รายงานวิจัยฉบับสมบูรณ์

ความไม่มั่นคงทางอาหารในผู้สูงอายุไทย

(Food insecurity in Thai elderly)

โดย

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สัญญาเลขที่ MRG5180132

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Noppawan Piaseu

Abstract

Project Code: MRG5180132

Project Title: Food insecurity in Thai elderly

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This study employed a mixed methodology including two phases that used qualitative and quantitative approaches. In Phase 1, the qualitative study was aimed to understand how older women in crowded urban community perceive the food insecurity experience and deal with it. In depth interviews were conducted among 30 older Thai women. Results revealed that older women perceived their food insecurity experience as a negative effect of the current economic downturn globally. They felt that they were confronting a crisis. Problems they dealt with included six issues. The older women employed management strategies around: food, health, money, and family.

In Phase 2, the quantitative study was conducted with aims to: 1) assess perceptions of food insecurity and health, 2) follow up with the prevalence of food insecurity at a 6-month period, and 3) determine factors predicting food insecurity in older Thai adults living in crowded urban communities. Through purposive sampling, 438 participants were recruited from community dwelling older adults in Bangkok. Data collection included interview from questionnaires and anthropometric measurement. Results revealed that 53.0% of older adults perceived their health as fair. At baseline, 84.5% of the older adults reported food security, while 13.5% reported mild food insecurity and 2.0% reported moderate to severe food insecurity. At a 6-month period follow up, mild and moderate to severe food insecurity situation increased to 13.9% and 2.3%, respectively. Logistic regression showed that older adults who were widowed/ divorced/ separated (OR = 1.804, 95% CI = 1.052-3.092, p = .032), who reported low family income (OR =.654, 95% CI = .523-.817, p < .001), and who had poor physical environment surrounding home (OR = 2.338, 95% CI = 1.057-5.171, p = .036) were more likely to have food insecurity.

The results suggest a need for health professionals to systematically develop strategies to identify, monitor, and facilitate a management of food insecurity in older adults by taking those factors into account. Intervention programs could be developed in a future study to promote food security for older adults residing in crowded urban community.

Keywords: Food insecurity, Older adults, Urban community

บทคัดย่อ

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ชื่อโครงการ: ความไม่มั่นคงทางอาหารในผู้สูงอายุไทย

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ระยะเวลาโครงการ: 2 ปี

การศึกษาครั้งนี้ใช้วิธีวิจัยแบบผสม ประกอบด้วย 2 ระยะ เป็นการศึกษาเชิงคุณภาพและเชิงปริมาณ ระยะที่ 1 การศึกษาเชิงคุณภาพมีวัตถุประสงค์เพื่อให้เข้าใจการรับรู้เกี่ยวกับประสบการณ์ความไม่มั่นคงทางอาหารและการจัดการของผู้สูงอายุสตรีที่อาศัยอยู่ในชุมชนแออัดเขตเมือง เก็บรวบรวมข้อมูลโดยการสัมภาษณ์เชิงลึกผู้สูงอายุสตรีจำนวน 30 คน ผลการศึกษาพบว่าผู้สูงอายุรับรู้ว่าความไม่มั่นคงทางอาหารเป็นผลจากเศรษฐกิจตกต่ำทั่วโลกในปัจจุบัน และกำลังเผชิญกับวิกฤติที่เกิดขึ้น 6 ประเด็นโดยใช้วิธีการจัดการในเรื่องอาหาร สุขภาพ เงินและครอบครัว

ระยะที่ 2 เป็นการศึกษาเชิงปริมาณมีวัตถุประสงค์เพื่อ 1) ประเมินการรับรู้ความไม่มั่นคงทางอาหารและสุขภาพ 2) ติดตามความชุกของความไม่มั่นคงทางอาหารในระยะ 6 เดือน และ 3) ศึกษาปัจจัยทำนายความไม่มั่นคงทางอาหารของผู้สูงอายุที่อาศัยอยู่ในชุมชนแออัดเขตเมือง กลุ่มตัวอย่างเป็นผู้สูงอายุที่อาศัยอยู่ในชุมชนแออัดในเขตกรุงเทพมหานครจำนวน 438 คน เลือกแบบเฉพาะเจาะจง เก็บรวบรวมข้อมูลโดยใช้การสัมภาษณ์จากแบบสอบถามและการวัดสัดส่วนของร่างกาย ผลการศึกษาพบว่า 53.0% ของผู้สูงอายุรับรู้ภาวะสุขภาพในระดับพอใช้ ที่ระยะเริ่มต้นการศึกษา พบว่า 84.5% ของผู้สูงอายุมีความมั่นคงทางอาหาร ในขณะที่ 13.5% มีความไม่มั่นคงทางอาหารในระดับต่ำ และ 2.0% มีความไม่มั่นคงทางอาหารในระดับปานกลางถึงสูง ผลการติดตามในระยะเวลา 6 เดือน พบว่าสถานการณ์ความไม่มั่นคงทางอาหารในระดับต่ำและระดับปานกลางถึงสูงเพิ่มขึ้นเป็น 13.9% และ 2.3% ตามลำดับ ผลการวิเคราะห์ถดถอยลอจิสติกพบว่า ผู้สูงอายุที่มีสถานภาพสมรสหม้าย/หย่า/แยก (OR = 1.804, 95% CI = 1.052-3.092, p = .032), มีรายได้ครอบครัวต่ำ (OR =.654, 95% CI = .523-.817, p < .001), และลักษณะสิ่งแวดล้อมของที่อยู่อาศัยไม่ดี (OR = 2.338, 95% CI = 1.057-5.171, p = .036) มีโอกาสสูงในการเกิดความไม่มั่นคงทางอาหาร

ผลการศึกษามีข้อเสนอแนะต่อบุคลากรทางสุขภาพในการพัฒนากลวิธีเชิงระบบเพื่อประเมิน ติดตาม และสนับสนุนการจัดการปัญหาความไม่มั่นคงทางอาหารในผู้สูงอายุโดยพิจารณาปัจจัยทำนายดังกล่าว รวมทั้งการพัฒนาโปรแกรมสร้างเสริมความมั่นคงทางอาหารในผู้สูงอายุที่อาศัยอยู่ในชุมชนแออัดเขตเมืองในการศึกษาครั้งต่อไป

คำหลัก: ความไม่มั่นคงทางอาหาร ผู้สูงอายุ ชุมชนเมือง

Introduction

Food insecurity, a social determinant of health, is recognized as an increasing problem worldwide (Craig & Dowler, 1997; Gopalan, 2001; Griffiths & Bentley, 2001; Studdert, Frongillo, & Valois, 2001; Uttley, 1997; Wilson, 1997). In Thailand, food insecurity has been discussed as a public health concern in relation to social and economic transitions (FAO, 2004; Kachondham, 1991; Kosulwat, 2002; Tucker & Buranapin, 2001). Food insecurity is prevalent both in urban and rural populations (Phillips & Taylor, 1998; Piaseu, Belza, & Shell-Duncan, 2004; Piaseu & Mitchell, 2004; Piaseu, 2005a; Piaseu, 2005b). However, until now data concerning food insecurity in Thai elderly has been scarce. The body of knowledge on food insecurity among Thai elderly population is still small when compared with general populations or with western countries.

