Spatial Redesign for Kangaroo Mother Care Center in Malawi

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THE POWER OF KANGAROO MOTHER CARE

Background

Over 80% of premature babies born worldwide are late-preterm, and do not require intensive care to survive and thrive (WHO, 2014).

Recent data shows Kangaroo Mother Care (KMC):
- reduces neonatal mortality, infections, and sepsis
- increases maternal-infant bonding, weight gain, and improves long-term child development and health
Background

Many neonatal care facilities are not conducive to KMC. At Ntcheu District Hospital the Neonatal Intensive Care Center (NICU):

- not enough space for KMC in NICU without disturbing nurses providing care to babies
- No working space for nurses for them to monitor and care for babies
ReSEARCH TRANSLATION

Discover, Learning, Innovation, & Field Tested Solution

Deep Collaboration

Researchers

Practitioners

Networks, Policy Makers, Private Sector, Donors

Question, Research, Context, and Field Testing

Impact

Wider Application

Replication/Scale

Increased Awareness
CATALYZING RESEARCH FOR DEVELOPMENT

Queen Elizabeth Central Hospital

Dr. Queen Dube

Practitioner
Researcher
Collaboration

Prof. Yuehwern Yih

Save the Children

Dr. Bina Valsangkar

Purdue University

Industrial Design

Prof. Steve Visser

Purdue University

Industrial Engineering

USAID

FROM THE AMERICAN PEOPLE
KMC Care Center

Spatial redesign of Ntcheu District Hospital neonatal care center and implementation of modular furniture can accommodate for and support KMC.
Academic Research
INDUSTRIAL ENGINEERING

Flow analysis (mothers, providers) ➔ space utility ➔ # cribs ➔ Capacity of NICU vs space of KMC

Visibility analyses ➔ # babies can be monitored from different location of the room ➔ care quality and safety
RESULTS

Academic Research
INDUSTRIAL ENGINEERING

Visibility Simulation
Average visibility index increased from 3.69 to 4.61 with spatial redesign of NICU.

Flow Simulation
Longest care completion time from old spatial layout to new layout reduced from 193 min to 145 min.
BABY CRIB AND NURSE’S STATION

Industrial Design

Modular furniture
Small footprints/Space saving
Mobility/Reconfigurable
Visibility
Ergonomic
Low cost
Local materials and production

Two-level Crib Design
Nurse’s Station
Industrial Design

Design considerations for furniture pieces include:
- Small footprint to maximize use of space
- Wheels on nurse’s station and baby crib to allow reconfiguration of space
- KMC chair that converts to bed for comfortable rest for mothers sleeping with babies
Thank You!!