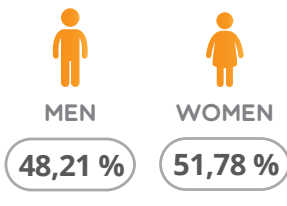# ANIBES

Breakfast habits and differences regarding abdominal obesity in a cross-sectional study in Spanish adults: The ANIBES study

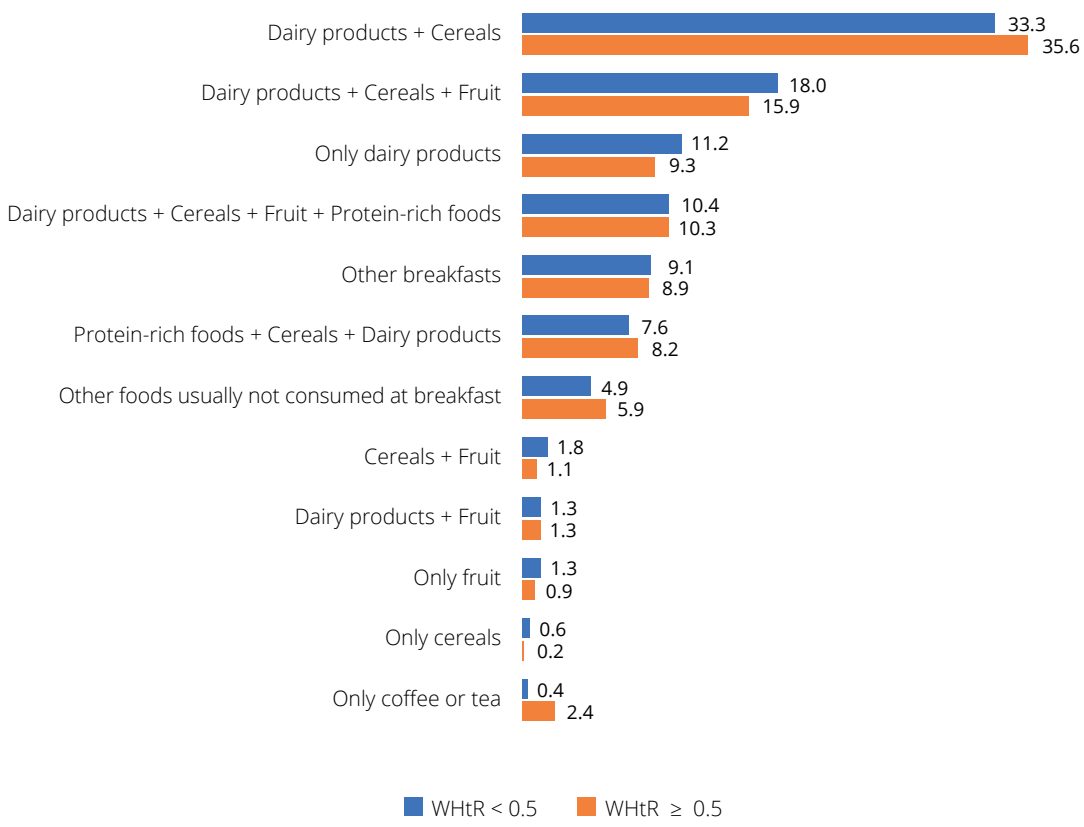Representative sample of 1,655 individuals aged 18 - 64 years.

