



International Seminar on Integrated
WATER-Related
Disease Control

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Sorhellinga Building
Norwegian University of Life Sciences, Ås



Reducing diarrhea in children and controlling dengue vector *Aedes aegypti* in rural schools in two municipalities in Colombia



Healthy Schools. Preliminary results

Knowledge, Attitudes and Practices (KAP) Dengue

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Objectives

- Reduce exposure to dengue and diarrhea risk factors in schools by improving health education on dengue and diarrhea prevention
- Determine the Knowledge, Attitudes and Practices (KAP) scores of the participants in the project about both diseases

Methodology

About KAP Survey

- Used in health planning since 1950s
- Belongs to health behavior research
- Helps establish a starting point for each dimension (Knowledge, Attitudes, Practices)



Pupils & Households Surveys

Design of a KAP survey for pupils between 5-15 years, KAP survey for households of the school children

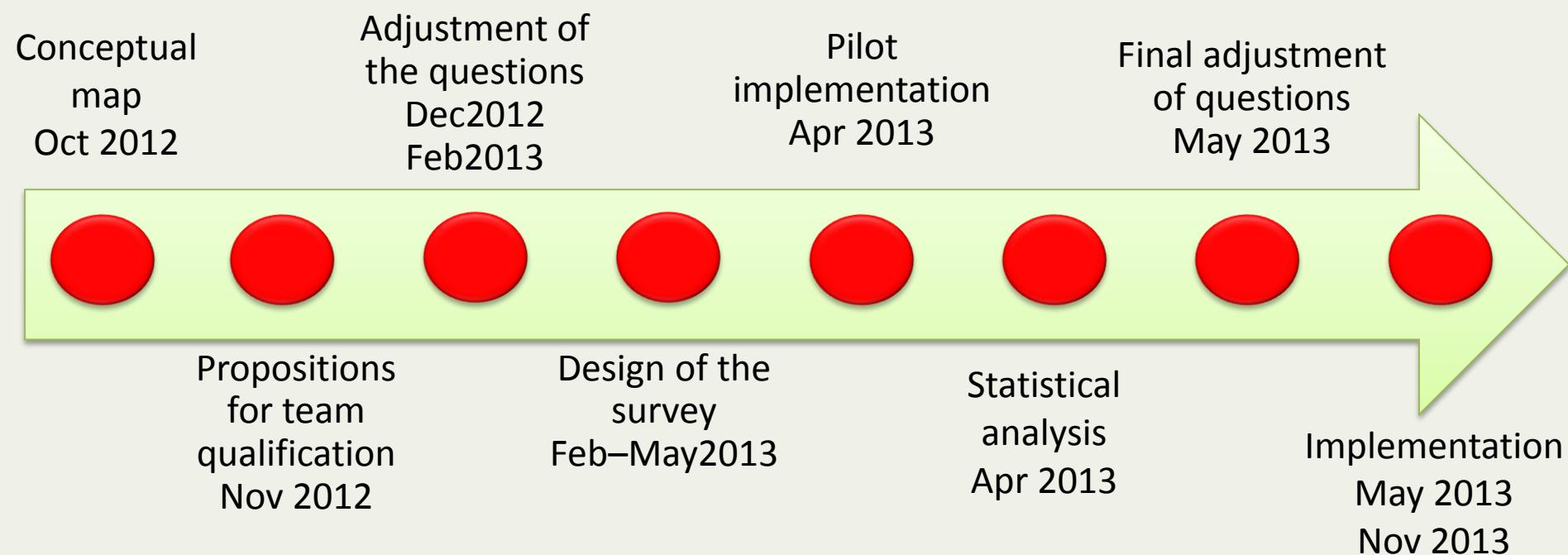
Application of two surveys during 2013 - Two applications (2012-2013)

Entry data and revision of database

Statistical and descriptive analysis

Methodology

Surveys - Pupils



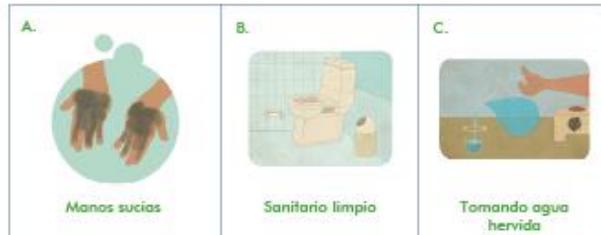
Methodology

Surveys - Pupils

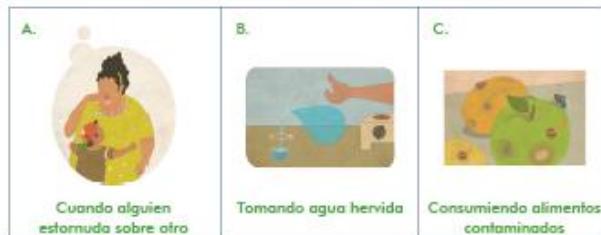
3. En las siguientes imágenes, marca con una equis (X) lo que puede ser un riesgo para enfermarse de diarrea. Elige una de estas imágenes:



4. En las siguientes imágenes, marca con una equis (X) la manera en que el popó puede llegar a nuestro cuerpo. Elige una de estas imágenes:



5. En las siguientes imágenes, marca con una equis (X) la manera en que el popó puede llegar a nuestro cuerpo. Elige una de estas imágenes:



6. Las propiedades que debe tener el agua para que la podamos beber son:
[Elige una: a, b o c]

- a. Con microbios, sin color, con olor y con sabor
- b. Sin olor, sin sabor, sin color y sin minerales
- c. Sin color, sin olor, sin sabor y sin microbios

18. En las siguientes imágenes, marca con una equis (X) lo que se puede hacer para que la zancuda saravida no nos pique. Elige una de estas imágenes.



¿Con qué frecuencia realizas éstas actividades?

	Nunca	Algunas veces	Siempre
19. En mi casa dejamos la basura tapada o en bolsas			
20. En mi casa tapamos o enmallamos los tanques en los que guardamos agua			
21. En mi casa duermo con toldillo			
22. En mi casa utilizamos mallas o anjeos en ventanas y puertas			
23. En mi casa usamos peces guppies en la alberca para evitar porrones y saltones			
24. Le digo a mi familia lo que aprendí sobre el zancudo saravido			
25. Le digo a mi familia que hay que tapar o enmallar los tanques			
26. Le digo a mi familia que hay que dormir con toldillo			
27. Es importante evitar los zancudos saravidos para prevenir el dengue			
28. La fumigación es la única medida para evitar los zancudos saravidos			
29. Si me da dengue, mi familia debería llevarme al médico			
30. Es un riesgo dormir sin toldillo cuando tengo dengue			
31. Podemos dejar basura tirada al aire libre			
32. Es importante enseñar a los demás lo que he aprendido sobre el dengue			
33. Podemos tomar pastillas sin que las haya formulado el médico			

Analysis

- Scores for knowledge, attitudes and practices for each disease were scaled to have a maximum value of 10.
- Average for each school was calculated over all interviews done in the intervention period. These school-level averages were the response variable for a factorial analysis of covariance described by Overgaard et al (2012).
- The explanatory variables were:
 - whether or not the school received the dengue interventions,
 - whether or not the school received the diarrhea interventions, and
 - municipio, by which the randomization was stratified.



Pupils

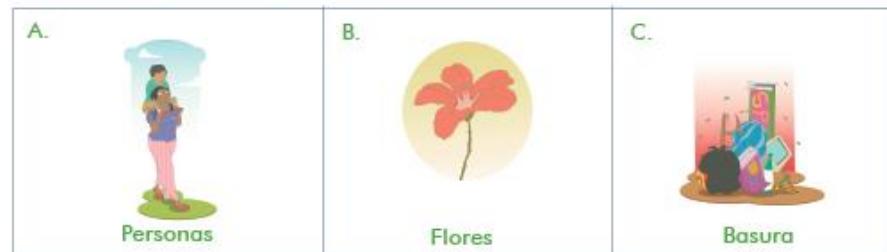


Pupils

- Breeding sites
- Disease
 - Symptoms
 - How to handle it
 - Transmission
 - Warning signs
- Vector
- Prevention



10. En las siguientes imágenes, marca con una equis (X) el dibujo que completa correctamente la siguiente frase. Elige una de estas imágenes.
La zancuda saravida se alimenta de:

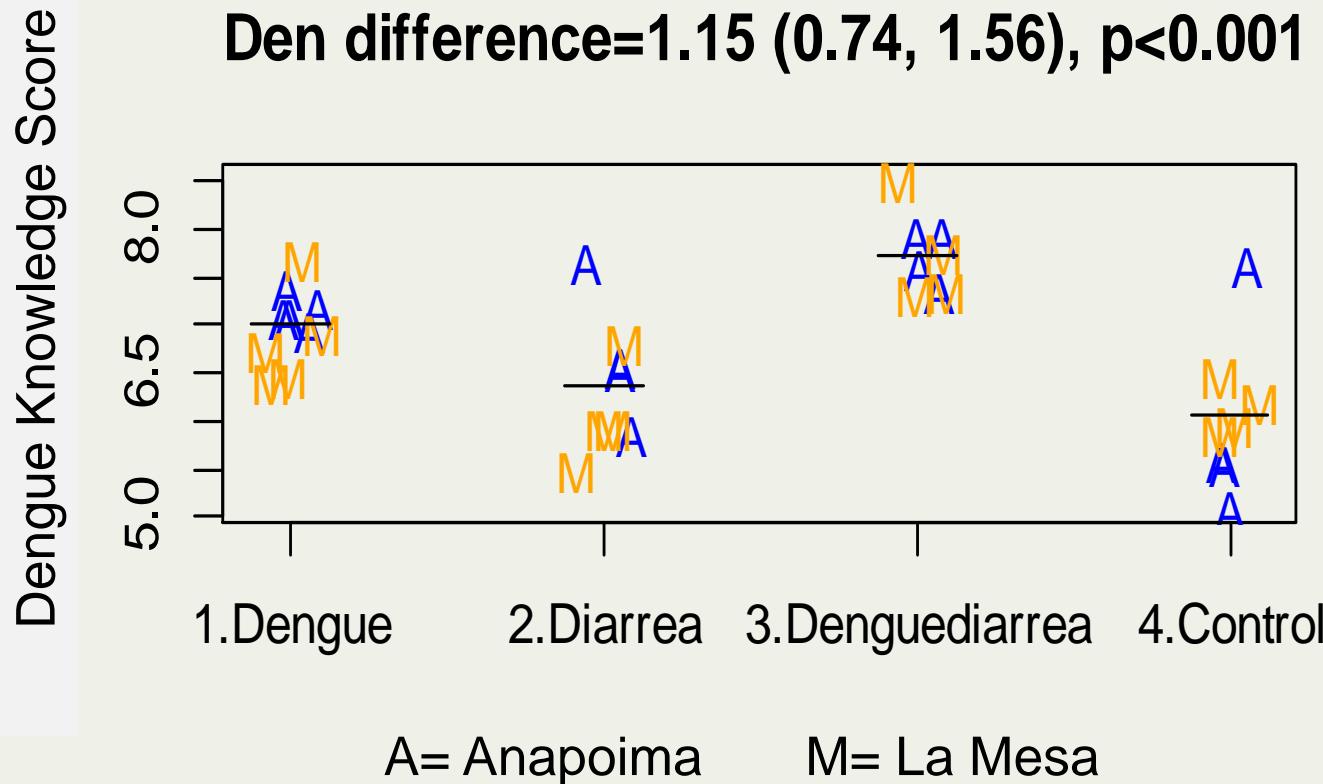


11. En las siguientes imágenes, marca con una equis (X) el dibujo que completa correctamente la siguiente frase. Elige una de estas imágenes.
La zancuda saravida se alimenta principalmente durante:



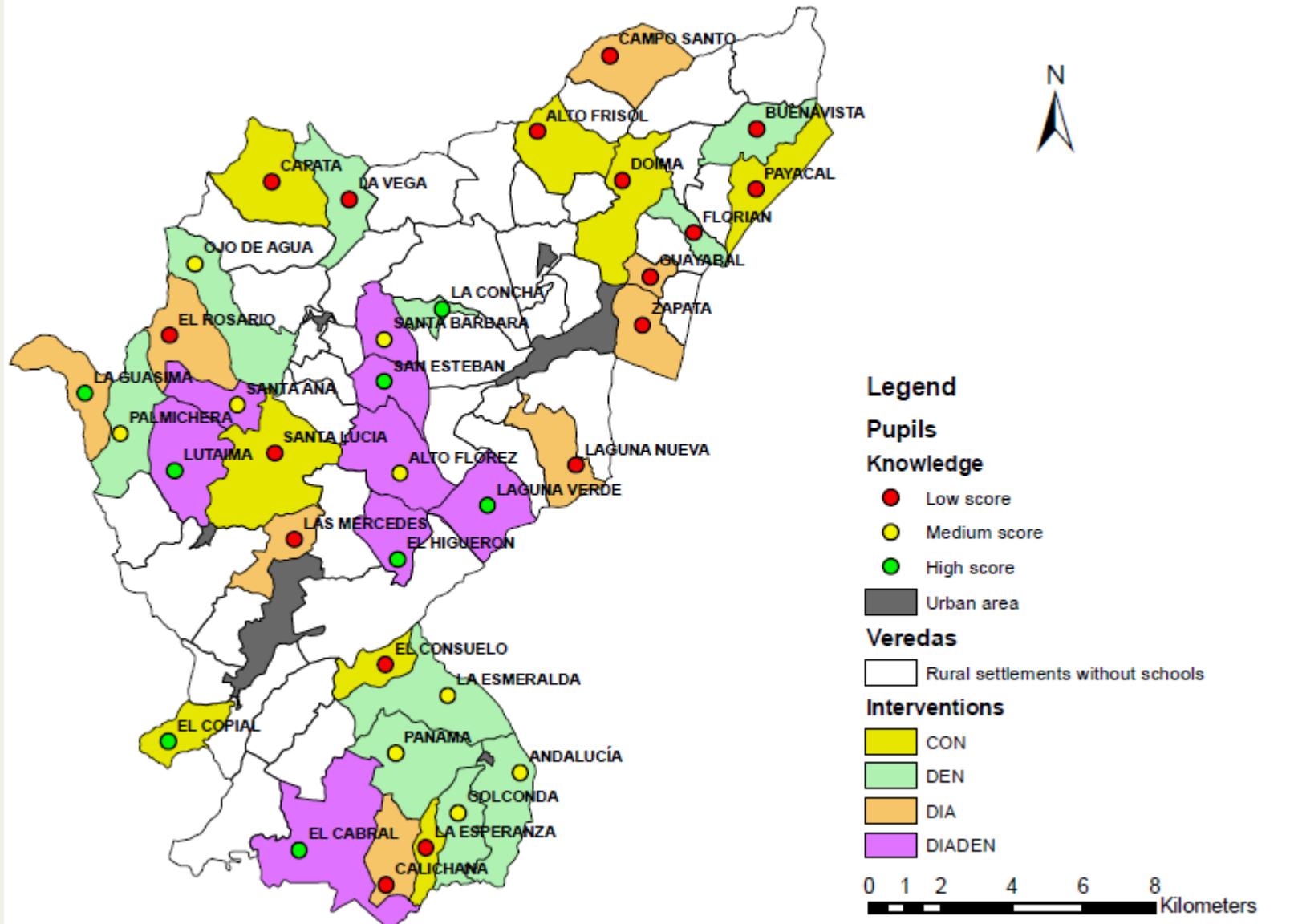
Scores of Pupils Knowledge on Dengue by the Arm of Intervention

