

# The Use of Oral Rehydration Fluids in Children with Acute Gastroenteritis and Moderate Dehydration

DCH project

Dr R Kauna

# Introduction

- Diarrhea is defined as a passage of 3 or more watery stool in 24 hours.
- Intestinal tract infection were etiology is bacteria/virus/parasites
- Pathogens come from fecal contaminated water/food from poor hygiene and sanitation.
- In developing countries, 2 most common pathogens; Rotavirus and Escherichia Coli

# WHO Classification of Diarrhea

- **Acute diarrhea:** defined as diarrhea less than 14 days.
- **Dysentery:** diarrhea with blood mixed stool.
- **Persistent diarrhea:** defined as diarrhea more than 14 days.
- **Chronic diarrhea:** painless and non infected diarrhea that lasts for more than 4wks

# Symptoms and signs of Dehydration

Signs	No dehydration	Moderate dehydration	Severe dehydration
Condition of baby/child	Alert/ active /well	Restless / irritable	Drowsy/ lethargic/ coma /floppy
Eyes	Normal	Sunken (++)	Very sunken (++++)
Tears	Present	Reduced / absent	Absent
Oral mucosa	Moist	Dry	Very dry
Thirst	Drinks normally	Thirsty/ drinks eagerly	Drinks poorly/not drinking
Skin turgor	Normal	Goes back slowly	Goes back very slowly
Fontanel	Normal	Sunken (+)	Sunken (++++)
Extremities	Warm	warm	Cool/moist/pale skin
Pulse	Normal (<120/min)	Increased (120-160/min)	Increased/thready (>160/min)
Capillary refill	< 2 seconds	<2 seconds	>2seconds
Urine output	Normal	Reduced	Absent

# Introduction

- There is no proper national data of diarrheal diseases in **PNG** due to incomplete reporting
- It is 2<sup>nd</sup> common in &out-patient disease PMGH as well as the country.
- For over 40 yrs, ORS has greatly improved the treatment of diarrheal diseases with mild dehydration.
- Despite proven efficacy of ORS, its not being utilized as often in clinics /hospitals in PNG.
- If it was possible to safely manage children with moderate dehydration as outpatients, it would avoid costs & complications.

# Aim of the study

- To determine safe use of ORS in treatment of acute gastroenteritis with moderate dehydration at home in patients  $\leq 5$  yrs.
- To promote efficacy of oral rehydration therapy to parents/guardians/health workers.

# Methodology

- A Prospective study was done on the use of ORS in acute gastroenteritis with moderate dehydration at CED PMGH
- Study was carried out from 1/04/2017 to 20/07/2017

# Recruitment Criteria

- Children with **three or more signs of Moderate Dehydration**
- If their catchment areas were within the city



# Exclusion criteria

- Persistent vomiting
- Those patients with **one or more** signs of severe dehydration. (*managed as severe dehydration*)
- Children with less than 2 signs of moderate dehydration (*treated as mild dehydration*)
- Very sick children like, severe PNA/meningitis associated with gastroenteritis and dehydration etc....

- 150 patients were recruited in this study.

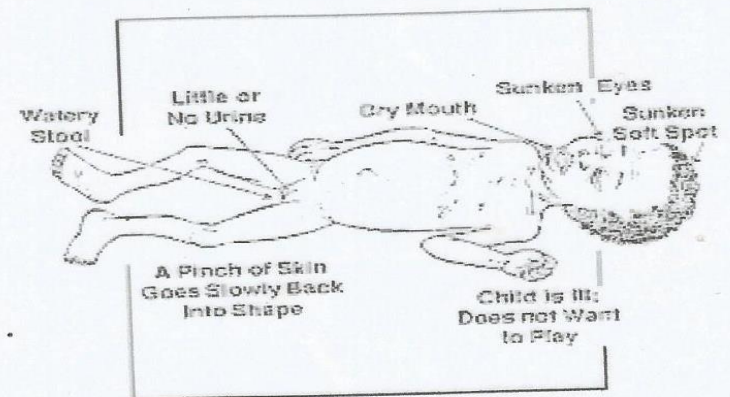
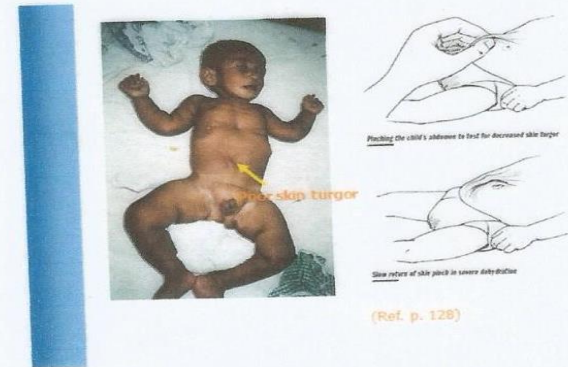
- Consent forms signed

