Dietary fat intake – a global perspective

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Food Intake => Nutrient Intake

Food Records: retrospective / prospective
- Food Frequency Questionnaires
- Food Balance Sheets

Food Composition Table/Database

Nutrient Intake (Fat, Fatty Acids)
Food Intake => Nutrient Intake

Example:

3-day dietary record
„half avocado“

Food Composition Database of the IfEW, University of Vienna based on the German BLS 2.3

best corresponding food item: „Avocado frisch 150 g“

total fat 35.3 g
SFA 5.3 g
MUFA 24.9 g
PUFA 3.5 g
Fat Intake in Austria

**Food Balance Sheets vs. 24-h-recall**

- Calculated from Food Balance Sheets, 2001*
  - 40 Energy%

- Calculated from 24-h-recalls, Austrian Adults aged 25-50, 1998-2001**
  - 37 Energy%

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*European Nutrition and Health Report 2004
** Österreichischer Ernährungsbericht 2003
Following quality assessment was carried out by UNILEVER

<table>
<thead>
<tr>
<th>Score</th>
<th>Year of data collection</th>
<th>Survey/study type</th>
<th>Sample size</th>
<th>Dietary assessment method</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>1980-89</td>
<td>Household survey</td>
<td>&lt;1000</td>
<td>Not specified</td>
</tr>
<tr>
<td>1</td>
<td>1990-99</td>
<td>-</td>
<td>&gt;1000</td>
<td>FFQ</td>
</tr>
<tr>
<td>2</td>
<td>2000-</td>
<td>Study</td>
<td></td>
<td>Single 24h recall</td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>National Nutrition survey</td>
<td></td>
<td>repeated 24h recall or 48h recall, (weighed) food record min 3d</td>
</tr>
</tbody>
</table>

Max score per criteria | 2 | 3 | 1 | 3
Quality of data per survey from various countries (carried out by UNILEVER)

<table>
<thead>
<tr>
<th>Quality Score</th>
<th>Countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Good quality data – score 9</td>
<td>Austria (new data) Belgium, Denmark, Finland (2007 adults survey), France, UK (adults), USA, China,</td>
</tr>
<tr>
<td>Medium quality data- score 8-7</td>
<td>Austria (old data), Bulgaria, Germany (Eskimo study), Greece (children data), Hungary, Italy, Netherlands (1998 &amp; 2003 survey), Sweden, Australia, New Zealand, Canada, Argentina, Thailand, Singapore, South Africa, Transfair data</td>
</tr>
<tr>
<td>Medium-low quality- score 6</td>
<td>Norway (adults, 1997), Spain (adults),</td>
</tr>
<tr>
<td>*Poor quality- score 0-5</td>
<td>Germany (HBS), Greece (adults data), Poland, Portugal (adults), Brazil, India,</td>
</tr>
<tr>
<td>°No information available on quality or not assessed (additional data was used)</td>
<td>Philippines, Japan, Mexico, Cameroon, Nigeria, Tanzania, Australia (Meyer et al. 2003), Belgium (Sioen et al. 2003), Germany (Linseisen et al. 2003) Japan (Kuriki et al. 2003), Norway (Johansson et al. 1998), UK (Bakewell et al. 2006), France (Astorg et al. 2004), India (Goyal et al. 2005), US (NHANES 2001-2002), US (CSFII 1994–1996)</td>
</tr>
</tbody>
</table>
Data is presented for adults 18+ with following exceptions:

<table>
<thead>
<tr>
<th>Countries</th>
<th>Age (M+F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Argentina</td>
<td>10-49y</td>
</tr>
<tr>
<td>Brazil</td>
<td>0+y</td>
</tr>
<tr>
<td>Thailand</td>
<td>15-59y</td>
</tr>
<tr>
<td>France</td>
<td>15&gt;65y</td>
</tr>
<tr>
<td>Norway</td>
<td>16-79y</td>
</tr>
<tr>
<td>Sweden</td>
<td>17-65y</td>
</tr>
</tbody>
</table>
Total fat intake
Data on total fat intake in Africa, Latin America and Asia

(*poor quality study, °no information on quality, p published year, ML minimum level, UL upper level)
Data on total fat intake in North America, Australia and New Zealand

