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Intervention For Women In Costa Rica Who Are Discouraged And Have Food Insecurity And Excess Body Weight

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**INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE DISCOURAGED
AND HAVE FOOD INSECURITY AND EXCESS BODY WEIGHT**

by

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DEDICATION

This work is dedicated to all people who unconditionally supported me during this process. My mother, my brothers, my aunt, my dear friends, my advisor, Dr. Frongillo, and particularly, my son, Jorge who has been my main motivation and support. Also, to my dear father (†) and my grandmothers, Tita (†) and Ayita (†) who always believed in me.

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“Gratitude is the memory of the heart” Jean Baptiste Massieu

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ABSTRACT

Introduction: The coexistence of food insecurity and excess body weight has been well-recognized by researchers, and it has been documented in women, but not men. Both food insecurity and excess body weight have multiple consequences for physical and mental health. Concerns have been raised about interventions aimed to reduce food insecurity because these programs might contribute to excess body weight, particularly in adult women.

Our previous in-depth qualitative research in Costa Rica showed that discouragement was the primary link in the coexistence of food insecurity and excess body weight among Costa Rican women, and that the family and existing gender norms contribute to and compound this coexistence. Building on this knowledge, we aimed to develop, implement, and evaluate an intervention to alleviate discouragement through enhancing women's capacities that we hypothesized would simultaneously improve food security and reduce body weight. It was also hypothesized that, when compared with the non-intensive arm, women in the intensive arm would have reduced discouragement and anxiety symptoms and improved social support for healthy eating, psychological and economic empowerment, and food and physical activity behaviors (Manuscript 1). According to our conceptual model, the intervention would also change gender norms and gendered behaviors. To evaluate these changes, we conducted a mixed methods sub-study with intensive arm's participants (Manuscript 2) that aimed to answer. First, what were perceived gender norms, attitudes, intentions, and behaviors of women and their

family and community members in relation to co-responsibility in the household and self-care at the beginning of the intervention? Second, what changes in these occurred during the intervention period? Third, how did the changes occur?

Methods: We conducted a cluster-randomized controlled trial in the Central Canton of the Province of Alajuela. The randomization was at the catchment area of the EBAIS, which is the first level of care in Costa Rica. This 6-month study compared two arms. The intensive arm consisted of activities at the individual (12 two-hour sessions, three follow-up monthly sessions, and one closing session), household (one workshop with the participants' household and community members, and homework with family participation), and community (two brochures and one workshop) levels. The non-intensive one was comprised of three one-hour sessions about healthy lifestyles. For the sub-study, we used three sources of data: pre-post-test at the workshops, non-participant observation and content analysis of the participant's comments during the workshops, pre- and post-semi-structured interviews, and focus groups with participating women.

Results: A total of 171 participants were enrolled (83 in intensive and 88 in non-intensive arm). At 6 months, the intensive arm had significantly greater decreases in BMI ($p=0.010$), waist circumference ($p=0.001$), and food insecurity ($p=0.004$) in relation to the non-intensive arm. In the mixed-methods sub-study, the sample was comprised of 62 participating women, 34 women's family members, and 9 community members. Participating women and their family members changed attitudes, intentions, gender norms, and behaviors related to co-responsibility in the household and self-care. Family relationships were also improved.

Conclusions: This intervention was effective to simultaneously improve food insecurity and reduce rather than exacerbate excess weight gain. Promoting co-responsibility in the household and self-care was an effective way to improve women's health and, in turn, the health and well-being of their household members.

TABLE OF CONTENTS

DEDICATION	iii
ACKNOWLEDGEMENTS	iv
ABSTRACT	vi
LIST OF TABLES	xi
LIST OF FIGURES	xii
CHAPTER 1: INTRODUCTION	1
CHAPTER 2: BACKGROUND AND SIGNIFICANCE.....	6
CHAPTER 3: METHODOLOGY	58
CHAPTER 4: RESULTS	81
CHAPTER 5: SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS	160
REFERENCES	169
APPENDIX A: CONSENT FORMS INTENSIVE AND NON- INTENSIVE GROUPS	199
APPENDIX B: LETTER OF INVITATION FOR FAMILY AND COMMUNITY MEMBERS	206
APPENDIX C: SOCIO-DEMOGRAPHIC AND ANTHROPOMETRIC INFORMATION -FIRST AND FINAL APPLICATION-	208
APPENDIX D: FOOD INSECURITY SCALE TO COSTA RICA.....	221
APPENDIX E: SCALE OF PERSONAL AGENCY AND EMPOWERMENT	224
APPENDIX F: SOCIAL SUPPORT SCALE.....	228
APPENDIX G: QUESTIONNAIRE OPINIONS ABOUT CO-RESPONSIBILITY AND SELF-CARE.....	232

APPENDIX H: BASELINE QUALITATIVE INTERVIEW	234
APPENDIX I: FINAL QUALITATIVE INTERVIEW	236
APPENDIX J: FOCUS GROUP GUIDE	238
APPENDIX K: CONSENT FORMS AND DATA COLLECTION INSTRUMENTS IN SPANISH.....	241
APPENDIX L: COMPARISON BETWEEN PEOPLE WHO COMPLETE OR NOT THE 3- OR 6-MONTH ASSESSMENT.....	287

LIST OF TABLES

Table 3.1 Variables, definition, measures, and the timeline of the data collection for the assessing variables.....	74
Table 4.1 Overview of intensive- intervention objectives by session.....	90
Table 4.2 Characteristics of study participants	98
Table 4.3 Baseline and 6-Month differences by group and the effect of the intervention on the main outcomes	101
Table 4.4 Baseline and 3-Month differences by group and the effect of the intervention on the main outcomes	103
Table 4.5 Characteristics of women at the time of the enrollment	128
Table 4.6 Pre- post-test in some elements of theory of planned behavior during the workshops	134
Table 4.7 Changes in traditional vs more equitable genders norms in relation to self-care and responsibility in the household	145
Table L.1 Comparison between people who complete or not the 3-or 6-month assessments	287

LIST OF FIGURES

Figure 2.1 Evidence map showing impacts of interventions on women's empowerment and nutrition outcomes	29
Figure 2.2 Conceptual Model of the intervention	56
Figure 3.1 Location in Costa Rica of Central Canton of Alajuela	58
Figure 3.2 Flow chart for the cluster randomized trial	62
Figure 3.3 Stages of the interactive education	67
Figure 4.1 CONSORT diagram for the study	97

CHAPTER 1

INTRODUCTION

Household food insecurity occurs when “the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain” (United States Department of Agriculture, 2014, p. 6). In Costa Rica in 2014, 19.9% and 4.4% of people 15 years and older were, respectively, moderate-to-severely and severely food-insecure (Food and Agriculture Organization, 2016).

Household food insecurity negatively affects diet and nutritional status, and is associated with negative outcomes in physical and mental health, including excess body weight (Frongillo, Olson, Rauschenbach, & Kendall, 1997; Institute of Medicine (US), 2011).

Excess body weight, which is defined as body mass index (BMI) ≥ 25 , is a global health problem and the major public health problem in Costa Rican women (Ministerio de Salud, 1996). Costa Rica has been included among the countries with the highest rates of obesity around the world (Mesa de Innovacion Social-Gobierno de Costa Rica, 2016). Excess body weight also has multiple consequences for physical and mental health, such as cardiovascular disease, depression, isolation, lack of self-esteem, cancer, and death (Azarbad & Gonder-Frederick, 2010; Hu, 2003; World Health Organization, 2015).

The coexistence of excess body weight and food insecurity is recognized by researchers and increasingly by the broader public (Food Research & Action Center, 2015; Institute of Medicine (US), 2011). Due to their negative impacts, poverty and household food insecurity are priority topics for the global community. Multiple studies

have concluded that poverty and household food insecurity are often associated with excess body weight in women, but not men (Adams, Grummer-Strawn, & Chavez, 2003; Kac, Pérez-Escamilla, Moura da Silva, & Schluskel, 2013; Townsend, Peerson, Love, Achterberg, & Murphy, 2001). Women with excess body weight and food insecurity are vulnerable because their physical and mental health is compromised in multiple ways.

Because food insecurity is linked with resource constraints and undernutrition, many policies and programs intend that households acquire the necessary nutrients to improve nutritional status. Concerns have been raised, however, that these programs might contribute to excess body weight, particularly in adult women (Frongillo, 2003; Leroy, Gadsden, González de Cossío, & Gertler, 2013; Townsend et al., 2001). For example, a cluster-randomized trial in Mexico to study the impact of Mexico's Programa de Apoyo Alimentario, which provided poor rural household with cash or food transfers, on the body weight of women showed that the program led to weight gain in women, particularly those who already were obese (Leroy et al., 2013). These results highlight the need to develop and implement interventions that improve food security while simultaneously reducing rather than exacerbating excess weight gain.

In our previous qualitative study in Costa Rica we found that discouragement is the primary link in the coexistence of food insecurity and excess body weight among Costa Rican women. The family and existing gender norms are contributing to and compounding this situation (Martinez-Jaikel & Frongillo, 2016). Gender norms refer to the social rules or expectations about what women or men should do, e.g., which behaviors, professions, products, or knowledges are appropriate for each of them; and

they may have a harmful impact on health and well-being (Fleming & Agnew-Brune, 2015a; Gendered Innovations, 2016; Monda.eu, 2016; Phillips, 2005).

1.1 Study Aims

Building on this knowledge, we aimed to develop, implement, and evaluate, using a cluster-randomized trial an intervention targeted at the individual, family, and community levels that would simultaneously improve food security and reduce body weight of women. This 6-month study compared two arms (intensive vs non-intensive). The overall goal of the intervention was to alleviate discouragement of food-insecure women with excess body weight in the Central Canton of the Province of Alajuela, Costa Rica through enhancing women's capacities (skills, knowledges, assertiveness, self-esteem, and economic autonomy), and influence gender norms and behaviors in relation to co-responsibility in the household and self-care. Co-responsibility refers to sharing responsibilities in the household, including taking care of children and the disabled, and contributing to household support between all members (Peña Palacios, 2007). This research had two specific aims that resulted in two separate manuscripts.

Manuscript 1

Specific Aim 1. To determine the impact of an intervention that focuses on alleviating women's discouragement through enhancing women's capacities (intensive arm) among food-insecure women with excess weight. The primary outcomes were body mass index, food insecurity, and waist circumference. The secondary outcomes were psychological and economic empowerment, food and physical activity behaviors and perceived social support for healthy eating. A control group (non-intensive arm) was used to ensure accurate assessment of the impact of the intervention.

Hypothesis 1. After the intervention, the participants in the intensive arm, compared to the non-intensive arm, would have:

- 1) higher household food security status
- 2) lower body mass index (BMI) and waist circumference.
- 3) higher psychological and economic empowerment
- 4) higher perceived social support for healthy eating
- 5) better food and physical activity behaviors

Manuscript 2

Specific Aim 2. To determine the impact of the intervention on perceived gender norms, attitudes, perceived advantages and disadvantages, and behaviors of women and their family and community members in relation to co-responsibility in the household (i.e. sharing responsibilities in the household, including taking care of children and the disabled and contributing to household support), and self-care, including healthy nutrition. For this specific aim we used mixed-methods, applying mainly qualitative methods (i.e., focus groups, semi-structured in-depth interviews, and non-participant observation) and complemented by a quantitative component. We had three research questions:

- 1) What were perceived gender norms, perceived advantages and disadvantages, intentions, and behaviors of women and their family and community members in relation to co-responsibility in the household and self-care at the beginning of the intervention?
- 2) What changes in these occurred during the intervention period?
- 3) How did the changes occur?

The results of this research will guide the development of future interventions to reduce food insecurity. We demonstrated that using a strong study design and a careful implementation, women simultaneously improved food security and reduced--rather than exacerbated--weight gain. Improvements in food security were possible by educating women about how to eat healthy at low costs, increasing their psychological empowerment, working with them on a life project that included employability and recognition of their dreams and goals in life, and changing gendered behaviors in relation to co-responsibility in the household and self-care of family and community members; and not just giving food or cash transfers, which might contribute to excess body weight, mainly in adult women (Frongillo, 2003; Leroy et al., 2013; Townsend et al., 2001). This document has been organized starting with the introduction in Chapter 1. Chapter 2 presents the background and significance for this study. Chapter 3 shows the research design and methods. Chapter 4 includes the two manuscripts which describe the study results. Chapter 5 presents the conclusions and implications.

CHAPTER 2

BACKGROUND AND SIGNIFICANCE

The following is a description of the relevant background information for the proposed research. The section begins with relevant studies attempting to understand the relationship between food insecurity and excess body weight, as well as interventions promoting food security. Later, it is presented a brief introduction to the emergence of the field of international development and the subsequent and fundamental role of women's empowerment and gender equality in population and development programs. Different conceptualizations of empowerment and its measurement are reviewed. Additionally, women's empowerment is addressed in the context of nutrition related interventions and how structural forms of gender inequality—including gender norms—impact women's health and well-being, and possible efforts to improve discouragement feelings and nutrition by transforming these norms. To understand the context in which the intervention was implemented, the current situation of Costa Rican women is presented. In addition to this, the current literature about social support and weight loss, placing emphasis on social support from family, and food insecurity, is discussed. A section summarizing the current status of the problem is presented before finally outlining the conceptual model of our study.

2.1 Understanding Food Insecurity and Excess Body Weight in Women

Food insecurity is defined as “limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways” (United States Department of Agriculture, 2014, p. 6). Household food insecurity has been related to many household and social consequences and has many implications for individuals’ physical and mental health. For example, Hamelin, Habicht, & Beaudry (1999) found three potential types of consequences at the household level: physical (episodes of fatigue and/or illness related to insufficient food), psychological (being stressed and unable to go against held norms and values), and socio-familial, such as modification of eating patterns, disruption of household dynamics and distorted ways of food acquisition and management. Additionally, food insecurity has been associated with excess body weight, anxiety, and depressive symptoms as well as risky sexual behavior and negative pregnancy outcomes in women (Franklin et al., 2012; Institute of Medicine (US), 2011; Ivers & Cullen, 2011).

The coexistence of excess body weight and food insecurity has been well recognized by researchers. Initially, it was considered a “paradox” because it was difficult to understand how it was possible for poor and food-insecure people to be overweight and obese (Institute of Medicine (US), 2011). This lack of understanding was based on the myth that poverty and food insecurity inevitably lead to undernutrition rather than to excess body weight (Frongillo, 2013). But nowadays, with more developed research and theoretical frameworks, this coexistence is expected because both food insecurity and excess body weight are related to social and economic disadvantage (Food Research and Action Center, 2015; Frongillo & Bernal, 2014).