Den difference=1.15 (0.74, 1.56), p<0.001

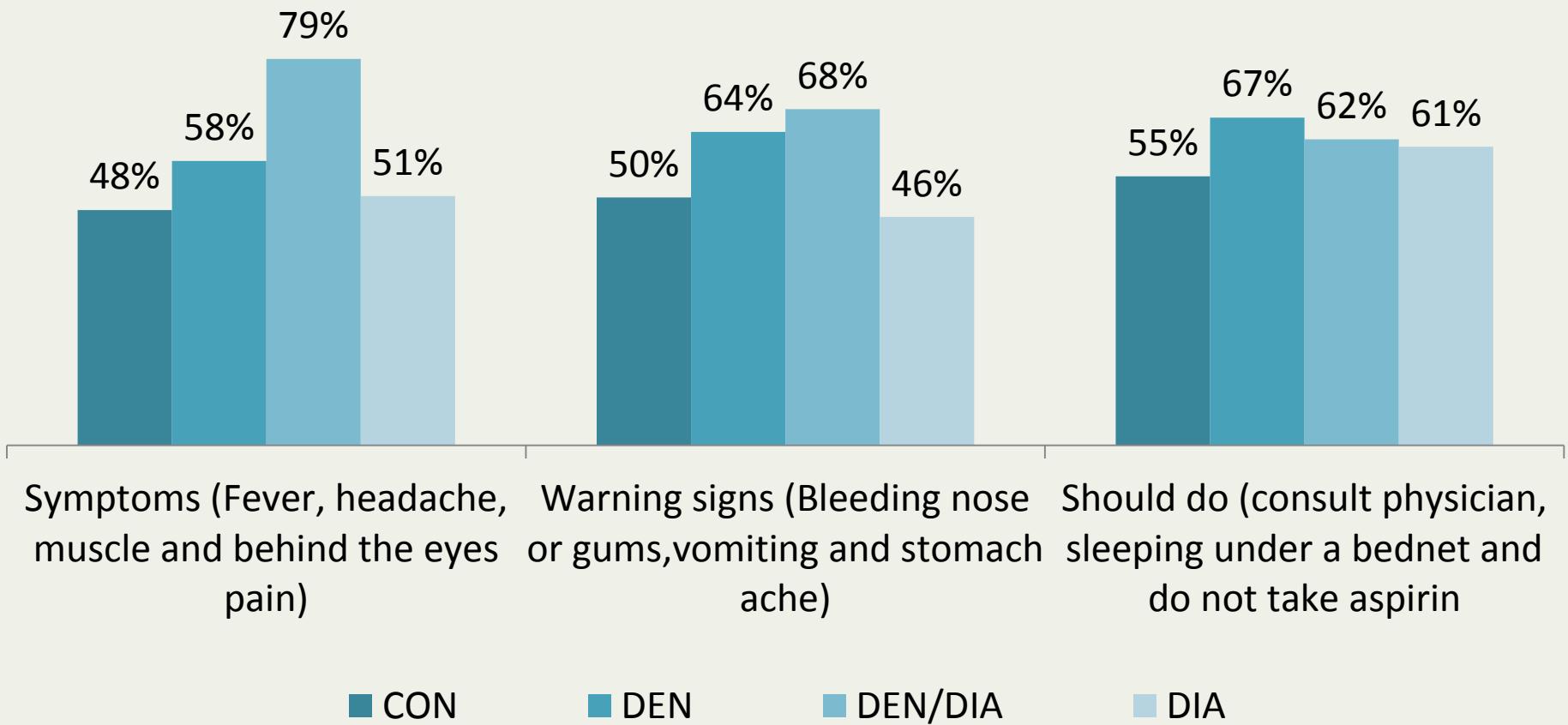


Ranges	Knowledge
Min	5,08
Low	< 6,88
Med	6,88-7,45
High	>7,45
Max	8,54

Pupils Knowledge on Dengue

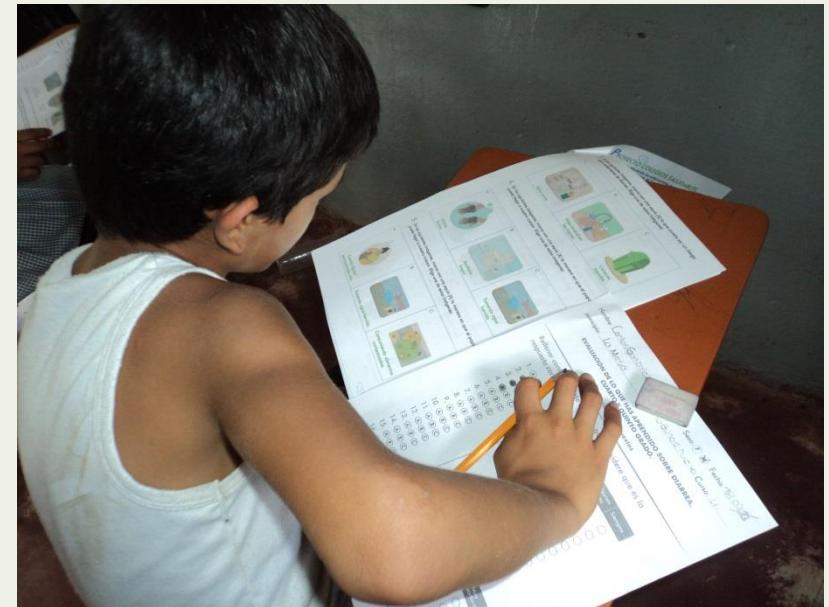


About the disease



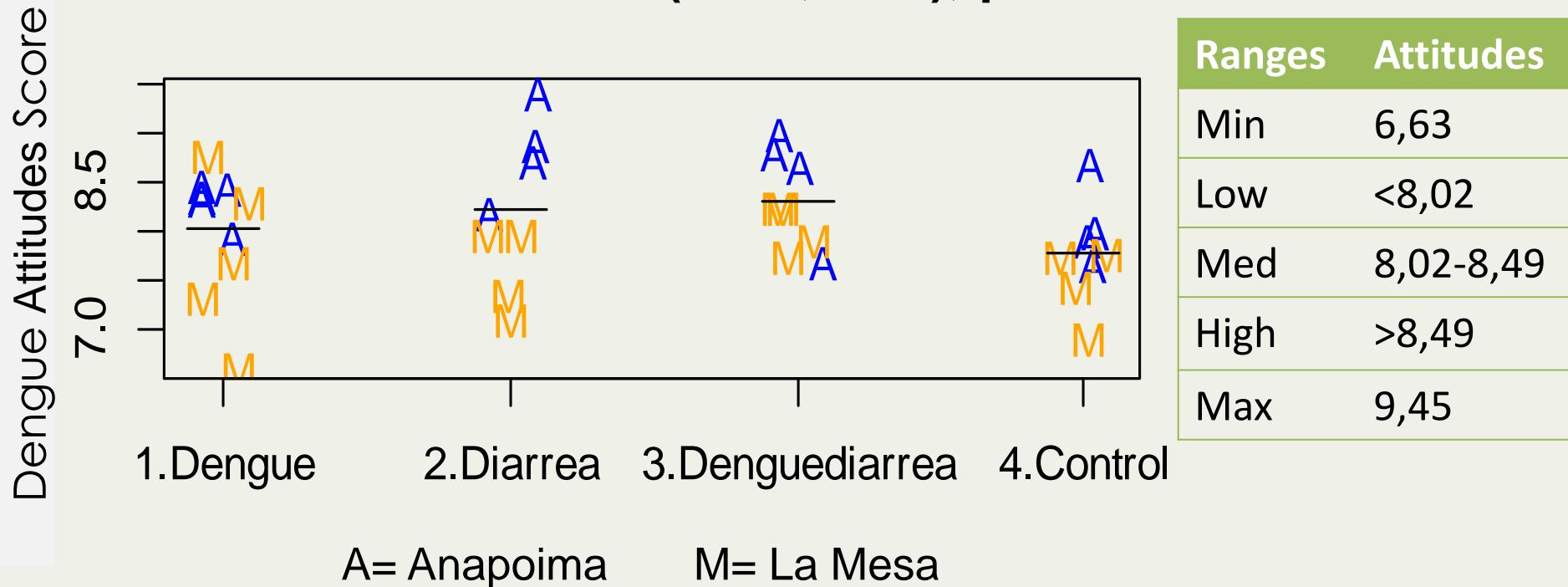
Pupils

- Control
- Consultation
- Bednet
- Transmission of Information
- Self-medication

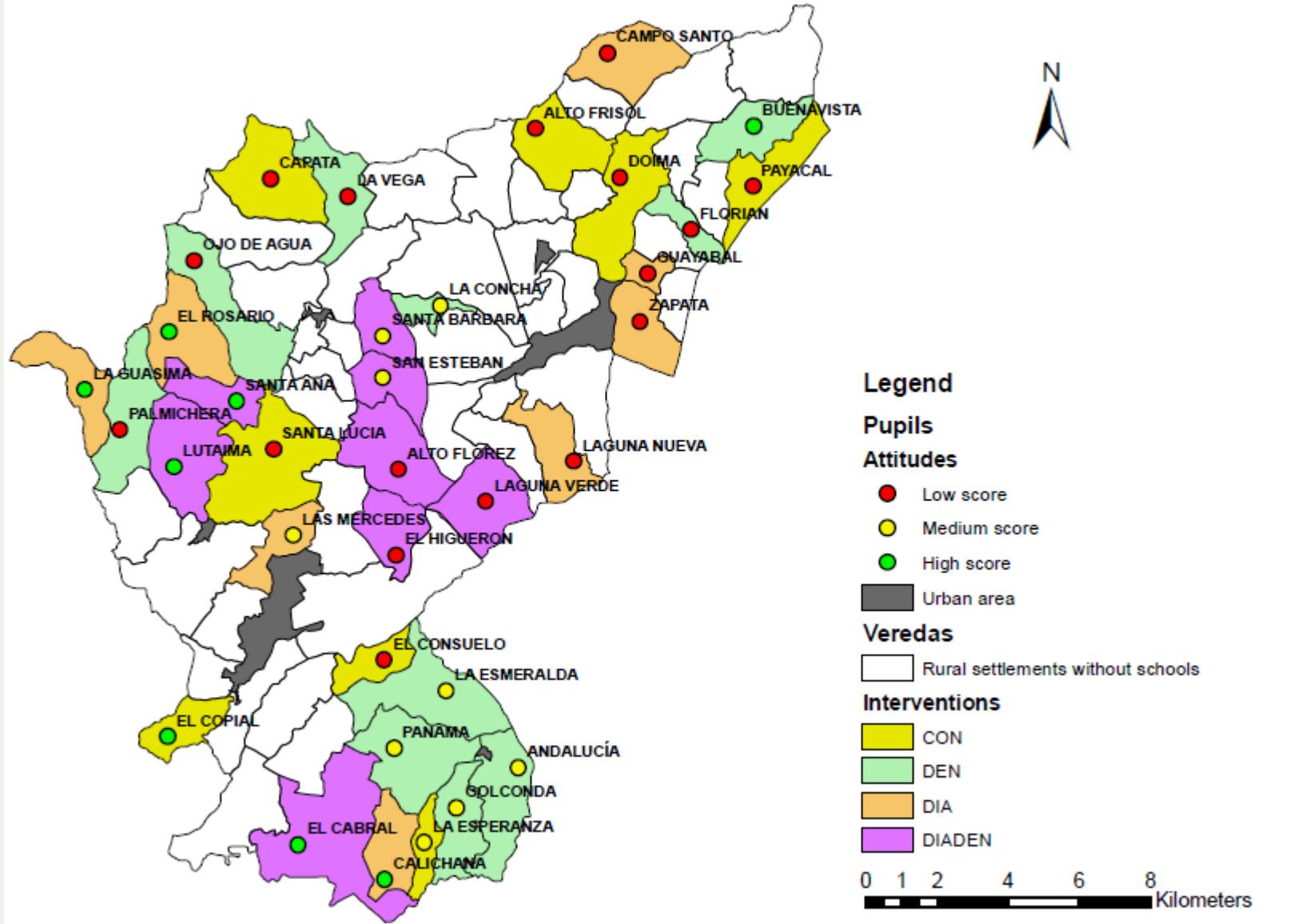


Scores of Pupils Attitudes towards Dengue by the Arm of Intervention

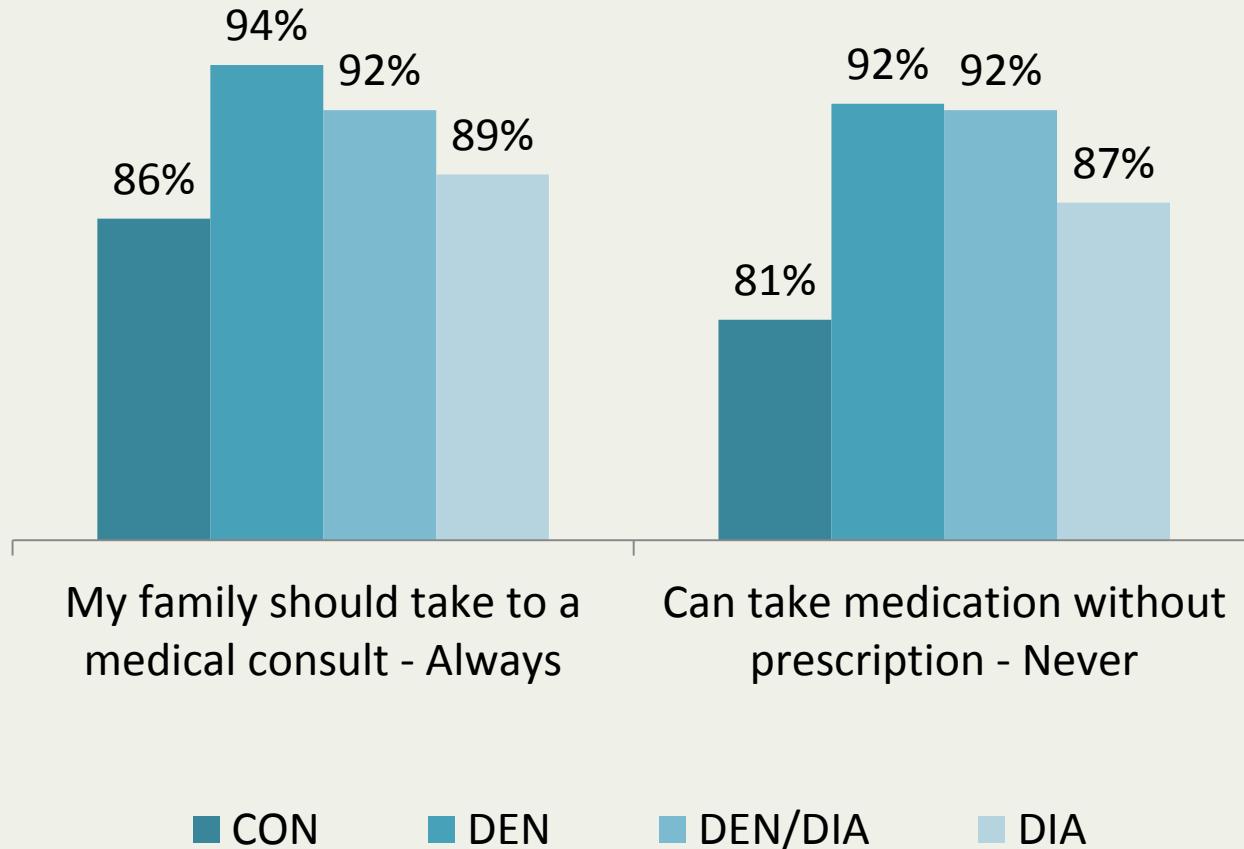
Den difference=0.18 (-0.17, 0.53), p=0.308