Acceptable range

(ML minimum level, UL upper level)
Data on total fat intake in Northern, Central, Western, Eastern and Southern Europe

(*poor quality study, ML minimum level, UL upper level)
International data on total fat intake

(*poor quality study, °no information on quality; p published year, ML minimum level, UL upper level)
SFA intake
Data on saturated fatty acid (SFA) intake in Africa, Latin America and Asia

(*poor quality study, °no information on quality; p published year, UL upper level)
Data on saturated fatty acid (SFA) intake in North America, Australia and New Zealand

Risk of nutrition related diseases

Prevention of diseases: to be targeted

UL upper level
Data on saturated fatty acid (SFA) intake in Northern, Central, Western, Eastern and Southern Europe

(*poor quality study, UL upper level)
International data on intake of saturated fatty acids (SFA)

(*poor quality study, °no information on quality, p published year, E energy, UL upper level)
TFA intake
International data on trans fatty acid (TFA) intake
(Ruminant and industrial TFA should be < 1%E)

(*poor quality study, °no information on quality, UL upper level)
PUFA intake
general recommendations
Data on polyunsaturated fatty acid (PUFA) intake in America

(*poor quality study, °no information on quality, ML minimum level, UL upper level)

Beneficial for secondary prevention
Prevention of chronic diseases
Avoiding deficiency

(UL) UL
(ML) ML


(*poor quality study, °no information on quality, ML minimum level, UL upper level)
Data on polyunsaturated fatty acid (PUFA) intake in Africa, Latin America and Asia

(*poor quality study, °no information on quality, ML minimum level, UL upper level)
Data on polyunsaturated fatty acid (PUFA) intake in North America, Australia and New Zealand

UL upper level, ML minimum level

- **Beneficial for secondary prevention**
- **Prevention of chronic diseases**
- **Avoiding deficiency**

ML minimum level, UL upper level
Data on polyunsaturated fatty acid (PUFA) intake in Northern, Central, Western, Eastern and Southern Europe

(*poor quality study, ML minimum level, UL upper level)
International data on polyunsaturated fatty acid (PUFA) intake

(*poor quality study, °no information on quality, p published year, E energy)
Intake of essential fatty acids
International data on linoleic acid (LA) intake

Acceptable Macronutrient Distribution Range: 2.5 – 9%E

- 2.5%E = 5 - 8 g/d (1800 – 3000 kcal)
- 9.0%E = 18 – 30 g/d (1800 – 3000 kcal)

Additional data without quality assessment, ML minimum level
International data on $\alpha$-linolenic acid (ALA) intake

Acceptable Macronutrient Distribution Range: 0.5 – 2%E

0.5%E = 1.0 – 1.7 g/d (1800 – 3000 kJ)
2.0%E = 4.0 – 6.7 g/d (1800 – 3000 kJ)

Additional data without quality assessment, ML minimum level
International data on eicosapentaenoic and docosahexaenoic acid (EPA + DHA) intake

*beneficial for secondary prevention*

*Dietitians, additional data without quality assessment, UL (upper level) for supplements*
MUFA intake
International data on monounsaturated fatty acid (MUFA) intake

(*poor quality study, °no information on quality, p published year, E energy)
UFA intake
International data on unsaturated fatty acids (UFA) intake

(*poor quality study, °no information on quality; p published year; E energy)
Data on unsaturated fatty acid (UFA) intake in Africa, Latin America and Asia

(*poor quality study, °no information on quality)
Distribution of SFA, MUFA and PUFA
International data on the distribution of SFA, MUFA and PUFA

(*poor quality study, °no information on quality; p published year)
Distribution of SFA, MUFA and PUFA in America

(*poor quality study, °no information on quality)
Distribution of SFA, MUFA and PUFA in Africa, Latin America and Asia

(*poor quality study, °no information on quality)
Distribution of SFA, MUFA and PUFA in adults in North America, Australia and New Zealand

- CA 2004
- US 2005-2006
- AU 1995-1996
- NZ 1996-1997

PUFA | MUFA | SFA
Distribution of SFA, MUFA and PUFA in adults in Northern, Central, Western, Eastern and Southern Europe

(*poor quality study)
Countries
African data on fat intake in adults

(Data quality not evaluated; p published year)
Data on fat intake of urban and rural dwellers in Nigeria

