

DEVELOPMENT OF THE IOWA BONE NUTRIENT FFQ FROM CSFII DATA

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Iowa Fluoride and Bone Development Studies

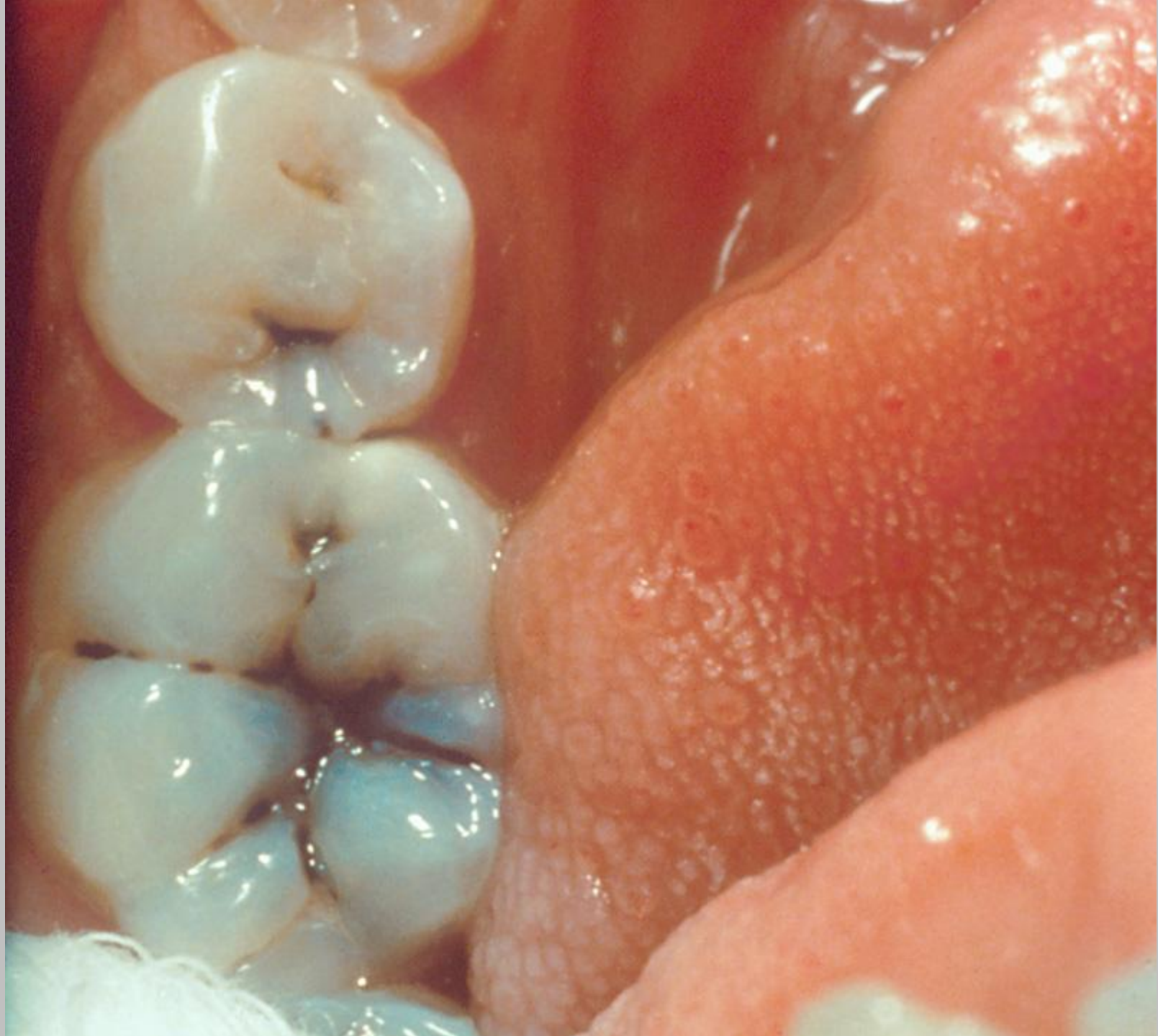
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Iowa Fluoride Study

- Longitudinal study of dental caries and fluorosis
- Cohort recruited at birth (1992 – 1995)
- Children now 11 – 14 years
- Questionnaires
- Dental studies at 5, 8, and 13 years











Iowa Bone Development Study Children

– Bone Outcomes

- DXA
- pQCT

– Exposures

- Diet (questionnaire)
- Exercise (questionnaire, accelerometers)
- Genetic (blood or cheek cells)



Iowa Bone Development Study Parents

- Outcome
 - Bone (DXA)
- Exposures
 - Diet (questionnaire – current and HS)
 - Exercise (questionnaire)
 - Genetic (blood or cheek cells)



Objective

To develop an easily administered FFQ/dietary screener for current (adult) and retrospective (adolescent) intakes of nutrients important for bone development and maintenance; and to quantify serving sizes and nutrients from foods using gender and age specific techniques.

