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The association between use of palm- vs peanut oil and risk factors for non-communicable diseases in Yangon Region, Myanmar

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- ❖ **MYANMAR**
- ❖ 51.2 million population
- ❖ 70% in rural
- ❖ Democratic government 2012
- ❖ Health expenditure 3.7% in 2016
- ❖ Poor Health Indicators

Ref: (NHP 2017-2021)



Global risk factors of NCDs

- ❖ high blood pressure (13% of global deaths)
- ❖ tobacco use (9%)
- ❖ high blood glucose (6%)
- ❖ physical inactivity (6%)
- ❖ overweight and obesity (5%)



In Myanmar

- ❖ Unhealthy diet, tobacco use, high blood pressure and high blood glucose -top risk factors (GBD, 2015)
- ❖ In 2014
 - ❖ Age-standardized prevalence of DM
 - ❖ Urban – 12.1%
 - ❖ Rural – 7.1%
 - ❖ Age-standardized prevalence of Hypercholesterolemia
 - ❖ Urban – 50.7%
 - ❖ Rural – 41.6%
 - ❖ Age-standardized prevalence of Hypertension
 - ❖ Urban – 34.5%
 - ❖ Rural – 34.2%
- ❖ peanut oil - the most preferred oil in cooking in lower Myanmar, followed by palm oil.



Research questions



- I. “Is there a difference between consumption of peanut- vs palm oil and NCD risk factors among 25-74-year old people in the Yangon Region?”



Objectives



In 25-74-year-old citizens of the Yangon Region, Myanmar:

- 1) To investigate the association between the two most commonly used types of cooking oil (palm- vs peanut oil) and NCD risk factors in 25-74 year old study participants



Methodology



❖ Household based cross-sectional study in 2014

In accordance with the WHO STEPwise approach for the surveillance of major NCD risk factors.

- STEP (1)** **Questionnaire survey**
- STEP (2)** **Physical measurements**
- STEP (3)** **Laboratory investigation**



Study Population

- ❖ Males and females aged 25-74 years from urban and rural areas of the Yangon Region
 - Total population = **7.4 million**
(60 % in urban areas and 40% in rural areas)