Previous research in the U.S has examined the relationship between food insecurity and excess body weight in relation to gender and race/ethnicity. For example, Adams and colleagues (2003) used data from the 1998 and 1999 California Women's Health Survey and found that food insecurity was associated with an increased likelihood of obesity, and this risk is greatest in non-white subjects. After adjusting for income and education, the associations between food insecurity and obesity among Asian, Black, and Hispanic women as a group were stronger than among white women. Using a large, diverse sample of low-income adults in California, Leung, Williams, & Villamor (2012) showed that the association between food insecurity and obesity exists in individuals of certain low-income, minority racial/ethnic groups, such as Hispanic men and women, and Asian women. The most consistent evidence for the association between food insecurity and excess body weight is that this relationship differs by gender. Many studies in the U.S have found that this relationship exists for women, but not for men (Adams et al., 2003; Pan, Sherry, Njai, & Blanck, 2012; T. M. Smith, Colón-Ramos, Pinard, & Yaroch, 2016; Townsend et al., 2001). For example, a study with 66,553 participants from 12 states showed that food- insecure adults had a 32% increased the odd of being obese ($BMI \geq 30$) compared to their food secure counterparts. Women (but not men), those with some college education or who graduated from college, and those with no children or two children in the household were the five population subgroups in which obesity was significantly associated with food insecurity (Pan et al., 2012). Townsend and colleagues (2001) also found that the prevalence of being overweight among women increased as food insecurity increased, from 34% for those who were food secure to 41% for those who were mildly food insecure and to 52% for those who were moderately food insecure.

Additionally, some studies conducted in Latin-American countries have also found that the positive relationship between food insecurity and obesity exists only in women. For example, a study found that Brazilian adult women living in moderately food-insecure households had a 49% higher risk of being obese when compared to their food-secure counterparts (Kac, et al., 2013). Using data from the Mexican Health and Nutrition National Survey 2012, Morales-Ruán, Méndez-Gómez Humarán, Shamah-Levy, Valderrama-Álvarez, & Melgar-Quiñónez (2014) found that mild food insecurity was associated with obesity, particularly among women.

The majority of Latin-American research has studied the relationship between socio-economic status (SES) and obesity but not the relationship between excess body weight and food insecurity. Monteiro, Moura, Conde, & Popkin (2004) reviewed studies conducted in adult populations from developing countries between 1989 and 2003 and found that among the four studies from Latin-American countries that were included (Brazil, Cuba, Chile and Peru), the socio-economic status (measured either by education, income or a composite measure), was negatively associated with obesity in women, but not in men.

Many mechanisms have been suggested to explain the relationship between food insecurity and excess body weight in the U.S, such as limited access to healthy and affordable foods in low income neighborhoods, the higher cost of healthy food in relation to food with high levels of sugar and fat, the presence of cycles of food deprivation and overeating, fewer resources for practicing physical activity, and greater exposure to marketing and advertising for products that promote obesity in low income

neighborhoods, limited access to health care, and greater levels of stress, depression and anxiety (Food Research and Action Center, 2015).

Some authors have also proposed possible explanations for the relationship between low SES and obesity considering the Latin-American context. For example, many authors mentioned the enormous changes in the nutritional and physical activity patterns in the Latin-American countries during the past decades. Mass media and food marketing have contributed to the substituting of the traditional food for the food patterns of more developed countries and new technologies have made people much more sedentary. All these changes may be easily faced for people of the high socio-economic status, who have more resources of time, money and information to have more flexibility in their food choices and physical activity behaviors. On the contrary, the low-income groups are more constrained in their choices (Gutiérrez-Fisac, 1998; Monteiro et al., 2004; Pedraza, 2009; Peña, Bacallao, Pan American Health Organization, & Pan American Sanitary Bureau, 2000). Aguirre (2000) suggests also that the perceptions about the excess body weight may be different among high-income and low-income populations, especially for women. So, for high-income-professional women, their body is part of their own value, thus they care for their bodies in different ways: they practice exercise, eat healthy, and use surgical procedures. For these women “being slim” allows them to fit into the society, meeting the criteria of health and beauty. On the contrary, poor women’s bodies are devaluated work tools, except when supporting the social value of motherhood. For their social class, the beauty pattern is to have a “strong” body, thus they do not need to meet the expectations of “thinness” of the high-income populations. Other authors propose (Gutiérrez-Fisac, 1998; Pedraza, 2009) that for low-income populations, having excess

weight may be a sign of prosperity, social status and wealth; and sexual attractiveness and beauty for women.

Other reasons may explain why the relationship between food insecurity and obesity may exist only in women. First, women are more exposed to the cycles of deprivation and overeating; that is, when there is not enough food, they sacrifice their own food intake to safeguard their children from hunger (Food Research and Action Center, 2015). But, when the food is available, they tend to overeat. This situation may lead them to excess body weight. Second, gender factors may also play an important role, women face disadvantages in many areas, including work, education, health and political representation (United Nations Development Program, 2015). Women have heavier social burdens that lead them to feel depressed and anxious and leave them little-to-no time for self-care, added to the fact that they have been traditionally subordinated to men in many countries, exposing them to a higher risk of excess body weight (Martinez-Jaikel & Frongillo, 2016; Peña et al., 2000; World Health Organization, 2016). Third, it is well known that women have higher rates of mental health problems, such as depression and anxiety, than men (World Health Organization, 2016). High levels of stress, anxiety, and depression are associated with food insecurity, and these may lead to excess body weight through stress-induced hormonal and metabolic changes as well as unhealthy eating behaviors, disordered eating, and lack of physical activity (Adam & Epel, 2007; Food Research and Action Center, 2015; Torres & Nowson, 2007). For example, Adam & Epel (2007) found that, in individuals who are chronically stressed, there is a hyper-activation of the hypothalamic-pituitary-adrenal axis (HPA), which releases cortisol. It has been

hypothesized that the repeated activation of the HPA axis by stress and the subsequent elevation of cortisol promotes the accumulation of abdominal fat mass.

2.1.1 Relationship between food insecurity, excess weight, and discouragement and anxiety symptoms

Martinez-Jaikel & Frongillo (2016) found that discouragement was the primary link of the relationship between food insecurity and excess body weight in Costa Rican women. Both food insecurity and excess body weight has been associated with depression and anxiety (Becerra, Sis-Medina, Reyes, & Becerra, 2015; Castañeda et al., 2016; de Wit et al., 2010; Craig Hadley & Patil, 2006; Heflin, Siefert, & Williams, 2005; Luppino et al., 2010; Whitaker, Phillips, & Orzol, 2006; Wu & Schimmele, 2005), however, the evidence is most consistent for food insecurity than for excess body weight. For example, a research in Africa (Hadley et al. 2008) studied whether food insecurity and exposure to stressful life events are associated with symptoms of mental health disorders among adults in sub-Saharan Africa, using the Hopkins Symptom Checklist and the Harvard Trauma Questionnaire to assess anxiety and depression and post-traumatic stress symptoms. Food insecurity was associated with high symptoms of depression, anxiety and post-traumatic stress. They concluded that interventions that promote food security may also positively influence adult mental health. Another study which took place in rural Western Tanzania also found that food insecurity was a strong predictor of symptoms of anxiety and depression, and changes in food insecurity across the seasons predicted changes in symptoms of anxiety and depression (Craig Hadley & Patil, 2008). Becerra et al. (2015) used the 2007, 2009, and 2011–2012 California Health Interview Survey (CHIS) to evaluate whether low food security and very low food security were

significantly associated with past-month serious psychological distress (depression and anxiety symptoms) among Hispanic adults living in poverty ($\leq 200\%$ of the federal poverty level). They found that food insecurity in the Hispanic population was significantly associated with past-month serious psychological distress. With regard to the relationship between depression and excess body weight; it seems to be that this relationship may depend on gender, the severity of the excess body weight, race, and age (Kodjebacheva, Kruger, Rybarczyk, & Cupal, 2015; Onyike, Crum, Lee, Lyketsos, & Eaton, 2003). For example, de Wit y colleagues (2010) showed evidence that both obesity and underweight are associated with increased levels of depression, after controlling for many socio-demographic variables. Moreover, there exists a trend indicating that differences in the association between males and females may exist. Onyike et al. (2003) found that obesity ($BMI \geq 30$) was associated with past-month depression in women but was not significantly associated in men. Additionally, they suggested that obesity is associated with depression principally among persons with severe obesity. Kodjebacheva and colleagues (2015) found that depressive symptoms were stronger predictors of BMI for African Americans and women than for non-Latino whites and men. Evidence is lacking, however, to determine whether depression and anxiety themselves are pathways from food insecurity to excess body weight.

2.2 Interventions Promoting Food Security

A wide range of interventions have been developed to alleviate food insecurity worldwide. Some examples of interventions that have been implemented in the U.S are: farmers' markets, community gardens, community-supported agriculture programs, farm to school initiatives, and food recovery programs (Holben & American Dietetic

Association, 2010; Kantor, 2001). Rose (2008) elaborated a synthesis of world-wide food-insecurity interventions with the purpose to learn valuable lessons for successful interventions from both low- and high-income countries. He classified the food-security interventions in four: (1) programs to increase agricultural production. For example, distribution of tools, developing new local crop varieties and educating farmers on how these crops can grow (Low et al., 2007; Nsabuwera et al., 2016; Weiser et al., 2015); (2) employment and income distribution programs, such as distribution of food or cash payments in exchange for labor on public works projects (Mattinen & Ogden, 2006); (3) interventions to increase human capital, that refers to interventions that “develop the skills, education, and health of individuals, so-called human capital development, allow them to seek better employment opportunities and to fulfill their earning potential” (Rose, 2008, p. 166) ; and (4) food-based distribution programs such as the U.S Supplemental Nutrition Assistance Program (SNAP). Since at least 1971, concerns have been raised, however, that these programs might exacerbate obesity. For example, in a study carried out in Boston, (Walker & Kawachi, 2012) participants with food insecurity who participated in emergency food assistance programs were more likely to have excess body weight compared with food-secure participants (80.5 vs. 61.5 %, respectively). A cluster-randomized trial in Mexico to study the impact of a program, which provided poor rural household with cash or food transfers, on the body weight of women showed that the program led to weight gain in women. Over 23 months, women who received a food basket or cash, significantly increased weight gain (70 and 53%, respectively) compared with the control group. The greatest impact was found in the already excess-weight women (Leroy et al., 2013).

We will develop further about interventions to increase human capital, specifically interventions to promote food security through nutrition education due to the intervention that we proposed have a nutritional education component. In the section of “Women’s Empowerment and Nutrition” we will discuss interventions aimed at empowering women.

2.2.1 The Role of Nutrition Education in Food Security

Although economists have argued that we would expect nutrition education to have a minimal impact on food insecurity because food insecurity comes from financial constraints (Dollahite, Olson, & Scott-Pierce, 2003); nutrition education has been recognized as one of the strategies to promote food security (Food and Nutrition Service, 2002; Holben & American Dietetic Association, 2010; Rose, 2008). Below is some evidence that show their effectiveness. For example, Dollahite, Olson, & Scott-Pierce (2003) assessed the impact of nutrition education on food security status in a multiethnic, low-income population using a pretest-posttest comparison group design. The population (n=16,146) were participants in the Expanded Food and Nutrition Education Program (EFNEP) in New York State. The EFNEP is a community-based nutrition education program funded by the United States Department of Agriculture (USDA). One of the primary goals of this educational program is to promote food security through nutrition education. For example, they help participants to identify and develop strategies to manage their food budgets and related resources, such as food stamps. The results showed that both groups the graduated, defined as “completion of six or more lessons, completion of both pre- and post-education assessment, and the participant’s and front-line educator’s assessment that the participant had met goals established upon entry into

the program” (p. 130); and terminated without graduation, show a significant decrease in food insecurity score ($p < .05$) before and after the education. A multiple regression analysis showed that food insecurity score decreased significantly more in graduates ($p < .001$) than in terminated without graduation. There was a dose response relationship between the number of lessons received and decreases in food insecurity.

Greer & Poling (2001), also examined the relationship between food insecurity and participation in nutrition education classes with participants in the EFNEP. They found that participants who had completed one or fewer lessons in the EFNEP program were almost two times more likely to be food insecure compared to subjects who had completed two or more lessons. Eicher-Miller, Mason, Abbott, McCabe, & Boushey (2009) aimed to understand the effect of Food Stamp Nutrition Education (FSNE) on participants’ food insecurity and food insufficiency. The FSNE educational sessions revolved around food preparation, healthy food choice, cooking skills, and budgeting and they are offered often in in the client’s home. The participants were women head-of-household with an age of 18 years or older in Indiana. Both food insecurity and food insufficiency in the experimental group compared with the control group were significantly improved. These three studies concluded that participation in nutrition education programs that teach basic nutrition, food resource management, and basic cooking skills are associated with decreases in food insecurity.

Another recent study in Honduras (Derose et al., 2015) with 482 anti-retroviral therapy participants who received a one session of peer nutritional counseling showed that even in a short period of time (2 months) household food insecurity decreased significantly among all participants ($\beta = -0.47$, $p < .05$). One important limitation of this

study was not using a comparison group. A study with 248 low-income, pregnant women receiving Centering Pregnancy™ group prenatal care (n = 124) or individual prenatal care (n= 124) concluded that group prenatal care in comparison with individual care may improve food security through increasing confidence and skills in managing household food resources. For example, group prenatal care participants were more likely to change their perceptions that they could afford the healthy foods they wanted (Heberlein, Frongillo, Picklesimer, & Covington-Kolb, 2015). This is important, because Martinez-Jaikel & Frongillo (2016) found that the main cognitive barrier to having a healthy nutrition in food-insecure excess weight women in Costa Rica was the belief that dieting is expensive and involves special products. Participants in this study mentioned also that for them -that always having a limited budget- it is very significant to have the knowledge about how to eat healthy at low cost.

On another hand, Lombe, Nebbitt, Sinha, & Reynolds (2016) attempted to understand whether nutrition knowledge is related with health outcomes and whether food insecurity is a moderator of this relationship. They used a sample of adults who were 185% of the poverty line from the 2007–2008 National Health and Nutrition Examination Survey (n= 2,171), found that nutrition knowledge was associated with decreased negative health outcomes, but this relationship was only significant for food secure respondents. In contrast, in food- insecure individuals, nutrition knowledge was not associated with improved health outcomes, suggesting that food insecurity is associated with poor health, regardless of the level of nutrition knowledge.

In sum, the relationship between food insecurity and excess body weight exists in women but not men. Women with food insecurity and excess body weight compromised

their physical and mental health in many ways. There is a gap in the understanding of the pathways of this relationship. For example, there is not enough evidence to conclude that depression and anxiety symptoms may be mediators between food insecurity and excess body weight. This lack of clarity in the pathways of this relationship has probably limited the development of successful interventions in food insecure women with excess body weight. In fact, no intervention studies targeting these women was found. Concerns have been raised that programs offering cash or food transfers might contribute to excess body weight, particularly in adult women. There is need to develop and implement interventions that improve food security while simultaneously reducing rather than exacerbating excess weight gain. These interventions should include health promotion strategies and may or not include cash or food transfers.

2.3 Gender, Empowerment, and Development

The field of “International Development” emerged in the 1950s after World War II as part of the decolonization process and its rise was facilitated in part through the newly formed United Nations. At that time, the success of the Marshall Plan convinced economists that aid-based strategic planning would help reduce the differences between developing and industrialized countries (Visvanathan, 2011). The International Conference on Population and Development (ICPD) was held in September 1994 in Cairo, Egypt. At this conference, 179 governments signed the ICPD Program of Action, which marked a new approach for addressing population and development issues. This program acknowledged that women’s empowerment and gender equality are basic elements of population and development programs (United Nations Population Fund [UNFPA], 2014). Since this conference, women’s empowerment has been recognized as

one of the most important goals in both national and international development (Malhotra & Schuler, 2005). It has been incorporated in multiple treaties, including a resolution adopted by the United Nations General Assembly titled, “Transforming our world: the 2030 Agenda for Sustainable Development” (United Nations [UN], 2015).