Pupils Attitudes towards Dengue



Towards consultation and self-medication



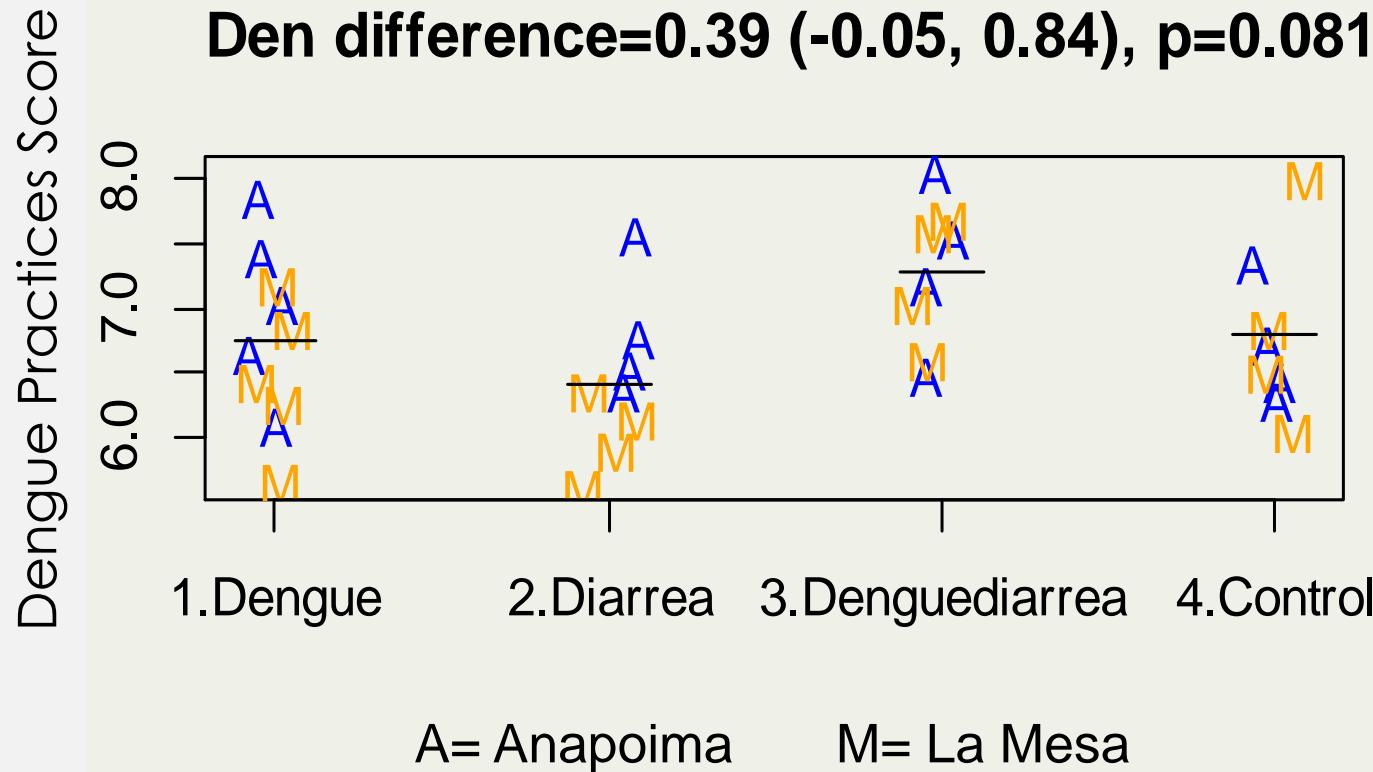
Pupils

- Control
 - Immature forms
 - Adult forms
- Transmission of Information



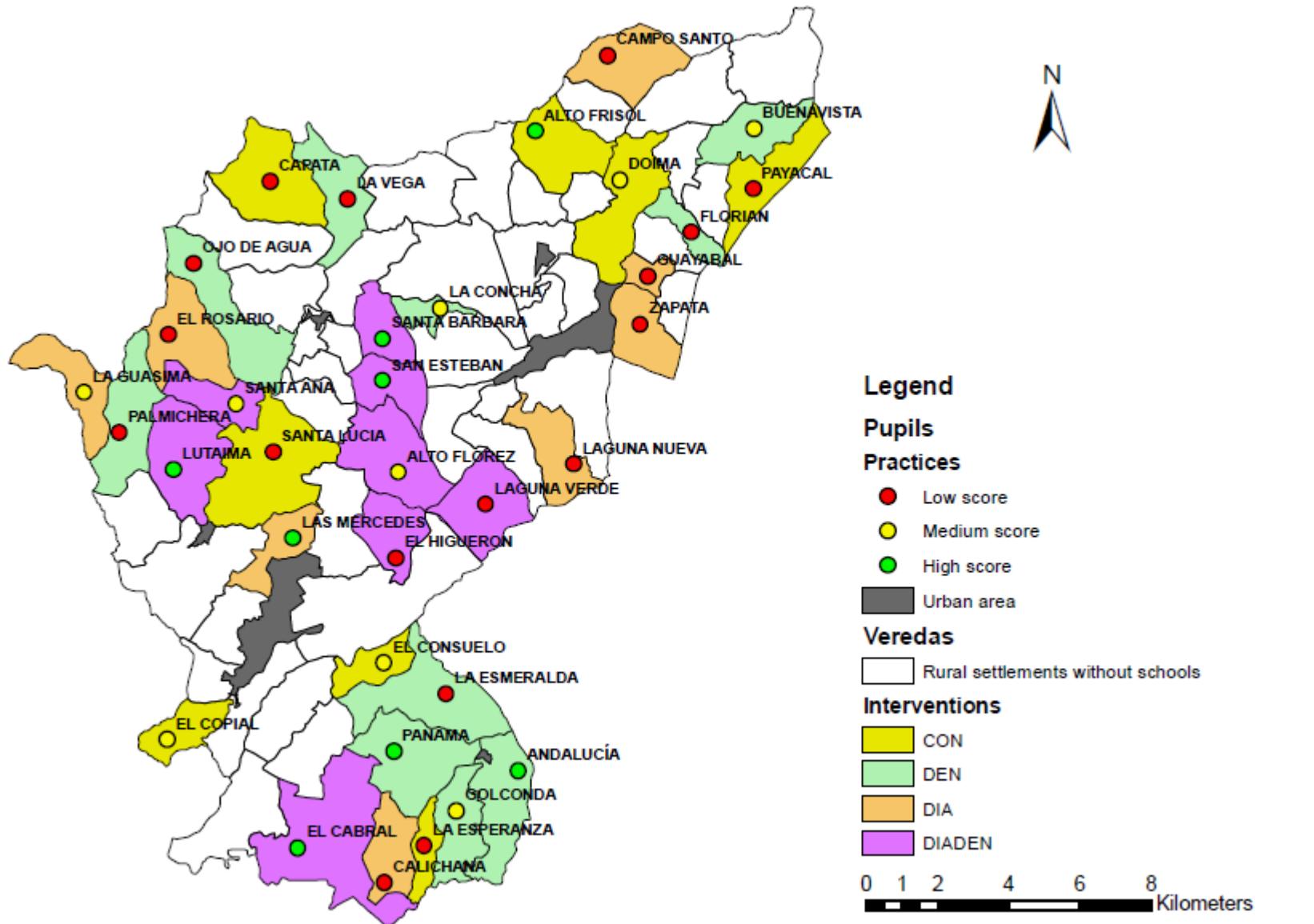
Scores of Pupils Practices related to Dengue by the Arm of Intervention

Den difference=0.39 (-0.05, 0.84), p=0.081

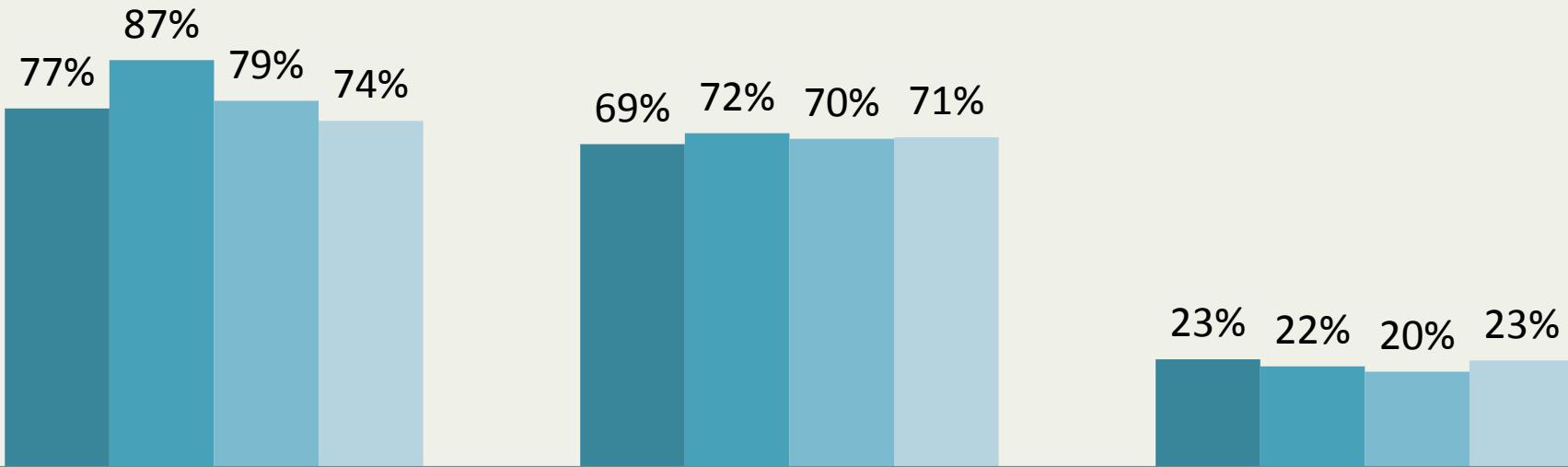


Ranges	Practices
Min	5,62
Low	<6,70
Med	6,70-7,33
High	>7,33
Max	8,08

Pupils Practices Related to Dengue



About prevention



Keep solid waste collected or in plastic bags at home- Always

Keep covered or with lids water containers at home - Always

Use of fish (guppy) in the laundry tanks to avoid larvae or pupae at home - Always