Sample size calculation

- ❖ Formula- WHO sample size calculator for STEP survey

$$N = z^2 P (1-P)/e^2$$

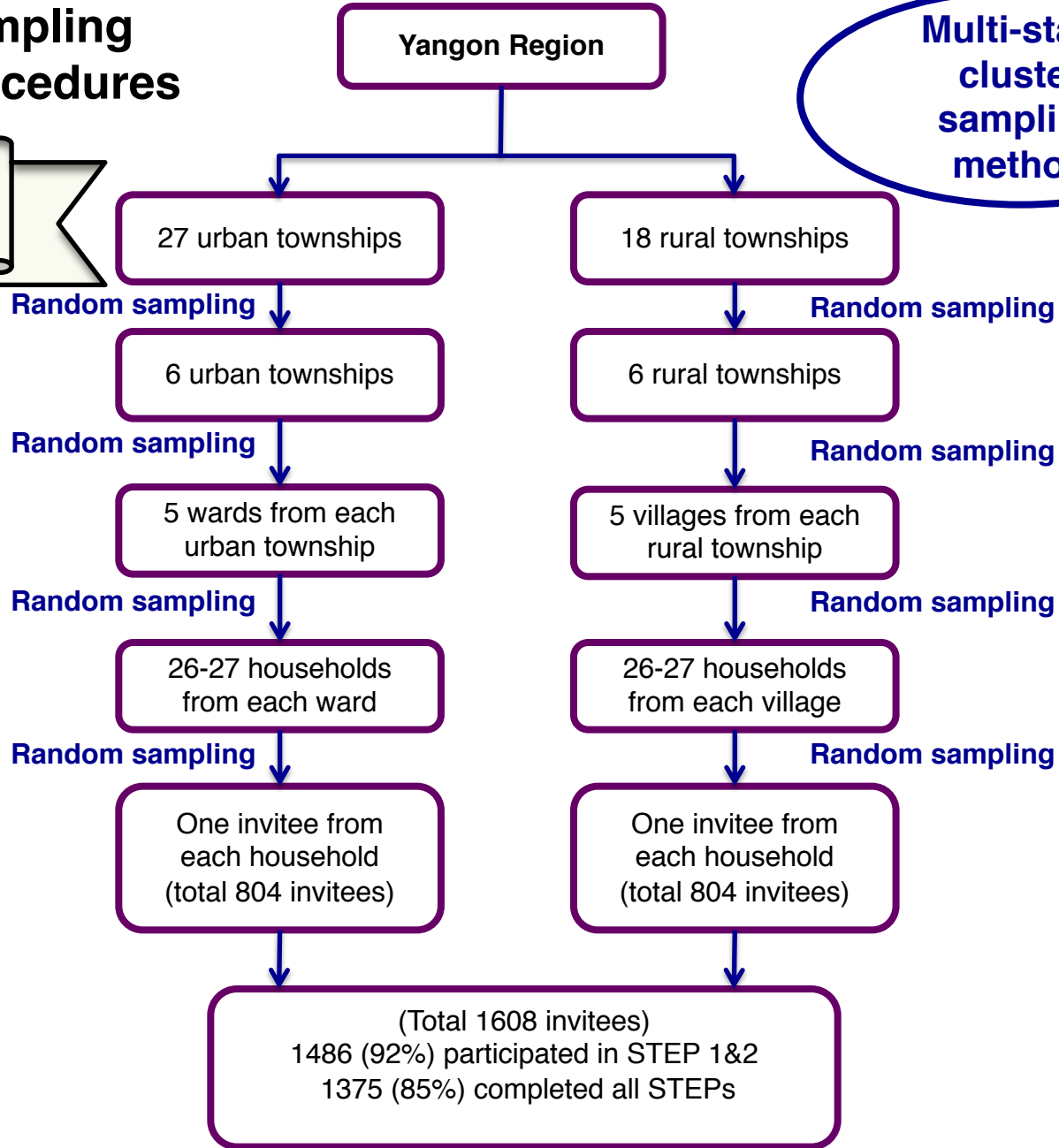


Sampling Procedures



Multi-stage cluster sampling method

2014 study





❖ Statistical methods

- use STATA 15.1 version software
- “svyset” for the complex survey design
- following “svy” command- analyses

❖ Ethical Approval

- Norwegian Regional Committees for Medical and Health Research Ethics (REK)
- Department of Health, Ministry of Health, Myanmar



nutrients



Article

Fatty Acid Profiles of Various Vegetable Oils and the Association between the Use of Palm Oil vs. Peanut Oil and Risk Factors for Non-Communicable Diseases in Yangon Region, Myanmar

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Abstract: The majority of vegetable oils used in food preparation in Myanmar are imported and sold non-branded. Little is known about their fatty acid (FA) content. We aimed to investigate the FA composition of commonly used vegetable oils in the Yangon region, and the association between the use of palm oil vs. peanut oil and risk factors for non-communicable disease (NCD). A multistage cluster survey was conducted in 2016, and 128 oil samples from 114 households were collected. Data on NCD risk factors were obtained from a household-based survey in the same region, between 2013 and 2014. The oils most commonly sampled were non-branded peanut oil (43%) and non-branded palm oil (19%). Non-branded palm oil had a significantly higher content of saturated fatty acids (36.1 g/100 g) and a lower content of polyunsaturated fatty acids (9.3 g/100 g) than branded palm oil. No significant differences were observed regarding peanut oil. Among men, palm oil users had significantly lower mean fasting plasma glucose levels and mean BMI than peanut oil users. Among women, palm oil users had significantly higher mean diastolic blood pressure, and higher mean levels of total cholesterol and triglycerides, than peanut oil users. Regulation of the marketing of non-branded oils should be encouraged.

Keywords: vegetable oils; palm oil; peanut oil; non-communicable diseases; Myanmar



Table 1. Sociodemographic characteristics of urban and rural 25-74-year-old participants from the Yangon Region, Myanmar, 2014



	2014 STEP Study			p value*
	Total (n=1372) N (%)	Peanut oil user (n=765) N (%)	Palm oil user (n=390) N (%)	
Gender				0.09
Male	681 (49.6)	376 (49.2)	212 (54.4)	
Female	691 (50.4)	389 (50.9)	178 (45.6)	
Age group				0.01
25-34	259 (18.9)	144 (18.8)	79 (20.3)	
35-44	316 (23.0)	162 (21.2)	99 (25.4)	
45-54	327 (23.8)	168 (22.0)	101 (25.9)	
55-64	306 (22.3)	181 (23.7)	80 (20.5)	
65-74	164 (12.0)	110 (14.4)	31 (8.0)	
Education level				<0.001
No formal education	86 (6.3)	28 (3.7)	47 (12.1)	
Primary education	641 (46.8)	300 (39.2)	257 (65.9)	
Secondary education	423 (30.8)	270 (35.3)	78 (20.0)	
Higher education	222 (16.2)	167 (21.8)	8 (2.1)	
Location				<0.001
Urban	693 (50.5)	464 (60.7)	110 (28.2)	
Rural	679 (49.5)	301 (39.4)	280 (71.8)	
Daily income				<0.001
<1.9 USD/day	743 (54.2)	359 (46.9)	266 (68.2)	
1.9- 3.09 USD/day	252 (18.4)	144 (18.8)	67 (17.2)	
≥3.1 USD/day	298 (21.7)	205 (26.8)	41 (10.5)	