Despite the above, it has been argued that although the two contexts in which the concept of development emerged—the post-Second World War international context and the emergence of many post-colonial states and their movement toward development agendas—facilitated significant changes in gender relations, a “gender blindness” existed, which resulted in specific modalities of development (Rai, 2011a). Also, both models of development—the communist and the liberal—were “insensitive to gendered power relations” (Rai, 2011a). These gendered critiques of development led to the introduction of the Gender-Related Development Index (GDI) and Gender Empowerment Measure as well as the inclusion of Gender Equality in the Millennium Development Goals; however, despite these advances, women continue to be disadvantaged in relation to men. Rai (2011b) also proposes that this persistent gender inequality can be explained women in development being addressed as objects of welfare, without bringing to the forefront the transformation of gender relations. Moreover, the theoretical debates on gender and development and their sometimes, contradictory nature, have impacted policy and institutional issues.

2.3.1 Understanding and Measuring Women’s Empowerment at Different Levels of Intervention

In the context of these development discourses, the concept of women’s empowerment emerged. Empowerment has been conceptualized and measured in many

ways. One conceptualization of women's empowerment involves two particular elements that allow us to differentiate it from other types of empowerment: process and agency (Malhotra & Schuler, 2005). Agency refers to the ways women themselves must be major actors in the process of change that is being described or measured. Process refers to the idea that a fundamental change in perceptions, or "inner transformation," is fundamental to the formulation of choices. Because process involves two different points of time, Malhotra & Schuler (2005) propose that qualitative research is a good choice to capture the empowerment process.

Malhotra & Schuler (2005) also propose that the definition of empowerment articulated by Kabeer (2001) should be considered a good point of reference because it defines empowerment as "the expansion in people's ability to make strategic life choices in a context where this ability was previously denied to them" and contains both the process and agency elements" (p.72). Malhotra & Schuler (2005) consider resources not as a characteristic of empowerment, but as "enabling factors" that can promote the empowerment process. They argue that resources are important but not sufficient to ensure women's empowerment. Women's individual and collective ability to recognize and use such resources in their own interest is more important. Empowerment also works at different levels of society. For example, micro (individual), meso (household), and macro (community). Thus, these different levels should be considered when the impact of an intervention is evaluated. The authors also highlight the variation of empowerment across and within contexts, these differences should also be taken into consideration in empowerment's measures. Finally, they discuss the multi-dimensionality of the empowerment concept and proposed a framework to develop indicators to measure it.

Some of these dimensions of empowerment include economic, social and cultural, legal, political, and psychological.

In a similar vein, (Narayan-Parker, 2005) points out that empowerment is multi-dimensional. These dimensions do not necessarily move at the same speed or even in the same direction. For example, the results of studies about the same phenomenon may be very different depending of the dimension of empowerment that they are measuring. She highlights that the most studied dimension of empowerment is the economic dimension. On the contrary, the less studied dimensions have been the social and political dimensions, including the psychological dimension. She points out that the interest among researchers about this last topic is growing because it has been observed that individuals with similar abilities and resources have different capabilities to act in their own behalf. Two important precursors to act are: self-confidence and self-efficacy. In relation to this psychological dimension, Johnson, Worell, & Chandler (2005) propose a definition of empowerment as a goal of women-centered interventions: “enabling women to access skills and resources to cope more effectively with current as well as future stress and trauma” (p.111). The authors think that empowerment as a goal of women-centered interventions consists of “helping women to become more independent and assertive about attaining her goals and achieving change and psychological growth” (Wyche &Rice, 1997, p. 60 as cited by Johnson et at, 2005).

Diener & Biswas-Diener (2005) argue that psychological empowerment and subjective well-being are related. Subjective well-being is defined as: “people’s positive evaluations of their lives, including pleasant emotions, fulfillment, and life satisfaction “(Diener & Biswas-Diener, 2005, p.125). Psychological empowerment as defined as

“people’s belief that they have the resources, energy, and competence to accomplish important goals” (Diener & Biswas-Diener, 2005, p.125) is considered one aspect of subjective well-being.

Kabeer (2005) discusses the concept of women’s empowerment in the light of the third Millennium Development Goal. She defines empowerment as “the processes by which those who have been denied the ability to make choices acquire such an ability.” To make “real choices” two conditions must be fulfilled. First, there must be alternatives. For example, the poverty due the lack of resources, excludes the possibility to make significant choices. Second, alternatives must not only exist, they must also be “seen” to exist. For example, women may accept violence because they cannot visualize another behavior. She proposes that the concept of empowerment can be explored through three dimensions: agency, resources, and achievements. In relation to empowerment, agency implies the ability to make choices in ways that shift power relations. Agency is exercised through resources. So, it is important to define the terms on which resources are obtained. For example, a woman who is economically dependent on her husband may have limited ability to make strategic choices. Achievements refers to the extent to which the potential for living the lives that they want is attainable. She points out that changes in any of the dimensions can lead to changes in others. She also analyzes how education, paid employment, and political participation (the indicators to monitor the progress of this Third Developmental Goal) produce positive effects and/or limits to empowerment. For example, women with access to paid work may have improvements in household relationships and more self-confidence and purchasing power, but at the same time, they

may work in bad conditions or may have the burden of the household work plus the work outside the home that finally leads to negative effects in their health.

Hanmer & Klugman (2016), analyze the conceptualization and measurement of agency focus on the Pathways of Women's Empowerment Research and the multidimensional measures by the Oxford Poverty and Human Develop Institute. Both strands agree on three different aspects. First, agency is exercised in multiple spheres of life. The ability to exercise agency in one domain, does not necessary imply agency in other domains. Hence, multidimensional measurement is necessary. Second, cognitive changes, for example, greater autonomy, self-confidence, feeling more valued and motivated are very important. Third, it is necessary to develop and used direct measures of agency. The pathway's work is drawn from Kabeer's approach, which was explained above. The Oxford Poverty and Human Develop Institute explores how gender roles, norms, and behaviors impact women's and men's ability to exercise agency in differentiated ways and how agency is frequently restricted for women in relation to men. This approach proposes that increased access to assets may not be necessarily translated to agency in the same way for different persons, because every individual has different constraints. They also discuss that improvements in agency may not result necessarily in changes in assets. For example, a woman who joins a women's group may increase her power to make decisions at home, but this situation does not necessarily imply that she gains assets. Finally, based on data from Demographic and Health Survey, Hanmer & Klugman (2016) conclude that completing at least secondary education, has consistently larger positive associations than only going beyond primary schooling (as the Millennium

Development Goal proposes). Moreover, education has a protective effect against violence, but only at women's secondary or higher education levels.

Although empowerment is currently related to the concepts of self-efficacy and agency, in its original formulation, this term comprised of three different domains that were considered equally important and indivisible: the intrapersonal (e.g., self-efficacy), the interpersonal (e.g., the ability to analyze critically with others about imbalances of power), and the behavioral (e.g., acting against these power imbalances) (Bay-Cheng, 2011). So, in this original definition, it was not possible to consider self-efficacy without critical consciousness and social action. Similarly, Gutierrez (1994) considers empowerment as “the process of increasing personal, interpersonal, or political power so that individuals, families, and communities can take action to improve their situations” (p. 202). For example, in the specific case of stress, she mentioned an important difference between the coping literature and the empowerment one. The work on stress coping is centered around how individuals adjust to stressful events, whereas for the empowerment perspective it is fundamental to understand how the persons and groups try to change the stressful and unjust conditions that are the origins of the stress. Oppenheim (2005) defines empowerment as “the extent to which some categories of people are able to control their own destinies, even when the people with whom they interact oppose their interests” (p.90). This author highlights the relational nature of empowerment, in other words, “people are empowered or disempowered relative to other people or groups whose lives intersect with theirs and whose interests differ from theirs at least in part” (p.90). This author also emphasizes that women's empowerment reflects community norms better than their personal socio-demographic characteristics. Thus, collective

action, such as organizing women into groups, may be a step in the right track. She also agrees with the idea that empowerment is multidimensional and recommends the combination of qualitative and quantitative methods to measure women's empowerment.

In sum, women's empowerment is an important component in the current development agendas. There are different definitions of empowerment, but many of them included the concept of agency – often understood as the ability to make choices that reflect one's own desires – obscuring the original definition of empowerment, which is more collective and action oriented (Bay-Cheng, 2011; Gutierrez, 1994). This individualistic definition may not work in context, such as, Latin-American countries where the culture are more collectivist and family-oriented. Thus, enhancing women capacities taking into consideration their household members and communities is a step in the right track. Moreover, the authors agree that the empowerment is multidimensional, thus a combination of methods are necessary to measure all the dimensions.

2.3.2 Women's Empowerment and Nutrition

Women's empowerment has been considered fundamental for improving nutrition (Bold, Mara, Quisumbing, & Gillespie, 2013). Empowerment has been related with women's own nutritional status as well as their children's nutritional status and physical and mental development (Ameringen, 2014; Bhagowalia, Menon, Quisumbing, & Soundararajan, 2012; Bold et al., 2013; Houston & Huguley, 2014; L. C. Smith, 2003). Thus, women are the target of many nutrition and/or empowerment interventions because their status as mothers. It is well-recognized that malnutrition can negatively impact an individual at any life stage, however, malnutrition during pregnancy and the first two

years of a child's life can permanently affect their growth, cognitive abilities, and the immune system, as well as increase the probability of developing chronic diseases in adulthood (Houston & Huguley, 2014; UNDP, 2012).

Smith (2003) found that women's status, defined as "women's power relative to men's in the households, communities, and nations in which they live" (p. 5) was related to children's nutritional status in three developing regions: South Asia, Sub-Saharan Africa, and Latin America and the Caribbean. Women's status impacts child nutrition because women with higher status have better nutritional status and better care; and thus, they can offer higher quality care to their children. By contrast, women with low status tend to have less control over household resources, severe time constraints, lower self-esteem and self-confidence, poorer mental health, less access to information, and health services, these factors in turn affect children nutritional status. The strength of these relationships as well as the pathway for this to occur varies substantially across regions. Bhagowalia et al. (2012) found that in Bangladesh, stunting – low height for age--was associated with attitudes toward domestic violence, height and maternal education, and age at first marriage. They also found that higher maternal education and household wealth significantly increase diet diversity, but maternal height and education were inversely related to long-term malnutrition.

Although the role of mothers is important for child development, women also play multiples roles in the society that should be considered. For example, gender inequality can have important impacts on productivity because they affect directly the physical and mental health of women. Women represent more than 40 percent of the global labor force, 43 percent of the agricultural workforce, and they are more than half of the world's

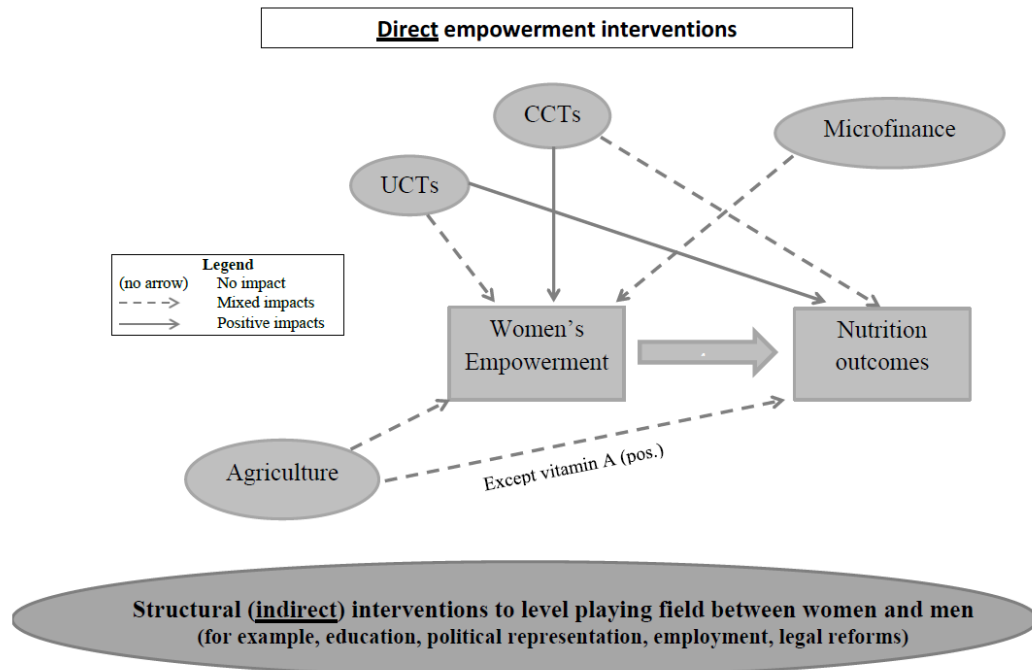
university students (The World Bank, 2012). Nutrition-related diseases such as overweight and obesity threaten women's quality of life, health, and productivity. Excess body weight, is a global health problem that increasingly affects low- and middle-income countries as well as high-income countries (World Health Organization, 2015). Excess body weight has multiple consequences on health, due to these health consequences, people with excess weight and their employers face costs because of lost productivity, due to presenteeism (i.e., working while sick), absenteeism, and disability (Lehnert, Sonntag, Konnopka, Riedel-Heller, & König, 2013). These annual costs vary between an additional \$86 to \$178 for overweight men and women. The annual costs for obese men and women is between \$1,172 and \$3,405 -in 2009 dollars- (Tan, 2014). Moreover, both excess body weight and gender inequality has been related to mental health problems, such as depression and anxiety (Luppino et al., 2010; World Health Organization, 2016).

Despite the above findings, an enormous gap in the literature exists on the relationship between women's empowerment and obesity. One study has explored the relationship and it examined the study protocol of a self-empowerment group treatment on excess weight patients (Struzzo et al., 2013). The results on its impact were not presented. Obesity may be related with women's disempowerment in many ways: First, it seems to be those that are the politically weaker groups that are more likely to suffer obesity. Women are more likely to be obese than men, obesity is more prevalent in lower socio-economic groups, rural populations tend to have more excess body weight than urban populations, and blacks are more likely to be obese than whites (Kent, 1988). Second, Wells, Marphatia, Cole, & McCoy (2012), found that after adjusting for per capita gross domestic product, both the Gini index of national wealth inequality, and the

gender inequality index were associated with excess female obesity. The magnitude of female excess obesity is greater in countries characterized by gender inequality and lower per capita gross domestic product. Third, women with excess weight suffer excessively from discrimination in multiples domains, including employment, education settings, romantic relationships, health care and mental health treatment, and stereotypes in the media. These kinds of discrimination lead women to have low self-esteem, depression, body dissatisfaction, and lack of self-confidence (Azarbad & Gonder-Frederick, 2010; Fikkan & Rothblum, 2012; Puhl & Heuer, 2009, 2010). In turn all these factors may be associated with disempowerment. Finally, weight-based discrimination affects women more than men and this type of discrimination against women may be not receiving the same level of attention than other types of discrimination (Fikkan & Rothblum, 2012).

There are many interventions aimed at empowering women; and evidence was reviewed about the impact on women's empowerment, nutrition, or both in three types of interventions directly aimed to empower women. They include conditional cash transfer programs, agricultural interventions, and micro-finance programs. Cash transfer programs focus on poor households and transfer money to beneficiaries who are typically mothers who are the head of household. In exchange for these payments, recipients should follow some behaviors or actions, such as ensuring that their children attend school or visit health services (Ahmed, Quisumbing, Nasreen, Hoddinott, & Bryan, 2009). Agricultural interventions may include, for example, home gardening. The microfinance programs aim to facilitate the access to financial services otherwise unavailable to the poor, such as credit, savings, insurance and support services (Bold et al., 2013; Rose, 2008).