Caveats

- Contrast parent and child diet
- Parent diet
 - current (at time of bone exam)
 - retrospective (high school)

FFQ/Food Screener

- Nutrients of interest
 - Calcium
 - vitamin D
 - Caffeine
 - alcohol

FFQ/Food Screener

- Nutrients of interest
 - Calcium*
 - vitamin D*
 - Caffeine
 - Alcohol

***Important for osteoblastic activity**

FFQ/Food Screener

- Nutrients of interest
 - Calcium
 - vitamin D
 - **Caffeine***
 - **Alcohol***

***Important for osteoclastic activity**

FFQ/Food Screener

- Fifteen categories of foods were selected for inclusion in a FFQ/dietary screener based on frequency of intake and nutrient density.
- Calcium contributing foods were selected from published dietary intake assessment tools.
- Food items contributing vitamin D, caffeine and alcohol were selected based on nutrient density and Midwest consumption practices.

FFQ/Food Screener

- Serving sizes were quantified in standard serving units or as small, medium and large servings.

FFQ/Food Screener

- Frequency of consumption
 - Screener allows for any number of servings (including fractions)
 - Screener allows for consumption frequency in day, week or month patterns
 - Screener allows for any combination of above

Food Categories Selected for Food Screener

- Milk
- Yogurt
- Meal replacement beverages/bars
- Calcium fortified fruit juice
- Coffee
- Tea
- Soft drinks
- Alcoholic beverages
- Frozen milk-based desserts
- Milk-based desserts
- Cottage cheese
- Cheese, cheese sauce
- Cheese in mixtures
- Green leafy vegetables
- Beans (legumes)

Steps to Create Nutrient Values

3. Select nutrient database
4. Determine nutrient values
5. Determine serving sizes

Select Nutrient Database

- CSFII (94 -98)

Select Nutrient Database

- FFQ/dietary screener food categories were matched to CSFII food line item intakes for the same age and gender groups as our study populations.
 - Males, 25 – 45 years
 - Females, 25 – 45 years
 - Males, 14 – 18 years
 - Female, 14 – 18 years

Select Nutrient Database

- CSFII foods were selected for each category represented by the food screener
- 2 – 151 CSFII foods per category

Food items represented in CSFII

Food Item	n
Milk	112
Yogurt	20
Meal replacements	44
Coffee, regular	38
Coffee, decaf	10
Tea, regular	10
Tea, decaf	9
Beer	2
Wine	9
Mixed drinks	40
Frozen milk-based desserts	114
Milk-based desserts	75
Cottage cheese	16
Cheese, cheese sauce	151
Cheese mixtures	54
Green leafy vegetables	62
Dry beans	112
Calcium fortified fruit juice	6

An Example – Cheese

- **CSFII food description files**
 - 151 cheese and cheese sauce entries

- **Number consumed by individuals 14 – 18 and 25 – 45 years of age**
 - 101 cheese and cheese sauce entries

Determine nutrient values

- Calculate median nutrient consumption for food categories based on CSFII intakes

Example - Cheese

Age	35	18
Sex	1	2
Food Code	14410400	14010000
Long Description	Cheese, processed, Swiss	Cheese, NFS
Food eaten (g)	21	14
Calcium (mg)	162	96
Alcohol (g)	0	0
Caffeine (mg)	0	0

Example – Cheese Calculations

Age	35	18
Sex	1	2
Food Code	14410400	14010000
Long Description	Cheese, processed, Swiss	Cheese, NFS
Food eaten (g)	21	14
Calcium (mg)	162	96
Alcohol (g)	0	0
Caffeine (mg)	0	0
Calcium per 100 g	772	680
Alcohol per 100 g	0	0
Caffeine per 100 g	0	0

Determine nutrient values

Food Item	Calcium(mg)/ 100 g	Alcohol (g)/ 100 g	Caffeine (mg)/ 100 g
Milk	122	0	0
Yogurt	152	0	0
Meal replacements	294	0	0
Coffee, regular	2	0	58
Coffee, decaf	2	0	1
Tea, regular	0	0	19
Tea, decaf	0	0	1
Beer	5	4	0
Wine	8	9	0
Mixed drinks	3	13	20
Frozen milk-based desserts	128	0	0
Milk-based desserts	79	0	0
Cottage cheese	60	0	0
Cheese, cheese sauce	627	0	0
Cheese mixtures	163	0	0
Green leafy vegetables	46	0	0
Dry beans	38	0	0

Determine serving sizes

- Standard serving sizes selected for beverages
- CSFII midpoint tertile frequency of intake values used to establish serving weights for small, medium and large servings.

Determine serving sizes

Food Category	Population Group	n	Small (g)	Medium (g)	Large (g)
Frozen milk-based desserts	Total	644	66	133	266
	Male	342	66	145	282
	Female	302	66	133	262
Milk-based desserts	Total	142	95	144	261
	Male	69	113	149	266
	Female	73	81	131	206
Green leafy vegetables	Total	411	22	92	184
	Male	192	26	92	184
	Female	219	22	80	172

Results

- CSFII data files provide an efficient way for estimating typical intakes, serving sizes and nutrient values for target groups.

Conclusion

- Age and gender derived data provide realistic estimates of nutrient intakes when utilizing FFQ/dietary screener assessment methods.

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Thanks for your attention!
Questions?