It is expected that world aging population will increase from 600 millions presently to 1,200 millions in 2025, and 2,000 millions in 2050. Similarly, Thai elderly persons are projected to increase from 6.4 millions currently to 12.9 millions in 2025, and exceed 20 millions in 2050 (IPSR, 2006). A number of elderly are vulnerable to food insecurity and struggle to meet their basic human needs due to economic resources constraint, limited mobility, or poor health. Food insecurity leads to malnutrition in the elderly, which in turn exacerbates disease, decreases infection resistance, extends length of hospital stay, increases disability, health care costs and burden to families as well as a larger society (Torres-Gil, 1996). Moreover, food insecurity not only affects physical but also mental health.

Social and environment are major factors affecting food insecurity. In Thailand, as in other developing countries, the most common pattern of residence among Thais is living with at least one child (Ding, 2004). Supports to the elderly rely mostly on their family. However, kin availability to provide care tends to decrease (Kinsella, 1996) as families become more nuclear, especially in urban areas. A larger proportion of elderly live alone, particularly female elderly (Bongaarts & Zimmer, 2002).

According to socioeconomic factors, the Thai Food Insecurity and Vulnerability Information Mapping System (FIVIMS) was developed and classified into three categories: most vulnerable, vulnerable, and less vulnerable groups. In Bangkok, even though the prevalence of food insecurity is rare, its consequences are evidently significant. Assessment of food insecurity is therefore an important approach to nutrition screening of the elderly (Reuben, Greendale, & Harrison, 1995; Wunderlich & Norwood, 2006). There were previous studies conducted in Thai elderly (Knodel, Chayovan, Mithranon, Amornsirisomboon, &

Arunraksombat, 2005; Knodel, Chayovan, & Siriboon, 1992; Knodel, Saengtienchal, & Sittitrai, 1995; Sobieszczyk, Knodel, & Chayovan, 2003), however, these studies did not specifically address the issue of food insecurity in this population. Little is known about how older Thai adults perceive food insecurity. It is necessary to ensure nutritional well being of the older adults especially for those who are at nutritional and health risk. To reduce the burden of disease and disability, research is needed to assess food insecurity and health of the older adults.

The overall objective in this study was to assess perceptions of food insecurity and its influencing factors as well as health among older Thai adults. Specific objectives were to: 1) understand the nature of food insecurity; 2) assess perceptions of food insecurity and health; 3) determine potential risk factors for food insecurity; and 4) follow up with the occurrence of food insecurity at a 6-month period in older Thai adults residing in crowded communities in Bangkok.

Methodology and Methods

This study employed mixed methodology, including two phases: qualitative and quantitative approaches. Phase I: Qualitative method was aimed to develop a better understanding of the meaning of food insecurity perceived by older Thai adults and the ways in which they cope with food insecurity. In-depth interviews were conducted in order to explore the meaning and experience of food insecurity, as well as coping mechanisms and management strategies among older adults living in community. The purposive sampling was used to recruit participants for interviews. Based on data saturation, 30 community dwelling older women aged 60 years or over who lived in Bangkok with experiences of food problem were included in the interviews.

Phase II: Quantitative method was conducted to assess perceptions of food insecurity and health, and determine potential risk factors for food insecurity among the older Thai adults living in crowded community in Bangkok. Questionnaires were completed using interview in order to identify the situation of food insecurity and its influencing factors. Anthropometry was also conducted as biologic measures of food insecurity. Through purposive sampling, participants were recruited from community dwelling older Thai adults aged 60 years or over including those who are retired from government office or public enterprise as well as those with socioeconomic disadvantage in four geographical areas of Bangkok. According to Kelsey (1986), sample size was estimated by using probability of type I error at .05, and acceptable error for the estimation of sample mean at 0.1%,

obtaining 384 participants. An expected attrition rate of 15% is estimated, thus obtaining 450 participants.

The instruments used in this study included two parts. Part I consisted of interview guides for qualitative phase including open ended questions to explore food insecurity experiences and management strategies. Part II consisted of the following five questionnaires and instruments for anthropometric measurement in quantitative phase.

1. The demographic questionnaire included: 1) personal and family information, and 2) environmental, social, and health information. It was developed by the researcher.

2. The food insecurity questionnaire (Piaseu, 2007). It was developed based on qualitative research to measure the degree of food insecurity over the past month as experienced by family food provider in crowded urban community in Thailand. The scale consisted of 33 items, including four major components: (1) anxiety about food; (2) food quantity; (3) food quality; and (4) food safety. The scores ranged from 0 (never) to 2 (regularly). Higher score indicated more severe food insecurity situation. In its development, the content validity index (CVI) was .93 and Cronbach's alpha coefficient was .94. In this study, the Cronbach's alpha coefficient was .90 and test-retest reliability of the instrument was acceptable (Reliability coefficient = .75-.89).

3. The nutrition screening initiative checklist (White et al, 1992). This 14-item checklist, developed by a coalition of groups who served older adults, was designed to identify individuals at nutritional risk. The checklist described characteristics related to poor nutritional status. This instrument has been extensively used to identify potential risk factors for food insecurity in older adults (Chumlea & Sun, 2004; Morley, 1986; Posner, Jette, Smith, & Miller, 1993; Visvanathan, Penhall, & Chapman, 2004). It was translated into Thai by the researcher. The score ranged from 0-14. Higher score indicated higher level of nutritional risk.

4. The modified version of multidimensional scale of perceived social support. It was originally developed by Zimet, Dahlem, Zimet, & Farley (1988) and modified by Piaseu and Mitchell (2004), including 12 items, 5-point Likert scale ranging from strongly disagree (0) to strongly agree (4). Higher score indicated higher social support. Cronbach's alpha coefficients of the original and modified version were .84-.92 (Zimet, Powell, Farley, Werkman, & Berkoff, 1990) and .83 (Piaseu & Mitchell, 2004), respectively. In this study, the Cronbach's alpha coefficient was .82.

5. The general health status, a 1-item, 5-point Likert scale, was used to assess current health status in overall. It was modified from the Medical Outcomes Study (Ware, Snow, & Konski, 2000).