They elaborated the next figure to explain these findings:



Source: Developed by authors.

Notes: The arrows indicate the extent to which available evidence indicates no impact, both positive and negative impacts, or positive impacts on women's empowerment and/or nutrition outcomes. However, this "evidence map" does not include information on the *amount* of evidence available or whether the evidence is quantitative or qualitative. It also does not provide information on pathways of impact. More detail on this can be found in the text of this paper.

CCTs: conditional cash transfers; UCTs: unconditional cash transfers.

Figure 2.1: Evidence map showing impacts of interventions on women's empowerment and nutrition outcomes

Source: Bold et al, 2013.

In relation to conditional cash transfers programs, the qualitative evidence showed positive impacts on women's empowerment, but the quantitative findings are not consistent. On long-term nutritional status, conditional cash transfer programs have shown mixed results. Comparing three programs - food, cash, or both food and conditional cash transfer programs - in Bangladesh, it was demonstrated that the programs which had the largest positive impact on women's empowerment provided the largest payments and challenged traditional gender norms (Ahmed, Quisumbing, Nasreen, Hoddinott, & Bryan, 2009).

Agricultural interventions showed mixed impacts on women's empowerment when taking into consideration measures such as women's time, workload, and control over income. Regarding nutrition, these programs demonstrated very little impact. Finally, in relation to the impact of microfinance on women's empowerment, evidence is also mixed. The authors showed that more recent review does not find any impact on women's empowerment or micronutrient status (Bold et al.,2013).

Many authors have agreed that the development of interventions that do not take into consideration gender disparities can contribute to distributing the benefits within a household in ways that reinforce women's subordination (Ahmed et al., 2009). The aforementioned programs (e.g., cash transfer program, agricultural interventions, and microfinance programs) have been criticized for their inability to address gender inequality. For example, Chant (2016)) questions whether depending on women and girls to solve world poverty is an effective way to achieve gender equality and greater female empowerment, or instead reinforces gender stereotypes which are unlikely to eliminate gender disparities. She concludes that there is little convincing evidence that these anti-poverty initiatives are effective means by which to achieve the goals of female empowerment and gender equality. In these programs, gender norms and the unequal gender relations they reflect remain unaddressed. Even more, she adds that such efforts have reinforced the non-egalitarian model of family. For example, the conditional cash transfer programs promote women's unpaid maternal and community work, encourage they sacrifice for future generations and made little efforts to include men. Bold et al., 2013 also found little evidence for the impact of these three programs.

In sum, the literature reviewed above about nutrition and women's empowerment emphasizes a focus on empowering women primarily if not exclusively because of their role as mothers. In other words, they reflect the belief that women should be empowered because it is a good way to improve the nutritional status and health of their children and in turn, "has major implications for the health and productivity for an entire country" (Houston & Huguley, 2014). While this is crucial, it is also important to empower women for the sake of their own health, their quality of life, their contribution to development beyond their role as a mother, and social justice. Such commitments and concerns are largely absent in the literature. Scholarship about the relationship between excess body weight and gender inequality or women's empowerment are also absent in the literature. This is a key research area that should be addressed because "improving women's status may be fundamental for addressing the global obesity epidemic over the long term, with potential benefits for the women themselves and for their offspring" (Wells et al., 2012).

2.4 Gender Norms, Gender Equality, and Health Behaviors

Changing gender norms is fundamental to promote healthy behaviors and support gender equality (Fleming & Agnew-Brune, 2015b; Schensul et al., 2015). Gender norms refer to the social rules or expectations about what women or men should do, e.g., what behaviors, professions, products, or knowledges are appropriate for each of them (Gendered Innovations, 2016; Monda.eu, 2016). Rigid gender norms can have a harmful impact on health and well-being of women and men because certain gendered behaviors may be related to health outcomes. For example, women may suffer more depression, anxiety, and somatic complaints than men, because women have a continuous responsibility for the care of others limiting the care of their own health. On the other

hand, alcohol dependence is generally more than twice as high for men as for women because it is normative for men in some cultures to drink alcohol excessively. Men also may avoid certain healthy food options or self-care for consider them feminine behaviors (Fleming & Agnew-Brune, 2015b; Montero et al., 2004; World Health Organization, 2016). Measuring social norms is challenging. Ones of the most widely used theories are the Theory of Planned Behavior and the associated Theory of Reasoned Action (Ajzen, Joyce, Sheikh, & Cote, 2011; Mackie, Moneti, Shakya, & Denny, 2015; Rimer, 2005).

Many interventions have been conducted aimed to change gender norms to promote different outcomes, such as preventing domestic violence, reducing risky sexual behaviors, or increasing the consumption of fruits and vegetables (Emanuel, McCully, Gallagher, & Updegraff, 2012; Schensul et al., 2015; World Health Organization, 2009).

2.4.1 Gender Norms and Discouragement

Gender inequality persists as key obstacle to human development. Women and girls face disadvantages in many areas, including work, education, health and political representation (United Nations Development Program, 2015). Gender inequality is produced and perpetuated by, among other things, the gender norms that assign women and men dissimilar roles in the society that affect their quality of life disparately (Hiller, 2008). In relation to mental health, important gender differences exist in the rates of the most common mental health disorders, such as depression, anxiety and somatic complaints; women have higher rates of these disorders than men. For example, in Costa Rica, according to 2013 data from the Ministry of Health, 74% of new diagnoses of depression are for women (Diario La Nación, 2014). Worldwide, unipolar depression is predicted to be the second leading causing of disability by 2020, and it is twice as

common in women as it is men. In contrast, other common mental health disorders, such as alcohol dependence, are generally more than twice as high for men as for women (Montero et al., 2004; World Health Organization, 2016). Mental health issues, including discouragement and anxiety should be addressed because they are associated with the incidence of diseases and disability. Addressing mental health issues will also provide people the opportunity to reach their potential as contributors to economic prosperity and contribute to their well-being both on the personal and societal level (Drew, Faydi, Freeman, Funk, & Organization, 2010; World Health Organization, 2016).

Two different theories have been used to explain these gender differences in mental health outcomes. The first explanation considers the constitutional, genetic and/or endocrine factors to account for these differences. For example, some scholarship focuses on the role of the menstrual cycle or the menopause period in explanations of gender differences in mental health; however, this biological reductionism has shown not only to be insufficient to explain this situation but also to paid little attention to how social conditions, adversely affect women's health (Inhorn & Whittle, 2001; Montero et al., 2004). A second type of explanation found in socio-cultural factors, including gender norms. According to this theory, women and men express their suffering and use coping strategies differently (Montero et al., 2004).

Although the biological explanations and treatments seem to dominate the mental health field (Inhorn & Whittle, 2001; Ordorika Sacristán, 2009), theories based in socio-structural factors have been used by some authors to explain mental health problems in women (Lagarde, 1993; Ordorika Sacristán, 2009). Even the World Health Organization mentions the following among the gender specific risk factors i.e. social determinants of

health, for common mental health disorders that affect women: socioeconomic disadvantage, low income and income inequality, low or subordinate social status, continuous responsibility for the care of others, and high rates of gender-based violence (WHO, 2016; WHO, 2001). In our previous study in Costa Rica, we also found that most of the women feel “discouraged. Women described “discouragement” as feeling sad, depressed, hopeless, and lacking drive to do important activities, such as find a job or study more. We also found that the discouragement that these women felt had to be understood in the family and social contexts in which they live (Martinez-Jaikel & Frongillo, 2016).

There is also a gender bias in the treatment of mental health disorders. For example, in the presence of identical symptoms of depression and similar scores on standardized measures, doctors are more likely to diagnose depression in women compared with men. Moreover, being female is a significant predictor of being prescribed mood altering psychotropic drugs (World Health Organization, 2016). The roles that women play in the society are fundamental in explaining their mental health problems and their use of mental health services.

Lagarde (1993) says that women prioritize the needs of others ahead of their own because of gender socialization processes and attendant gender norms, which are reinforced throughout the life course. She proposes that the construction of the female role around this “renuncia” (renunciation of one’s needs) leads to “la locura” (dementia). Moreover, “la locura” is produced when women attempt to meet gender expectations, such as being a “good woman,” build a good marriage, raise good children, or have a happy family (Lagarde 1993). Burgos, Sharratt, & Trejos (1988) concur and summarize

the traditional gender expectations that women face, which may be one of the main causes of their discouragement:

- Women's personal fulfillment should be found within the household, in marriage and motherhood.
- Women should depend on a masculine breadwinner. This breadwinner not only gives them household provisions and material goods but also an identity and status.
- Women's behavior should be oriented toward taking care of others. Their needs should always be below others' needs. They should show an important spirit of sacrifice, love and compassion.
- Women should live their own lives by living through the lives of the others. They should consider the others' achievements (husband, children, and brothers) as their own successes.
- Women should be concerned about their physical appearance. They should try to be beautiful for others.
- Women should avoid expressing anger or power, and initiating sex.

Lagarde (1993) adds that due to the gender expectation that women organize their lives around others, the needs of the others become more important than their own desires. If in some moment women lose the possibility to live for others, they will feel "empty" and "worthless." Women typically visit the doctors and the clinics to be seen and heard. Such interactions allow women to have their feelings validated and provide them some of the attention that they need from someone with power.

Grela & López Gómez (n.d.) agree with the argument that gender expectations may lead to discouragement in women. Women feel frustration because they give love, time, and attention to others, but at the expense of their own needs and desires. Due to centering their lives on the needs of others, women are in a vulnerable position: their own value depends of the others' judgment. In other words, the others define their value. Since the role of the "unconditional giver" reinforces the others' belief that women can give in an unlimited way, the others always will have higher expectations for them, which are often impossible to meet. The cost of this type of relationship leads women to feel that they never are meeting others' expectations, which can lead to guilt and feeling psychically and mentally exhausted. All these aspects may lead women to feel discouraged. In addition to that, when women take a non-traditional path that may not include a partner, they may experience social stigma because they are living in a social context that doesn't recognize or legitimize non-traditional life course trajectories for women. The authors conclude that women should focus on their self-development, which conflicts with institutionalized gender norms. Nonetheless the authors argue that women can contribute to others' development, but such contributions should be based on the mutual solidarity and not only in women's sacrifice.

In the contemporary context, both women and men may play multiples roles in the society and may have their own independent goals and accomplishments. The advantages of combining multiples roles are fewer for women than for men when it comes to mental health. Simon (1995) recognizes that there are structural factors contributing to this situation, such as the modest contributions of the husband to the household labor and child care; and the labor market inequality. The last factor contributes to why women

earn less than their husbands, which also decreases their power within the household and their marriage. However, Simon argues that these factors only partially explain why mental health advantages of combining work and family are less for women. He found that gender differences in the perception about the relationship between work and family roles may explain this gender difference. For example, women feel that their primary responsibility is to support their children and husbands, so their employment inhibits them from fulfilling their most important responsibility. Thus, they feel guilty. By contrast, men believe that their employment is fundamental for their family, because they are satisfying their family needs through generating income. Hence, they feel satisfied. Blake and colleagues (2009) found gender differences in relation to the satisfaction with food choice. For example, whereas mothers feel satisfied on their ability to balance work and family demands providing healthy meals for their families, fathers evaluated satisfaction meeting expectations to contribute to food preparation.

In summary, normative gender expectations for women can lead to discouragement and other mental health problems. Their roles as unconditional caregivers encourage them to subordinate their own needs. Furthermore, the different types of violence that women suffer may lead them to seek out health services to relieve their pain. They use these health services and, in many cases,, encounter medicalized solutions to their problems, such as prescription drugs (WHO, 2016). Addressing gender inequality through transforming gender norms, seems to be the long- term solution to reduce the high burden of women mental health problems, including discouragement. The way to accomplish such goals however remains unclear.

2.4.2 Status of women in Costa Rica

Based on the 2014 data of the National Institute of Statistics and Censuses, Costa Rica has a population of 4,757,606 individuals, 2,376,679 (49.96%) are women and 2,380,927 (50.04%) are men. This section will describe some aspects of the women's situation in Costa Rica in fields such as, education, income, work and gender equality.

Country Gender Equality Indicators

Costa Rica has a Gender Development Index (GDI) of 0.969, ranking 66th among 188 countries (United Nations Development Program, 2016a) That means, that for each 100 opportunities that men have, women have 96.9. GDI measures gender gap in human development achievements in three basic dimensions of human development: health (female and male life expectancy at birth); education (female and male expected years of schooling for children, and female and male mean years of schooling for adults ages 25 and older); and command over economic resources, measured by female and male estimated earned income. The Gender Development Index shows how much women are left behind males; and how much women need to advance within each dimension of human development. It allows the understanding of the real gender gap in human development achievements (United Nations Development Program, 2016b).

In the 2014 Social Institutions and Gender Index (SIGI), Costa Rica has a score of 0.0506, ranking in the category of low. That means that the country has low levels of discrimination in social institutions. The SIGI scores 108 countries according to their level of discrimination in social institutions and classifies them into five groups, from very low levels of discrimination in social institutions to very high levels (OECD Development Centre, 2016).

Education

In Costa Rica, the educational status of women has improved drastically in the past twenty years compared with men. Women have secured equal access to education and perform better in many of indicators (Guzman-Stein & Morales, 2003). In 2012, there was practically no gender gap in primary school enrolment and a slight gender gap benefiting girls in secondary education (United Nations Development Program, 2016b). For example, the ratio of girls to boys in primary school enrolment was 99.2%. Women also in average performed better. For example, the lower secondary completion rate is 59% for women, in comparison to 53% of their men counterparts. Despite the above, in the low-income groups this situation is reversed, and the lower secondary completion is higher for men (42%) than for women (37%) (The World Bank, 2016). This situation shows that SES has a greater impact on the status of women than men, since more men than women can finally complete the lower secondary school having a low-socio-economic status. If we would disaggregate the data just for gender, we would not realize these differences based in gender and SES. This fact reaffirms the importance of take an intersectionality perspective, that means, “moves beyond single or typically favored categories of analysis (e.g. sex, gender, race and class) to consider simultaneous interactions between different aspects of social identity as well as the impact of systems and processes of oppression and domination” (Hankivsky, 2012, p. 1712).

Remunerated work and Health Insurance

The growing female participation in the labor market (non-domestic work) is a world-wide trend. In Costa Rica, for example, in the 70's the participation of women in the labor market was less than 20% of women with the required age to work. This situation

has been modified substantially reaching 45% in 2013 (Morales & Román, 2013).

Despite the above, gender inequality persists in many areas. For example, even if women have a higher health insurance coverage than men --16% of women are without coverage in comparison with 23% of men-- (Ministerio de Salud, Organización Panamericana de la Salud, & Organización Mundial de la Salud, 2005), the gap between men and women exists in the type of coverage.

In Costa Rica, the Caja Costarricense de Seguro Social (CCSS), the institution responsible for providing health care services, has 5 methods of insurance: 1) direct (maintains a conventional employer-employee relationship), 2) self-insured (voluntary insured who works on his/her own account in some activity), 3) pensioner, 4) family insured (indirectly-insured relatives of direct beneficiaries: wage-earners, pensioners, or self-insured beneficiaries), and 5) insured by the State, in which case the financing is the entire responsibility of the State (Sáenz, Bermúdez, & Acosta, 2010).