- Guardians/ parents were educated on;

- ✓ Symptoms and signs of moderate and severe dehydration by using pictures
- ✓ Types of oral rehydration fluids
- ✓ how to make/mix ORS
- ✓ how much to administer at home
- ✓ Given parent information sheet

## PARENT INFORMATION SHEET

### WARNING SIGNS OF DIARRHEA AND DEHYDRATION



<https://www.google.com.pg/search?q=WHO+%2Bdehydration+pictures&client>

### Warning signs to bring your baby ASAP to hospital

- Persistent vomiting
- Not eating/drinking well
- Very weak/sleepy
- >4 moderate amount of diarrhea/day

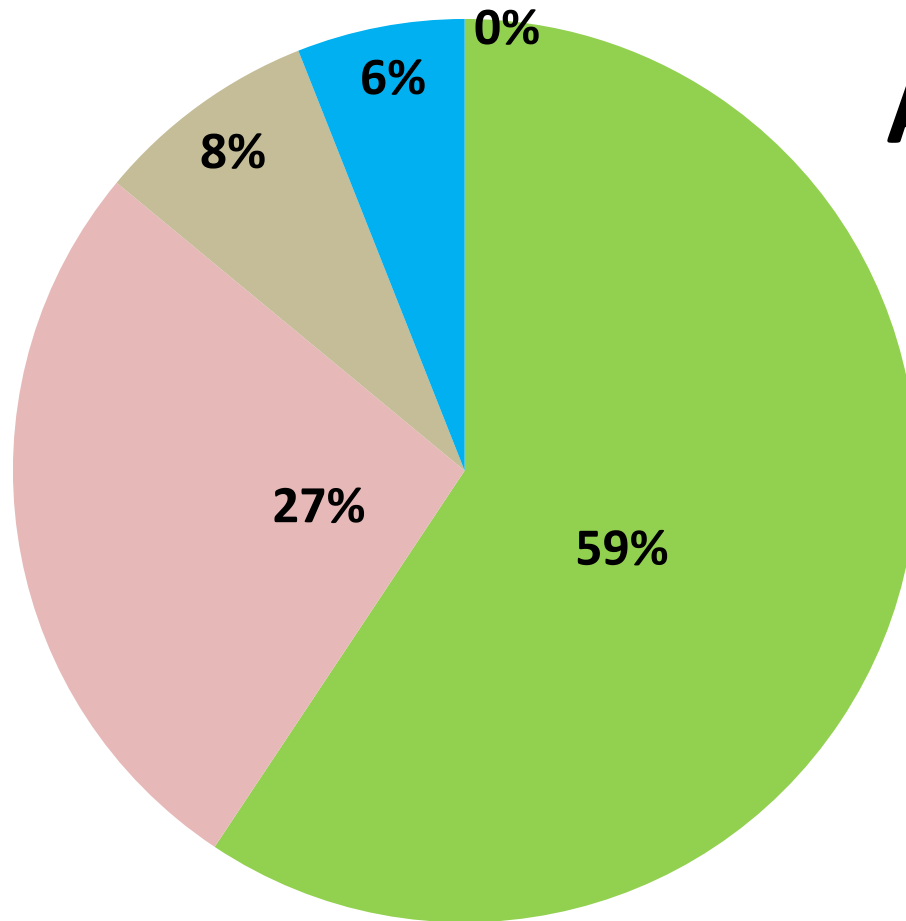
- ORS (zinc, albendazole, tinidazole /antibiotics) was administered
- They were observed for 3-4 hours and if **tolerated ORS well** ie;
  - *drank well without vomiting or*
  - *Without spiting or*
  - *able to drink  $\approx 40\text{ml/kg}$  then were discharged home on ORS and zinc.*

**NOT tolerate well ie;**

- *vomit or*
- *were weak or*
- *kept having frequent diarrheal episodes, they were given HSD.*
- Those tolerated ORS well were reviewed on day 1, 2 and 5 at CED or via phone.