SEX

MEN **48,21 %**   WOMEN **51,78 %**

Breakfast habits regarding sex and WHtR categories

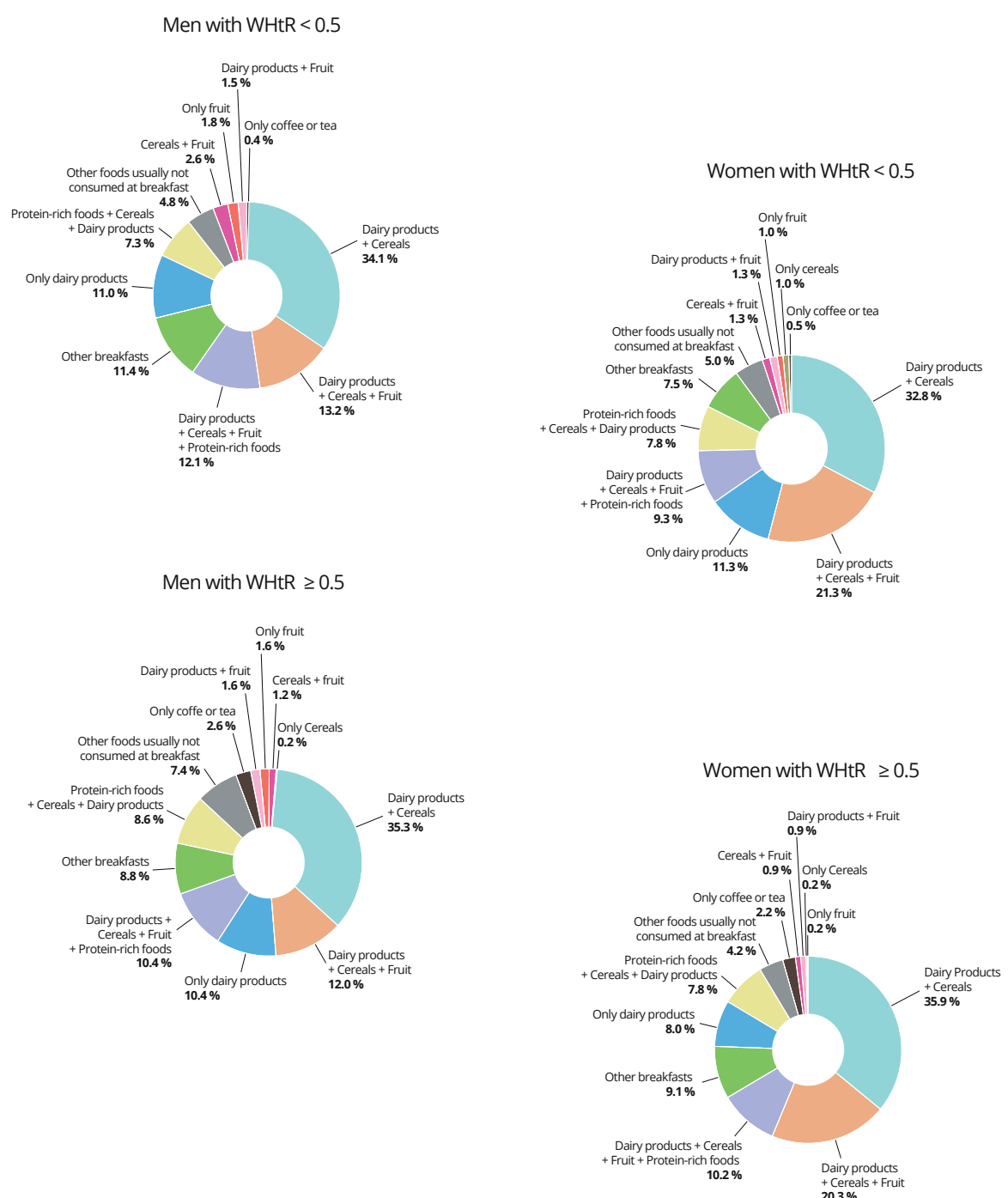|	WHtR < 0.5			WHtR ≥ 0.5		
	Total	Men	Women	Total	Men	Women
N	689	282	407	966	516	450
Age (y) (m ± sd)	34.0 ± 11.0***	32.5 ± 11.2***	35.0 ± 10.7***	44.2 ± 11.2***	43.5 ± 10.9***	45.0 ± 11.5***
18 – 40 (%)	73.4*	78.4*	70*	39*	41.5*	36.2*
41 – 64 (%)	26.6*	21.6*	30*	61*	58.5*	63.8*
Breakfast (%):						
Never	2.9	3.6	2.5	4.1	5.5	2.4
Sometimes	16.4*	20.9*	13.3	12.5*	14.7*	10
Always	80.7	75.5	84.3	83.4	79.8	87.5
Total energy intake (kcal/day) (m ± sd)	1,886 ± 543***	2,102 ± 581***	1,736 ± 460***	1,765 ± 482***	1,892 ± 507***	1,620 ± 407***
(MJ/day) (m ± sd)	7.9 ± 2.3***	8.8 ± 2.4***	7.3 ± 1.9***	7.4 ± 2.0***	7.9 ± 2.1***	6.8 ± 1.7***
Breakfast energy intake (kcal/day) (m ± sd)	310.8 ± 169.3	339.3 ± 189.0**	291.2 ± 151.6	294.9 ± 169.3	299.4 ± 170.8**	289.9 ± 148.1
(MJ/day) (m ± sd)	1.3 ± 0.7	1.4 ± 0.8**	1.2 ± 0.6	1.2 ± 0.7	1.3 ± 0.7**	1.2 ± 0.6
Breakfast energy intake (% total energy intake) (m ± sd)	16.6 ± 8.0	16.1 ± 8.0	16.8 ± 8.5*	16.8 ± 8.5	15.8 ± 8.5	18.0 ± 8.3*
Individuals whose breakfast provides: (%)						
15 – 25 % energy total	39.3	36.3	41.4	41.9	40.5	43.4
< 15 % energy total	45.7	49.5	43.1	42.8	47.1	38.1
> 25 % energy total	15	14.3	15.5	15.3	12.4	18.5
Food variety at breakfast (number of foods at breakfast/day) (m ± sd)	2.25 ± 1.00*	2.33 ± 1.12*	2.20 ± 0.91	2.16 ± 0.89*	2.13 ± 0.93*	2.18 ± 0.84
Time used for breakfast (minutes/day) (m ± sd)	12.12 ± 8.72	11.72 ± 9.75	12.40 ± 7.95	12.73 ± 8.96	12.07 ± 9.19	13.47 ± 8.63

m: mean; sd: standard deviation; WHtR: Waist to height ratio. Student's t test for normally distributed variables and Mann Whitney test for variables with non-normal distribution. Z test proportions for variables expressed in proportions. Significant differences between adults with WHtR < 0.5 and WHtR ≥ 0.5.
* $p < 0.05$.
** $p < 0.01$.
*** $p < 0.001$.