Around half of women (46.7%) have the category of “family insured” in comparison to 27.1% of the men. That means, that women are getting the coverage through one family member, such as husband or son/daughter that are directly insured, (Sáenz, Acosta, Muiser, & Bermúdez, 2011; Valitutti, Salas, Castro, Rojas, & Vargas, 2015).

This situation is related with the traditional sexual division of labor in which women take the household responsibilities (non-remunerated work) and men become the breadwinners. From this perspective and in this culture men have the right to decide how the household resources are used and distributed putting women in a condition of dependence and vulnerability in relation to household and personal life (Camacho de la O, Ana Lorena, Valitutti Chavarría, & Cordero Gamboa, 2011). For example, due to

women dependence on another person to be insured, they are unprotected if the relationship with the directly insured person is broken up. Moreover, women are risking their quality of life in old age, because they are not contributing toward having a retirement in the future (Ministerio de Salud et al., 2005; Valitutti et al., 2015). On the contrary, 30% of the men have an insured category of “salaried employment” but only 15% of women has this category. Among the total population with a known-income just 38.2% are women in comparison with 61.8% for their male counterparts. Among adults aged 15 years and older that in 2013 reported not having any income, 15.5% were men compared to 34.3% women. This data confirms that it is difficult for women to have economic autonomy. Even, if women have a remunerated job, there exists a gap between the women’s and men’s wages. In 2010, women earn just 84.8% in comparison to men (Valitutti et al., 2015).

Domestic and non-domestic Work

According to the “Costa Rican Time Use Survey” (Instituto Nacional de Estadística y Censos (Costa Rica), 2018), whereas women spend 35.49 hours weekly doing non-remunerated domestic work, men only spend 13.42 hours. That means that women spend about 22 hours per week more than men in non-remunerated domestic work. The most time-consuming task for women in comparison to men are: feeding and taking care of household members. For example, whereas women invest 13.8 hours a week cooking, men just 4.32 hours in the same period of time (Sandoval, 2013). According to 2013 data of the National Institute of Women (Valitutti et al., 2015), for every 100 women who reported not being able to work due to household responsibilities there are just 20 men who reported the same. All these factors put women at a higher risk of food insecurity

and poverty. For example, whereas the total of female-headed households in Costa Rica is 36%, in the extreme-poverty households, 43% of women are heads of household.

In conclusion, despite that at the country level Costa Rica seems to have a high level of gender equality, there are more specific indicators that show the gender inequalities. Researchers have also concluded that gender norms in relation to the distribution of household responsibilities remain one of the most important barriers to reaching gender equality (Camacho de la O et al., 2011; Sandoval, 2013; Valitutti et al., 2015). The growing incorporation of females into the labor market has not meant that men have taken more responsibilities in the household; on the contrary, women continue assuming most household responsibilities in addition to responsibilities outside the household. This double workload prevents women from not only assuming other opportunities in society, such as having better remunerated jobs, but it also has immense implications in women's physical and mental health.

2.5 The role of social support in weight loss and food security

The concept of social support has been used to define many different concepts and relatively overlapping functions, such as emotional, instrumental, informational, and appraisal support (Sallis, Grossman, Pinski, Patterson, & Nader, 1987; Verheijden, Bakx, van Weel, Koelen, & van Staveren, 2005). Verheijden et al. (2005) made the main distinction between structural and functional support. Structural support refers to social integration and it is the availability of significant others, such as spouses, family members or friends among others, regardless of the real exchange of support. In contrast functional support is a subjective measure of the perception of support and; it depends on personal characteristics and expectations. On the other hand, Uchino (2009) differentiates

between perceived and received social support. He points out that the main distinction between perceived and received social support is that perceived support has had a greater relationship to health in a more consistent way than received support. Perceived support is related to one's potential access to social support (a similar concept with functional support). On the other hand, received support is more a relational factor that appears during a specific time frame and usually in response to stressful circumstances (Uchino, 2009).

Thoits (2011) defines social support as “the functions performed for the individual by significant (i.e., primary) others,” although she argued during her article that “these functions can be supplied by secondary group members as well” (p.146). Caplan et al. (as cited in Sallis et al., 1987) defines social support as activities that help the individual move toward goals. On the contrary, negative forms of support may block or hinder goal attainment. The foregoing are examples attempting to show the heterogeneity of social support definitions.

2.5.1 Social Support and Weight Loss

Social support has been related to many health outcomes. For example, low levels of social support have been related with higher mortality rates and high levels with lower mortality rates from cancer and infectious diseases (Uchino, 2009). Also, social support has been related to beneficial effects on cardiovascular, endocrine, and immune systems positively influencing disorders such as, cardiovascular disease (Uchino, Cacioppo, & Kiecolt-Glaser, 1996).

Excess body weight has multiple causes, and for this reason there is not a single treatment for it (National Institute of Diabetes and Digestive and Kidney Diseases

(NIDDK), 2012). Promoting a healthy diet and exercise are two of the most important components of weight loss interventions and for both, a behavior change is required (Bethesda(MD), 1998). Theoretically, social support may be also a main determinant of success in changing health behaviors during weight loss processes (Greaves et al., 2011; Verheijden et al., 2005). Family members are one of the most recognized sources of social support (Thoits, 2011). Our study in Costa Rica with food insecure, excess weight women showed that family may help in the efforts to lose weight or may hinder it (Martinez-Jaikel & Frongillo, 2016). Thus, recognizing the role of the household members, including partners, in weight loss processes has a strong rationality.

Some literature reviews have evaluated the effect of the family in adult weight loss but the results are not consistent (Black, Gleser, & Kooyers, 1990; McLean, Griffin, Toney, & Hardeman, 2003; Verheijden et al., 2005). For example, McLean, Griffin, Toney, & Hardeman (2003) concluded that involvement of spouses in weight loss, weight control and weight maintenance interventions tended to improve effectiveness, however, the existing studies provide limited support. Another review Glenny, O'meara, Melville, Sheldon & Wilson (1997) suggested that interventions involving families seem to show some advantages in children; but in adults, specifically in interventions with couples, the effectiveness cannot be fully established from the studies included in the review. Other reviews found that family therapy is associated with greater weight losses for up to two years when compared with individual therapy (Avenell et al., 2004). The inconsistency of the results may be partly because evaluation of the effectiveness of social support is difficult due to the lack of clarity in the definitions, the difficulty in separating social support from other intervention activities, and the lack of inclusion of social support as an

outcome measure (Verheijden et al., 2005). We will take into consideration the most recent literature (from 2005 to now) in relation to family social support and weight loss to understand whether family social support influence the processes of weight loss in women and whether the participation of family members, including partners, in weight loss interventions improve weight outcomes.

Interventions Examining Association between Family Social Support and Weight Loss in Women

There are four studies (Jerome et al., 2015; Kiernan et al., 2012; Kyrlyiuk, Baruth, & Wilcox, 2015; Teixeira et al., 2002) that evaluated the association between family social support and weight loss in women. In three of them, the predominant population is white, but also included other populations; in Kyrlyiuk et al., (2015) the population is African American. Three of the studies used different scales to measure different types of family social support - such as social support for diet (Jerome et al., 2015), perceived support, and sabotage from friends and family - for healthy eating and physical activity (Kiernan et al., 2012) and general social support (Teixeira et al., 2002). Two of the studies used the Sallis, Grossman, Pinski, Patterson, & Nader (1987) scale to assess support from family and friends in relation to exercise behavior. In three of the studies, family social support was not associated with weight loss. In Jerome et al., (2015), family social support was not associated with weight loss neither in African-American women, nor in non-African American women. Teixeira et al., (2002) found that perceived social support and social support for exercise (including family support) was not associated with weight loss either. Kyrlyiuk et al., (2015) did not find any association between social support for physical activity and social support for fruit and vegetable consumption and weight loss.

Only Kiernan et al. (2012) found that women who never experienced family support were least likely to lose weight (45.7% lost weight) while women who experienced frequent friend and family support were more likely to lose weight (71.6% lost weight).

Interventions Including Family Members and Their Relationship with Weight Loss

We found four interventions that aimed to know if the inclusion of family members improves weight loss outcomes. Three randomized trials (Cousins et al., 1992; Kumanyika et al., 2009; Marquez & Wing, 2013) and one trial with a non-experimental design (Pinelli, Brown, Herman, & Jaber, 2011) that had sample sizes between 27 and 281 were carried out among non-white women. The family social support was measured in two different ways: 1) As attendance of family members to the intervention sessions (Cousins et al., 1992; Kumanyika et al., 2009; Pinelli et al., 2011) and 2) through using Sallis et al (1987) Social Support for Diet and Exercise Behaviors Questionnaire (Marquez & Wing, 2013).

The study of Kumanika et al. (2009) was conducted with African-American and found that being assigned to participate with family members, friends, or other group members had no effect on weight change; enrolling with others was associated with greater weight loss only when partners participated more and lost more weight. Marquez & Wing (2013) concluded that enlisting family or friends did not enhance weight loss outcomes in Latinas. Cousins et al., (1992) found among Mexican-American women, a trend for the family intervention to be more effective than the program for individuals but this difference was not significant. Only the study of Pinelli et al. (2011) found that Arab-American women with support were significantly more likely to achieve the weight loss goal than those without support (85% of 14 women vs 33% of 30 women, $p=0.0028$). On

the contrary, in men, even success in achieving weight loss was also higher for those with family support, although the difference was not statistically significant (44% of 9 men vs 28% of 18 men, $p = 5.42$).

2.5.2 Social Support in Food Security

The relationship between social support and food insecurity has not been well documented in the literature. There are a couple of articles that aimed at understanding the utilization of social support as coping mechanism in food-insecure people. Ahluwalia, Dodds, & Baligh (1998), conducted 16 focus groups with 141 participants, who were either at risk or experienced food insufficiency and they found that both Individual and network-level mechanisms were used to cope with insufficient food supply. At individual level they used strategies such as, shopping for low-cost food and in different stores, using coupons, budgeting money, making shopping lists and shopping with other families at multiple stores to save in transportation expenses. Many parents also reduce their own food to warrant that their children have enough food or send children to eat with relatives. The participants were more likely to use their social networks just when the resources of the nuclear family were exhausted. They mentioned to receive support from three different levels of social networks: the primary level (extended family members), the secondary level (friends); and the tertiary level (neighbors and acquaintances). The help received included food, information and emotional support.

Another qualitative study (Davis, Grutzmacher, & Munger, 2016) included 37 low-income participants. The participants recognized the utility of networks (family, friends, coworkers, and neighbors). They engage in reciprocating support to cope with food insecurity. For example, they exchange resources such as food for another food or food

for services. They also apply pooling strategies, including shopping and preparing food together.

Other studies attempted to understand the modifying role of social support in the relationship between food insecurity and obesity in different populations. Findings from these studies suggest that social support buffers against the negative consequences of household food insecurity on depression risk (Kollannoor-Samuel et al., 2011; Tsai et al., 2012; Wu & Schimmele, 2005). For example, Kollannoor-Samuel and colleagues (2011) found in Latino population with Type 2 Diabetes that at each level of food insecurity the risk of depression was lower the higher the level of social support ($P < 0.05$). Tsai et al (2012) using cohort data from 456 men and women living with HIV/AIDS initiating HIV antiretroviral therapy in rural Uganda found that food insecurity was associated with depression symptom, which was more severe among women than men, and that social support buffered the impacts of food insecurity on depression. They also found that instrumental support (i.e offering assistance with practical tasks or problems) had a greater buffering influence than emotional social support.

In sum, with the current evidence, it is not possible to draw solid conclusions about whether family social support improves weight losses. This is not only for the little evidence, but also, for the mixed results. This inconsistent evidence may be partly because of the difficulty in evaluating the effectiveness of the social support due to the lack of clarity in the definitions, the difficulty separating social support from other intervention activities, and the lack of inclusion of social support as an outcome measure (Verheijden et al., 2005). More research should be carried out to inform policy makers of interventions that include the participation of household members in measuring social

support. The biggest challenge may be how to involve them in the interventions in a cost-effective way and taking into consideration the particularities of the family dynamic in each cultural context. For example, in Costa Rica, it may be challenging to engage male partners in interventions. Also, there are few studies that aimed at understanding the role of social support in food insecurity. But, the results are consistent with social support playing an important role buffering the effects of food insecurity. There are no studies attempting to understand the role of social support in excess weight women experiencing food insecurity.

2.6 Summary of the current status of the problem

The negative impacts of household food insecurity are well-recognized. Household food insecurity negatively affects diet and nutritional status, and is associated with poor negative physical and mental health, including excess body weight (Frongillo et al., 1997; Institute of Medicine (US), 2011). In Costa Rica in 2014, 19.9% and 4.4% of people 15 years and older were, respectively, moderate-to-severely and severely food-insecure (Food and Agriculture Organization, 2016).

Excess body weight is a global health problem that is also a major public health problem in Costa Rica (Ministerio de Salud, 1996). Six of ten adults in Costa Rica have excess body weight. According to the last National Survey of Nutrition 2008-2009, 59.7% of women between 20 and 44 years of age have excess body weight, reaching 77.3% in those of 45 to 64 years of age (Ministerio de Salud, 1996). This data ranks Costa Rica among the 10 countries with the highest index of obesity world-wide. Even the government of Costa Rica has considered the high obesity rates as one of the most important problems in the country (Mesa de Innovacion Social-Gobierno de Costa Rica,

2016). In the most recent Social Progress Index (Social Progress Imperative, 2016) Costa Rica ranks 28th worldwide in social progress, but the report considers the high rates of obesity are one of the most important weaknesses of the country.

Excess body weight has multiple consequences for physical and mental health, such as hypertension, dyslipidemias, cardiovascular disease, heart attacks, and death (Azarbad & Gonder-Frederick, 2010; World Health Organization, 2015). Other psychosocial consequences such as depression, insecurity, isolation, and lack of self-esteem are also recognized (Azarbad & Gonder-Frederick, 2010). Thus, excess body weight and food insecurity affect women's physical and mental health in many ways. For example, in one study in Costa Rica it was found that 42% of low-income women with excess body weight met the criteria for metabolic syndrome (Esquivel et al., 2015). Both food insecurity and excess body weight are compounded by prevailing gender norms, which assign women most of the reproductive work (household responsibilities and caring activities), which is unpaid and has little social recognition (Martinez- Jaikel, T, 2011; Martinez-Jaikel & Frongillo, 2016).

Based on the literature, little is known about successful approaches to address simultaneously food insecurity and excess body weight. Concerns have been raised that some programs aimed to reduce food insecurity might contribute to excess body weight, particularly in adult women. It is needed to develop and implement interventions that improve food security while simultaneously reducing rather than exacerbating excess weight gain. There is also little research about health promotion interventions that include the participation of women and their household or family members, as well as, the intervention impact on health and well-being. We found in the literature interventions

aimed to change gender norms to influence health behaviors, but not specifically intended to decrease excess weight, promoting food security, or alleviating discouragement.

The proposed research aims to improve food security and to reduce excess body weight in women in the Central Canton of the Province of Alajuela, Costa Rica. At the same time, we want to address gender norms in relation co-responsibility in the household and self-care that are fundamental causes of these problems. To accomplish this goal, we proposed an intervention targeted at the individual, family, and community level in the Canton Central of the province of Alajuela, Costa Rica guided by two specific aims:

Specific Aim 1: To determine the impact of an intervention that focuses on alleviate women's discouragement through enhancing women's capacities among food-insecure women with excess body weight.