6. Weighing scale, Height meter, Harpenden Caliper, Measuring tape, and record forms were used for anthropometric measurement (Komindr, 1998).

Data collection procedure

The procedure of data collection was divided into 3 stages.

Stage I: In-depth interviews were conducted in 30 older women following the interview guides.

Stage II: The first quantitative data collection was completed. Demographic data, the food insecurity questionnaire, the nutrition screening initiative checklist, the modified version of multidimensional scale of perceived social support, and the general health status were asked to identify the features of food insecurity, social and environmental factors influencing food insecurity, and anthropometric measurements including weight, height, waist and hip circumference, and triceps skinfold thickness were conducted to assess nutritional status among the participants.

Stage III: The second quantitative data collection was completed using interview of the food insecurity questionnaire with the same participants at 6-month interval.

Data analysis

Qualitative data were analyzed by content analysis (Huberman & Miles, 1998; Miles & Huberman, 1994). Quantitative data were analyzed by using descriptive and inferential statistics (Munro, 2005).

Results and Discussion

Results and discussion on Phase I of the study were reported in Appendix. In Phase II, results on personal and family characteristics of 438 older adults were described in Table1. Most of the older adults participated in this study were female (71.9%) and Buddhists (92.0%). More than half of them were 60-69 years old (54.1%), married (51.6%), and obtained primary education (58.9%). About one-third did not work (31.5%). Nearly half had family income more than 10,000 baht/month (48.2%). Approximately half of them had 3-5 family members (53.4%) and 39.3% lived with two children in their family.

Table 1 Personal and Family Characteristics (n = 438)

Variable	n (%)
Gender	
Female	315 (71.9)
Male	123 (28.1)
Age (years)	
60-69	237 (54.1)
70-79	170 (38.8)
≥ 80	31 (7.1)
Marital status	
Single	31 (7.1)
Married	226 (51.6)
Widowed	162 (37.0)
Divorced/ Separated	19 (4.3)
Religion	
Buddhist	403 (92.0)
Christian	9 (2.0)
Muslim	26 (6.0)
Education	
None	98 (22.4)
Primary education	258 (58.9)
Secondary education	47 (10.7)
Vocational/ college	29 (6.6)
Baccalaureate	6 (1.4)
Occupation	
None	138 (31.5)
Household chores	187 (42.7)
Employee	27 (6.2)
Food sellers	45 (10.3)
Farmers	5 (1.1)
Retired government officers/ public enterprise	36 (8.2)
Family income (Baht/month)	
≤ 1,000	31 (7.1)
1,001 - 3,000	15 (3.4)
3,001 - 7,000	55 (12.5)

Variable	n (%)
7,001 - 10,000	126 (28.8)
> 10,000	211 (48.2)
Number of family member	
1	31 (7.1)
2	7.3 (7.3)
3-5	53.4 (53.4)
> 5	32.2 (32.2)
Number of children in family	
None	66 (15.1)
1	135 (30.8)
2	172 (39.3)
$\geq$ 3	65 (14.8)

The environmental, social, and health factors of the older adults were described in Table 2. Most of the older adults lived in a fair environment surrounding their home with no garbage or infested trapped water (79.7%). Also, their perception of social support was rather high, on average of 3.2. While approximately half of them had normal body mass index (51.1%) and more than half had normal triceps skinfold thickness (55.7%), only 35.6% had waist hip ratio within a normal range. However, the level of nutritional risk was not high although majority of them had health problem (77.6%) with at least one kind of medication use. The overall health perception was rated at fair level as the highest proportion of the older adults participated in this study (53.0%).

Table 2 Environmental, Social, and Health factors (n = 438)

Variable	n (%)
Physical environment surrounding home	
Fair	349 (79.7)
Poor	89 (20.3)
Social support	
(Mean$\pm$SD = 3.2$\pm$0.5, Min-Max = 0.6-4.0, Possible range = 0-4)	
Body mass index (Kg/m^2)	
Underweight (< 18.5)	34 (7.8)
Normal (18.5 – 24.9)	224 (51.1)
Overweight/ Obesity ($\geq$ 25.0)	180 (41.1)

Variable	n (%)
Triceps skinfold thickness (mm)	
Normal (≤ 20 in female; ≤ 15 in male)	244 (55.7)
Over (> 20 in female; > 15 in male)	194 (44.3)
Waist Hip Ratio	
Normal (≤ 0.8 in female; ≤ 0.95 in male)	156 (35.6)
Over (> 0.8 in female; > 0.95 in male)	282 (64.4)
Level of nutritional risk	
(Mean±SD = 2.3±1.6, Median = 2.0, Min-Max = 0-8, Possible range = 0-14)	
Health problem	
No	98 (22.4)
Yes	340 (77.6)
Number of medication	
None	111 (25.3)
1-2	134 (30.6)
≥ 3	193 (44.1)
Overall health	
Poor	15 (3.4)
Fair	232 (53.0)
Good	120 (27.4)
Very good	59 (13.5)
Excellent	12 (2.7)

Food insecurity was prevalent as described in Table 3. At baseline, 84.5% of the older adults reported food security, while 13.5% reported mild food insecurity and 2.0% reported moderate to severe food insecurity. At a 6-month period follow up, food security rate decreased to 83.8% while mild and moderate to severe food insecurity increased to 13.9% and 2.3%, respectively. Results indicated a more severe situation of food insecurity with advancing period of time.

There were four dimensions of food insecurity, including anxiety about food, food quantity, food quality, and food safety. Food safety was reported with the highest score both at the baseline and the 6-month period, indicating the major component of food insecurity among the older adults in this study. The followings were food quality, anxiety about food, and food quantity, respectively. Results pointed that the older adults managed the situation by decreasing their food quality as appropriate to maintain their food quantity.

