Healthy Rice Consumer Behavior in Nay Pyi Taw, Myanmar

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Chan Myae Lwin, Dr. Orachos Napasintuwong, Dr. Suwanna Praneetvatakul

PhD student and Associate Professors
Department of Agricultural and Resource Economics,
Faculty of Economics, Kasetsart University, Thailand

INTRODUCTION

- Still prevailing nutrition related health issues
  - Anemia (public health problem: around 35% of children aged 6-59 months, 51% of children aged 5-9 years, 30% of adolescent girls and women of reproductive age are anemic *(MoHS, 2019)*
  - Stunting (in high threshold level, 27%)
  - Wasting (in medium threshold level, 7%) *(FAOSTAT, 2018)*

- Rising non-communicable diseases
  - Overweight (28% in women of reproductive age)
  - Obesity (13% in women of reproductive age)
    (Myanmar demographic and health survey, 2015-16)
  - Hypertension (30% among residents aged 25 to 64 years)
  - Diabetes (10% among residents aged 25 to 64 years) *(Latt et al., 2019)*

  - These health issues are more prevalent in urban areas than in rural areas. *(Aung et al., 2018; Thapa et al., 2021)*

- Hidden costs from undernourishment and unhealthy dietary patterns
  - 27% of GDP losses in low-income countries; 12% in lower-middle-income *(FAO, 2023)*

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INTRODUCTION

- High per-capita rice consumption - 155.14 kg/year (425.04 g/day) *(Myint et al., 2016)*

- Underconsume micronutrient dense foods *(Mahrt et al., 2019; Robertson et al., 2018; Scott et al., 2021)*

- Understanding the choices of rice consumption is crucial to addressing nutrition-related health challenges in Myanmar, given that rice is a staple food and a culturally adaptable option.

- Healthy rice refers to a combination of fortified rice, brown rice, parboiled rice, rice berry rice, basmati rice and knojac rice those that are polished white rice as alternative choices of staple food consumption considered healthy diets.

OBJECTIVE

➢ to identify the factors that influence urban consumers in Nay Pyi Taw to choose healthy rice

DATA COLLECTION

- Data collected from 481 rice consumers during September to October 2023

- Nay Pyi Taw Council Territory: Zabuthiri, Pyinmana, Pobbathiri, and Zeyarthiri townships

- Three locations: open markets, modern trade stores, and playgrounds/preschool

- Township selection - based on the urban population percentage

- Locations selection - based on affordability and purchasing behavior, and prevalent use of fortified rice as a baby supplement

Sample size allocation by township and market places

Township	Urban population	Percent of Population	Number of Respondents			Total	Percent of Respondents
			Open market	Modern trade store	Preschool/ Playground		
Zabuthiri	104,596	41	68	64	64	197	41
Pyinmana	72,010	28	48	44	44	136	28
Pobbathiri	44,437	17	28	28	28	84	17
Zeyarthiri	35,106	14	24	20	20	64	14
Total	256,149	100	168	156	156	481	100

Source: CSO (2011, 2015, 2018 and 2021)

6

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DATA ANALYSIS

Binary logistic regression model

Variable	Description	Unit of measurement
CONS	This variable indicates whether the respondent has consumed or is consuming any type of healthy rice	Dummy (1 for consumption, 0 otherwise)
AGE	Age of the respondent	Years
EDU	Number of schooling years completed by the respondent	Years
HHSIZE	Count of individuals living in the respondent's household, sharing meals and expenses for at least six months	Number
CHILD	Indicates presence of children in the respondent's household	Dummy (1 for Yes, 0 for No)
ELDER	Indicates presence of elderly member in the respondent's household	Dummy (1 for Yes, 0 for No)
INCOME	Monthly income of the respondent's household	Million MMK (Myanmar Kyat)
KNWL	Numerical score representing the respondent's knowledge about anemia, diabetes, and nutrition based on 24 questions (1 point for each correct answer)	Numeric score
HABIT	A numerical score representing the respondent's habitual health-related behaviors, including exercise routine, fruit and vegetable consumption, etc. (1 point for each healthy habit, assessed through 8 questions)	Numeric score

RESULTS

Type of nutritional rice consumed by the respondents (n=88)

Legend:
- FR
- BR
- BAR
- RBR+BAR
- BR+BAR
- BR+KR
- RBR
- BR+PR+BAR

Pie chart labels:
- Fortified rice (57%)
- Brown rice (27%)
- Basmati rice (9%)
- 2%
- 1%
- 1%
- 1%
- 1%

➤ only 88 out of 481 respondents (18% of total sample) reported consuming healthy rice.