Specific Aim 2: To determine changes due to the intervention on perceived gender norms, perceived advantages and disadvantages, intentions, and behaviors of women and their family and community members in relation to co-responsibility in the household and self-care, including healthy nutrition.

To address specific aim 1, we used a cluster-randomized controlled trial design (C-RCT) at the EBAIS level. EBAISs are the first level of care in Costa Rica. To specific aim 2, we conducted a mixed-methods sub-study.

2.7 Conceptual Model

The conceptual model that guided the intervention was based on previous qualitative research (Martinez-Jaikel & Frongillo, 2016). The previous study found that both food insecurity and excess body weight led women to discouragement that women described

as feeling sad, depressed, hopeless, and lacking drive to do important activities, such as find a job or study more.

At the same time, discouragement is the primary link for the coexistence of food insecurity and obesity. Discouragement resulted in anxiety, which the women understood as an agitated disquiet that caused them to lose control and want to eat regardless if they were hungry or not, and sought out foods that were high in carbohydrates and sugars. After eating, they felt remorse and shame, and these feelings led them to feel more discouraged. Thus, these women kept spiraling down into discouragement and perpetuating their excess of body weight. Food insecurity, excess body weight, and discouragement reinforced one another.

There are individual factors determining this situation, such as unhealthy dietary habits or lack of physical activity, but other, more structural factors, such as the family and the prevailing gender norms, that also contribute and compound this situation. Hence, possible explanations for the discouragement that these women feel and the corresponding eating behaviors could be found in the family and social context in which they live. On one hand, family members insult them due to their excess weight, and on the other hand, they do not support the women when they trying to lose weight; even more, the family tries to subvert their intentions to lose weight by bringing home unhealthy foods. Additionally, some of them are economically dependent on their male partners because traditionally, the man should be the home provider and women attend domestic work; thus, their capacity to make choices, including food choices, is likely to be limited.

The gender norms of the society assign women an excess of responsibilities that are often not socially valued, such as domestic labor that included cooking, cleaning, and taking care of children, the elders and the disabled. These functions are mostly unpaid and prevent them from caring for themselves and carrying out other roles within the society that they may want to pursue, such as education and paid work outside the home.

All these factors lead these women firstly to a reduced psychological empowerment, as defined as “people’s belief that they have the resources, energy, and competence to accomplish important goals” (Diener & Biswas-Diener, 2005, p. 125). If women do not believe that they can make changes, they will have little motivation to take actions aiming to improve their lives and they will feel discouraged.

For the development of the community and household intervention aimed to change gender norms we adapted some concepts of the Theory of Planned Behavior (TBP) (Ajzen, 1991). This theory has received critique in many aspects, such as focusing exclusively on rational reasoning excluding unconscious influence on behavior and the role of the emotions (Sniehotta, Pesseau, & Araújo-Soares, 2014). This theory has been widely used, however, and it may provide some guidance about how to measure social norms and social norms change (Mackie et al., 2015). It explores the relationship between behaviors and beliefs, attitudes, and intentions. It proposes that behavioral intention is the main determinant of behavior. Behavioral intention is determined by a person’s attitude toward the behavior (personal evaluation of the behavior); by the subjective norm, which is the belief about whether people who are important to the person approve or disapprove of the behavior; and for the perceived behavioral control – the belief that one can control determined behavior–.

The theory expects that if attitude toward the behavior, the subjective norms and the perceived behavioral control change, then behavior would change. With our study, the behaviors that we expected would change were related to sharing responsibilities in the household, including contributing to household support, as well as changes in self-care such as improving nutrition or practicing physical activity. Based on the above, we developed a change model that guided our intervention (Figure 2.2).

The primary outcomes of the intervention were that women reduced their household food security status and decreased their body mass index and waist circumference. The intermediate outcomes were that women increased psychological and economic empowerment, improved food and physical activity behaviors, as well as, increased social support for healthy eating.

The proposed intervention was comprised of group sessions with food- insecure women with excess body weight; and homework, workshops and brochures with the community and household members of the participating women. The group sessions allowed women, first, to increase knowledge about eating healthy at low cost, and strategies to organize their financial resources, such as make a budget. These led women not only to lost weight, but also to decrease food insecurity through a better management of the existing resources and changes in their perceptions that they could afford the healthy foods they want.

Second, engaging in activities to promote self-esteem, perceived behavioral control and assertiveness would increase their psychological empowerment, in turn, this would help women to recognize their own aspirations, goals, and dreams in their lives, including undertaking formal or informal education, finding a job, or undertaking some productive

activity. We expected that an increase of the psychological empowerment of these women would help them to feel less discouragement. Thus, these women could feel less anxious and escape the downward spiral of discouragement, food insecurity, and obesity.

Moreover, this psychological empowerment would enable these women not only to make changes in their lifestyles, but also in the long term to get more financial and personal resources through more study, finding a job, or beginning a micro-business resulting in more economic empowerment, which means more contribution to household support. This economic empowerment in turn would result in a decrease of food insecurity.

Third, developing team work and communication skills and increasing knowledge and motivation to connect with employability resources allowed them to increase their economic empowerment. Fourth, understanding about possible causes of their discouragement and how to cope with anxiety led them to decrease discouragement and anxiety symptoms.

Fifth, increasing knowledge about how to eat healthy and importance of physical activity so women will improve food and physical activity behaviors. Finally, using interactive education encouraged sharing experiences among women and homework with household members promote support of household members leading to an improvement of social support for healthy eating and, in turn, of the self-care of women and their family members.

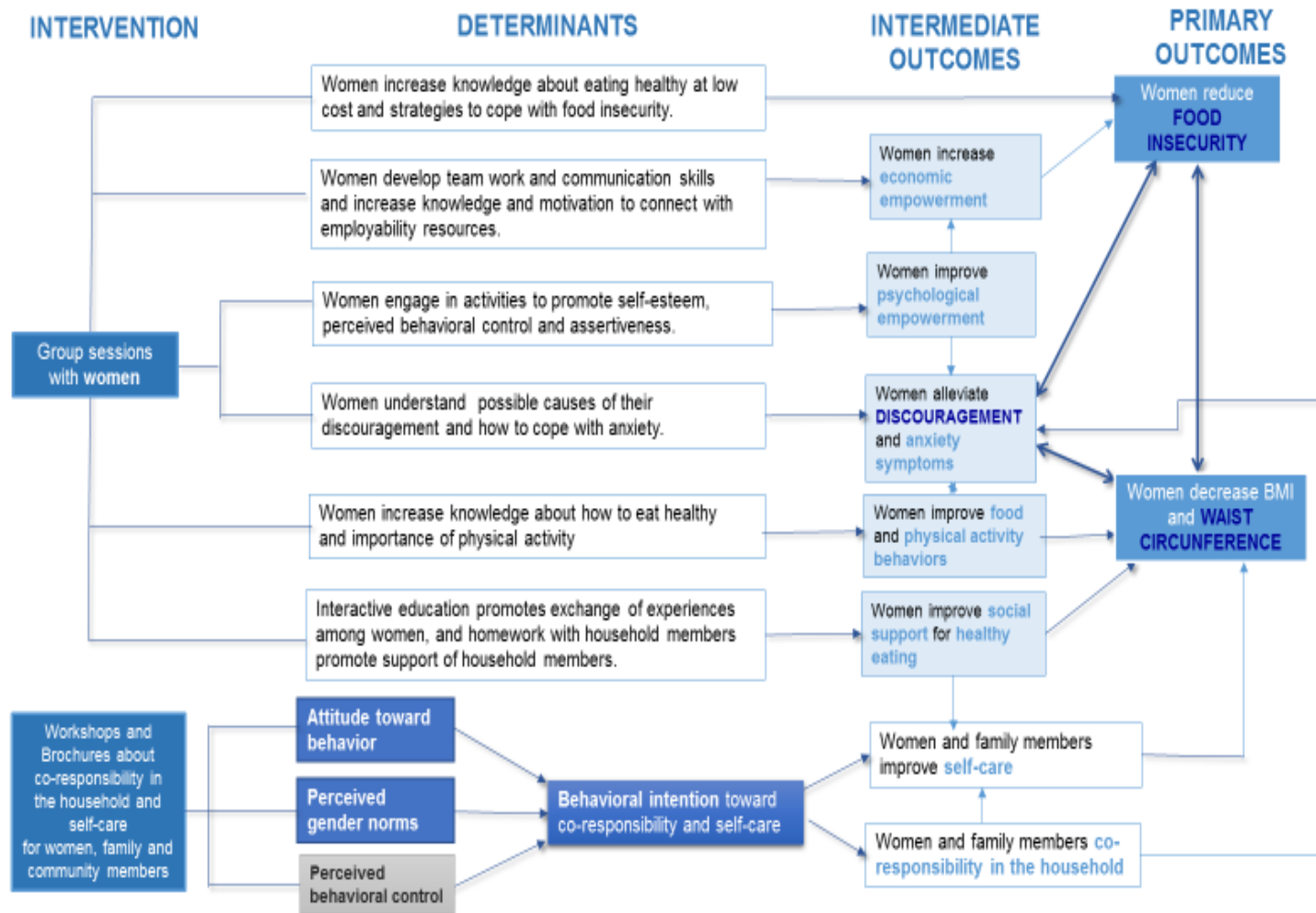


Figure 2.2: Conceptual Model of the intervention

Workshops and brochure were developed aimed to change attitudes, perceived gender norms and perceived behavioral control, the three primary determinants of people's intentions and behaviors, as proposed in Theory of Planned Behavior, so participants could change their behavioral intention and behavior in relation co-responsibility in the household (i.e. sharing responsibilities in the household, including taking care of children and the disabled and contributing to household support) and self-care. In turn, better distributions in household responsibilities would help to alleviate women discouragement.

CHAPTER 3

METHODOLOGY

This chapter will describe the methodology of this research, starting with the setting description, study design and randomization, recruitment and retention, description of the intervention, measurements, data collection, data analysis, data management, process evaluation, and ethical considerations.

3.1 Setting description

The study took place between February and December 2017 in the Central Canton (the capital) of the province of Alajuela in Costa Rica (Figure 3.1).



Figure 3.1: Location in Costa Rica of Central Canton of Alajuela

Source: Wikipedia, 2016

It was implemented by the School of Nutrition of the University of Costa Rica, the women's and employability office of the Municipality of Alajuela and the local association "Agenda de Mujeres", with the support of the University of South Carolina.

Costa Rica is a middle-income country, but is among the top performers in health outcomes in Latin America with life expectancy, fertility rates, and infant mortality rates comparable to higher income Organization for Economic Cooperation and Development (OECD) nations (Cavagnero, Class, Ferl, & Rajkumar, 2014). For example, the life expectancy at birth in Costa Rica is 82 years for females and 77 years for males, ranking Costa Rica second in the Americas behind Canada (WHO | Costa Rica, 2018).

These positive health outcomes may be explained by two factors: The first factor is historical investment in clean water and sanitation. For example, 97% of Costa Rican households have potable water piped in and 95% have what is considered the highest level of sanitation facilities. The second factor is the primary health care coverage. The Costa Rican health care system offers almost complete, universal coverage, both financially and geographically. This achievement is supported by a financing strategy based on the contributions of the government, the employers, and the workers (Cavagnero et al., 2014; Sáenz, Bermúdez, & Acosta, 2010). On the other hand, these positive achievements have been accompanied by an increase in chronic illnesses in relation to infectious diseases. These chronic diseases, such as cardiovascular disease and cancer, are now the main causes of death.

The Central Canton of Alajuela covers an area of 388.43 square kilometers (149.97 sq mi). It has a population of 254,567 individuals. In 2009, using the Human Development Index, the Central Canton of Alajuela was ranked 61st of the 81 cantons of

Costa Rica. Its situation has worsened because in 2005, this canton was ranked 36th. The Central Canton of Alajuela is composed of 14 districts (Alajuela, San José, Carrizal, San Antonio, Guácima, San Isidro, Sabanilla, San Rafael, Río Segundo, Desamparados, Turrúcares, Tambor, Garita and Sarapiquí). About 88% of the population in this Canton is in urban areas. The main causes of death in this Canton are also cardiovascular diseases and cancer (Municipalidad de Alajuela, 2012).

3.2 Study Design and Randomization

To test the hypotheses of the study, we conducted a cluster-randomized controlled trial design (C-RCT). These trials are characterized by randomization at the level of the cluster. In a C-RCT, all individuals within a given cluster are assigned to the same study arm (Mazor et al., 2007). This 6-month intervention had two arms (intensive and non-intensive arm); and the randomization was at the catchment area of the EBAIS to avoid the contamination between the intensive and the non-intensive arm. EBAIS is the acronym for Equipos Básicos de Atención Integral en Salud (Basic Provision Units of Integrated Healthcare) which is the first level of care in Costa Rica. The entire country is divided into 105 Health Areas of around 30,000 to 60,000 residents each. In turn, each area is subdivided into population sectors of 3,500 to 4,000 persons that are served by one EBAIS.

There are 81 cantons in Costa Rica, and all of them are composed of districts. Each district has at least one EBAIS, but may have more than one, depending on the population. Each EBAIS is comprised of a physician, a primary care technician, a nurse, and a medical records technician. One EBAIS provides primary and preventative health care to all the persons in a community. In the Central Canton of Alajuela, there are four

Health Areas: Alajuela Central, Alajuela Oeste, Alajuela Este y Alajuela Sur; and 53 EBAISs. We selected among the four Health Areas the 30 catchment areas of the EBAISs that attended the people with the lowest socio-economic level and with geographic proximity to the center of Alajuela.