# RESULTS

## Ages



■ 0-1/12

■ >1/12 - 1 yr

■ >1yr - 2 yrs

■ >2 yrs - 3 yrs

■ >3 yrs - 5 yrs

**150**  
patients were recruited

**15**  
Persistent/chronic  
gastro  
**EXCLUDED**

**135**  
patients with  
acute  
gastroenteritis

**3 had  $\leq 2$**   
signs  
moderate  
**EXCLUDED**

**3 had 1 sign**  
of Severe  
**EXCLUDED**

**129**  
had signs of  
moderate  
dehydration

**129 patients AGE and moderate dehydration**

**63 patients tolerated ORS well**

**66 Patients didn't tolerate ORS well**

**35 Completed 3 days r/v Resolved**

**18 Resolved D1**

**10 Resolved D2**

**HSD**

**All didn't come back for D5 r/v**

**63 RESOLVED**

- **24 resolved**
- **37 unknown outcome**
  - **5 kept observation**

# For those (63) that tolerated ORS well

- Average weight: 7.68kg
- Average ORS tolerated: 192 mls
- Average time for observation: 2 hours 16 mins

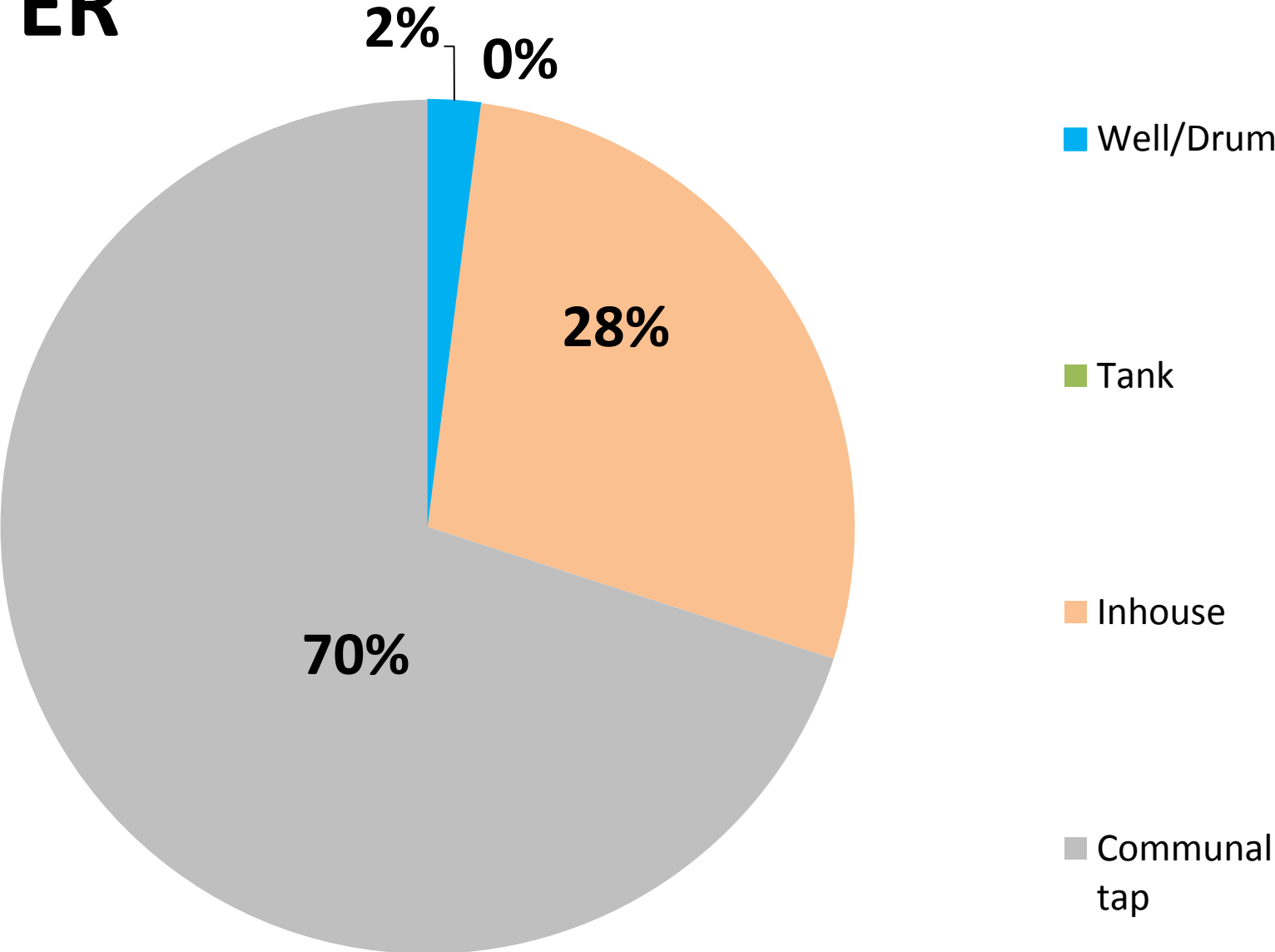
NB: most of them took  $\approx$  20-25ml/kg over 2hrs 16 mins to reach some form of stability from dehydration