Table 3 Food insecurity situation of older adults (n = 438)

Variable	Possible range	Baseline					6-month follow up				
		Min-Max	Mean (SD)	Food insecurity			Min-Max	Mean (SD)	Food insecurity		
				Food secure n (%)	Mild n (%)	Moderate to Severe n (%)			Food secure n (%)	Mild n (%)	Moderate to Severe n (%)
Food insecurity											
Anxiety	0-2	0-2	.28(.47) Median= 0	362(82.6)	49(11.2)	27(6.2)	0-2	.30(.48) Median= 0	361(82.4)	49(11.2)	28(6.4)
Quantity	0-2	0-1.71	.20(.40) Median= 0	384(87.7)	35(8.0)	19(4.3)	0-1.86	.20(.41) Median= 0	383(87.4)	36(8.3)	19(4.3)
Quality	0-2	0-1.75	.36(.32) Median= .25	380(86.8)	50(11.4)	8(1.8)	0-1.92	.38(.33) Median= .25	377(86.0)	52(11.9)	9(2.1)
Safety	0-2	.11-1.56	.75(.27) Median= .78	217(49.5)	202(46.1)	19(4.4)	.10-1.78	.75(.27) Median= .78	216(49.3)	203(46.3)	19(4.4)
Total food insecurity	0-2	.03-1.55	.42(.29) Median= .30	370(84.5)	59(13.5)	9(2.0)	.06-1.70	.43(.30) Median= .33	367(83.8)	61(13.9)	10(2.3)

To determine factors predicting food insecurity, correlation matrix was initially used to test associations between major variables. Food insecurity was significantly associated with gender ($r = .124$, $p = .012$), family income ($r = -.025$, $p < .001$), marital status ($r = .224$, $p < .001$), physical environment ($r = .170$, $p = .001$), level of nutritional risk ($r = .164$, $p = .001$), and social support ($r = -.210$, $p < .001$). As shown in Table 4, logistic regression was used to determine factors predicting food insecurity. In model 1, demographic characteristics including gender, family income, and marital status were entered. The model was significant ($\chi^2 = 32.033$, $p < .001$). In model 2, these demographic characteristics were first entered, followed by environmental, social, and health factors including physical environment surrounding home, level of nutritional risk, and social support. The final model was significant when considering effects of demographic characteristics ($\chi^2 = 41.430$, $p < .001$). Results revealed that older adults who were widowed/ divorced/ separated (OR = 1.804, 95% CI = 1.052-3.092, $p = .032$), who reported low family income (OR =.654, 95% CI = .523-.817, $p < .001$), and who had poor physical environment surrounding home (OR = 2.338, 95% CI = 1.057-5.171, $p = .036$) were more likely to have food insecurity.

Table 4 Logistic regression results: factors predicting food insecurity (n = 438)

Variable	Coefficient	SE	Wald	OR	95% CI	p
Model 1						
Gender (1=male,2=female)	.257	.429	.358	1.293	.557, 3.000	.550
Family income	-.469	.109	18.640	.625	.505, .774	<.001
Marital status	.735	.265	7.727	2.086	1.242, 3.504	.005
Model 2						
Gender	.162	.435	.139	1.176	.502, 2.758	.709
Family income	-.425	.114	13.988	.654	.523, .817	<.001
Marital status	.590	.275	4.604	1.804	1.052, 3.092	.032
Physical environment surrounding home	.849	.405	3.568	2.338	1.057, 5.171	.036
Level of nutritional risk	.212	.112	.440	1.237	.992, 1.542	.059
Social support	.037	.056	4.397	1.038	.930, 1.158	.507

OR = odds ratio; CI = confidence interval, Log-likelihood = 196.924, $\chi^2 = 41.430$ ($p < .001$)

Conclusion and Recommendation

Results in this study support that social and environment are major factors predicting food insecurity in older adults residing in crowded urban community. The results also suggest a need for health professionals to systematically develop strategies to identify, monitor, and facilitate a management of food insecurity in older adults by taking those factors into account. Intervention programs could be developed in a future study to promote food security for them.

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Output

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   4.2 Providing consultant and the screening tool for food insecurity in persons with HIV/AIDS for the research project collaborating with the Australian government, the Thai Red Cross, and the Institute of Nutrition, Mahidol University in 2008.

APPENDIX

Understanding Food Insecurity among Thai Older Women in an Urban Community

Abstract

This qualitative study aimed to describe how older women in crowded urban community perceive the food insecurity experience and deal with it. In depth interviews were conducted among 30 Thai older women aged 60 years and older. Results revealed that older women perceived their food insecurity experience as a negative effect of the current economic downturn globally. They felt that they were confronting a crisis. Problems they dealt with included six issues. The women employed management strategies around: food, health, money, and family. The results suggest a need for welfare reform that facilitates management strategies aimed to meet food security.

Food insecurity is a multidimensional and dynamic concept. According to the United States Department of Agriculture [USDA (1999)], food security is "a situation that exists when all people, at all times, have physical, social and economic access to sufficient food to meet their dietary needs for a productive and healthy life (p. 6)." At the World Food Summit (WFS) in 1996, commitment was made to achieve food security for all in 2015. Food security is considered as a social determinant of health that links with other dimensions including gender inequality (McIntyre, 2004; Tarasuk, 2001). One of the third millennium developmental goals is therefore to promote gender equality and empower women (United Nations Department of Economic and Social Affairs, 2006).

Food insecurity is currently an increasing problem associated with global food crises, price increases and demand on a world scale. Food insecurity is recognized as a considerable problem worldwide. Although the problem has declined, it still exists in the majority of developing countries (Meyers, 2001). In Thailand, food insecurity has been discussed as a public health concern in relation to social and economic transitions (ICN, 2009; Kachondham, 1991; Kosulwat, 2002). Financial constraint is a major risk for food insecurity (Guthrie & Lin, 2002; Piaseu, Belza, & Shell-Duncan, 2004). Along with the rapid growth of the older population, older persons are more likely to be at risk for food insecurity and health problems associated with physiological changes and the aging process (Wolfe, Olson, Kendall, & Frongillo, 1996). Among older persons, women tend to have a higher risk for food insecurity than men because of multiple roles and responsibilities in their family. Women perform food-related activities including food shopping and preparation within a complex food and nutrition system particularly in urban settings (Pingali, 2006). For these reasons, this is a fertile area to conduct research.

Food insecurity leads to malnutrition in the older persons (Wellman, Weddle, Kranz, & Brain, 1997), which in turn exacerbates disease, increases disability, health care costs and burden to families as well as the larger society. Food insecurity not only affects physical but also mental health of

individuals. Even though the prevalence of moderate to severe food insecurity is reported at 16.6% (Piaseu & Mitchell, 2004), its consequences are significant. There have been previous studies conducted in female family food providers living in crowded urban communities in Thailand (Piaseu, Belza, & Shell-Duncan, 2004; Piaseu, 2005b), however, those studies did not specifically address the issue of food insecurity in older persons. Until now data concerning food insecurity in older persons has been scarce. Little is known about how they perceive experience, and manage their food insecurity situation. A comprehensive understanding of the phenomena is needed. The objectives of this qualitative study were to describe the perception of food insecurity experience and management of food insecurity in Thai older women residing in crowded urban community.

