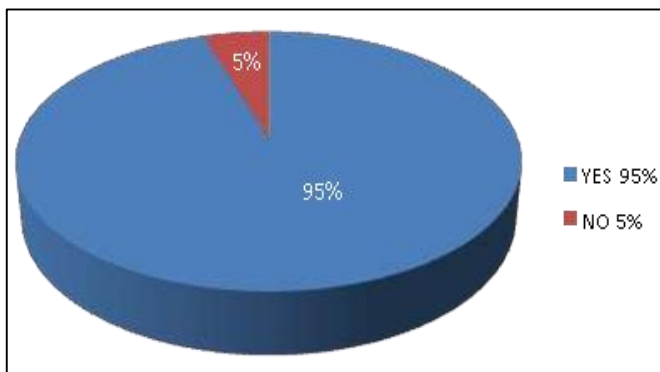
The above graph shows that as large as 95% of retail pharmacist surveyed were storing the medicines in the shop by ABC analysis as it was most convenient, popular and easy method of storing the drugs in the store, whereas only 5% used some other methods.



Graph 5: Difficulty in storing medicine as per label

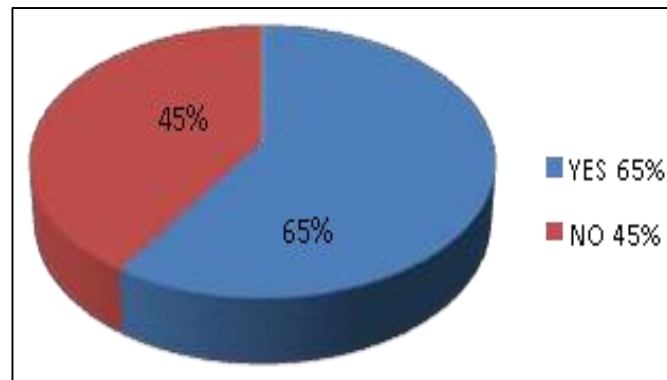
The above graph shows that 85% of retail pharmacist surveyed find it difficult to store the medicine due to variety of storage conditions written on almost all the medicine labels of which most are not very clear to understand and also due to space constraint, whereas 15% found it very convenient to store as per the label, probably because they were having sufficient space for storing especially for the cool temperature.

The above graph shows that 75% of retail pharmacist surveyed faced the problems relating to the product that are dispensed in glass containers (though the number of such containers is decreasing with the coming time with the use of plastic containers). The fragile ness of the glass containers like ampoules and vials were more liable for breakage.



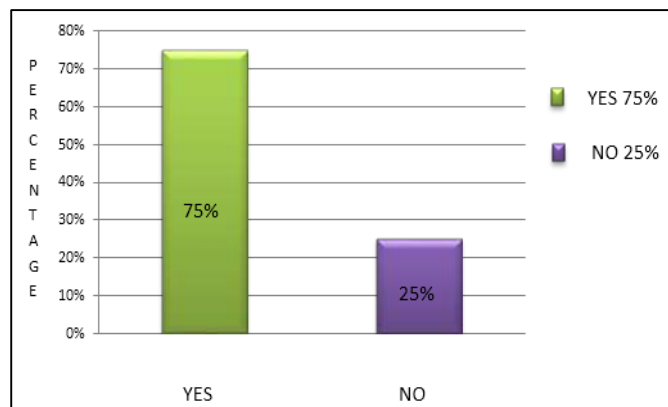
Graph 6: Software used for stock verification

The above graph shows that 95% of retail pharmacist surveyed used software for stock verification which makes them easy for knowing the stock available and where it is stored, whereas 5% do not use the software for stock verification and choose physical verification which is done once in a while and not on regular basis.



Graph 8: Improper sealing or packaging of pharmaceutical products

The above graph shows that 65% of retail pharmacists were of the opinion that they faced the problem of improper sealing of some pharmaceutical products like ampoules, which might be due to the improper transportation facility or sometimes careless handling by the pharmacists. But 45% were of the opinion that they didn't find any issues regarding sealing of products.



Graph 7: Problems faced during manually storing the products

Apart from the above interpretations it was also agreed by all the retail pharmacist that most of them lack the space for storing the products below 25 °C, since most of them have a refrigerator (125 lit) which do not have sufficient space to store all the medicines below 25 °C. Most of the liquid preparations have the storage conditions of storing below 25 °C but it was observed that most of the liquid preparations were stored outside the refrigerator.

While on the other hand changes in atmospheric conditions in our region generally during summer is also a concern while storing of the pharmaceutical products.

It was also observed that storing the vaccine preparation is critical since the temperature range is very specific i.e. 2-8 °C, below 8 °C it loss there potency. E.g:- oral polio (2 – 8 °C), BCG vaccine (2-8 °C), Tetanus toxoids (2-8 °C & Do not freeze), Small pox vaccine (2-8 °C & Do not freeze), Cholera vaccine (2-8 °C & Do not freeze).

Conclusion

The survey conducted to determine the various storage conditions written on the labels of pharmaceutical products and its implementation at retail pharmacy shop revealed that there are large number of storage conditions mentioned on the pharmaceutical products with lots of ambiguity in actually understanding and implementing it.

Though the study showed that more than 70% retail pharmacist were aware about the storage conditions on the labels but as large as 85% were of the opinion that it was difficult to provide the written storage conditions as per mentioned on the label, since most common storage condition written is 'store at cool temperature' which indicates to store below 25 °C and with just a single refrigerator in the shop it is difficult to provide this condition to all the products.

So it could be concluded that the loss of potency during improper storage conditions may influence the efficacy and safety of pharmaceutical products and ultimately the life of patient, it becomes the moral responsibility of the pharmacist at retail outlet to properly provide the required storage conditions mentioned on the Pharmaceutical products in order to ensure that their quality is not compromised.

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