Figure (1) Proportion of participants using various vegetable oils for cooking purposes in the Yangon region in 2014

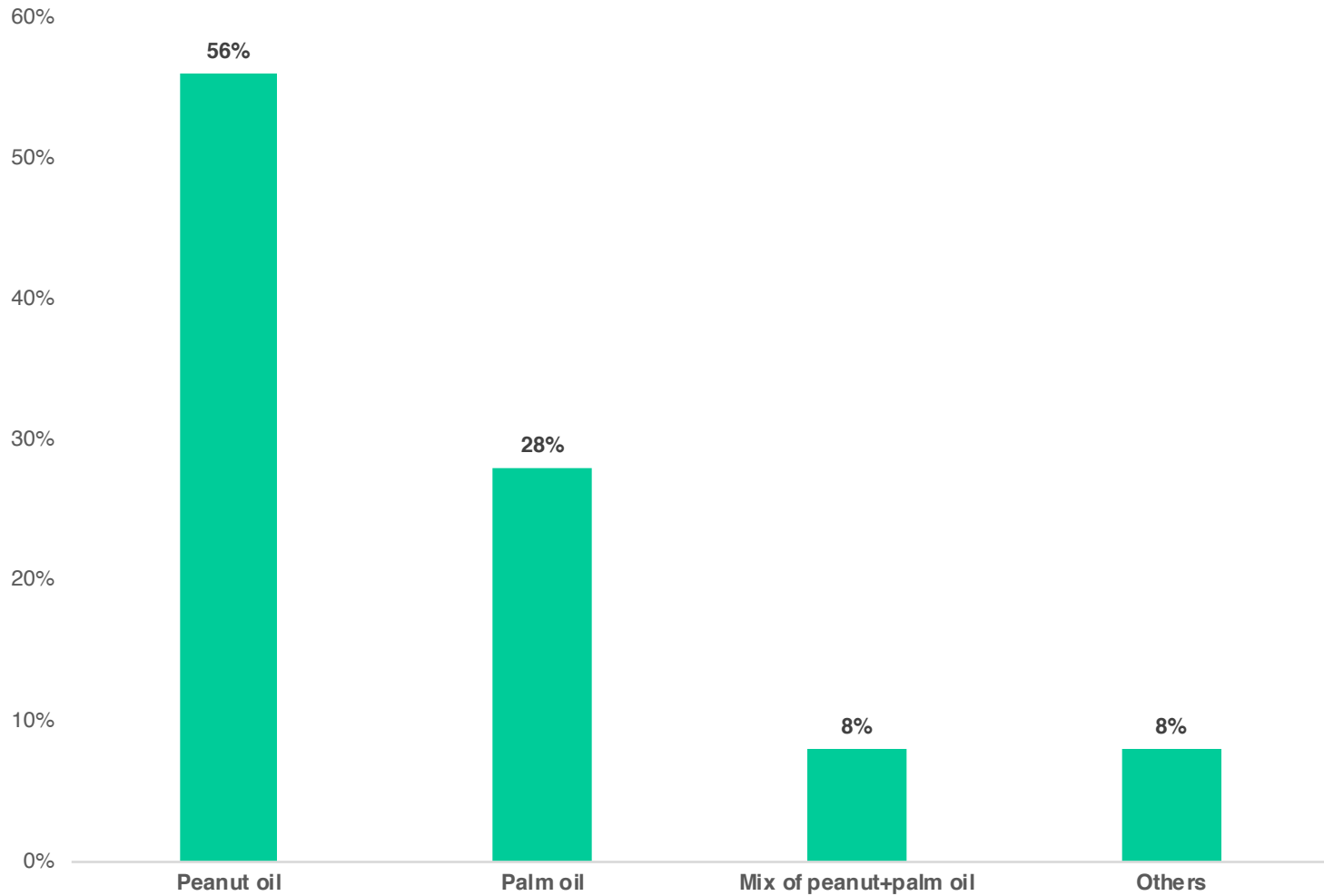




Table 2: The association between using palm oil in cooking as compared to peanut oil, and various risk factors for non-communicable diseases, among 25-74-year-old citizens in Yangon Region in 2014, linear regression regression analysis