Methods

This study employed an interpretive approach (Schwandt, 2000). Qualitative methods, including in-depth interview and participant observation, were used. Through contact with community health nurses, social workers, and community leaders, the purposive sampling was used to recruit participants for interviews. Based on data saturation, 30 community dwelling older women participated in the interview. Inclusion criteria included: 1) older women aged 60 years or over; 2) ambulatory; 3) residing in a crowded urban community in Bangkok for at least 5 years; 4) ability to verbally communicate in Thai; and 5) willing to participate in the study. Participants represented families in four geographical crowded areas of Bangkok. All participants had the opportunity to refuse to participate in the study at any time. None of the interviews was refused. Each interview was conducted in the participant's home. According to a Thai cultural practice, the researcher had a conversation with the family members of the participants to gain their trust and seek their consent before the interview. At the start of the interview session, some family members were with the older women while the researcher explained the nature of the study, assured the confidentiality, and requested permission to tape-record the interview. During a one month

period, in-depth interviews were conducted twice for each participant in their home. Following the interview guide, questions were asked regarding how they perceive food insecurity experience and manage their food problem. 1) What is it like when you do not have enough money? What does it mean to you? 2) What are your major concerns and what things have been particularly difficult for you when having not enough food? 3) How do you handle the hard times when you have not enough food? Field notes were taken during the interview. Each interview lasted approximately 45-60 minutes. A bag of rice was given to each participant at the end of the study as a thank you gift.

The Ethical Committee, Faculty of Medicine Ramathibodi Hospital, Mahidol University approved the study.

Data analysis

Data were analyzed by using content analysis (Huberman & Miles, 1998; Miles & Huberman, 1994). Thai verbatim transcription was completed for each interview. The transcripts were reviewed. Summary statements were made and the coding system was set. Another researcher independently read the transcribed interviews and identified themes. Initially, some transcript lines were coded with more than one theme. Modifications were made in the coding system to better reflect the themes. Questions or concerns were discussed and resolved with the primary author and second researcher. Following within-case analysis, cross-case analysis was performed to compare similarities and differences. The trustworthiness of the analysis was confirmed by member checking (Guba & Lincoln, 1989). On the second visit, the themes were shared with each participant. Each participant was in agreement that the emerged themes were appropriate. Findings were then translated into English.

Findings

Description of the older women and their families in crowded urban community

Thirty older women aged 60-78 years participated in the study. Most of them lived in extended families with family income ranging from 130-450 Bahts per day or 2,600-9,000 Bahts per month (2009 exchange rate was 36 Bahts per American dollar). Many of the participants did not work; however, they received financial support from their adult children. All of them received 500 Bahts for a monthly allowance for a senior benefit from the government. Twelve participants were married, while fourteen were widowed, and four were geographically separated. Twenty five participants were Buddhists. All participants had no formal education. Their health problems included diabetes, hypertension, asthma, coronary heart disease, osteoarthritis, and visual and hearing problems.

The participants were responsible for child care of their offspring and care of family members who were sick or disabled. The majority of the family members were born and had lived in the community their whole life. Some families migrated from other provinces. Migration typically had occurred in the past 10 years and was due to looking for employment. Most of the family members worked in the labor market or were self- employed. The daily work status of participants was highly uncertain. Therefore, the rate of unemployment was high and resulted in crowded living circumstances with many houses consisted of three generations of families. Most houses were in close proximity. They shared water and electricity. Many families did not have savings for emergencies. One participant who was 60 years old said:

“Here in this house, we have 3 families staying together: children, adults, and elderly. We have aunty (herself), uncle (her husband), and grandma (her mother). The grandma is now 84-85 years. We also have families of my daughter and my son and 5-6 grandchildren. One boy who is the son of my son, his brain is abnormal. We have to help take care of him. His father works at the port and gets paid just day by day. Never have any kinds of saving.”

Regarding labor, many families referred to "*long khrueang*." This is the local term that describes jobs which require manually carrying machines. This is the hardest job for labors as the machines are extremely heavy and awkward. In addition, the term "*long lhaow*" means manually carrying packages of alcohol. Alcohol is lighter when compared to machines. A participant whose income depended on her daughter's family talked about her son-in-law, "He got laid off for two months. It's hard to get a new job in this economy. No matter how hard the work is, he decided to go in line for "*long lhaow*" or "*long khrueang*" at the Port."

Eating is perceived as a need in order to stay alive. Usually, participants cooked the dinner. Many of them had their meals on the floor by taking their food directly from the pot on the stove after the children ate. The participants had little variety in their food and primarily ate steamed rice and chili paste. They usually ate their meal while watching the television. Some ate sticky rice with their fingers according to traditional culture. They also believed in the God of rice who produces rice for everyone. With that belief, they did not throw away their food, but kept the food and ate it at a later time. In many families, the wife prepared the meal, while the husband helped with the heavy work around the house or rode a motorcycle to buy food. Due to the low educational level and few skills, many families worked for informal sector such as readymade garments industry. There is a need for many women to save their time on food preparation so that they have more time to work. Therefore, street foods and ready-to-eat food (already cooked food) play a major role in the family diet.

Perception of food insecurity experience

In this study, participants expressed their perception of food insecurity experience as the situation of having insufficient food that was getting worse. They dealt with six issues which impacted their food security: 1) the global economic crisis, 2) political issues of the nation, 3) concerns regarding social

acceptability, 4) childhood experience of food problems, 5) dependence associated with family health and financial problems, and 6) their fate.

Food insecurity is perceived by the participants as a negative effect of the current economic downturn globally. Moreover, political issues of the nation made them more concerned about difficulty to earn money and get enough food in their family. They felt that they were confronting a crisis. One participant said,

"We're getting worse and worse every moment. It's the crisis everywhere. We felt a lot of effects. We're confronting crises. We're getting so worse because of the political problem. I'm very concerned… the crises going on… how we can earn money and get enough food."

While confronting the crises, the participants were also concerned about getting food through socially acceptable means. A participant talked about her situation, "Even though I don't have anything to eat, I am too ashamed to go get food in the trash. Some people do that, but for me I feel ashamed."

The participants expressed their experience of not having enough money and food as a familiarity of difficulty that links between the current situation and their previous experience in childhood. One participant said, "No money left. I'm broke now…getting used to it though. I keep remembering that in the past when I lived with my Mom, we had a lot of difficulties with having no food to eat."

Food insecurity is perceived not only as a consequence of poor health and financial problems. The participants also think that whatever happens to them is a fate and they have no control over their fate. A widowed woman with asthma who lived with her son's family said, "My son pays for everything. I have no money as I cannot work. I have asthma and sometimes have difficulty breathing. After getting medication, it's like I have a rebirth. When I feel sick, I have no appetite. Don't want to do anything even for myself. Living with my daughter-in-law is to depend on her. If she is in a bad mood, she would not buy food for me. I sometimes cry. It's my fate." Fate is therefore perceived as an inevitable event related to food insecurity experience for some participants.