To help ensure comparability of the intensive and non-intensive arm with respect to baseline characteristics, we matched EBAISs into pairs according to similar participants characteristics in BMI and food insecurity score at the time of the recruitment. We randomly assigned within each pair 15 EBAISs to the intensive arm and 15 EBAISs to the non-intensive arm. The random allocation sequence was generated using a computer software program and was conducted by one of the authors in Columbia, SC who did not have direct contact with the communities. The first author, in Costa Rica, implemented the assignments. We calculated the sample size based on a power calculation using the command *clustersampsi* in Stata (StataCorp,L.P., 2016). At a sample size of 75 women in each arm, assuming a power of 0.9, an intraclass correlation of 0.05, an alpha of 0.05, and a standard deviation (SD) of 2.5, which was taken from previous studies in Costa Rica (Cruz, Rivera, & Méndez, 2015), we intended to detect mean differences in body weight of 1.5 kg. For food insecurity, stating the same assumptions, with an SD of 5 (González, Jiménez, Madrigal, Muñoz, & Frongillo, 2008), we intended to detect differences of 3 units in the food insecurity scale. The study teams aimed to recruit up to 105 patients to account for 30% of drop-outs and loss to follow-up, which means that we were recruiting 7 women for each EBAIS. After the 6-month intervention, the participants in the non-intensive arm were invited to receive the intensive intervention, but no measurements were taken. The flow chart below (Figure 3.2) depicts the cluster randomized trial:

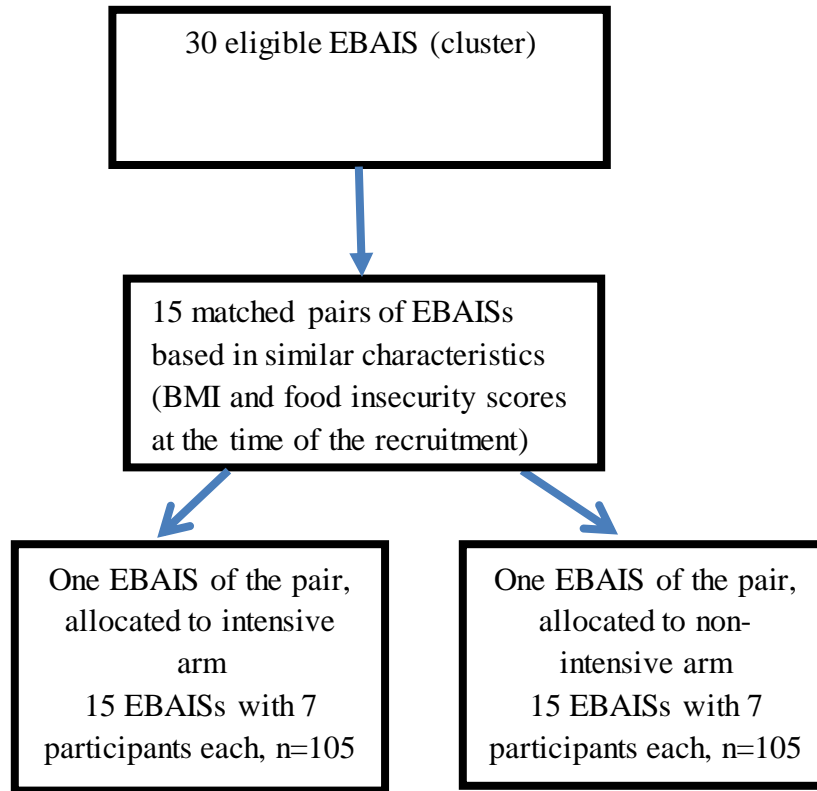


Figure 3.2. Flow chart for the cluster randomized trial.

We began the study with 83 women in the intensive arm and 88 in the non- intensive arm, and a median size of 6 per EBAIS.

3.3 Recruitment of the participating women

We recruited women through the database of the Municipality of Alajuela, communal leaders, posters and social media. At the time of recruitment of potential participants, communal leaders were blinded to the specific intervention to which the community had been randomized. Women were eligible for the study if they met the following criteria:

- Being excess weight BMI ≥ 25 , according to the WHO classification
- Not having a diagnosis of diabetes mellitus
- Not being pregnant

- Being between 18 and 60 years old
- Being food insecure (low, moderate, or severe) according to have a score ≥ 15 in the Food Insecurity Scale of Costa Rica (González et al., 2008)
- Living in the catchment area of the selected EBAIS
- Being willing to participate fully in the study
- Having at least one other adult household member or family member willing to participate
- Knowing how to read and write

We organized meeting of interested women. Anthropometric data (weight and height) were taken and interviews conducted in order to know who met the inclusion criteria. Participants should also complete the food insecurity scale for Costa Rica (González et al., 2008). The women who were interested in participating but do not met the criteria were invited to participate in healthy life-styles sessions offered by the Municipality of Alajuela.

Before the intervention began, we visited the different communities and contact leaders that help us with the recruitment of people for the different activities of the intervention. Moreover, we tested the questionnaires that were used in the intervention with 28 women with the same characteristics as our target population.

After the recruitment and the randomization, but before the interventions began, we organized meetings with all the women who met the study requirements, both in the intensive and non-intensive arms. We explained them the study, answered their questions, and invited them to participate. Women who decided to participate were invited to the

first measurements session and required to sign the consent form (Appendix A) prior to initiating any study procedures.

3.4 Description of the intervention

The topics of the sessions in the intensive arm were based mostly on previous work (Cruz et al., 2015; Martinez- Jaikel, T, 2011; Stephens, M & González, R., 2011) and we also considered the opinions of the participants. We discussed with participating women, ideas that they had about the best strategies to involve household members in the intervention, as well as to formulate strategies to motivate household and community members to participate in the workshops. At 3 months of the group intervention, we discussed with these women whether the proposed workshop topics might help them to reach their goals. We did this at that time and not before, because we expected that these women would have more awareness about the importance of changing gender norms and could provide us with a better feedback. The principal investigator with the support of the professionals of the different participant institutions developed the educational matrices and materials of each session and conducted all sessions and workshops in both arms.

3.5 Implementation of the Intervention

Women in the non-intensive arm received three one-hour sessions about healthy lifestyles, including healthy nutrition. Sessions were held the same day that women completed questionnaires and anthropometric assessments. The intensive arm consisted of activities at the individual, household, and community levels. At individual level, the intervention was comprised of 12 two-hour sessions, three follow-up monthly sessions, one workshop with the participants' household and community members, and one closing session. We carried out the intervention in five different groups of women with around 15

participants. Sessions included three components: 1) eating healthy at low cost, including how to cook healthy and inexpensively, 2) psychological empowerment, for example, assertiveness and self-esteem, and 3) life project, including employability, recognition of their dreams and goals in life, and visualization of themselves in their multiples roles that they play as women in society to finally develop a life project. This project may be defined as a plan about the goals that women may want to reach in all the spheres of their lives such as career, family, spiritual practice, or social life; it may include studying more, finding a job, or starting a micro-business.

We motivated the participants and showed them how to use the resources that the Municipality of Alajuela and other institutions have so that they may accomplish their life project. This project may be defined as a plan about the goals that women may want to reach in all the spheres of their lives such as career, family, spiritual practice or social life. During the sessions participants were encouraged to practice physical activity. For example, at the beginning of each session we practiced some physical or recreational activity. The session "Cooking healthy and inexpensively" took place in the School of Nutrition of the University of Costa Rica. This session had the objective not only that the women learnt how to cook in a healthy way but also that they attended a course at the university. This was very significant for many of these women who had never visited the university. The project provided free transportation from Alajuela to the School of Nutrition. To develop the sessions, we used an education matrix based on the stages of interactive education (deBeausette, 2006).

These sessions were interactive in that they offered learner-centered education. This teaching method is comprised of 5 stages; it was built on the constructivism theory, the

popular education of Paulo Freire and the “aprendizaje vincular” (connected learning) of Pinchon-Riviere. It has been used for many years to impart nutrition education in Costa Rica, but we have gained experience using this method in other topics not directly related to nutrition, such as decision making, self-esteem and coping with anxiety (Cruz et al., 2015; Stephens, M & González, R., 2011).

This teaching methods offered many advantages for women for different reasons. First, the group facilitation supported group interactions, which means we were promoting social support within the group. Second, women participated in team work, presented their ideas to the group, and shared their experiences, dreams and goals while developing verbal communication and teamwork skills, which would help to improve not only their psychological empowerment but also their employability skills. Third, it allowed women to build from their own realities the “most-feasible” for them. For example, even if the ideal is to eat 5 portions of fruit and vegetables per day, a woman could decide that it was feasible for her to begin eating just two. This realistic method allowed our women to improve their self-efficacy and therefore their psychological empowerment. The general structure and content of each of the segmental interactive sessions are presented in Figure 3.3.

Household level: At the household level women were encouraged to invite members of their household to attend one workshop about co-responsibility in the household and self-care, including healthy nutrition (Appendix B). In addition to this, six assignments required the household members’ participation. We conducted two similar workshops in different days so that participants could select whichever was more convenient for them.

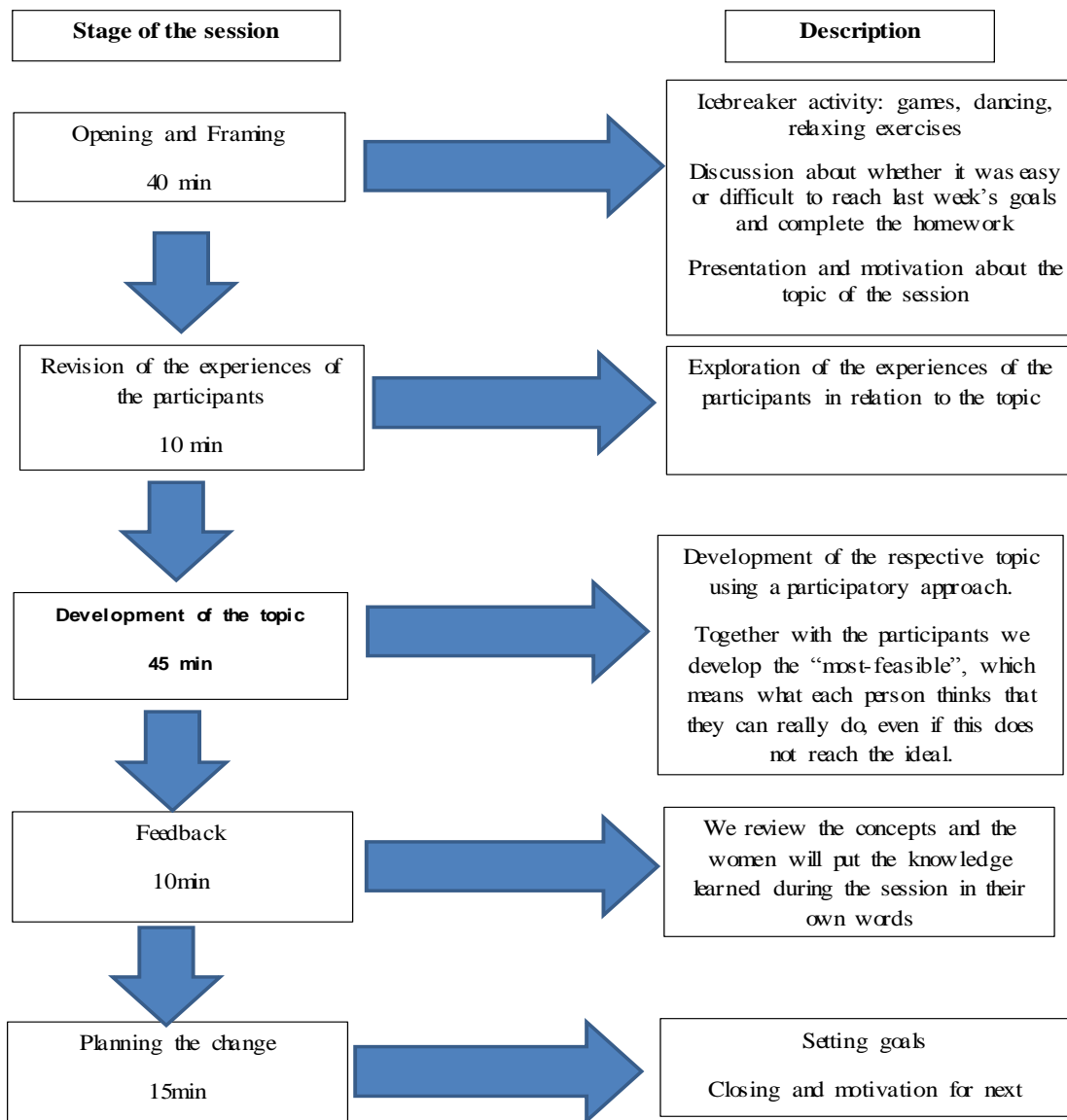


Figure 3.3: Stages of the interactive education

The workshops were developed to change the perceived gender norms, attitudes, intentions, and behaviors relating with co-responsibility in the household and self-care. These workshops were conducted after the first 12 sessions.

We used non-traditional methodologies to decrease the participants' possible resistance to our messages. The program consisted of activities, such as sports games,

group discussions, educational sessions, and a theater performance. The play was based on a theatrical adaptation of Ramón of the author Sergi Belbel. It tells the story of an argument between a named man and four anonymous women onstage. It revolved around a couple's long-term problems and their separation; we modified it, not only to include messages about co-responsibility in the household and self-care, but also, we changed the ending of the play to promote the communication among men and women. After the performance, there was a discussion in small groups based on a worksheet with questions and a subsequent plenary.

The two educational sessions were about co-responsibility in the household and self-care, including healthy nutrition. In both, we discussed traditional gender norms in Costa Rica that influence the behaviors, the advantages of both behaviors for all household members, and some strategies to implement them. We worked with the household members to establish household goals, including a worksheet to distribute household chores.

Community Level: At the community level, we developed activities to change gender norms in relation to co-responsibility in the household and self-care, including healthy nutrition. We distributed two different brochures, one about co-responsibility and another about self-care, and carried out the workshop mentioned above. The brochures were developed for the research team. The research team included people of different disciplines who had a lot of experience working with gender related topics. Participating women were involved in the planning and recruitment of people for the workshops and the distribution of educational materials.

3.6 Measurement (Variables and Measures): Specific Aim 1

At the beginning of the intervention we measured the socio-demographic characteristics of participants: age, marital status, occupation, the highest grade of completed education, income, and participation in assistance programs. At the end, we asked about the use and recommendation to family and community members of women's and the employability office (Appendix C).

At the individual level, the three primary outcomes of interest were food insecurity, BMI, and waist circumference. The secondary outcomes were psychological and economic empowerment, social support, and physical activity and food behaviors.

Food insecurity: We applied the Food Insecurity Scale for Costa Rica (González et al., 2008). This scale has 14 items. The response categories were “never”, “sometimes”, and “many times.” The internal consistency reliability for the set of items at baseline (Cronbach's α) was 0.917 (Appendix D).

Body Mass Index and waist circumference: Body mass index (BMI) was calculated as (weight (kg)/ (height (m)²)). Weight was measured (to the nearest 0.1 kg) using a Tanita BC-549. Height was obtained only at baseline using a portable stadiometer SECA 213 (to the nearest 0.1 cm). Waist circumference as measured (to the nearest 0.1 cm) in the midpoint between the iliac crest and the lowest rib. To enhance the quality of the measurements, people who took the measures, were trained in the Human Nutrition Labor of the School of Nutrition of the University of Costa Rica and to decrease the variability of the measure, the principal investigator took all the waist circumference measures.

Psychological empowerment: We used the agency subscale for the Scale of Personal Agency and Empowerment (Appendix E). This subscale includes the concepts of self-efficacy, self-determination, autonomy, and control. It is comprised of 35 items (Pick et al., 2007). Each item used a 4-point Likert-type scale (1=none, 2=rarely, 3=almost always, 4=always). This subscale had a Cronbach's α of 0.892 at baseline.

Social support: We applied the Social Support and Eating Habits Survey to measure social support (Sallis et al., 1987). This scale was created to measure participants' perceived support from family and friends for healthy eating in the previous 3 months. It consists of 10 items where ratings were made on a 5-point Likert-type scale ranging from none (1) to very often (5). The Cronbach's α ranged from 0.786 to 0.906 for the four subscales at baseline. The subscales should be scored separately for family and friends. Items 1-5 represent encouraging support for healthy eating, and items 6-10 represent discouraging support. We translated the scale into Spanish. (Appendix F).

Economic empowerment: We measured economic empowerment through three questions related to household decision-making in relation to food purchasing and contribution to household support. We also used three indicators of economic empowerment which were measured at the end of the intervention: (1) the number of women that visited the employability office of the Municipality, (2) the number of women that engaged in courses, and (3) the number of women that obtained a job (Appendix C).