	Crude	Adjusted for age, location, education, income, fruit and vegetable intake
	β (95% CI)	β (95% CI)
Male		
Body mass index (kg/m ²)	-2.11 (2.96, -1.26)***	-1.35 (-2.22, -0.49)**
Waist hip ratio	-0.11 (-0.24, 0.02)	-0.05 (-0.17, 0.07)
Fasting plasma glucose (mmol/l)	-0.39 (-0.54, -0.25)***	-0.16 (-0.30, -0.01)*
Systolic blood pressure (mmHg)	-1.44 (-5.48, 2.60)	1.21(-3.46, 5.88)
Diastolic blood pressure (mmHg)	-1.34 (-3.83, 1.17)	-0.30 (-2.80, 2.20)
Total cholesterol (mmol/l)	-0.37 (-0.55, -0.19)**	-1.89 (-0.41, 0.03)
Triglycerides (mmol/l)	-0.23 (-0.52, 0.06)	-0.13 (-0.45, 0.19)
Female		
Body mass index (kg/m ²)	-0.32 (-0.47, -1.62)	0.63 (-1.13, 2.39)
Waist hip ratio	0.06 (-0.01, 0.13)	0.05 (-0.03, 0.12)
Fasting plasma glucose (mmol/L)	-0.37 (-0.85, 0.11)	-0.50 (-1.10, 0.08)
Systolic blood pressure (mmHg)	3.00 (-1.37, 7.37)	2.64 (-0.82, 6.11)
Diastolic blood pressure (mmHg)	3.28 (0.50, 6.07)*	3.25 (0.84, 5.65)*
Total cholesterol (mmol/l)	0.29 (0.03, 0.55)*	0.28 (0.07, 0.49)*
Triglycerides (mmol/l)	0.12 (-0.10, 0.34)	0.16 (0.02, 0.30)*



In multivariate linear regression analyses: Associations between consumption of peanut-vs palm oil and NCD risk factors

- ❖ Men who consumed palm oil had lower levels of BMI and of FPG, compared to peanut oil consumers.
- ❖ Women who used palm oil had higher mean levels of DBP, TC and TG, compared to those using peanut oil.



Discussion



- ❖ Choice of oil depends on
 - Educational level
 - Income
 - Consumer's preference
 - Taste
 - Health knowledge

- ❖ Palm oil - the cheapest oil and often the choice of low income people.

- ❖ Palm oil was most commonly used by the participants with low educational level and income, among rural dwellers and among women.



- ❖ A consumer preference study of vegetable oil in Myanmar from 2011 - peanut oil was rated high regarding taste, aroma, nutrition status and health benefits, however with low affordability.
- ❖ Palm oil was - affordable, but with low scores for taste, aroma, nutrition and health benefits
- ❖ Oils rich in SFA has high stability and is therefore suitable for cooking and short-term frying , which is a popular way to prepare food in Myanmar.



Discussion cont:



- ❖ The results from our study - using palm oil, as compared to peanut oil, was associated with some favorable NCD risk factor levels in men, however with unfavorable risk factor levels in women.
- ❖ Intake of different kind of other foods are accompanying the oil consumed by women and men, which differently affects risk of NCDs.
- ❖ In Myanmar, men are commonly breadwinners working outside the house and may be less exposed to foods cooked at home.



Discussion cont:



- ❖ The association - not only by type of oil, but also by amount consumed.
- ❖ However, in our study, amount of oil consumed did not vary with socio-economic position, location or gender.
- ❖ There might be other unmeasured confounders explaining the observed sex-differences in the association between use of oil and NCD risk factors.



Conclusion

- ❖ A cheaper price of palm oil and limited information for how to choose healthy oils could be barriers to change to more healthy alternatives.
- ❖ Appropriate intervention, such as information on how to choose healthy oils could help reducing the intake of oils rich in SFA and trans fats and help to reduce risk of NCD in this area.
- ❖ Further research into the quantity of vegetable oil consumption and food preparation, with a focus on sex differences is warranted.

A landscape photograph showing the silhouettes of numerous pagodas and stupas against a hazy, golden-orange sky, likely during sunrise or sunset. The structures are layered in the distance, creating a sense of depth. The foreground is dark, with some trees and the tops of pagodas visible.

Thank you