Management of food insecurity

Participants perceived food insecurity as a negative experience. They learned ways to manage the situation. Depending on their life experiences, the participants used strategies to manage their food, health, money, and family (Table 1).

1. Managing food

The participants managed their food by arranging their food supply, simplifying their meal preparation, and adjusting food choices.

1.1 Arranging food supply

The participants or their family members arranged their food supply by purchasing food while being cognizant of the price. This included buying small portions of inexpensive food. They also limited their purchases of food with additives such as monosodium glutamate as those foods typically cost more.

Many participants had health problems (such as visual and hearing problems, osteoarthritis, and functional decline or loss of physical strength). They did not feel comfortable walking outside of their home so they paid for transportation such as hiring a motorcycle and driver to go food shopping. A participant said: “I just write down a list of what I want and ask him (motorcycle rider) to go get them from the market. Then, I pay him 40 Bahts per ride for the service.”

All women participated in this study addressed that how they get food for their family needed to be in a socially acceptable approach through donated or gifted food, not the food stolen from others or taken from the garbage. The food should also be provided for children in their family as a priority.

1.2 Simplifying meal preparation

Many participants managed their cooking by simplifying the process of meal preparation. They also purchased prepared food which did not require cooking. One participant said, “I usually take it easy. Fried egg and soup or sour-soup is common dish. It doesn’t take too long for preparation and cooking. Sometimes I bought ready-to-eat food like the stir fried noodle with gravy. It’s very convenient. I’ve never made any food with preservatives.”

1.3 Adjusting food choices

The participants made choices of their food based on their need by eating simple or seasonal food, keeping food for grandchildren as a priority while skipping meals for themselves, cutting down the meal size and meal frequency. Rice and eggs are popular food choices if there is no money. Decreased or lack of appetite happened sometimes. One widowed woman said:

“I sometimes starve as I give food to my grandchildren first. I myself eat two meals: close to noon and the evening, mostly steamed rice with chili paste, or red sour soup and fried egg. Not any snacks. Sometimes, I have no appetite.”

Some participants shared their food with their husband while some split food for themselves into two meals, indicating a possibility to have not enough calories.

2. Managing Health

Many participants suffered from health problems. Strategies that they used for managing their health were maintaining health and spirituality, and performing self-care.

2.1 Maintaining health and spirituality

The participants maintained their health through arranging health checks that included periodic monitoring for blood pressure, blood sugar and cholesterol, and getting dental and abdominal examinations.

Confronting barriers to health is another strategy used by participants in the study. With financial constraints and increased health care costs, the participants with chronic diseases

expressed that they were afraid of high medical cost as they had no savings and do not have enough money to pay for health care services including transportation to secure health care services. Moreover, the priority for them is to get enough food to eat. So, they usually do not go to see the physician and do not keep their follow-up appointments. Instead, they buy medication refills from the drug store as that is more convenient and less expensive. A participant shared,

"I'm taking blood pressure lowering drugs. Drug cost is about 50-60 Bahts per visit, but I pay much higher for taxi to the hospital. It's hard to take a bus. I'm clumsy. Recently, I don't go to see the doctor because I have no money. I buy the drug at the drug store here (close to her home). They are much cheaper for 100 tablets."

However, with medical emergencies such as with acute heart problems, the participants chose to buy urgent medicine or pay for medical treatment as a first priority. They said they need to trade off between the medicine and food for unplanned conditions. They found that their need for medicine to survive is greater than food; therefore, decision to cut food was made if they do not have enough money.

Another approach is seeking health and spirituality. The participants not only seek health through a professional system, but also traditional and folk systems. A participant with breast cancer said:

"I got chemo (chemotherapy) many times and got hairs loss after that. I had no appetite at that time. My daughter also asked me to take boiled herb medicine. I did and I had more appetite then. We also went to the temple to get holy water and a mystic symbol (mystic symbol with cabalistic writing) to put on the door. My mind is much better."

2.2 Performing self care

In order to maintain functional status when the situation of food insecurity is not severe, the participants managed their health by performing self-care that included having healthy food,

being physically active, adhering to medication, and using complementary and alternative medicines.

Having healthy food is described by the participants as a means to perform self care. In this study, the participants tried to have healthy food by avoiding heavy meal, and cooking with fresh ingredient. However, in the situation of financial problems with more severe food insecurity, they could not select healthy foods. They mostly ate foods containing high carbohydrates. Moreover, they sometimes did not have enough to eat. One participant said, “I have no money, no time to take care of my health. I have to eat much of starch…just to fill up my stomach, no fruits and sometimes nothing.”

The participants also expressed that being physically active either as individual or group exercise is an alternative approach to self-care. A participant shared, “Walking… It is a need. The doctor advises that I must exercise. After boiling water in the morning (her usual activity), I put my hands on my legs, and move my wrists. Here, we also have exercise group. It is a joy.”

Adhering to medication is a priority for the participants and their family in this study. Even though it’s expensive, they tried to be able to afford it in addition to the health service and medical cost as extra payment. A participant talked about her husband:

“He (her husband) has vessel stenosis and high blood pressure with high cholesterol. Need to see the doctor at a private clinic usually every month for several years. We spent a lot of money (looking at her husband) 600 Bahts per visit. It would be 700 Bahts if cholesterol is added. Heart exam is 500 Bahts separately. If there is an extra problem, he sees the doctor more often. We’re thinking about moving to the health center because we have senior card, but the

medication we're taking is not available there. No matter how expensive it is, we need to pay to get medication continuously."

For some participants, although adhering to medication is necessary, they could not take it as they could not afford it when having not enough money. Another participant said, "I don't take medication sometimes when I have no money."

Using complementary and alternative medicine is a strategy taken to overcome food insecurity. The participants ingested natural grown plants known as local herbs that are commonly eaten in their community. A participant with diabetes said, "My blood sugar is good. I take blood sugar lowering drugs. I also have 'blanched bitter melon' eaten with a sauce of shrimp paste and chili. The bitter melon helps lowering my sugar."

3. Managing money

The participants in this study did not want to be a burden. Working was an important method for alleviating food insecurity. They managed their money by arranging to work and paying bills.

3.1 Producing work

The participants felt that it was hard not to work. Even though their family did not want them to work as they were getting old. A participant said, "My sons and daughters asked me to stop working but I couldn't. No work, no money."

Working to earn money is a means to help their family survive. They obtained daily jobs such as making lays (string flowers), making paper bags, and providing child care." A participant said "I'm now 70 (years old). I still sweep the road. I need to work to support my family. To survive is not to be starved."Gardening at home is another means for a few participants to work but not earn money such as growing chili and lemon grass.

