

## **Project Title**

Using a Microfibre Umbrella Dryer for quicker umbrella drying to reduce Plastic use and improve Environmental Sustainability

## **Project Lead and Members**

Project members: Choong Shang Yang, Bernard Teo Yi Min

## **Organisation(s) Involved**

Sengkang General Hospital

## **Healthcare Family Group(s) Involved in this Project**

Healthcare Administration

## **Applicable Specialty or Discipline**

Supply Chain Management

## **Project Period**

Start date: March 2023

Completed date: May 2023

## **Aims**

The project aimed to improve the management of wet umbrellas as individuals step into Sengkang General Hospital (SKH). The objectives were:

- Ensure users' satisfaction with regard to their handling of wet umbrellas.
- Reduce annual general waste of disposed umbrella sleeves by 30%.
- Maintain the highest level of safety for individuals on SKH premise.

## **Background**

See poster appended/ below

## **Methods**

See poster appended/ below

## **Results**

See poster appended/ below

## **Conclusion**

See poster appended/ below

## **Project Category**

Care & Process Redesign

Operation Management, Logistics Management

## **Keywords**

Umbrella Dryer, Plastic use, Reduce, Sustainability, Environmental

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# Using a Microfibre Umbrella Dryer for quicker umbrella drying to reduce Plastic use and improve Environmental Sustainability

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## Introduction

On rainy days, bringing dripping umbrellas into the hospital is a topmost safety concern for the Environmental Services (ES) department, which would execute detailed bad-weather plans, including the standard provision of disposable plastic umbrella sleeves at building entrances. Though these lightweight, transparent umbrella sleeves function to contain the umbrellas' excess rainwater from dripping onto the ground and preventing falls, it also leads to another set of issues:

- The process of inserting wet umbrellas into the plastic sleeves may also cause part of the excess water to drip onto the floor, increasing the risk of hazardous falls. For extremely wet umbrellas, some individuals may even resort to using two pieces of umbrella sleeves at the same time.
- Many environmentally conscious individuals may have refrained from using the disposable plastic umbrella sleeves. Their dripping umbrellas have indirectly led to more puddles and slippery floor surfaces.
- At times, the wet umbrella sleeves are discarded haphazardly onto the ground, increasing the risk of slips & falls.
- Some individuals have also conveniently used the umbrella sleeve stand as a general waste bin.
- As these plastic sleeves are single-use, a tremendous amount of general waste is being generated each year, impacting the environment & ecosystem negatively.



Used plastic sleeves discarded haphazardly onto the ground. Used surgical mask found inside umbrella sleeve stand.

## Aim & Objectives

The project aimed to improve the management of wet umbrellas as individuals step into Sengkang General Hospital (SKH). The objectives were:

- Ensure users' satisfaction with regard to their handling of wet umbrellas.
- Reduce annual general waste of disposed umbrella sleeves by 30%.
- Maintain the highest level of safety for individuals on SKH premise.

## Methodology

The Design-Thinking model was used to derive at an alternative solution.

### EMPATHISE

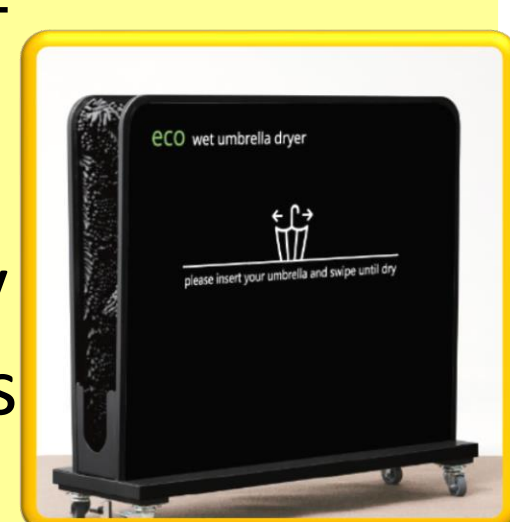
- Users would often get their hands wet & messy while using the plastic umbrella sleeves.
- Individuals are worried about fall & injury on slippery ground during rainy days.

### DEFINE

- Users would need an umbrella drying device that is easy to use, quick to dry, reduce risk of slippery ground, and environmentally sustainable.
- A clean, dry, and safe environment to carry out individual activities.