More frequently consumed breakfasts regarding WHtR categories (% consumers)

	WHtR < 0.5	WHtR ≥ 0.5
Dairy products + Cereals	33.3	35.6
Dairy products + Cereals + Fruit	18.0	15.9
Only dairy products	11.2	9.3
Dairy products + Cereals + Fruit + Protein-rich foods	10.4	10.3
Other breakfasts	9.1	8.9
Protein-rich foods + Cereals + Dairy products	7.6	8.2
Other foods usually not consumed at breakfast	4.9	5.9
Cereals + Fruit	1.8	1.1
Dairy products + Fruit	1.3	1.3
Only fruit	1.3	0.9
Only cereals	0.6	0.2
Only coffee or tea	0.4	2.4

■ WHtR < 0.5   ■ WHtR ≥ 0.5

WHtR: Waist to height ratio.
Other breakfasts include combinations different to the described ones, such as protein-rich foods with cereals, or with dairy products, or with fruit.

More frequently consumed breakfasts regarding sex and WHtR categories (% consumers)

Men with WHtR < 0.5
- Dairy products + Fruit 1.5 %
- Only fruit 1.8 %
- Only coffee or tea 0.4 %
- Cereals + Fruit 2.6 %
- Other foods usually not consumed at breakfast 4.8 %
- Protein-rich foods + Cereals + Dairy products 7.3 %
- Only dairy products 11.0 %
- Other breakfasts 11.4 %
- Dairy products + Cereals + Fruit + Protein-rich foods 12.1 %
- Dairy products + Cereals + Fruit 13.2 %
- Dairy products + Cereals 34.1 %

Women with WHtR < 0.5
- Only fruit 1.0 %
- Dairy products + fruit 1.3 %
- Only cereals 1.0 %
- Only coffee or tea 0.5 %
- Cereals + Fruit 1.3 %
- Other foods usually not consumed at breakfast 5.0 %
- Other breakfasts 7.5 %
- Protein-rich foods + Cereals + Dairy products 7.8 %
- Dairy products + Cereals + Fruit + Protein-rich foods 9.3 %
- Only dairy products 11.3 %
- Dairy products + Cereals + Fruit 21.3 %
- Dairy products + Cereals 32.8 %

Men with WHtR ≥ 0.5
- Only fruit 1.6 %
- Dairy products + fruit 1.6 %
- Cereals + fruit 1.2 %
- Only Cereals 0.2 %
- Only coffee or tea 2.6 %
- Other foods usually not consumed at breakfast 7.4 %
- Protein-rich foods + Cereals + Dairy products 8.6 %
- Other breakfasts 8.8 %
- Dairy products + Cereals + Fruit + Protein-rich foods 10.4 %
- Only dairy products 10.4 %
- Dairy products + Cereals + Fruit 12.0 %
- Dairy products + Cereals 35.3 %

Women with WHtR ≥ 0.5
- Dairy products + Fruit 0.9 %
- Cereals + Fruit 0.9 %
- Only Cereals 0.2 %
- Only coffee or tea 2.2 %
- Only fruit 0.2 %
- Other foods usually not consumed at breakfast 4.2 %
- Protein-rich foods + Cereals + Dairy products 7.8 %
- Only dairy products 8.0 %
- Other breakfasts 9.1 %
- Dairy products + Cereals + Fruit + Protein-rich foods 10.2 %
- Dairy products + Cereals + Fruit 20.3 %
- Dairy Products + Cereals 35.9 %

WHtR: Waist to height ratio

Having always breakfast was negatively associated with abdominal obesity [OR = 0.738 (0.55 8 ± 0.975) p = 0.033].

The odds of abdominal obesity after full adjustment (age, gender, and educational and activity level) were 1.5 times higher for those who skipped breakfast when compared to those who always have breakfast.

Navia B, López-Sobaler AM, Villalobos T, Aranceta-Bartrina J, Gil Á, González-Gross M, et al. Breakfast habits and differences regarding abdominal obesity in a cross-sectional study in Spanish adults: The ANIBES study. PLoS ONE, 2017;12(11):e0188828; doi:https://doi.org/10.1371/journal.pone.0188828.