■ CON

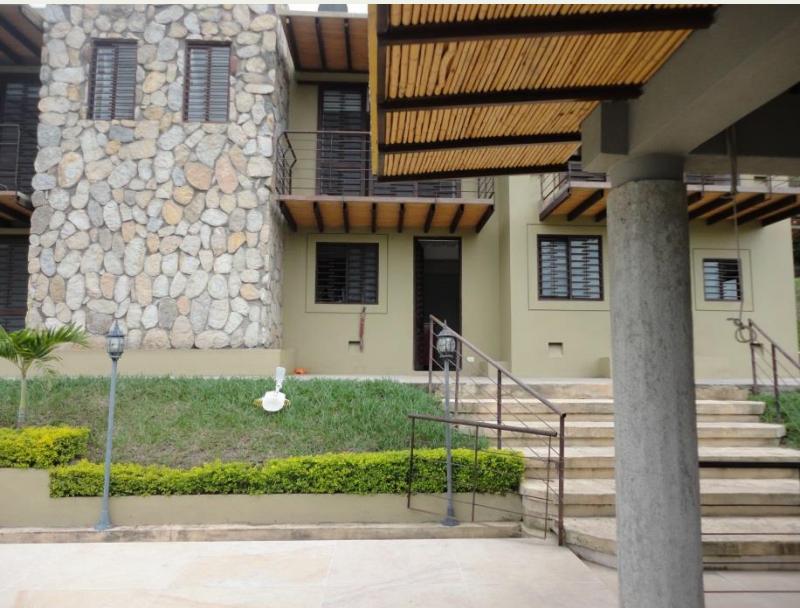
■ DEN

■ DEN/DIA

■ DIA

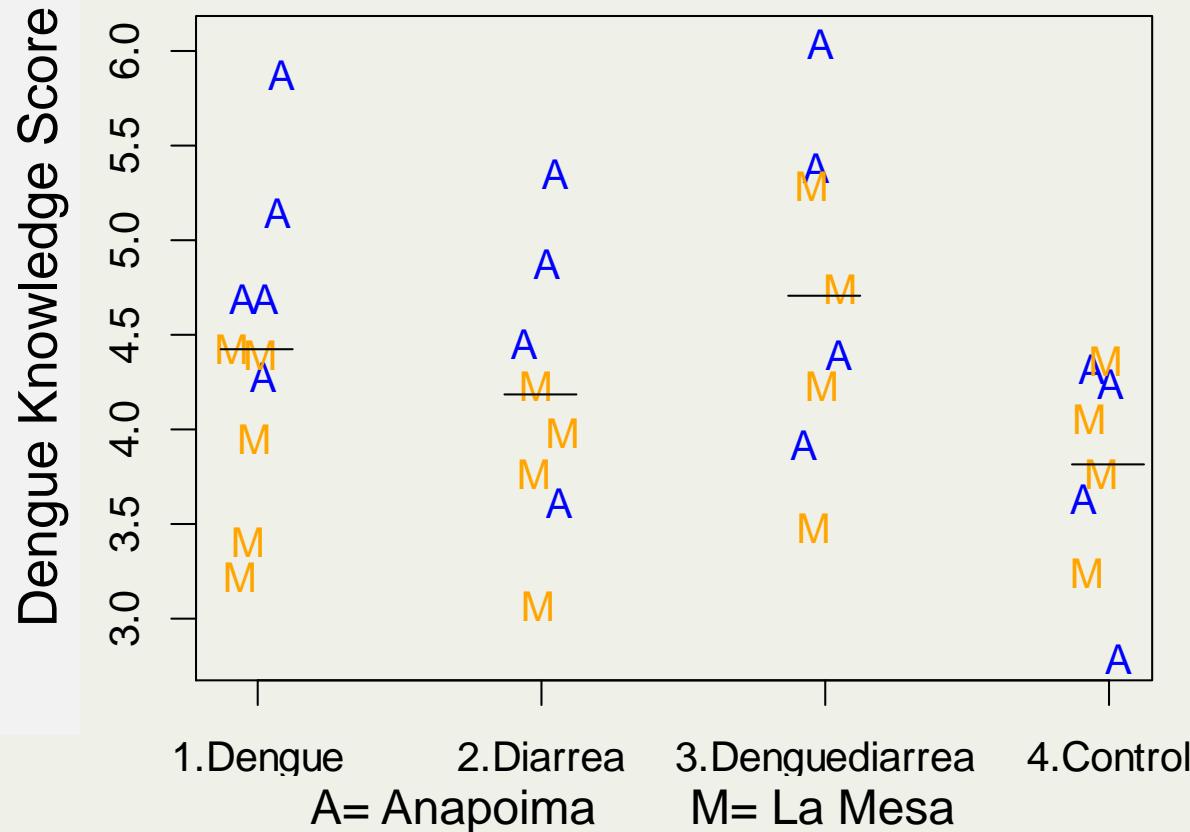


Households



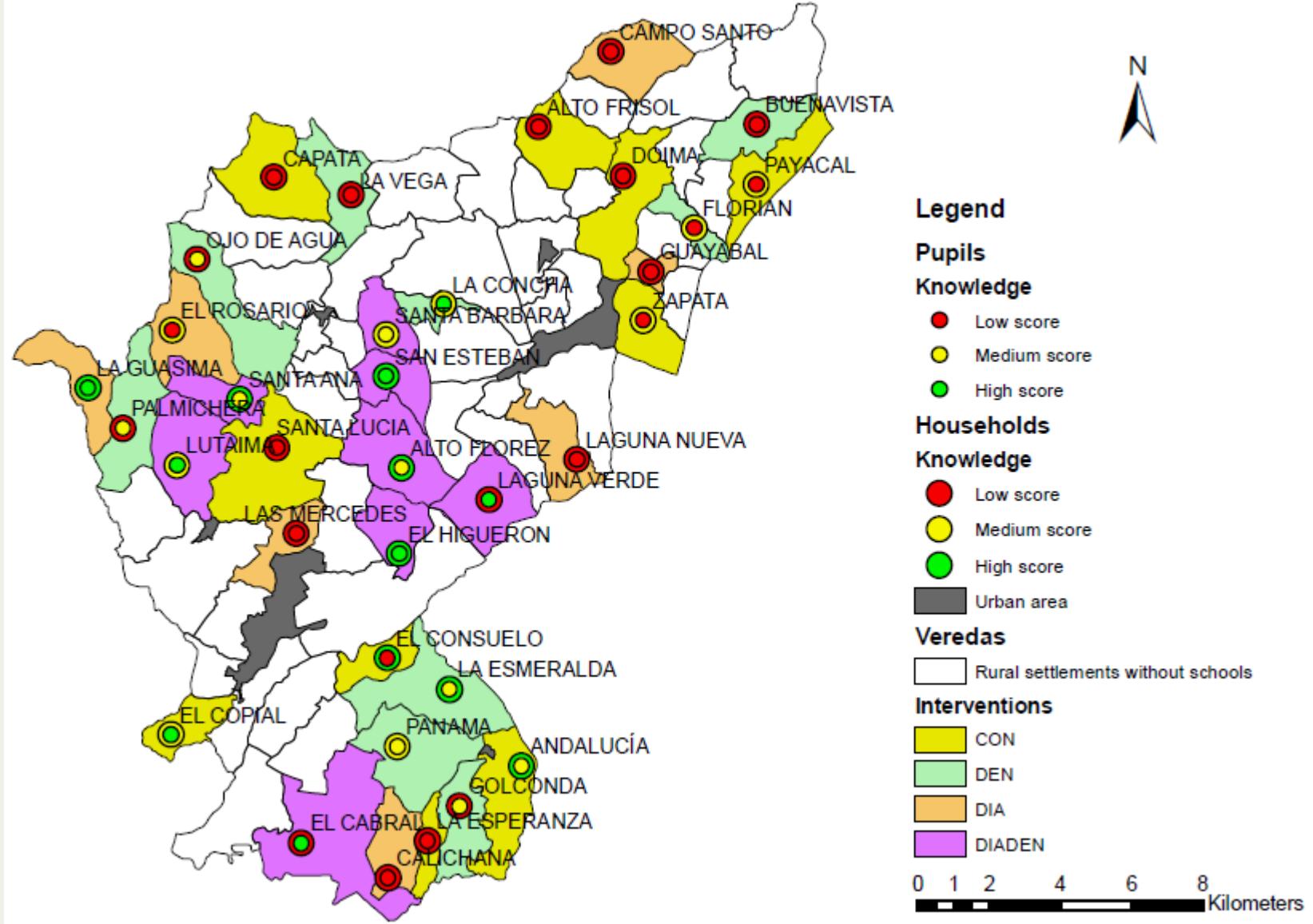
Scores of Household Knowledge on Dengue by the Arm of Intervention

Den difference=0.56 (0.09, 1.03), p=0.021



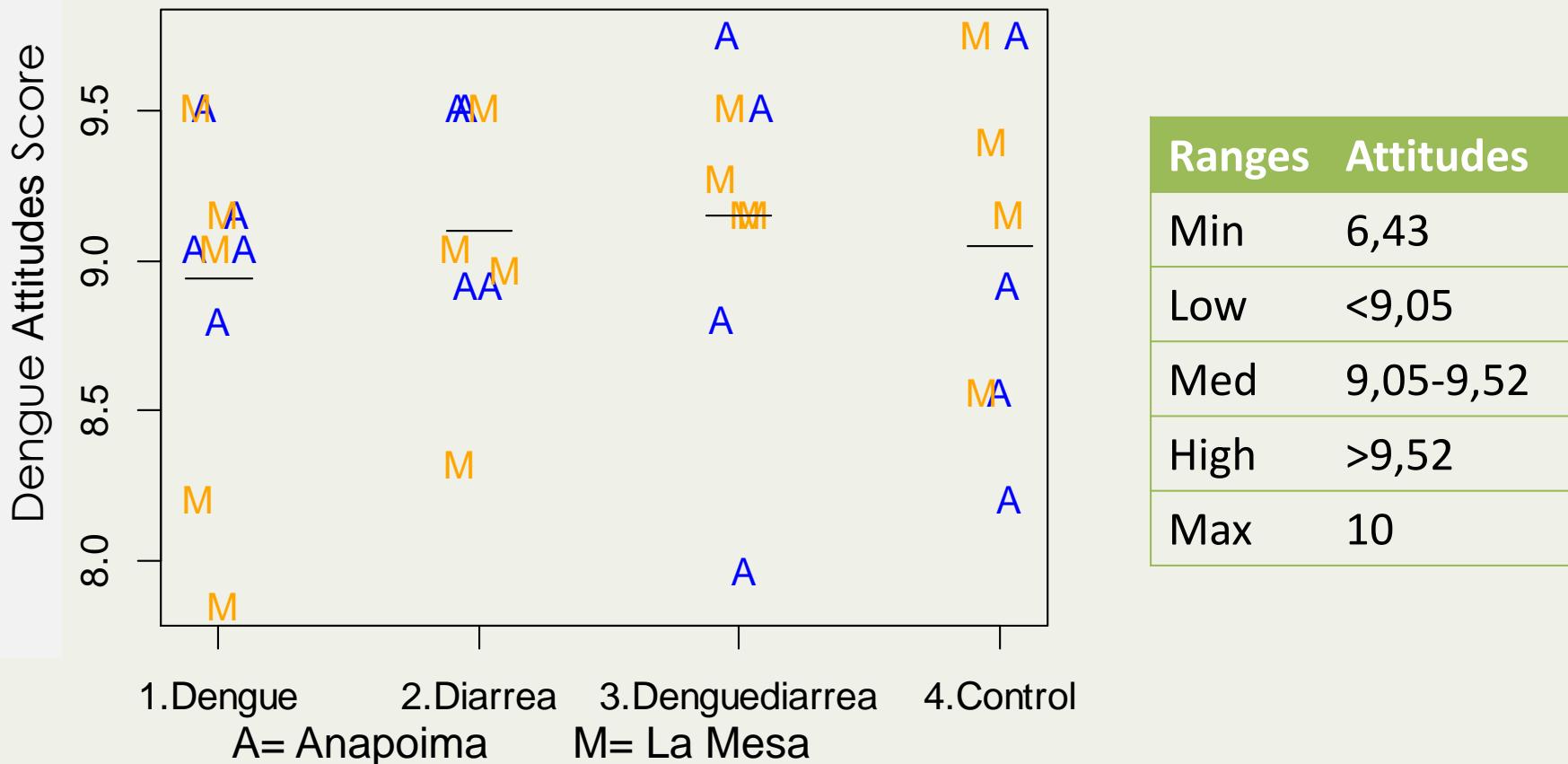
Ranges	Knowledge
Min	1,72
Low	<4,29
Med	4,29-4,93
High	>4,93
Max	6,80