(Data quality not evaluated; p published year)
Data on fat intake in adults in America
Data on fat intake in adults in Australia and New Zealand

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Total Fat</td>
<td>35%</td>
<td>15%</td>
</tr>
<tr>
<td>SFA</td>
<td>15%</td>
<td>10%</td>
</tr>
<tr>
<td>MUFA</td>
<td>12%</td>
<td>8%</td>
</tr>
<tr>
<td>PUFA</td>
<td>5%</td>
<td>4%</td>
</tr>
</tbody>
</table>
Data on fat intake in adults in Africa, Latin America and Asia

- Total Fat
- SFA
- MUFA
- PUFA

Legend:
- CM° 2000p
- TZ° 1997p
- BR* 2002-2003
- MX 2006
- IN* 2006
- SG 2004
Data on fat intake in adults in Latin America and Asia
Sources of dietary fats
Percentage contribution of food group to total fat:
- Fats, 44%
- Meat and meat products, 29%
- Milk and milk products, 12%
- Confectionery, 5%
- Bread and cereal products, 5%
- Eggs, 3%
- Other, 2%

Percentage contribution of food group to SFA:
- Fats (mainly animal), 37%
- Meat and meat products, 30%
- Milk and milk products, 21%
- Bread and cereal products, 4%
- Other, 8%

Percentage contribution of food group to PUFA:
- Fats (mainly vegetable fats - margarine and oils), 63%
- Meat and meat products, 30%
- Bread and cereal products, 11%
- Other, 11%

Source: Dybkowska E et al. Pol J Food Nutr Sci. 2004

Poland
Household budgets (n=96)
Data of 1998
Percentage contribution of food group to ALA

- Fats (mainly vegetable fats - margarine and oils), 66
- Meat and meat products, 9
- Bread and cereal products, 8
- Milk and milk products, 6
- Vegetable and vegetable products, 4
- Other, 7

Percentage contribution of food group to LA

- Fats (mainly vegetable fats - margarine and oils), 63
- Meat and meat products, 15
- Bread and cereal products, 12
- Other, 10
- Milk and milk products, 6
- Vegetable and vegetable products, 4

Source: Dybkowska E et al. Pol J Food Nutr Sci. 2004

Poland
Household budgets (n=96),
Data of 1998
Percentage contribution of food group to total fat

- Meat & meat products, 23
- Cereals & cereal products, 19
- Milk & milk products, 14
- Other, 22
- Potatoes & savoury snacks, 10
- Margarines (<40% fat), 1
- Margarines (60-80% fat), 5
- Margarines (>80% fat), 1
- Butter, 4

Percentage contribution of food group to SAFA

- Milk & milk products, 24
- Meat & meat products, 22
- Cereals & cereal products, 19
- Other, 18
- Potatoes & savoury snacks, 7
- Margarines (<40% fat), 1
- Margarines (60-80% fat), 3
- Margarines (>80% fat), 1
- Butter, 6


UK
N= 1724, 19-64yrs
Survey done 2000-2001
Fat sources in the diet
Input for break-out session IEM

n-3 PUFA, sources %

Percentage contribution of food group to Om3 PUFA

- Potatoes & savoury snacks, 17%
- Meat & meat products, 17%
- Cereals & cereal products, 17%
- Fish & fish dishes, 14%
- Vegetables (excl potatoes), 11%
- Other, 17%
- Margarines (<40% fat), 1%
- Margarines (60-80% fat), 3%
- Margarines (>80% fat), 2%
- Butter, 1%

n-6 PUFA, sources %

Percentage contribution of food group to Om6 PUFA

- Cereals & cereal products, 20%
- Meat & meat products, 18%
- Eggs & egg dishes, 14%
- Potatoes & savoury snacks, 13%
- Vegetables (excl potatoes), 9%
- Margarines (>80% fat), 1%
- Margarines (60-80% fat), 9%
- Margarines (<40% fat), 2%
- Butter, 0%

UK
N= 1724, 19-64yrs
Survey done 2000-2001

Spain
N= 1112 children 6-7 yrs
Survey done in 1998-1999

**Greece**

N = 248 (23-64)

Survey done 1995