# Place of residence

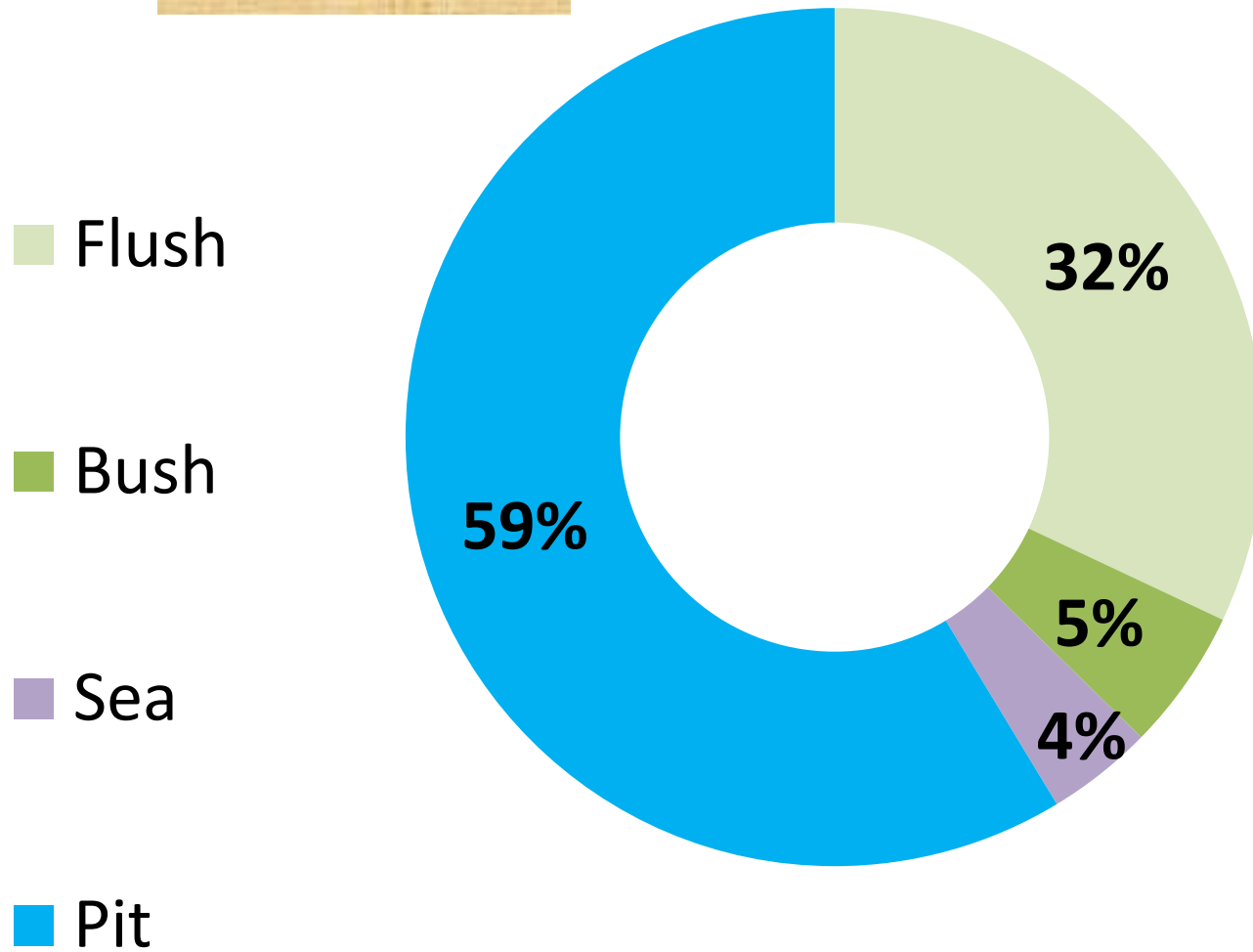
Residence	n=150	Percentage (%)
Settlement	88	58.7 %
Suburb	53	35.3 %
Village	9	6 %