Household Knowledge on Dengue

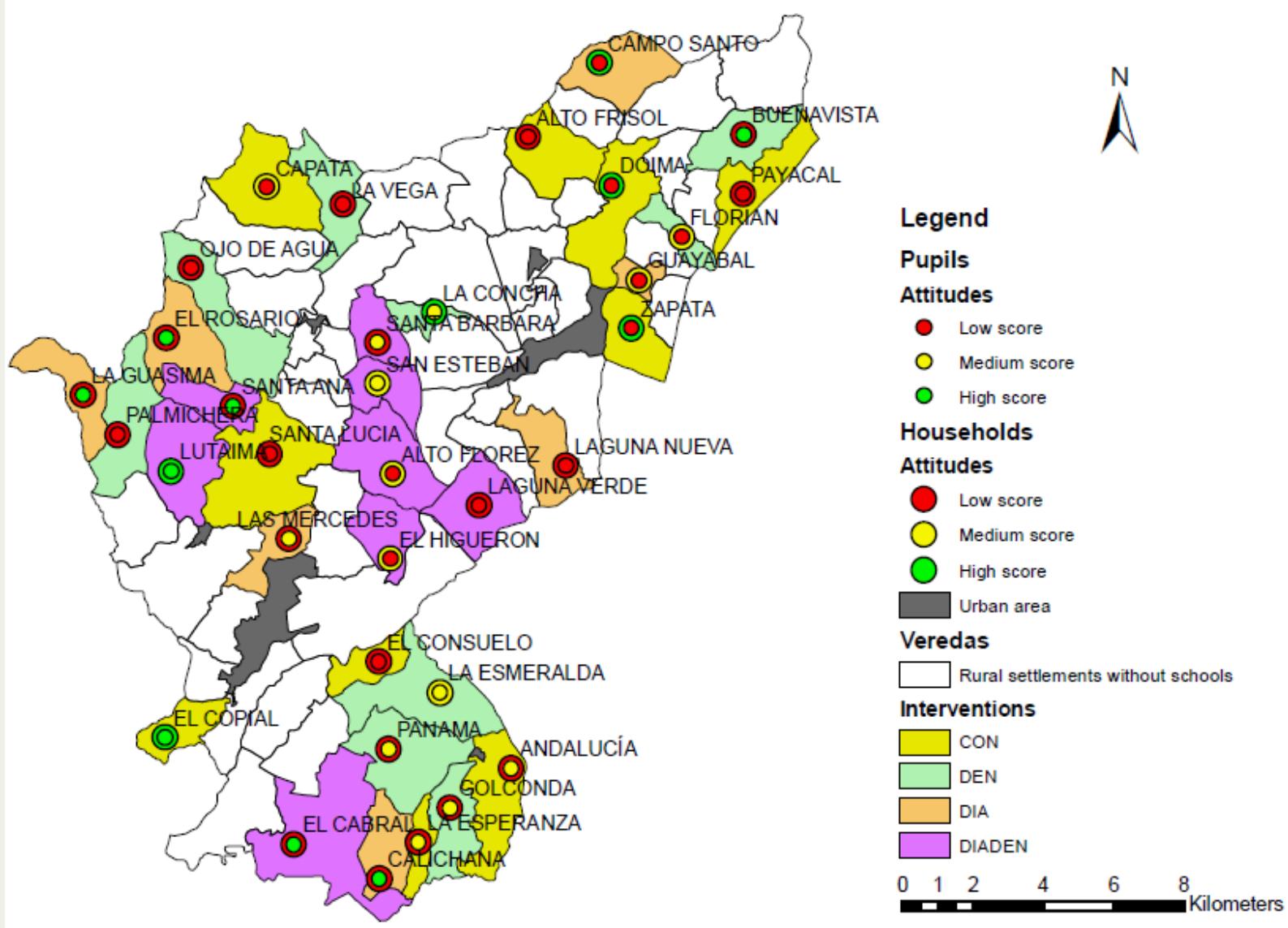


Scores of Household Attitudes towards Dengue by the Arm of Intervention

Den difference=-0.03 (-0.4, 0.34), p=0.865

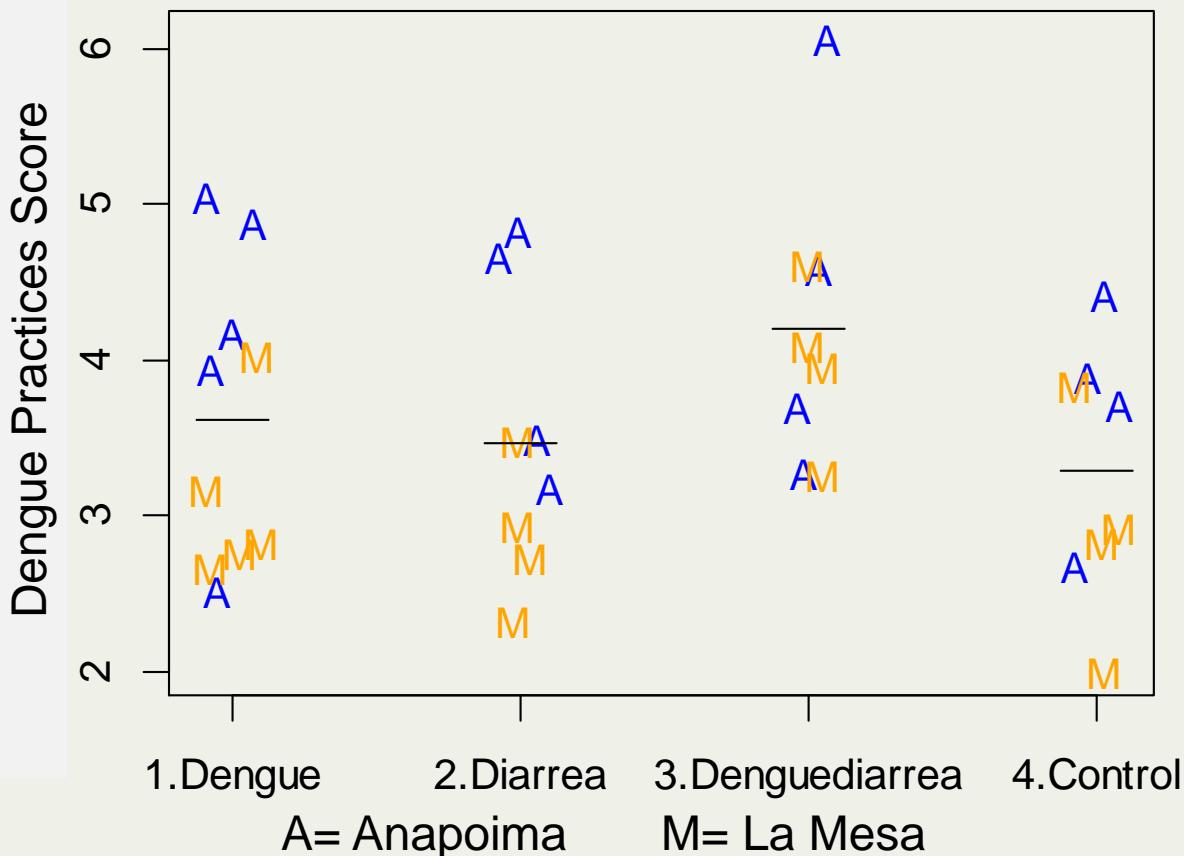


Household Attitudes towards Dengue



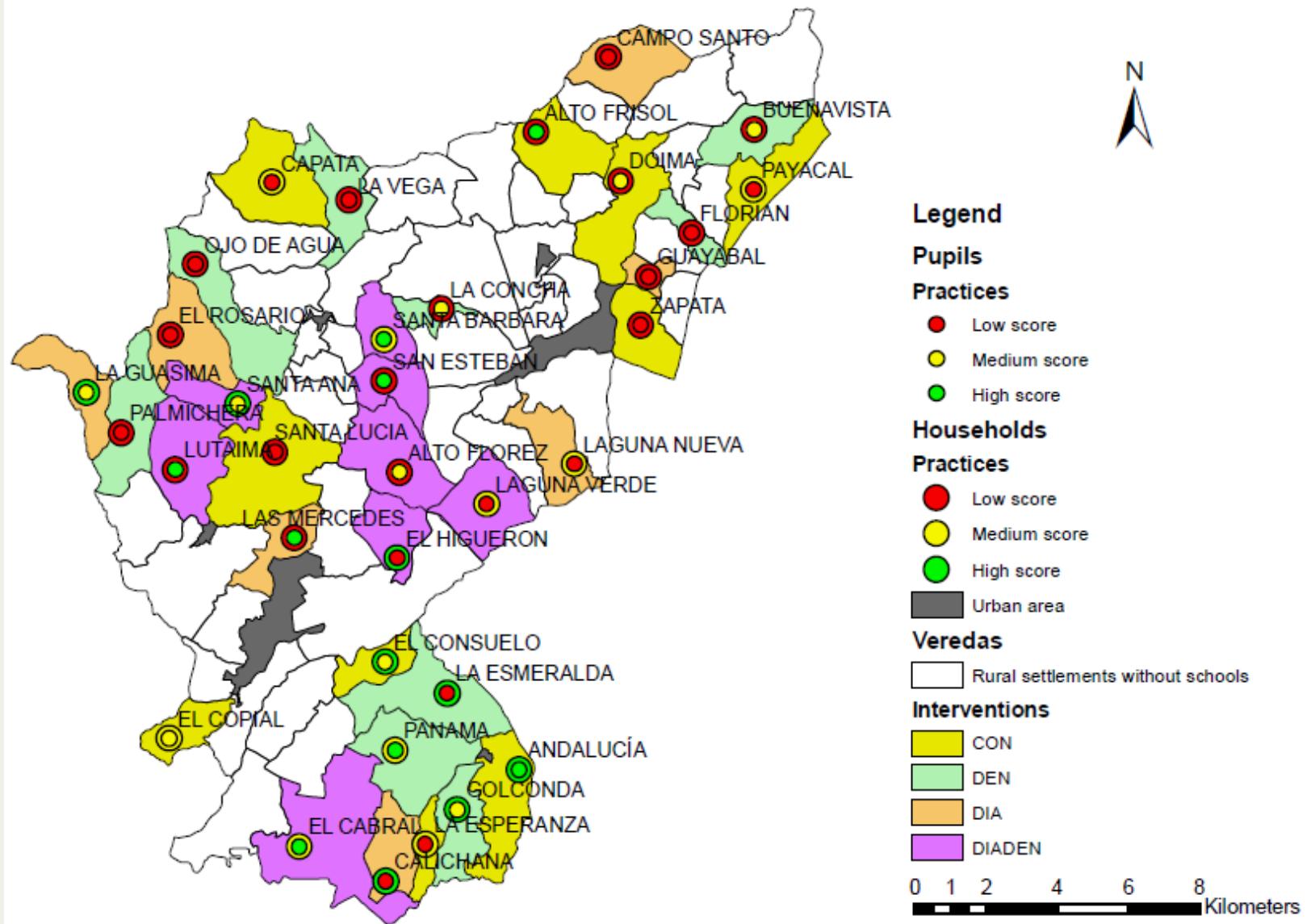
Scores of Household Practices related to Dengue by the Arm of Intervention

Den difference=0.52 (-0.02, 1.06), p=0.06



Ranges	Practices
Min	1,29
Low	<2,85
Med	2,85-3,61
High	>3,61
Max	6,39

Household Practices Related to Dengue



Healthy Schools. Preliminary results

Knowledge, Attitudes and Practices (KAP) Diarrhea

Pupils



Pupils

- Risks related to water, food and hygiene
- Water and sewage
- Water contamination
- About prevention
- Disease
 - Symptoms
 - ORS
 - Warning signs

10.

En las siguientes imágenes, marca con una equis (X) la manera en la que podemos evitar que se contamine el agua. Elige una de estas imágenes:

A.



Lavando los recipientes que almacenan agua

B.



Arrojando basura en el río

C.



Recogiendo la basura

11.

En las siguientes imágenes, marca con una equis (X) la situación en la que el agua está contaminada. Elige una de estas imágenes:

A.



Agua en recipientes sucios

B.



Lavarse las manos

C.



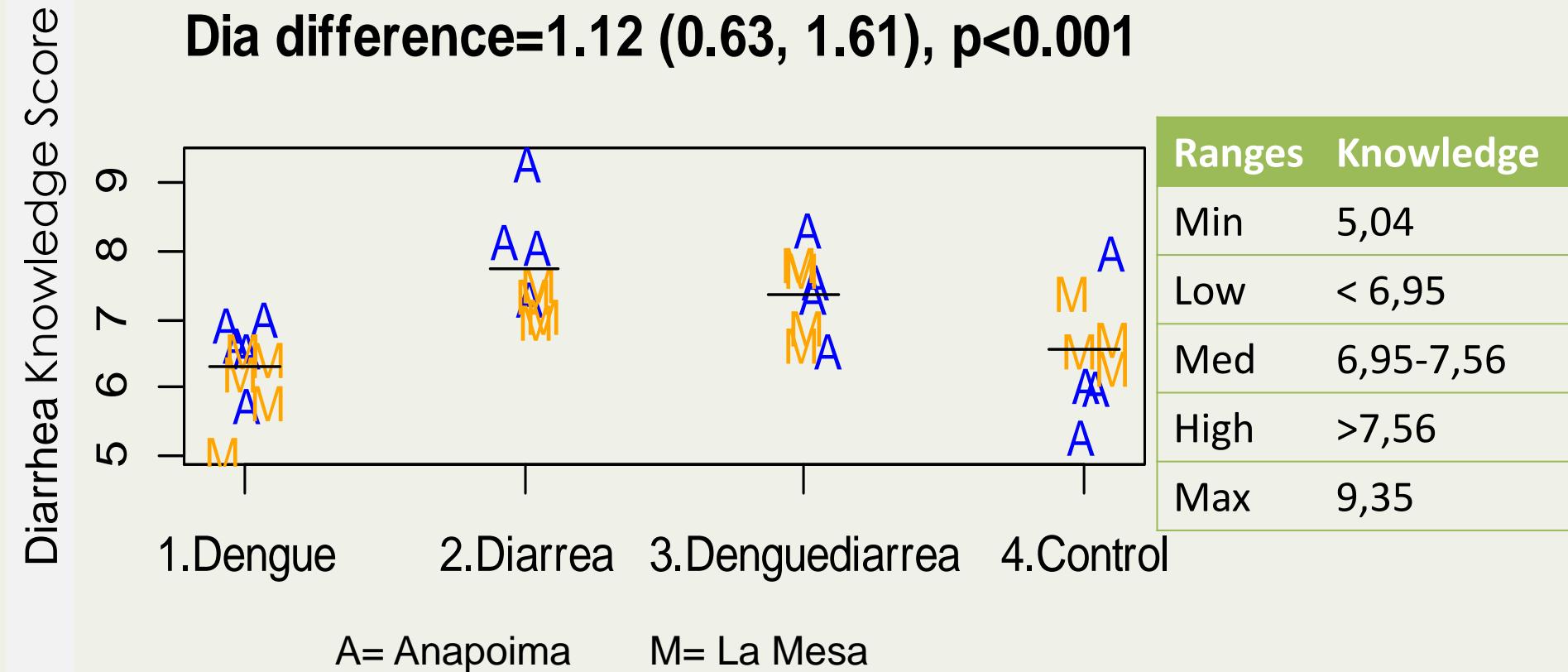
Tomar agua en un vaso limpio

Pupils Knowledge of Diarrhea

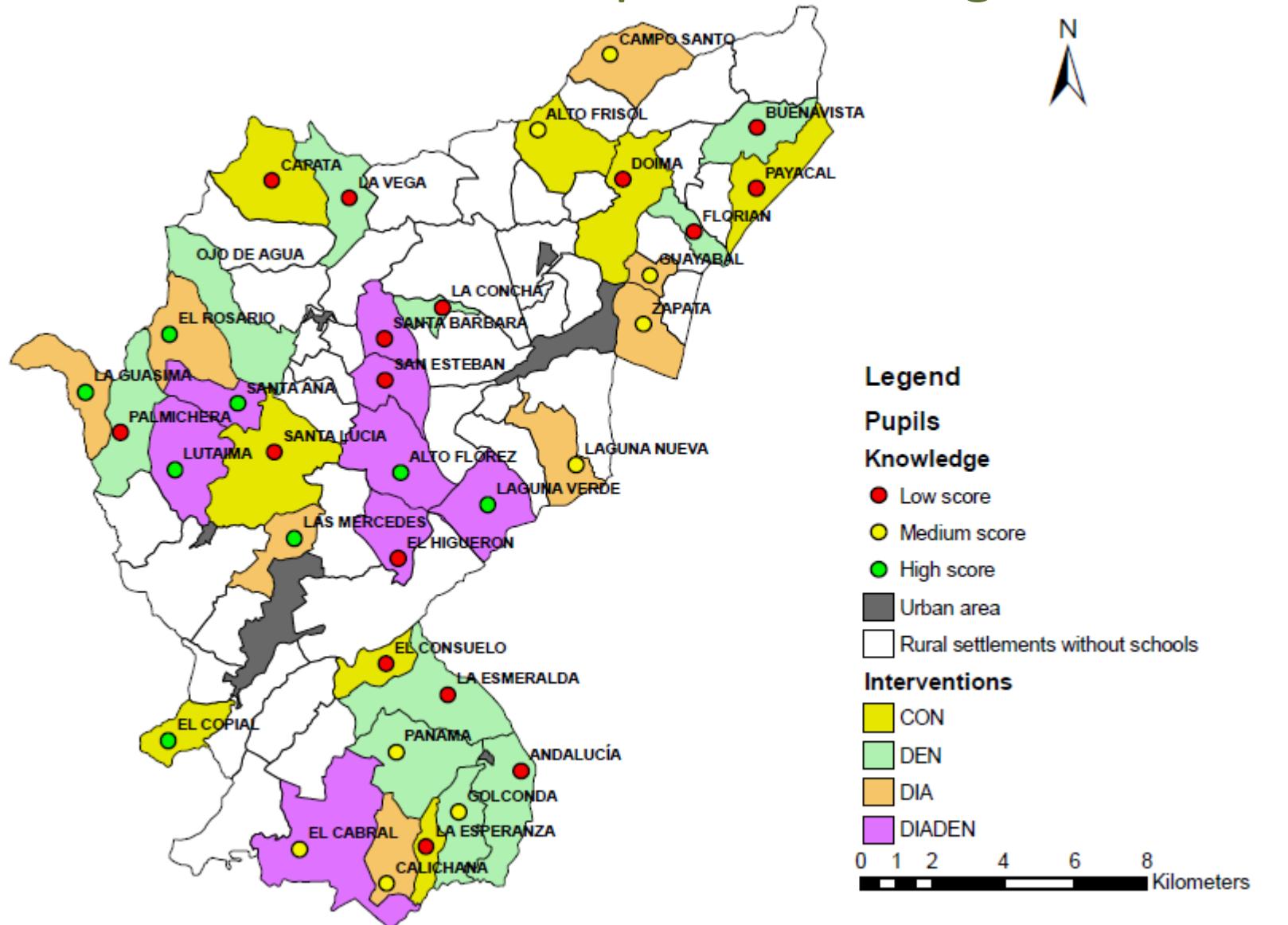
Pupils

Diarrhea Knowledge Scores for Pupils by Arm of Intervention

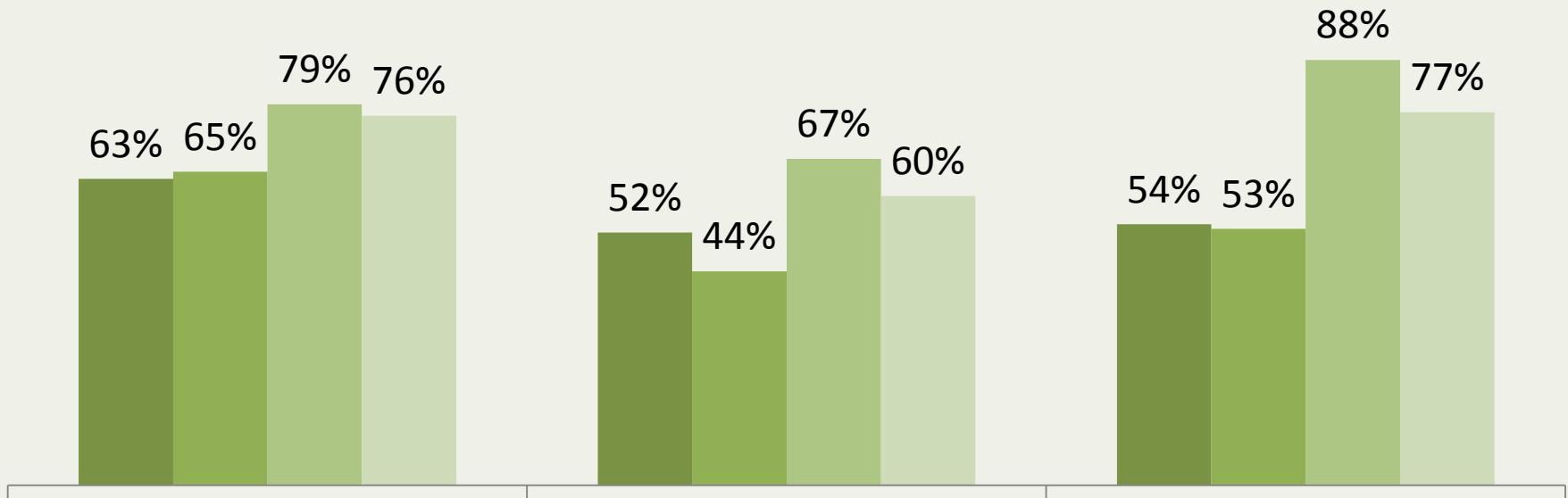
Dia difference=1.12 (0.63, 1.61), p<0.001