3.2 Arranging payment

Delaying payment is usually happened to the participants. Most bills for utilities and rent were paid late. Another approach was to buy on credit. Food items bought from local grocery stores including rice, sugar, sauces, and eggs were paid at the end of the month. Sometimes, in the severe financial problem such as health emergency of a family member and whenever schools start, the participants needed to borrow money from one in order to pay the money owed, "No money left. It's like "*Chak Nah Mai Tueng Lang"* (borrowing money from Peter to pay Paul)."

4. Managing Family

Financial burden and food problems cause challenges for the participants and their family. The participants adjusted their family life to overcome food problems in their family by "applying sufficient living", and "coping with difficulty".

4.1 Applying sufficient living

In this study, the participants expressed their highest respect to Royal King Rama the Ninth, who initiated the "Sufficiency Economy" theory that could be applied by all people regardless of gender and social class. The theory promotes living in moderation with optimal resources and self-reliance (The Chaipattana Foundation, 1999).

A participant said, "We are satisfied with what we have…. It's sufficient when economy is not good like this. Use only enough, eat just enough to live on. Try to live sufficiently following the Royal King's principle."

In addition, some participants tried for achieving sufficiency by saving energy, making decisions on purchasing goods and services.

4.2 Coping with difficulty

When the participants were faced with difficult situations, they asked for support from their family or relatives. A participant said, "Mostly I called my daughter when I have no money

left or when the money is almost gone." Other sources for support were public assistance and community resources including senior benefits, survival kit, donated food through a charity or local temple, information on farmers market and emotional support from neighbors. One participant said, "They (neighbors) always tell me where I can get cheap food at the market. They also encourage me all the time. Here, we live very close and get along with for a long time."

Another approach to cope with difficulty is getting a loan. The participants coped with the problems in different ways such as making a loan, borrowing money from their children or relatives, and getting credit at a small store. Many people in the community usually buy on credit at a local grocery. A participant expressed that, "I buy rice just for one kilo (gram) at a time. I get it for half a bin when I can borrow 300-500 Bahts."

Normalizing life is also used by the participants. The participants experienced many repetitive problems as well as resource constraints within their environment, they then make the problems simple by altering their thinking, minimizing the burdens, and stabilizing their life based on the related contexts such as Buddhist teaching. A participant said, "You know? What I face is very common. The problem comes, then it's gone. We're doing the best. Whatever will be will be. We accept that anything is not permanent."

Discussion

The women who participated in this study are older women residing in crowded urban community. They are at risk for food insecurity for many reasons. Two major reasons for food insecurity are social and economic. With low educational attainment and their retirement stage, the participants have no job, thus depend on financial support from their children and the government. Although some of the participants work, their income is insufficient. Moreover, widowhood makes them more vulnerable for food insecurity (Quandt, McDonald, Arcury, Bell, & Vitolins, 2000). Health problems also increase the risk for food insecurity, particularly visual and hearing problems.

Participants differed in their perceptions of the causes of food insecurity. The perceptions ranged from the global economic crisis, political issues of the nation, social acceptability of food insecurity, previous experience of food problems in childhood, dependence associated with family health and financial problems, and fate. These indicate that the participant's perception represents economic, political, psychological, social, and cultural dimensions of food insecurity. Food security is therefore linked to poverty (Tanumihard, Anderson, Kaufer-Horwitz, Bode, Emenaker, Haqq et al, 2007). However, we did not discover a link between food security and environmental impact. It is possible that the participants in this study had different perceptions from those in a previous report (FAO, 2008).

The participants perceived that they are confronting a crisis due to the adverse effect of global economic crises, and political issues of the nation. These effects lead to concerns regarding their financial trouble and ability to afford food in their family.

Getting food with social acceptability is also a concern. Although their food was insufficient, they expressed that they felt ashamed for acquiring food with socially unacceptable means. The finding indicates that social norms play a significant role in Thai society. This finding for older adults is similar to findings from a previous study of Thai adults living in similar conditions (Piaseu, Belza, & Shell-Duncan, 2004). Since food is significant for survival, we must ensure that everyone has enough at the most basic level.

The food insecurity situation is seen as a linkage between their previous experience of not having enough food due to financial problem in childhood and the current situation. This is consistent with the study of Sarlio-Lahteenkorva and Lahelma (2001) who reported the association of food insecurity and past as well as present economic hardship.

Similar to other studies (Pheley, Holben, Graham, & Simpson, 2002; Vozoris & Tarasuk, 2003), the food insecurity situation among the women in this study was interwoven with health and financial problems of their family. Neglect-of-self was partly observed and linked to food insecurity in some of the

widowed women, similarly to a previous study (ElmstaEhl, Persson, Andren & Blabolil, 1997); however, more evidence is required to explore this phenomenon. Women's live are intricately woven with their family members; and as such they perceive their situation as caused by inevitable event called "fate".

Findings from this study demonstrate that food insecurity involves biological, cultural, and socio-economic aspects of one's living situation. Additionally food insecurity is linked to family economic status, family structure, health problems, and social support. There is a time context for food insecurity in that it occurs mostly at the end of the month. Food insecurity is also linked to the multiple roles and responsibilities of women within the context of a family and society.

Management of food insecurity

Having done this study, we learned from the older Thai women perspective how they manage their food insecurity. The participants dealt with food insecurity by managing food as the priority. Since they had low income while food prices increased, they struggled with financial and health problems. Therefore, they arranged their food supply using various approaches. Purchasing inexpensive food with small portions is a common strategy and is consistent with previous studies conducted in different populations (Kempson, Keenan, Sadani, Ridlen, & Rosato, 2002; Piaseu, 2005b; Quandt, Arcury, Early, Tapia, & Davis, 2004). Moreover, findings from this study are similar to other studies (Pierce, Sheehan, & Ferris, 2002; Sidenvall, Nydahl, & Fjellstrom, 2001) in that many participants have health problem that results in a loss of physical strength, inability to access food, or experience trouble in transportation to secure food. Therefore, the strategy taken by many participants were to pay for transportation services by hiring a motorcycle ride. This strategy has been reported elsewhere (Pierce, Sheehan, & Ferris, 2002). Acquiring food with social acceptable concern described in this study is consistent with a previous study (Piaseu, Belza, & Shell-Duncan, 2004).

Simplifying meal preparation is a strategy used by the participants in order to manage their food. With advanced age, increased functional limitations and declined motivation, the participants usually purchase already cooked food or prepare and cook meals with easy and quick methods, similarly to findings in the study by Pierce et al (2002). A difference is that preserving food is a food management strategy reported in a study conducting in rural communities (Quandt, Arcury, McDonald, Bell, & Vitolins, 2001); however, it is not found in this study. This is probably due to not many home-grown food and gardening in the urban community.