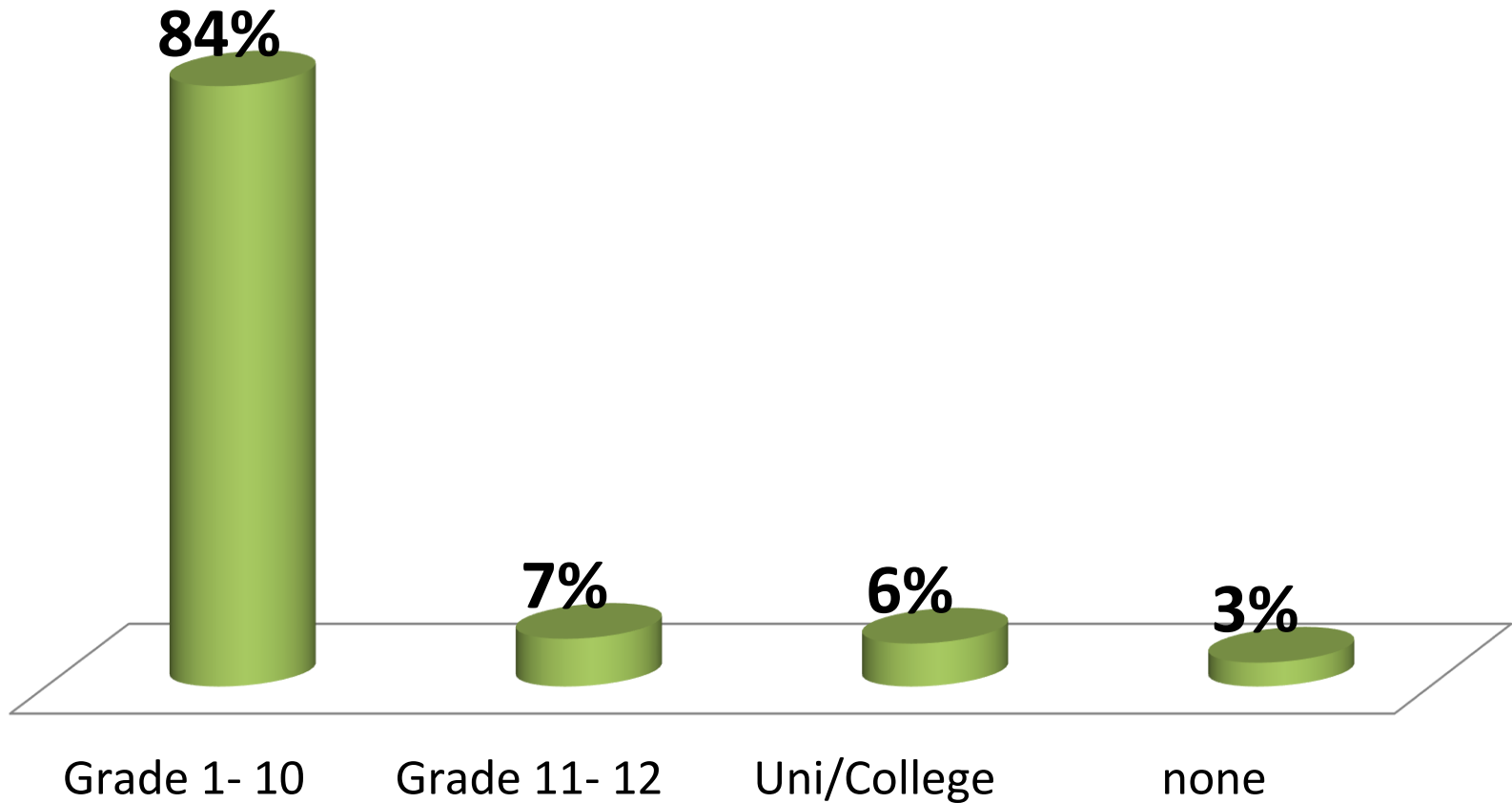
# WATER



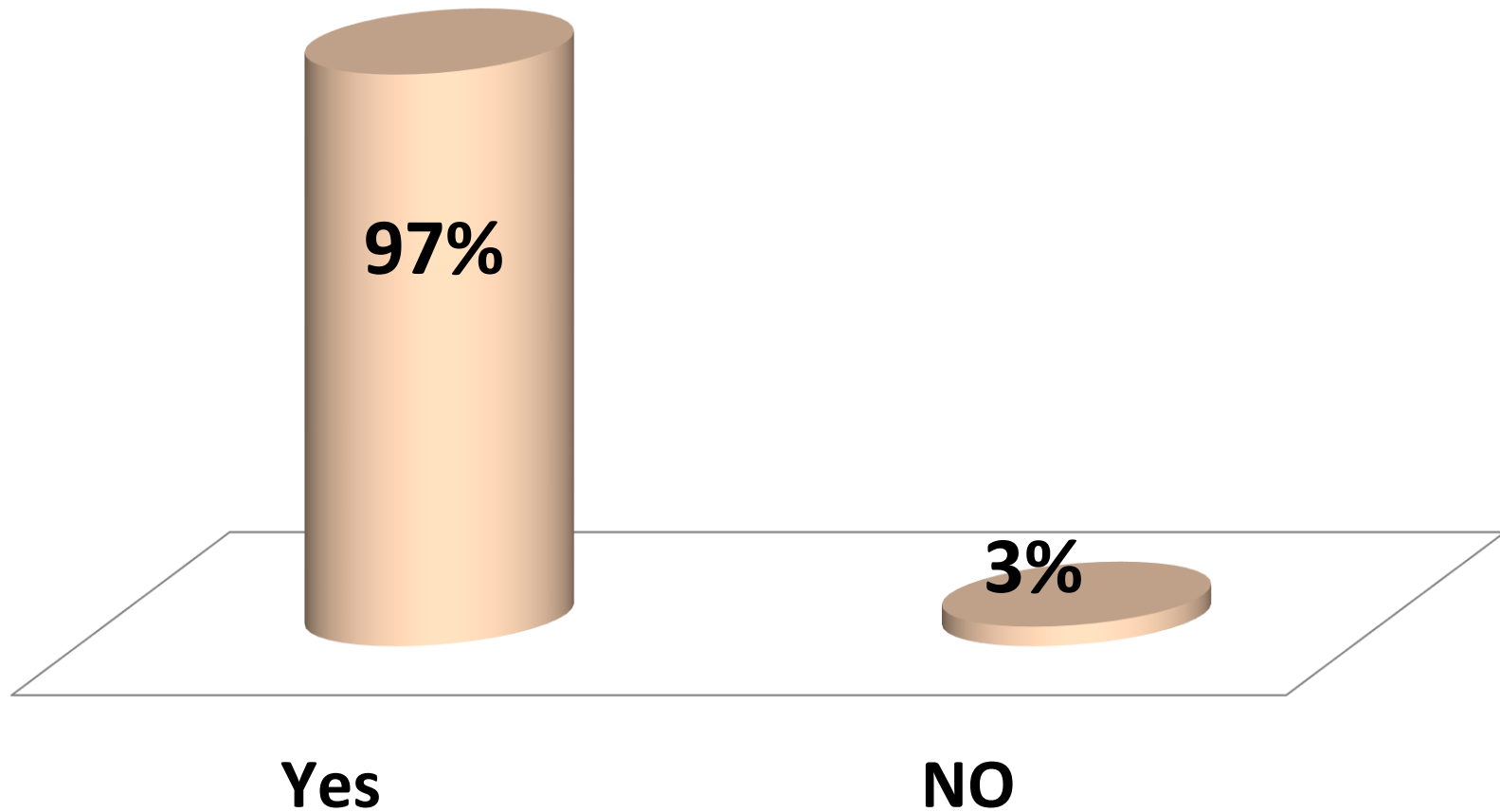
# TOILET



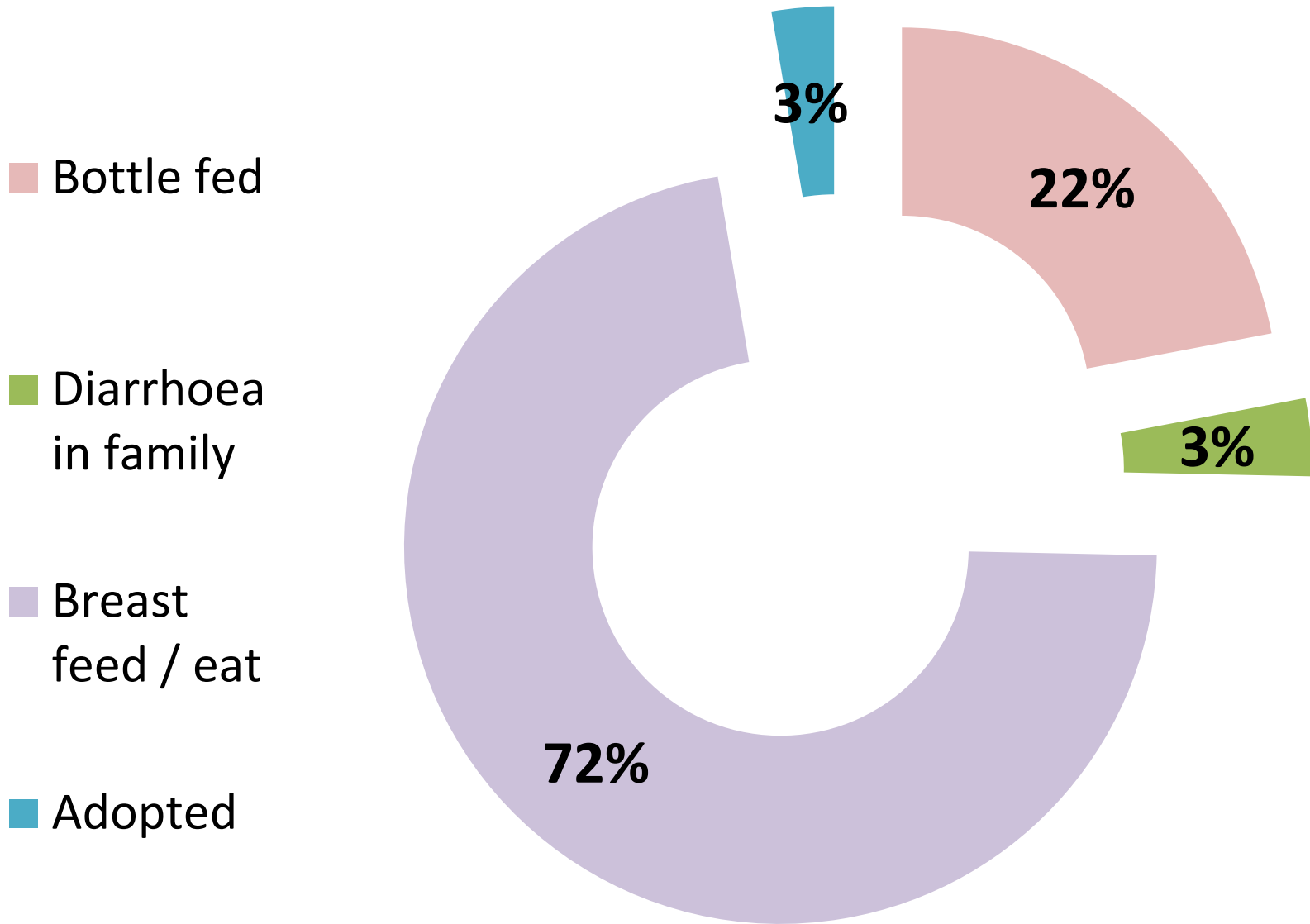
# Level of education for parents/guardians



# Parents understanding in making and administration of ORS at home



# OTHERS



# Discussion

- ❑ This study was focused on patients who tolerated ORS well.
- ❑ Did not focus on outcome of those who received HSD.
- ❑ Not all parents were educated due to time factor and man power issues.

