

## 学位論文の内容の要旨

### Summary of the Substance of Dissertation

専攻 Major Field	医学	部門 Department	
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論文題目 Thesis Subject	Temporal Trends in Apparent Food Consumption in Bangladesh: A Joinpoint Regression Analysis of FAO's Food Balance Sheet Data from 1961 to 2013		
(論文要旨) Summary	<p><b>Background:</b> Bangladesh has made a significant increase in food grain production and food availability, although food security at household and national levels remains a matter of major concern for the government. The typical diet at the individual, as well as household level, in Bangladesh is not balanced and remains dominated by a high intake of cereals, mostly rice. Tracing and monitoring the dietary intake at individual and population levels is required to assess the impact of dietary changes over time. Moreover, obtaining information on apparent and actual intakes is essential for predicting future dietary changes.</p> <p><b>Methods:</b> We analyzed the temporal trends and significant changes in apparent food consumption or availability in Bangladesh from 1961 to 2013. Like most countries, food supply derived from the food balance sheets is a reliable and perhaps a very good option available to follow and analyze the trends of dietary changes at the national level. In this study, due to the lack of a long-term national dietary intake dataset, food availability data in Bangladesh were obtained from the FAO's food balance sheets documented in the Food and Agriculture Organization Corporate Statistical Database (FAOSTAT) from 1961 to 2013. We used joinpoint regression analysis to identify significant changes in the temporal trends. The annual percent change (APC) was computed for each segment of the trends.</p> <p><b>Results:</b> Apparent intake of starchy roots, eggs, fish, vegetables, milk, and vegetable oils significantly has increased in the Bangladeshi diet since 1961; whereas cereals changed by merely 4.65%. Bangladesh has been experiencing three structural changes in their dietary history after the Liberation War, though the intake level has been grossly inadequate. Initially, since the late-1970s, apparent vegetable oils intake increased at a market rate (APC = 7.53).</p>		

Table. Apparent food consumption in the diet in Bangladesh from 1961 to 2013.

	Trend 1		Trend 2		Trend 3		Trend 4		Trend 5	
	Period	APC <sup>2</sup>	Period	APC <sup>2</sup>	Period	APC <sup>2</sup>	Period	APC <sup>2</sup>	Period	APC <sup>2</sup>
Cereals	1961-1967	-1.68*	1967-1997	0.19*	1997-2001	2.40	2001-2013	-0.25		
Starchy roots	1961-1969	10.32*	1969-1998	-1.71*	1998-2013	8.77*				
Pulses	1961-1968	-0.73	1968-1977	6.86*	1977-1983	-6.27	1983-2008	-0.89*	2008-2013	6.29
Fish	1961-1973	2.59*	1973-1976	-11.28*	1976-1991	-0.55*	1991-2010	5.05*	2010-2013	0.08
Eggs	1961-1968	10.7*	1968-1987	-0.95	1987-2013	4.65*				
Meat	1961-1978	-0.09	1978-1981	-10.22*	1981-2013	1.54*				
Vegetables	1961-1968	2.65*	1968-1977	-4.68*	1977-2001	0.04	2001-2009	10.58*	2009-2013	0.45
Fruits	1961-1968	2.48*	1968-1972	-9.39*	1972-2002	-1.81*	2002-2007	20.44*	2007-2013	-0.73
Milk	1961-1967	-1.39	1967-2002	0.70*	2002-2013	3.55*				
Vegetable oil	1961-1978	-1.27	1978-1985	7.53*	1985-2000	3.79*	2000-2013	0.88		
Sugar	1961-1968	8.13*	1968-1973	-9.26*	1973-2002	-1.40*	2002-2005	10.82	2005-2013	-1.92*

Subsequently, since the early-1990s, the real force behind the structural change in the diet has been the increasing trends in the apparent intake of fish (APC = 5.05), eggs (APC = 4.65), and meat (APC = 1.54). Lastly, since the early 2000s, apparent intakes of fruits (APC = 20.44), vegetables (APC = 10.58), and milk (APC = 3.55) increased significantly ( $p < 0.05$ ). This study result reveals and quantifies the significant secular changes in the dietary history of Bangladesh from 1961 to 2013. Bangladesh has experienced inadequate but significant structural changes in the diet in the late-1970s, early-1990s, and early-2000s. Overall, the apparent intake of starchy roots, eggs, fish, vegetables, milk, and vegetable oils increased significantly in the Bangladeshi diet from 1961 to 2013. Apparent food intake except cereals, though substantially inadequate, significantly increased during the 1960s. Starchy roots, eggs, sugar, fish, vegetable, and fruit apparent consumption increased during that time. Since the late-1970s, vegetable oils; since the late-1980s, fish, eggs, and meat; and since the early-2000s, milk, vegetable and fruit apparent intakes in the Bangladeshi diet started to increase significantly, though the increasing amounts were inadequate compared to the recommended level of intake.

**Conclusion:** Overabundance of cereals and inadequate structural changes in the diet may have caused the increasing prevalence of overweightness and emergence of diet-related, non-communicable diseases in Bangladesh.

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(Recital) Sum up the within 1500 letters.