Breakfast is commonly described as being beneficial for health and people who eat breakfast have frequently been reported as having a lower body mass index compared to people who skip breakfast; however reasons for this potential association are still not clear. The aim of this study was to focus particularly on pre-prandial hunger and serum ghrelin levels in lean and overweight breakfast eaters and breakfast skippers (n = 37) when asked to consume breakfast for 7 days and skip breakfast for 7 days. Measurements were taken at the start and the end of each breakfast condition. Habitual breakfast eaters reported greater levels of hunger in each breakfast condition compared with breakfast skippers (p <0.05). Changing to the alternative breakfast condition did not influence hunger scores. There were no differences in total ghrelin levels between breakfast eaters and breakfast skippers, the different breakfast conditions nor were there any differences between measurements made at baseline and after 7 days. It was concluded that this relatively short intervention had no significant effect on breakfast time hunger; it is possible that seven days was not sufficient to modify habitual breakfast behaviour or patterns of ghrelin secretion.