# Conclusion

From the study, half recovered from ORS, thus;

- ORS can safely be used at home to treat acute gastroenteritis and moderate dehydration;
  - ✓ **only IF tolerated well &**
  - ✓ **20-25ml/kg over 2 hours**
- During the time of the study, it had promoted the use of ORS.

# Recommendations

- Education and awareness on;
  - importance of the use of ORS at health clinics.
  - causes of diarrhea
  - prevention methods (hygiene/sanitation).
- Employment: nursing and medical officers
- Availability of sweet affordable ORS in public health facilities



# Acknowledgement

I would like to acknowledge;

- Prof Trevor Duke
- Dr Kone Sobi
- Dr Wendy Pameh
- CED team

# References

- A comparative study of hypo-osmolar and standard ORS solutions in treating children with persistent diarrhea admitted to Mulago Hospital , Dr Wobudeya Eric, School of Medicine School of Health Science, UPNG 2003 (makir.mak.ac.ug>Wobudeya-Eric-thesis)
- Assess the knowledge and practices of parents and care givers of children who attend the children's out patient with acute gastroenteritis at PMGH. Bonnie Hurae, School of Medicine School of Health Science, UPNG 2013
- A 3 hour quantitative comparison of glucose based versus rice based ORS intake by children with diarrhea in PMGH Wall C, Todaro W, Edwards K, Cleghon G, 1993
- Evaluation of Baobab (Gonglase) solution for home management of diarrhea in Sudanese children, a thesis by Nour Blhuda Abdel Galil, University of Khartoum, 1985 viewed 19 February 2017 [www.iaea.org/inis/collection/NCLCollectionStore/\\_Public/29/067/29067964.pdf](http://www.iaea.org/inis/collection/NCLCollectionStore/_Public/29/067/29067964.pdf)
- Frank Shann, John Vince, John Biddulph 2003 'Paediatrics for Doctors in Papua New Guinea'
- Jelka Vince December 1995 'Diarrhea in Children in PNG' PNG medical journal 38 (4):262-71 viewed 15 February 2017, <https://www.ncbi.nlm.nih.gov/pubmed/9522866>
- Osonwa Kalu O, Eko Jimmy E, Emas S 'Utilisation of ORT in the management of diarrhea in children among nursing mothers in Odukpani Local Government area of Cross River State, Nigeria' American Journal of Public Health Research, vol, 4, no. 1 (2016): 28-37 (210.12691/ajphr-4-1-5) viewed 17 February 2017 <http://pubs.sciepub.com/ajphr/4/1/5>
- Oral Rehydration Therapy Wikipedia viewed 17 February 2017 [https://en.m.wikipedia.org/wiki/Oral\\_rehydration\\_therapy](https://en.m.wikipedia.org/wiki/Oral_rehydration_therapy)
- Rotaviral diarrheal diseases in children at PMGH, PNG. A Hospital Based Surveillance. Dr Fiona Kupe, School of Medicine School of Health Science, UPNG 2013
- The treatment of Diarrhea: A Manual for Physicians and other Senior Health Workers WHO 2005 viewed 17 February 2017 [whqlibdoc.who.int/publications/2005/9241593180.pdf](http://whqlibdoc.who.int/publications/2005/9241593180.pdf)
- Todaro W, Wall C et al 1995 'Acceptability of a rice based oral rehydration solution in PMGH's Children's outpatient Department PNG' Med J 1995 Dec; 38(4).278-83 viewed 8 February 2017, Pubmed, [www.ncbi.nlm.nih.gov/pubmed/9522868](http://www.ncbi.nlm.nih.gov/pubmed/9522868)
- The Home treatment of diarrhea among children under 5 years of age in Lae, Morobe Province. Dr Jerry Tanumei, School of Medicine School of Health Science, UPNG 2006
- WHO Diarrheal Diseases 2013 viewed 17 February 2017 <http://www.who.int/mediacentre/factsheets/fs330/en/>
- <https://www.google.com.ng/search?q=WHO+%2B+dehydration+pictures&client>

Thank you