Pupils Knowledge of Diarrhea



Water & sewage



Water must be without color,
smell, taste and microbes

Appropriate water
management boiling, filtering
and chlorinate

Methods to manage sewage
and excreta latrine, septic
tanks and sewage systems

■ CON

■ DEN

■ DEN/DIA

■ DIA

Pupils

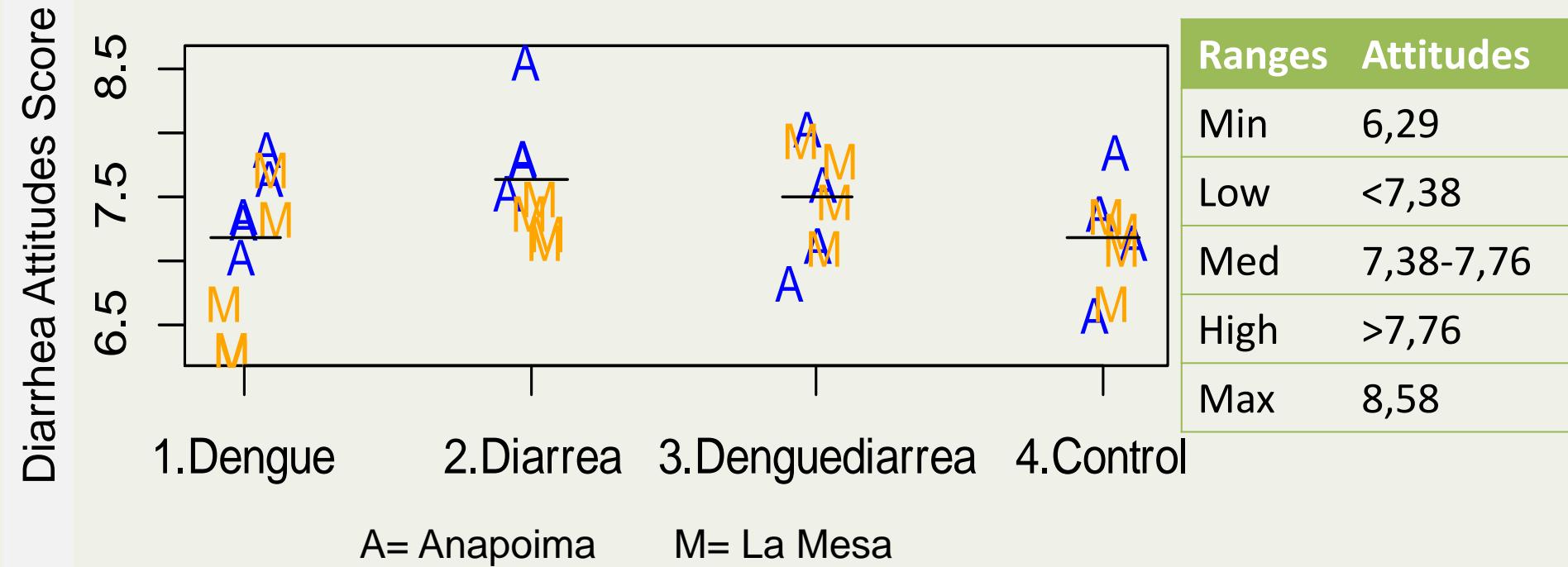
- Safe water
- Hygiene and sanitation
- ORS
- Self-medication
- Transmission of information



Pupils Attitudes towards Diarrhea

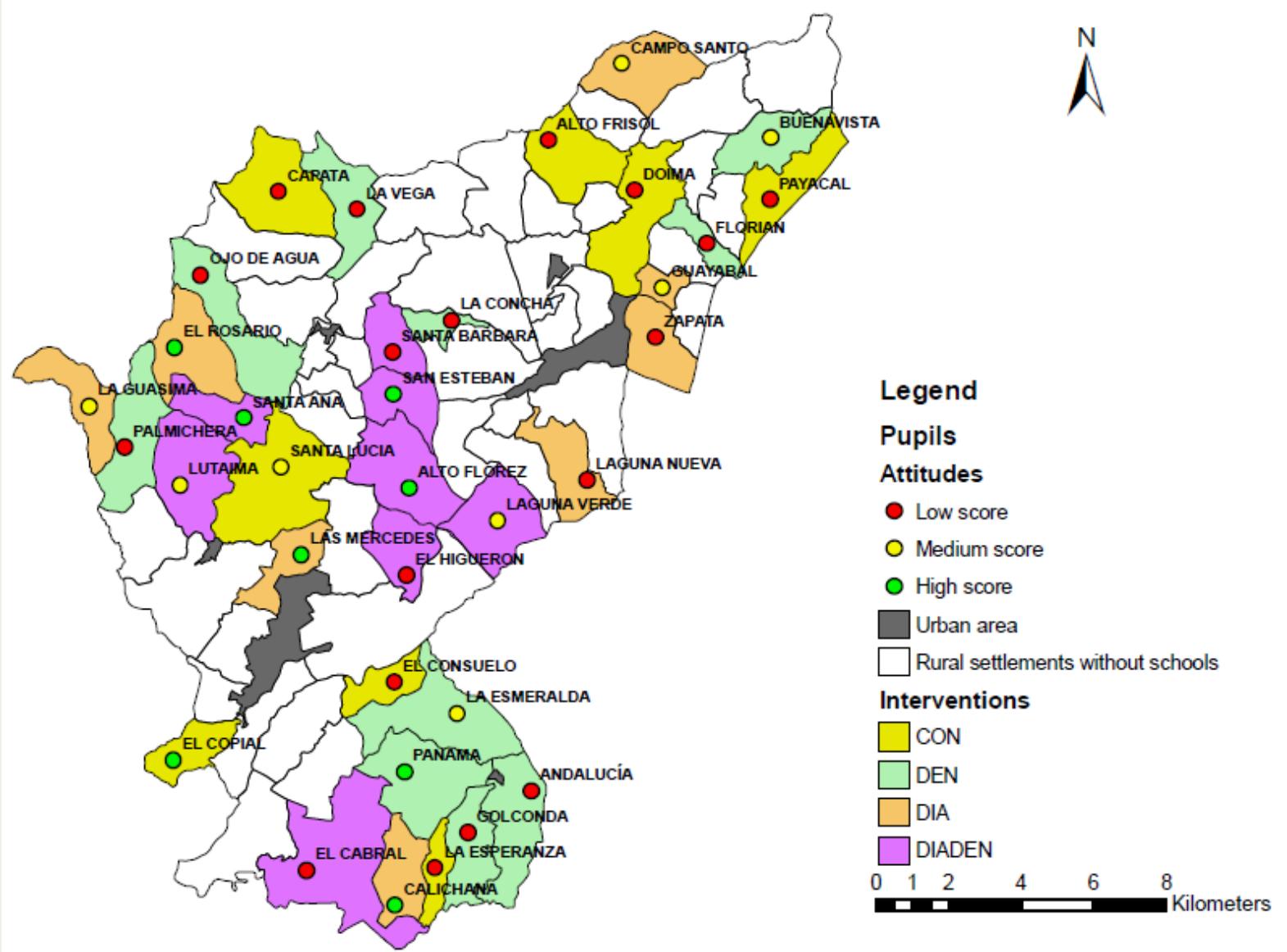
Diarrhea Attitudes Scores for Pupils by Arm of Intervention

Dia difference=0.39 (0.08, 0.7), p=0.016



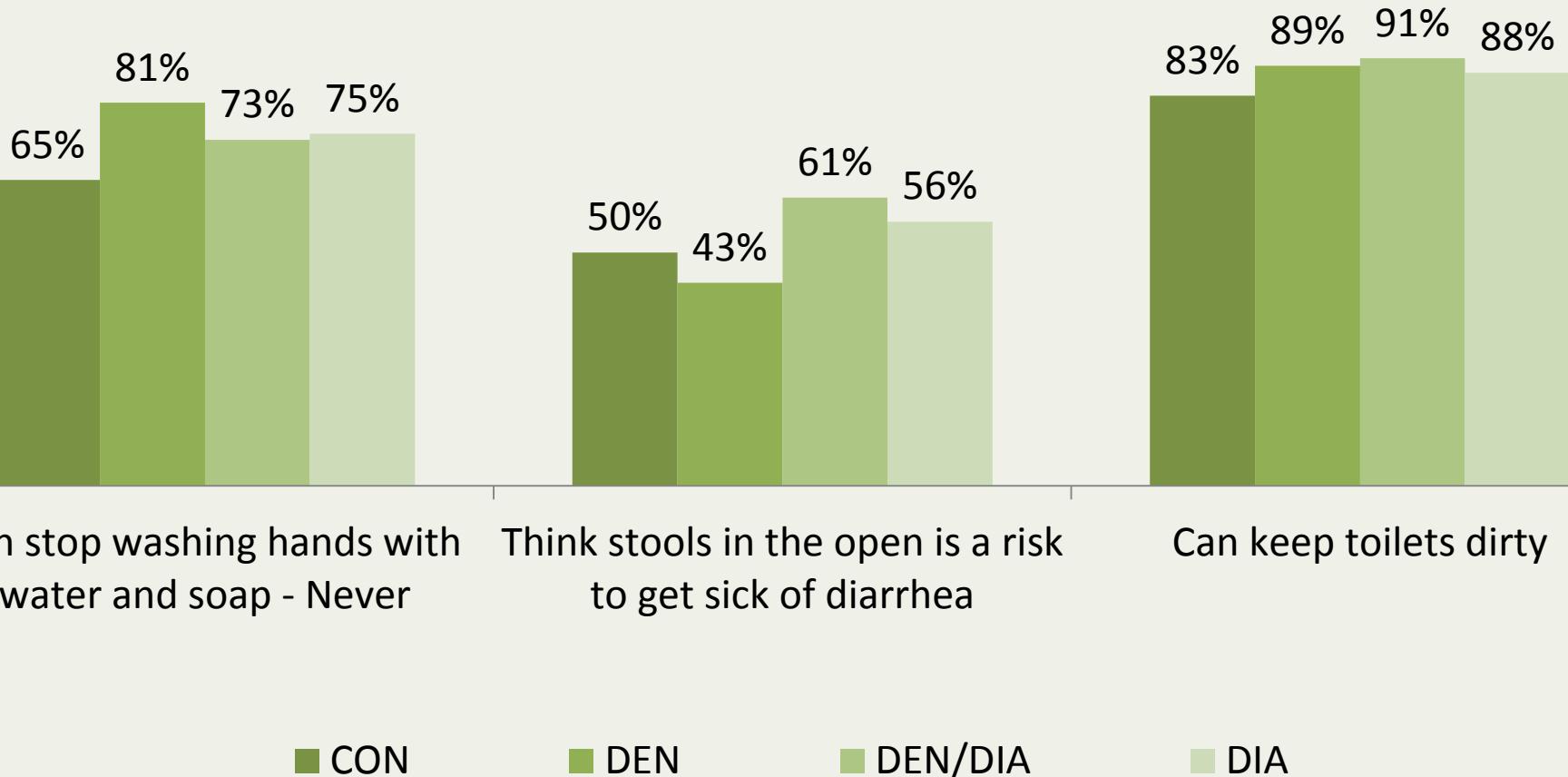
Pupils Attitudes towards Diarrhea

○



Attitudes

Hygiene



Pupils

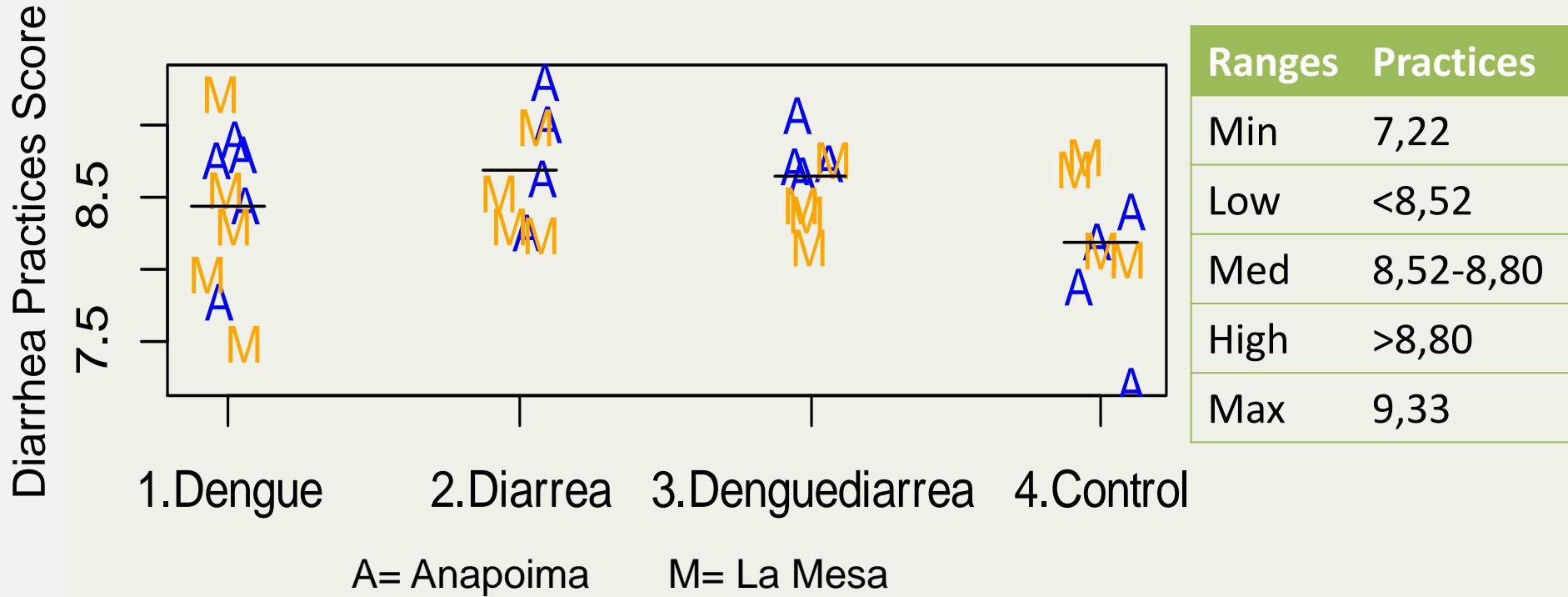
- Prevention
 - Hand washing
 - Safe water
 - Hygiene
 - Food management
- Knowledge transmission