Note: FR=Fortified rice, BR=Brown rice, BAR=Basmati rice, RBR=Rice berry rice, KR= Konjac rice, PR=Parboiled rice

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Socio-demographic profile of the respondents

1. Gender Proportion:
   - Nearly identical in healthy rice and normal rice groups.
2. Age Distribution:
   - Skewed towards older group (>35 years old) in normal rice group.
   - $\chi 2 = 7.245$, p-value = 0.064
3. Educational Level:
   - Healthy rice group: >70% with bachelor's degree and above.
   - Normal rice group: >40% with bachelor's degree and above.
   - $\chi 2 = 25.764$, p-value = 0.000
4. Income Distribution:
   - Healthy rice group: >70% in medium and high income groups.
   - Normal rice group: 47% in low income group.
   - $\chi 2 = 30.819$, p-value = 0.000

Socio-demographic profile of the respondents

5. Household size:
   - Not different between healthy rice and normal rice groups.

6. Household Composition:
   - More vulnerable household members (children, elders, anemic, diabetes) in healthy rice group.
   - Children member below 5 ($\chi2 = 8.524$, p-value = 0.004)
   - Elder member ($\chi2 = 4.9679$, p-value = 0.026)
   - Anemic member ($\chi2 = 2.8385$, p-value = 0.092)
   - Diabetes member ($\chi2 = 8.4995$, p-value = 0.004)

Nutritional knowledge

- Knowledge scores were classified into three levels using Bloom's cut-off points: low level (59% or below), moderate level (60-80%), and high level (81-100%).

- The nutritional knowledge of the majority of respondents falls within the moderate knowledge range or below.

- Healthy rice consumers had higher mean knowledge score (12.27) than normal rice consumers (10.56).

- Knowledge scores significantly differed between healthy and normal rice consumers in medium-income group, although no significant effect was found in the low and high-income groups.

  (t value=-3.086, p value=0.002)

- For low-income consumers, despite having sufficient knowledge, financial barriers may pose a significant obstacle to consumption.

- For middle-income consumers, who face fewer obstacles in terms of financial ability compared to low-income groups, have adequate knowledge that influences their decision to move towards consumption.

Habitual health related behaviour

- exercise routines, weekly exercise hours, fruit consumption, and vegetable consumption, limiting sugary or processed foods, and reading nutritional information labels

- A total of eight questions were used to obtain a self-reported healthy habit score.

- A score of one was assigned for each healthy habit in response to each question, resulting in a total of eight scores for individuals with fully established healthy habits.

- The average score of all respondents is 4.69, but for healthy rice consumers, it is 5.44, which is higher than for normal rice consumers at 4.27.

- The difference between the healthy and normal rice groups is statistically significant under the t-test. (t value=-2.4627, p value=0.0156)

Estimated logit model for consumers' healthy rice consumption

Variables	Coefficient	Std. err.	z	P>z	Marginal effect	P>z
AGE	-0.019	0.014	-1.310	0.192	-0.002	0.190
EDU	0.139	0.043	3.240	0.001***	0.018	0.001
HHSIZE	-0.018	0.080	-0.220	0.825	-0.002	0.825
CHILD	0.738	0.282	2.620	0.009***	0.094	0.008
ELDER	0.592	0.291	2.030	0.042**	0.076	0.040
INCOME	0.045	0.017	2.730	0.006***	0.006	0.005
KNWL	0.060	0.035	1.720	0.086*	0.008	0.084
HABIT	0.219	0.070	3.120	0.002***	0.028	0.001
Constant	-5.096	0.948	-5.370	0.000		

Number of observations = 481   Pseudo R2 =0.149

LR chi2 (13) = 68.06   Log likelihood = -194.848

Prob>Chi2 = 0.000

Note: ***, **, * denotes significance at 1%, 5% and 10%, respectively

CONCLUSION

- The adoption of healthy rice in Myanmar remains limited.

- The level of education and the presence of vulnerable household members significantly influence healthy rice consumption.

- Income emerges as a crucial factor determining the consumption of healthy rice.

- The nutritional knowledge of the majority of respondents falls within the moderate knowledge range or below, but it shows a significant positive correlation with healthy rice consumption.

- Income plays a mediating role in the relationship between knowledge and healthy rice consumption.

- Targeting households, especially those in the medium-income group with elders and children, will likely lead to the success of extension programs.

- Habitual health-related behaviours show a strong correlation with consumption.

- To promote healthier behaviours, it is essential to provide facilities and create environments conducive to exercise and physical activities, given the current limited access in Myanmar.

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ETHICAL APPROVAL

- Ethical approval was given by Kasetsart University Research Ethics Committee, Thailand.

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