### PROTOTYPE

- After further review, an umbrella dryer with two layers of high-quality absorbent microfibre was identified for trial.
- Users would run through the wet umbrellas between microfibre cloth.



### IDEATE

- Apart from plastic sleeves, the current umbrella drying methods include umbrella rack, microfibre dryer, absorbent mat, etc.
- After review of various methods' pros & cons, the team decided to test a microfibre-based dryer.

### TEST

- As Medical Centre (MC) Level 1 has the highest foot traffic, a one-month trial test was conducted by placing one unit of microfibre umbrella dryer at the building entrance in Mar 2023.
- The trial addressed the set of issues identified in the Introduction section.

## Results

With the encouraging trial results, the microfibre umbrella dryer was deployed for rainy days with effect from May 2023.

Objectives	Results									
1 Ensure individuals' satisfaction wrt their handling of wet umbrellas	<p>Survey findings on Users in Mar 2023:</p> <table border="1"> <tr> <td>a) Noticed the new microfibre umbrella dryer outside MC</td> <td>60.0%</td> <td>40.0%</td> </tr> <tr> <td>b) Preferred to use microfibre umbrella dryer over plastic sleeve</td> <td>86.7%</td> <td>13.3%</td> </tr> <tr> <td>c) The microfibre dryer is effective in keeping your umbrella dry</td> <td>90.0%</td> <td>10.0%</td> </tr> </table> <p>■ YES ■ NO</p> <p>i) The respondents agreed that they no longer get their hands wet and messy now as compared to the past when they needed to place the wet umbrellas into the plastic sleeves.</p> <p>ii) In addition, the respondents also noticed that the ground is kept dry which helps to lessen the risk of slip and fall cases.</p>	a) Noticed the new microfibre umbrella dryer outside MC	60.0%	40.0%	b) Preferred to use microfibre umbrella dryer over plastic sleeve	86.7%	13.3%	c) The microfibre dryer is effective in keeping your umbrella dry	90.0%	10.0%
a) Noticed the new microfibre umbrella dryer outside MC	60.0%	40.0%								
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Umbrella Dryer	Annual Pieces	Plastic Waste	Remarks
Plastic Sleeves	30,000	94.75kg	In actuality, the disposed plastic sleeves would be very much heavier due to retained water from wet umbrellas.
Plastic Sleeves & Microfibre Cloth	18,000	56.85kg	
<b>Annual Savings</b>	<b>12,000</b>	<b>37.90kg</b>	
<b>Percent Change</b>	<b>40.0%</b>	<b>40.0%</b>	

i) In addition, the elimination of plastic sleeves would result in lesser overall production of harmful plastics, and lesser generated waste.

ii) Separately, the microfibre cloth also helps to dry the umbrellas faster, thus providing for better care, minimizing replacement of defective umbrellas and in the process, reducing the overall primary and secondary waste.

3 Maintain high levels of safety for individuals on SKH premise	<p>i) Unlike plastic sleeve stand, the microfibre umbrella dryer is fitted with wheels which makes it easy for housekeeper to deploy it within the shortest time, thus restoring the safety level for all individuals engaged at the MC as soon as possible.</p> <p>ii) Given that much of MC Level 1 space is kept dry during rainy days, the risk of slip and fall is significantly lowered.</p>
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## Conclusion

The use of microfibre umbrella dryer had led to multiple important outcomes: (1) high levels of users' satisfaction due to more effective, smarter, and better management of their wet umbrellas; (2) reduction of annual umbrella sleeve trash by at least 40%, as well as connected waste such as fewer defective umbrellas & lesser production of plastic sleeves; and (3) highest levels of safety for individuals engaged with activities at the MC. There is no additional cost in deploying a microfibre umbrella dryer as it is equivalent to the procurement cost of plastic sleeves for 4-5 years. The project would be fully extended to replace the remaining plastic umbrella sleeve stands in SKH. Last but not least, the conversion to microfibre umbrella dryer is a significant milestone toward alignment with Singapore Green Plan 2030 to reduce waste disposal by 30% by 2030.

The project is scalable to the entire community with potential for stronger environmental sustainability by saving tons of plastic waste. Future research directions can focus more on ideation about reducing grocery plastic bags and food containers for takeaways.