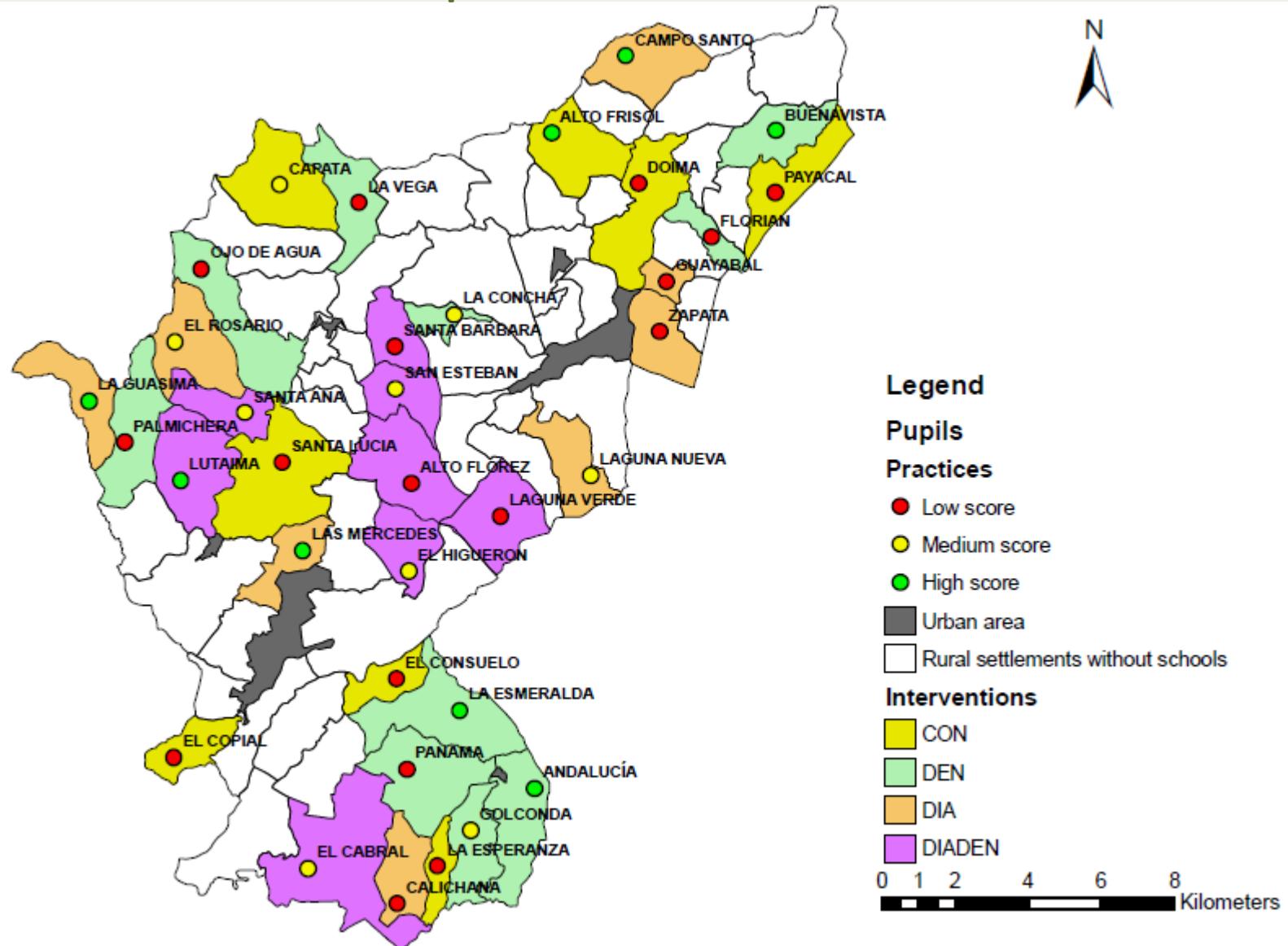
Pupils Practices Related to Diarrhea

Diarrhea Practices Scores for Pupils by Arm of Intervention

Dia difference=0.34 (0.02, 0.65), p=0.039

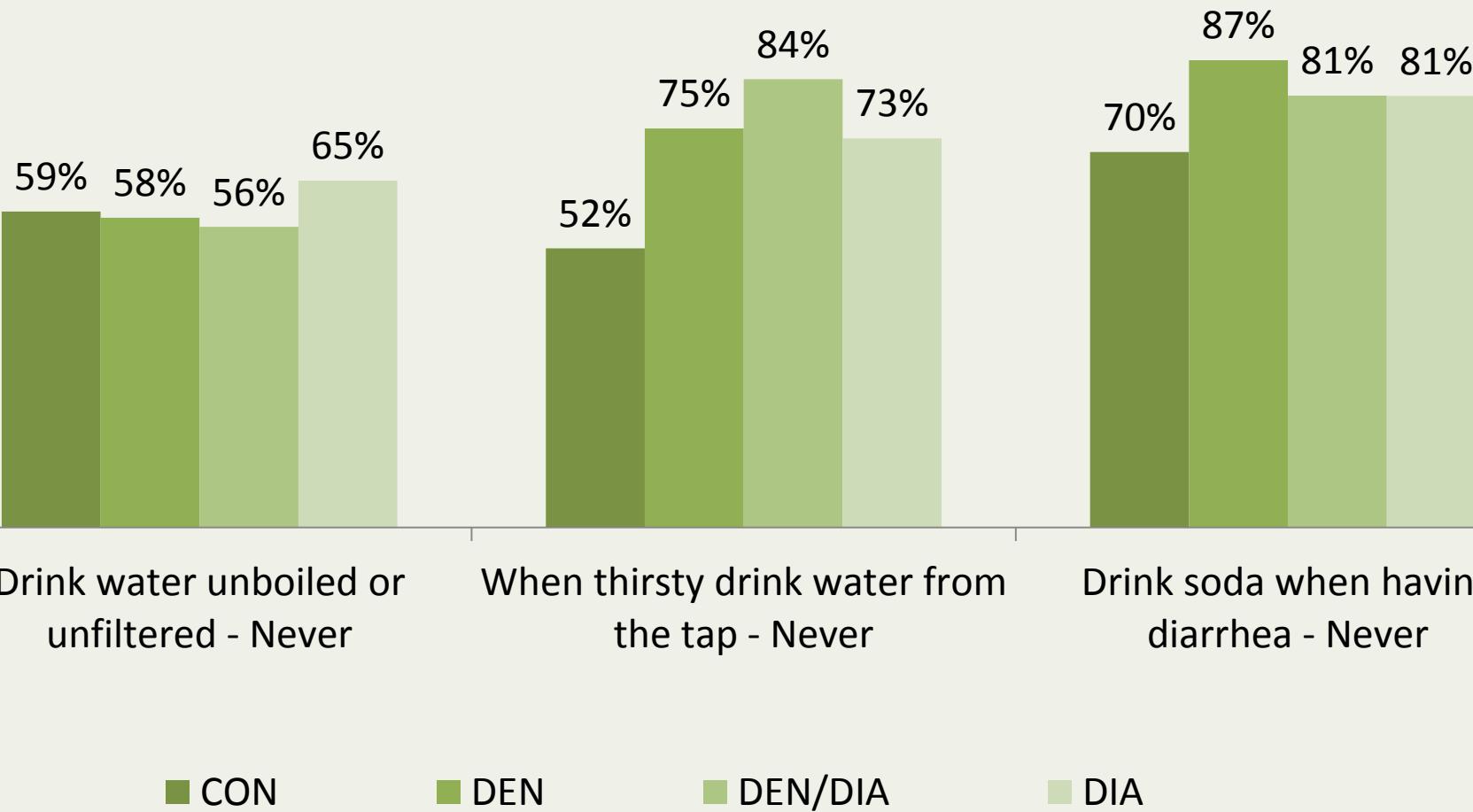


Pupils Practices Related to Diarrhea



Practices

About prevention



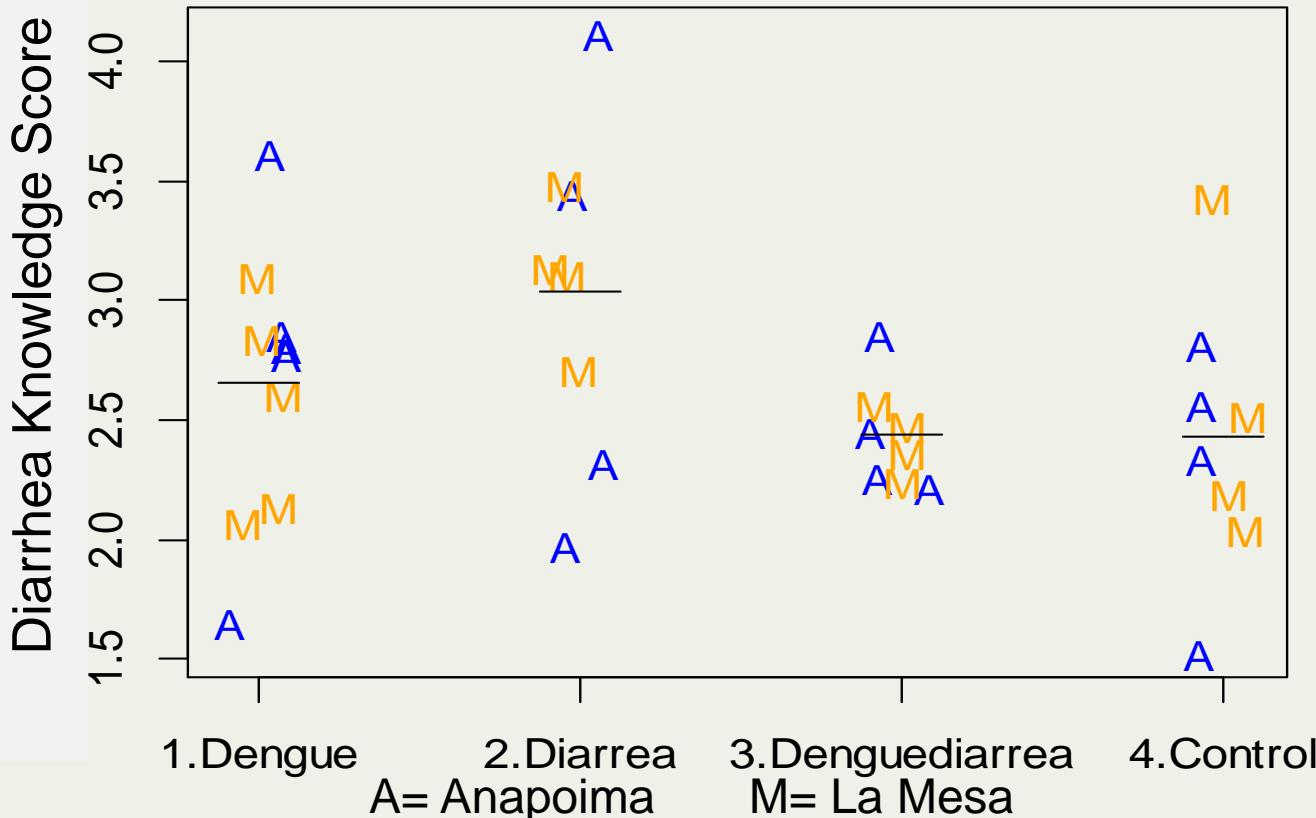
Households



Households

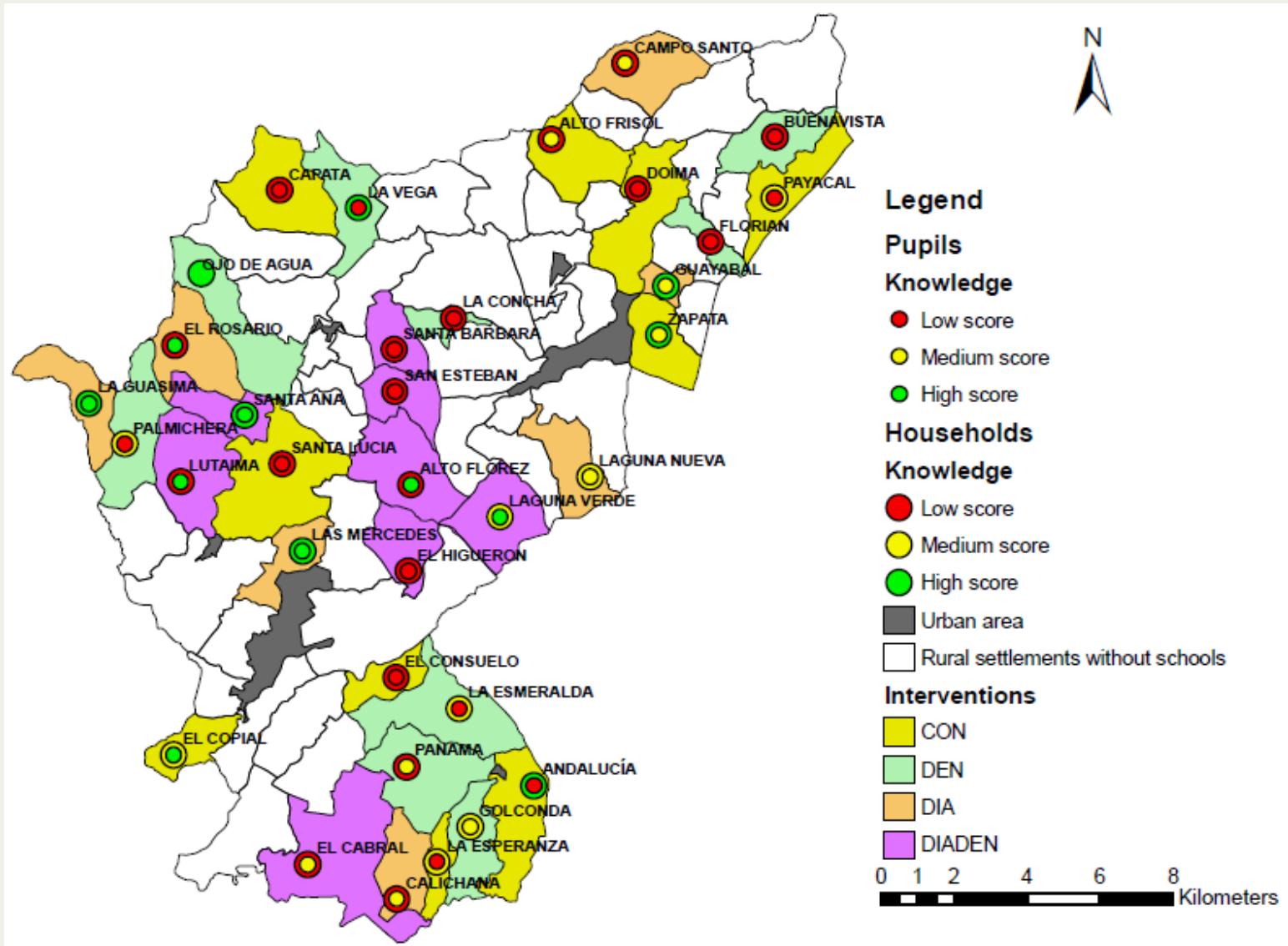
Diarrhea Knowledge Scores for Households by Arm of Intervention