Adjusting food choices indicates that the participants in this study coped with the resource constraints. Reducing meal frequency is consistent with those in previous studies (Gustafsson & Sidenvall, 2002; Sidenvall, Lennerna, & Ek, 1996). Widowed women are particularly vulnerable for food insecurity possibly due to the loss of a spouse which may result in loneliness, lack of appetite, and insufficient food intake (McDonald, Quandt, Arcury, Bell, & Vitolins, 2000; Sidenvall, Nydahl, & Fjellstrom, 2000; Sidenvall, Nydahl, & Fjellstrom, 2001). .

Food insecurity has been shown to be associated with health and illness (De Marco, Thorburn, & Kue, 2009; Lee & Frongillo, 2001; Piaseu, 2005a; Stuff, Casey, Szeto, Gossett, Robbins, Simpson, et al, 2004; Tarasuk, 2001). Many participants in this study suffer from health problems. To maintain health and spirituality, the participants arrange their health check per follow up or monitoring schedule and recommendation. However, due to economic constraints together with needs for food and healthcare simultaneously, some participants confront barriers to health. Although there is universal health coverage in Thailand, participants still made decision for refilling their medication at a drug store which is more economical and convenient for them. In contrast, during a medical emergency, purchasing medications at a higher cost becomes the priority. Poor health or unplanned health problems have major impact on food insecurity, resulting in limited food purchases, preparation, and consumption (Pierce, Sheehan, &

Ferris, 2002). Thus, this calls attention for the need for emergency food assistance programs within a health care delivery system.

Some participants use their spirituality to address their concerns with food insecurity. Using folk medicine or complementary and alternative medicine, including holy water, mystic symbol, and boiled herb medicine, may enhance their spiritual health and help decrease their concern about food insecurity regarding inappetite, a side effect of chemotherapy. This is consistent with a previous study (Piaseu, 2005b). Piaseu as well as Kleinman (1980) indicated that women seek health by integrating professional, popular, and folk remedies within a local health care system.

Performing self-care, a strategy used for managing health when the situation of food insecurity is not severe, reflects less dependent behaviors. Consistent with previous studies (McDonald, Quandt, Arcury, Bell, & Vitolins, 2000; Piaseu, 2005b), having healthy food and being physically active are considered as an approach to self care and a moral behavior (Conrad, 1994) that prevent food insecurity as well as non communicable disease related death (American Dietetic Association, 2005).

Managing money is taken by the participants in this study. The result is consistent with those in previous studies (Derrickson, Fisher, Anderson & Brown, 2001; Piaseu, 2005b; Tarasuk, 2001), indicating that the participants arrange their payments including delaying payments and buying on credit. However, some participants manage their food insecurity situation and desire to be independent by working in order to get enough to eat. The results from our study as well as other studies support a link of financial hardship to food insecurity (De Marco & Thorburn, 2008; Piaseu, 2005a).

Family is a major social structure in Thai culture. The term “family” in Thai is “Khrob Khrua” which means a control of kitchen, implying that cooking is a role for women in a Thai family. “Khrob” means to control or take over, and “Khrua” means kitchen. Family food is influenced by social events and life experience within the family. Therefore, experience of food insecurity in family made the participants to manage their family life in order to achieve sufficient living.

The fact that the participants ask for support from their children indicates that they use family as an economic resource of priority and depend on their family for financial support. The participants also use public assistance and community resources that frequently include financial, instrumental, information, and emotional supports which are similar to the results reported in other studies (McDonald, Quandt, Arcury, Bell, & Vitolins, 2000; Piaseu & Mitchell, 2004; Pierce, Sheehan, & Ferris, 2002). Getting a loan and buying on credit is perceived to be a common approach to managing food insecurity. These along with strategies discussed earlier help the participants to cope with difficulties and normalize their life.

Limitations

Direct translation is limited for some parts of the interview scripts due to cultural differences in language. Every attempt was made to translate the interviews as closely as possible to the original script. The generalizability of these findings to other cultures may be limited due to the cultural context of the findings. The first author and primary researcher was Thai and as such might have some biases in interpreting the findings. Data was collected in 2008 which was immediately prior to the major global economic downturn and as such the situation for these participants in regards to food insecurity may be worse now than when the interviews were conducted. It was difficult at that time to conduct a retrospective study.

Recommendations

The results help us understand food insecurity in urban community-dwelling older Thai women and how they manage to maintain food security. The results also suggest a conceptual framework of the social determinants of health that links gender, economic, culture, and food security. Health professionals need to better be able to identify and monitor biological, psychosocial, economic, and cultural dimensions of food insecurity particularly in women recently widowed. More study is needed in frail older adults who are disabled and/or widowed.

Challenges of food insecurity addressed in this study suggest a need for an improvement of welfare reform that facilitates management strategies for older women's food, health, money, and family aimed to meet food security in this population. An emergency food assistance program, for example, needs to be improved in the Thai health care delivery system.

This study points out a need to systematically develop strategies to solve the food security problems since older women take more risks regarding social and health status than general population. Discourse analysis could be carried out in a future study. The older women could be empowered and their roles could be shifted to having food simultaneously with their families. This is even more critical as the changing demographic includes an ever growing older adult population. The "Sufficiency Economy" theory could be integrated in strategic plans for health promotion to ensure food security for all.

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Table 1. Themes of food insecurity management in community-dwelling Thai older women

Theme	Category	Subcategory
1. Managing food	1.1 Arranging food supply	1.1.1 Buying with food price concern
		1.1.2 Using paid service for food purchase
		1.1.3 Supplying food with socially acceptable approach
	1.2 Simplifying meal preparation	1.2.1 Making simple preparation and cooking process
		1.2.2 Purchasing food not cooking at home
	1.3 Adjusting food choices	1.3.1 Eating simple food
		1.3.2 keeping food for grandchildren as a priority
		1.3.3 Cutting meal size and frequency
		1.3.4 Sharing meal with husband
2. Managing health	2.1 Maintaining health and spirituality	2.1.1 Arranging health check
		2.1.2 Confronting barriers to health
		2.1.3 Seeking health and spirituality
	2.2 Performing self-care	2.2.1 Having healthy food
		2.2.2 Being physically active
		2.2.3 Adhering to medication
		2.2.4 Using complementary and alternative medicine
3. Managing money	3.1 Producing work	3.1.1 Working to earn money
		3.1.2 Gardening at home
	3.2 Arranging payment	3.2.1 Delaying payment
		3.2.2 Buying on credit
4. Managing family	4.1 Applying sufficient living	4.1.1 Satisfying life and living status
		4.1.2 Achieving sufficiency
	4.2 Coping with difficulty	4.2.1 Asking for support
		4.2.2 Getting a loan
		4.2.3 Normalizing life