Dia difference=0.17 (-0.23, 0.58), p=0.388



Ranges	Knowledge
Min	0,56
Low	<1,67
Med	1,67-2,09
High	>2,09
Max	3,67

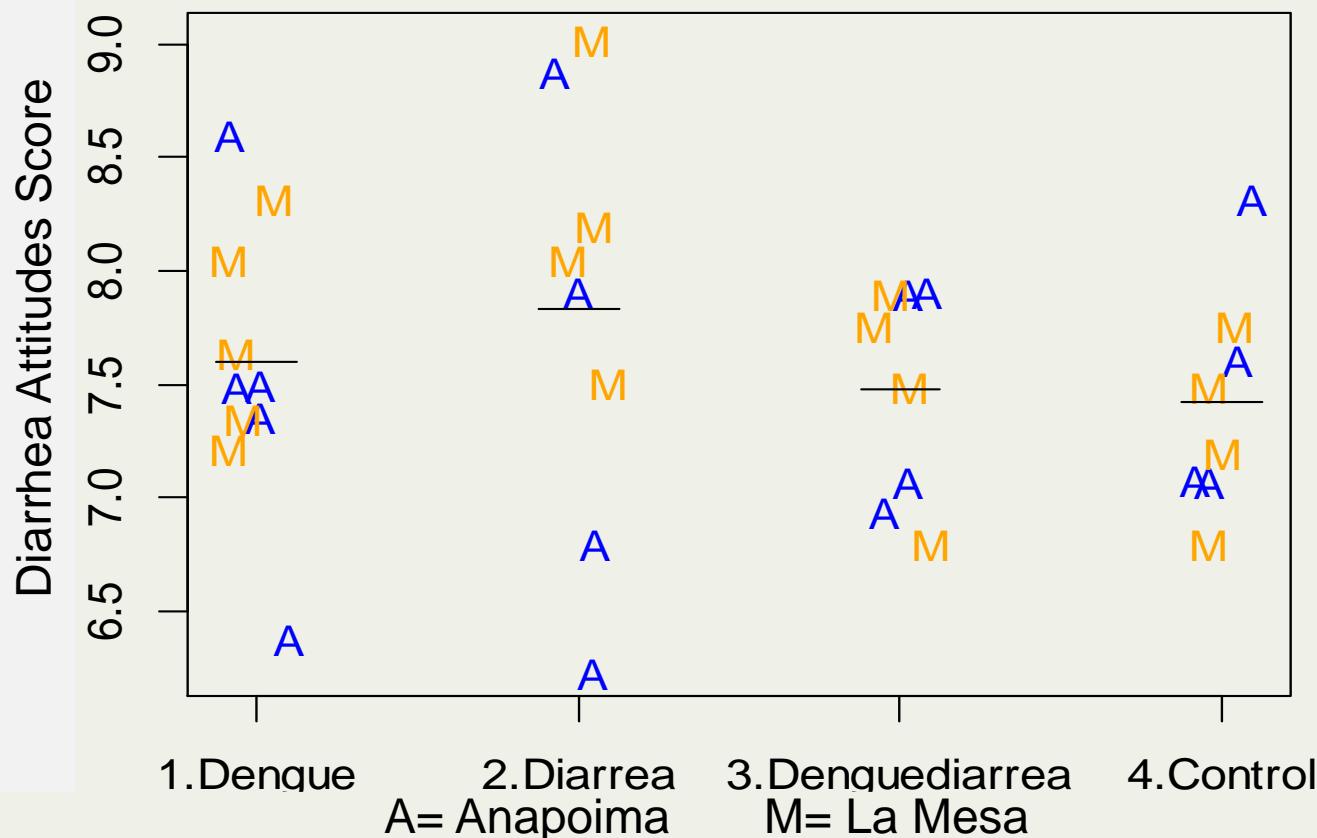
Households Knowledge of Diarrhea



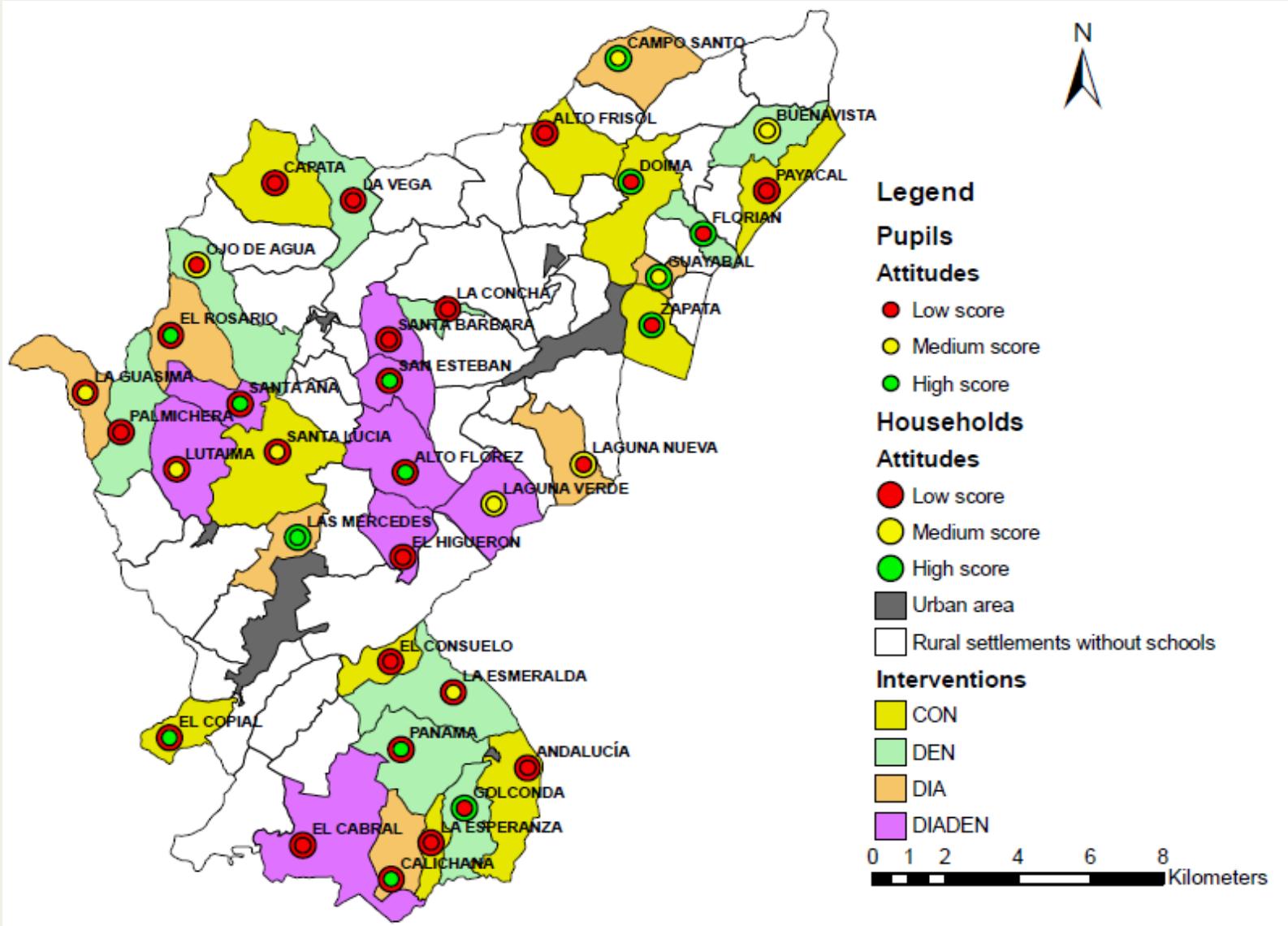
Households

Diarrhea Attitudes Scores for Households by Arm of Intervention

Dia difference=0.13 (-0.34, 0.6), p=0.578



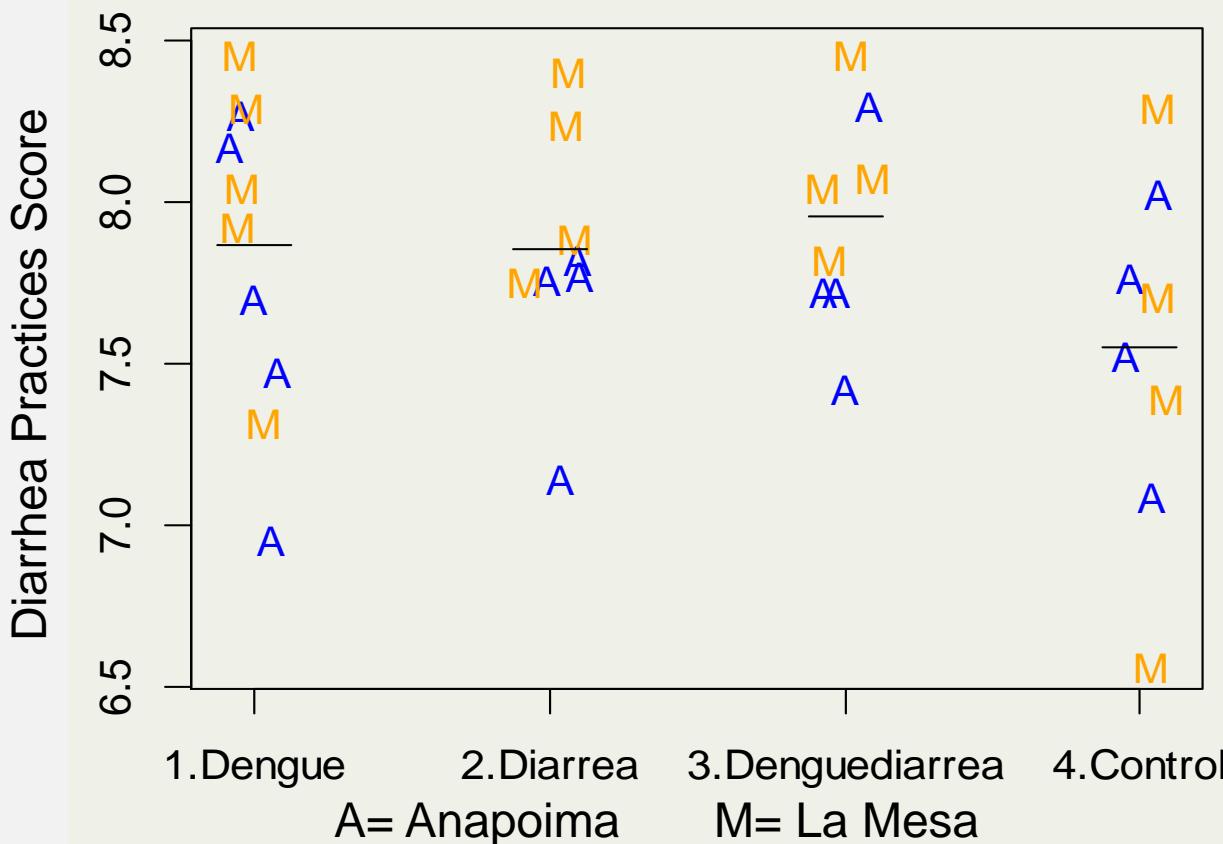
Households Attitudes Towards Diarrhea



Households

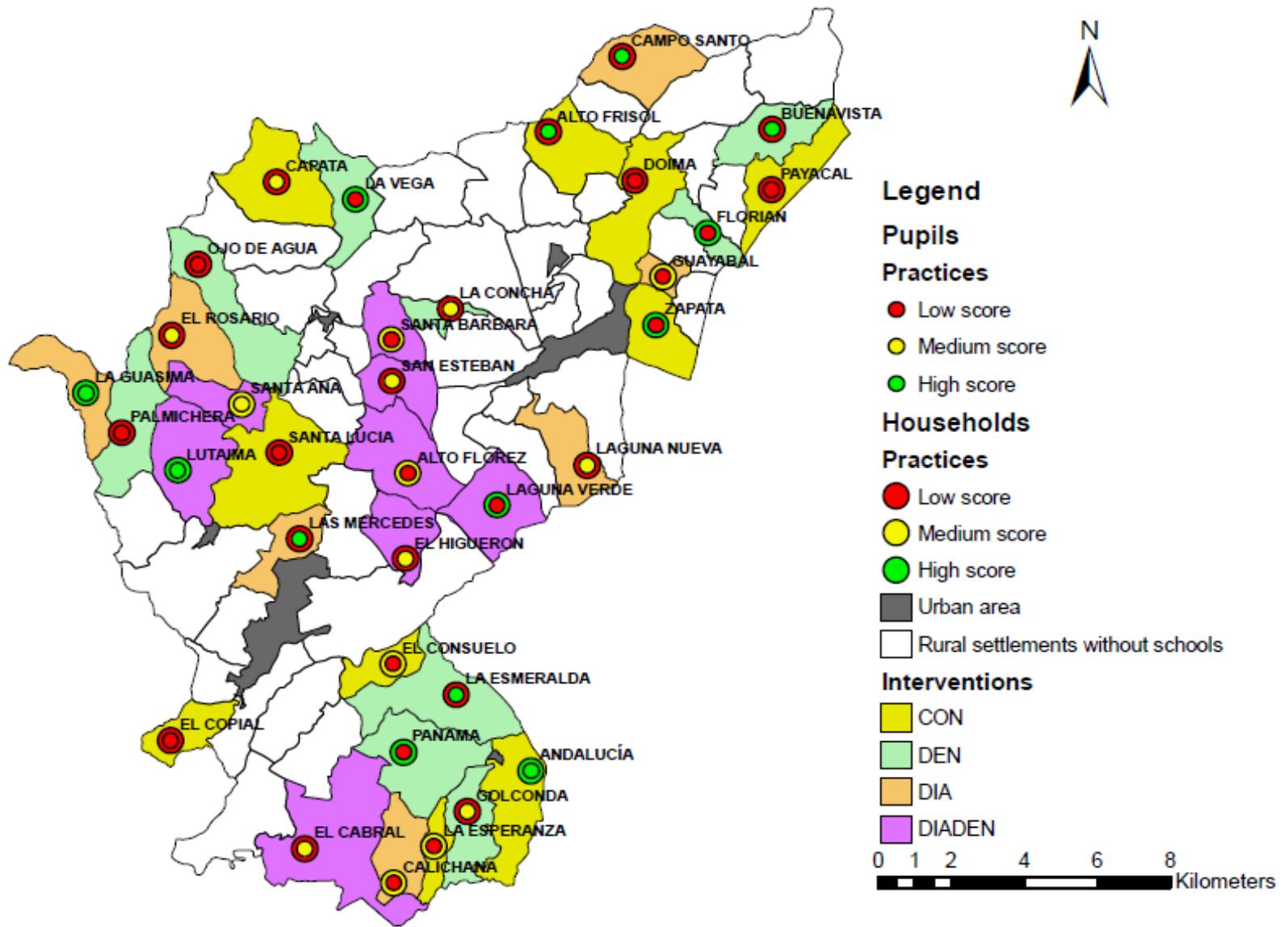
Diarrhea Practices Scores for Households by Arm of Intervention

Dia difference=0.19 (-0.11, 0.49), p=0.212



Ranges	Practices
Min	4,95
Low	<6,06
Med	6,06-6,48
High	>6,48
Max	7,53

Households Practices Related with Diarrhea



Conclusions

Pupils weaknesses

1. Must be strengthened
 - a. Knowledge about laundry tanks as breeding sites for dengue vector
 - b. Knowledge and shared responsibility about practices and risk (dengue-diarrhea)
 - c. Acknowledge of the importance of linking the family group to the learning made in the school



Considerations

- An improvement on the knowledge about dengue of the pupils who participated in the dengue and dendia intervention was shown. A similar result was obtained for their household knowledge and practices against those who were not in the dengue intervention. In both cases, the difference was statistically significant.
- There was a significant difference in the KAP on diarrhea for pupils on dia and dendia arms compared to those in the other arms.
- A dynamic way of intervention with participation of various actors is a positive way of transforming the knowledge.



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