Physical activity and food behaviors: We assessed physical activity using two questions: "During the last month, did you practice physical activity?" Yes or No. If the women answered affirmatively, we would then ask additional questions about the type of

activity, how many times a week, and how many minutes in each session of physical activity. We calculated the metabolic equivalents per week of physical activity using the Compendium of Physical Activities (Ainsworth et al., 2011). To evaluate food behaviors, we used a food-frequency questionnaire focused on the most problematic eating behaviors found in previous studies in Costa Rica (Cruz et al., 2015; Esquivel et al., 2015; Stephens, M & González, R., 2011) low consumption of fruits and vegetables, high consumption of fried foods, sugar-sweetened beverages, and fast-food (Appendix C).

3.7 Specific Aim 2

To understand changes in gender norms, perceived advantages and disadvantages, intentions, and behaviors of women, their family, and community members in relation to co-responsibility in the household and self-care, we used mixed methods. We applied mainly qualitative methods (Strauss, Corbin & Zimmerman (2002) complemented by a quantitative component to evaluate changes during the workshops (Morse & Cheek, 2014).

3.7.1 Sources of data and data collection

We used three sources of data. First, we assessed participants before and after the workshops. Based on the Theory of Planned Behavior, we assessed the attitude toward the behavior and the behavioral intention corresponding with the two topics of the workshops, co-responsibility and self-care. Participants were asked to rate their agreement with four statements, two related to attitude toward behavior and the other two to behavioral intention, using a 5-point Likert scale ranging from strongly agree to strongly disagree. For example, how much do you agree or disagree with people who think that the household chores, including decision-making, taking care of children and

the disabled, and contributing to household support, should be shared among all the household members? Are you likely or unlikely to share household chores? (Appendix G)

Second, during the two theater performances, the discussion in small groups, and subsequent plenary, we conducted observation of the participants' reactions to the messages and afterward performed a content analysis of the participant's comments during the plenary. We attempted to capture not only the non-verbal communication, such as gestures and expressions, but also comments of the participants that may have reflected their attitudes, intentions and gender norms in relation to co-responsibility in the household and self-care. We used this alternative method to evaluate the attitude toward the behavior and the behavioral intention because people may want to answer the questions of the pre- and post-tests in a socially acceptable way. The observer took notes based on an unstructured observation guide. The sessions were also video-taped and the recording was verified for accuracy and transcribed verbatim.

Third, we conducted pre- and post-semi-structured interviews with selected participating women on two occasions, at the beginning of the intervention and 6 months later at the end of the intervention and conducted focus groups at the end of the intervention. Questions for baseline interviews (Appendix H) covered categories related with the entire intervention: reasons to participate in the intervention, daily routine, self-description, health status perception, state of mind, self-esteem, dreams and goals in their lives, ability to express their concerns to others and stand up for their own rights, economic situation and how does it affect their food consumption, family support for healthy lifestyles, and co-responsibility in the household. At the end of the intervention, we collected data for the same categories, (Appendix I) including changes in co-

responsibility in the household and self-care of themselves and their household members. Based on baseline answers, we elaborated different interview guides for each woman. Interviews were conducted by the first author. The five focus-groups at the end of the intervention were conducted by the first author and one recorder using a semi-structured interview guide. Women were asked about changes due to intervention, including co-responsibility in the household and self-care in themselves, household and community members (Appendix J). All interviews and focus groups were audio-recorded and uploaded to a password-protected computer. To ensure participant anonymity each interview had the participant's code and not their names. In the Appendix K are the data collection instruments as they were applied in Spanish language.

3.7.2 Recruitment and Study sample

The total sample in the sub-study was comprised of 62 participating women, 34 family members of the women, and 9 community members. We recruited participants in this sub-study from the intensive arm of the main study. For the semi-structured qualitative interviews, a maximum variation sampling selected three or four women from each of the five intervention groups. Women with different food insecurity scores, marital status, and occupations were selected. We conducted interviews with 19 women at baseline and 16 of these 19 women at 6 months to evaluate possible changes due to the intervention as well as factors that affected their outcomes. The sample of the focus groups was 49 women who were enrolled in the intervention and attended the last session. As a summary, in Table 3.2, the different levels of the intervention, the strategies applied in each level, the expected outcomes and the measures that were applied are depicted.

Table 3.1. Variables, definition, measures, and the timeline of the data collection for the assessing variables

Level	Variables/ Categories	Definition	Measures	Baseline	3 months	6 months
Individual	Socio-demographic characteristics	Social and demographic characteristics of the population	Age, marital status, occupation, highest grade of completed education, income and participation in assistance programs	X		
Individual	Household food insecurity	Limited or uncertain availability of nutritionally adequate and safe foods or limited or uncertain ability to acquire acceptable foods in socially acceptable ways (United States Department of Agriculture, 2014)	Food insecurity scale to Costa Rica	X	X	X
Individual	Excess body weight	BMI equal to or greater than 25	Weight (kg), height (m), BMI (kg/m ²), waist circumference	X	X	X

Individual	Psychological empowerment	“people’s belief that they have the resources, energy, and competence to accomplish important goals” (Diener & Biswas-Diener, 2005, p. 125).	Escala de Agencia Personal y Empoderamiento	X	X	X
Individual	Economic empowerment	Relative contribution to household support and influence in decisions about food buying and preparation	1)Questionnaire Economic Empowerment 2)Number of women that register in the Office of Employability of the Municipality 3)Number of women that are taking some training 4)Number of women that found a job	X		X
Individual	Social support for healthy eating	Perceived support from family and friends for healthy eating in the previous 3 months	Social Support and Eating Habits Survey	X		X
Individual	Food behaviors	Consumption of certain foods, such as fruits and vegetables,	Food Frequency	X	X	X

		fried foods, sugar - sweetened beverages, desserts, and pastries.				
Individual	Physical activity behaviors	Behavior related with the practice of physical activity	Type of physical activity Minutes per day	X	X	X
Household and Community	Gender norms	The social rules or expectations about what women or men should do.	Pre- and post-semi-structured interviews with women Content analysis of the workshops' plenary Focus groups	X		X
Household and Community	Attitude toward the behavior	Personal evaluation of the behavior	Pre-post- tests at the workshops Observation Content analysis of the workshops' plenary Pre- and post-semi-structured interviews with women Focus groups	X		X
Household and Community	Behavioral intention	Perceived likelihood of performing behavior	Pre-post- tests at the workshops Observation Content analysis of the workshops' plenary	X		X

			Pre- and post-semi-structured interviews with women			
			Focus groups			

At the individual level, assessments were conducted at baseline, 3 months later, after the first 12 weekly sessions of the group intervention and at the end of the intervention (6 month), except the economic empowerment and the social support for healthy eating questionnaires that were applied only at baseline and at the end of the intervention. Semi-structured interviews were conducted at baseline and at the end of the intervention (6 month) and focus groups at the end of the intervention.

3.8 Data Analysis

Specific Aim 1: All statistical analyses were conducted using Stata version 14.1 (StataCorp,L.P., 2016). Analyses occurred between January and March 2018. Intervention effects were analyzed as intent-to-treat using multi-level, repeated measures models to examine differences between arms in changes from baseline to 3 months and from baseline to 6 months. The interaction of arm and visit was used to test these differences between arms in changes. We considered differences in changes significant at $P < 0.05$ using a one-tail p-value. Before conducting the analysis, we checked for normality using histograms and skewness statistics for all outcomes. The food consumption and physical activity variables were positive skew, so we used square-root transformations. As a robustness check, we also used analysis of covariance (E.A. Frongillo & Rowe, n.d.) to assess the differences between arms, and we obtained similar results for all outcomes. To determine possible differences between people who did or

did not complete the 3- or 6-month assessment in the intensive and non-intensive group, we compared their age, BMI, food insecurity score, and psychological empowerment at baseline. People who completed 3-or 6-month assessments were similar at baseline for distributions of these outcomes to people who did not completed the assessments (Appendix L).

Specific Aim 2: All statistical analyses were conducted using Stata version 14.1. We used Wilcoxon sign rank test because the changes from pre- to post-test were not normally distributed. The qualitative data analysis was based on the constant comparative method. The analysis was done in Spanish, and selected results and quotations were later translated into English. We followed five steps. First, interviews, plenary video-tapes, and focus groups were transcribed verbatim; both transcriptions and field notes were reviewed by two different persons, including the first author, for accuracy. Second, we reviewed the video-recording to complete and verify the field notes. We also transcribed and analyzed the comments of the participants during the theater forum to observe gender norms in relation to co-responsibility and self-care as well as possible changes in attitude toward behavior and behavioral intention. Third, based on the research questions and a preliminary reading of the transcriptions, we prepared a preliminary list of categories. Fourth, the transcripts were coded by first author using the computer software NVivo 11,³ and open coding was used for emergent themes. Fifth, different categories were grouped further to address the sub-study research questions as well as questions that emerged during the research process.

To ensure data quality, peer debriefing (Lincoln & Guba, 1985) through meetings of the primary researcher with other members of the research team enabled group discussion

of the results and the emergent themes. We collected data with different methods (focus groups, interviews, observation, and analysis of content of the plenary) and the participants were women and their family and community members.

3.9 Data management

All the researchers and research assistants were trained and standardized in the anthropometric measurements and the filling of questionnaires. Data collection forms were reviewed during collection for missing or ambiguous information, a hard copy was made and storage in a locked filing cabinet at the School of Nutrition of the University of Costa Rica. Only the research team had access to the research data. An ID number were assigned to every participant and no names linked participants to data.

3.10 Process Evaluation

We conducted a process evaluation to assess dose delivered, reach, and fidelity. During the sessions, a member of the research team took notes and we evaluated to what extent the educative matrix was followed. All the activities were held as planned. We conducted a total of eight sessions to explain and invite people to participate in the study, 15 educational sessions with the five intensive groups (75 sessions), and three short educational sessions with three non-intensive groups. We offered different schedules (morning, afternoon, night, and Saturday) to promote that women with different life situations could participate. Women in the intensive arm attended a mean of 53.3% of the sessions, and 99% of them indicated that the sessions were very helpful for them. We conducted two similar workshops in two different days so participants could select the more convenient for them. A total of 83 people attended them, 40 participant women, 34 family members, and nine community members.

3.11 Ethical considerations

The study protocol was approved by the Institutional Review Board at the University of South Carolina (IRB Registration number: 00000204) and by the Ethical-Scientific Committee of the University of Costa Rica. It is registered in clinicaltrials.gov (NCT03492619).

CHAPTER 4

RESULTS

This chapter presents the results of this dissertation in two manuscripts. Manuscript 1 corresponds with specific aim 1 of the study and it presents the quantitative results of the cluster randomized controlled trial. Manuscript 1 is prepared for submission to the *American Journal of Preventive Medicine*. Manuscript 2, which corresponds to specific aim 2, presents results from the mixed- methods sub-study. Manuscript 2 is prepared for submission to a journal to be decided.

**4.1 INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE
DISCOURAGED AND HAVE FOOD INSECURITY AND EXCESS BODY
WEIGHT: A CLUSTER RANDOMIZED TRIAL¹**

¹ Martínez, T, Frongillo, E, Blake, C, Mann, E, Fram, M. To be submitted to American Journal of Preventive Medicine.

ABSTRACT

Introduction: The coexistence of food insecurity and excess body weight has been well-recognized by researchers and it has been documented in women, but not men. Both food insecurity and obesity have multiple consequences for physical and mental health.

Concerns have been raised about interventions aimed to reduce food insecurity in terms that these programs might contribute to excess body weight, particularly in adult women.

The purpose of this study was to develop, implement, and evaluate an intervention to alleviate discouragement and simultaneously reduces food insecurity and body weight.

Study Design: Cluster-randomized controlled trial, February-December 2017

Setting/participants: Food-insecure women with excess body weight of the Central Canton of the province of Alajuela, Costa Rica.

Intervention: The intervention had two arms. The intensive arm consisted of activities at the individual (12 two-hour sessions, three follow-up monthly sessions, and one closing session), household (one workshop with the participants' household and community members, and homework with family participation) and community (two brochures and one workshop) levels. The non-intensive one was comprised of three one-hour sessions about healthy lifestyles.

Main outcome measures: Body mass index (BMI), waist circumference, and food insecurity.

Results: A total of 171 participants were enrolled (83 in intensive and 88 in non-intensive arm). At 6 months the intensive arm had significantly greater decreases from baseline in BMI ($p=0.010$), waist circumference ($p=0.001$), and food insecurity ($p=0.004$) compared with the non-intensive arm.

Conclusions: This intervention was effective to simultaneously improve food insecurity and reduce rather than exacerbate excess weight gain.

Trial registration: This study is registered at www.clinicaltrials.gov NCT03492619.

INTRODUCTION

Household food insecurity occurs when “the availability of nutritionally adequate and safe foods or the ability to acquire acceptable foods in socially acceptable ways is limited or uncertain (United States Department of Agriculture, 2014). In Costa Rica in 2014, 19.9% and 4.4% of people 15 years and older were, respectively, moderate-to-severely and severely food-insecure (Food and Agriculture Organization, 2016). Household food insecurity has been related to many household and social consequences and has many implications for individuals’ mental and physical health, such as depression and excess body weight (Franklin et al., 2012; Edward A. Frongillo & Bernal, 2014; Institute of Medicine (US), 2011; Ivers & Cullen, 2011).

Excess body weight, which is defined as body mass index (BMI) ≥ 25 , is a global health problem that affects low-, middle-, and high-income countries (World Health Organization, 2015). For example, in Costa Rica, according to the last National Survey of Nutrition 2008-2009, 59.7% of women between 20 and 44 years of age have excess body weight, reaching 77.3% in those of 45 to 64 years of age (Ministerio de Salud, 1996). Costa Rica ranks among the 10 countries with the highest prevalence of obesity world-wide (Social Progress Imperative, 2016). Excess body weight has multiple consequences for physical and mental health, such as cardiovascular disease, cancer, depression, isolation, lack of self-esteem, and death (Azarbad & Gonder-Frederick, 2010; Hu, 2003; World Health Organization, 2015).

The coexistence of excess body weight and food insecurity is recognized by researchers and increasingly by the broader public (Food Research & Action Center, 2015; Institute of Medicine (US), 2011). Multiple studies have concluded that household food insecurity is often associated with excess body weight in women, but not men (Adams et al., 2003; Goldberg, Guéguen, Schmaus, Nakache, & Goldberg, 2001; Kac et al., 2013). For example, adult women living in moderately food-insecure households in Brazil had a 49% higher risk of being obese when compared to their food-secure counterparts (Kac et al., 2013).

Because food insecurity is linked with resource constraints and undernutrition, many policies and programs intend that households acquire the necessary nutrients to improve nutritional status. Concerns have been raised, however, that these programs might contribute to excess body weight, particularly in adult women (E. Frongillo, 2003; Leroy et al., 2013; Townsend et al., 2001). For example, a cluster-randomized trial in Mexico to study the impact of Mexico's Programa de Apoyo Alimentario, which provided poor rural household with cash or food transfers, on the body weight of women showed that the program led to weight gain in women, particularly those who already were obese (Leroy et al., 2013). These results highlight the need to develop and implement interventions that improve food security while simultaneously reducing rather than exacerbating excess weight gain.

Our previous in-depth qualitative research in Costa Rica showed that discouragement is the primary link in the coexistence of food insecurity and excess body weight among Costa Rican women, and that the family and existing gender norms contribute to and compound this coexistence (Martinez-Jaikel & Frongillo, 2016).

Women described as feeling sad, depressed, hopeless, and lacking drive to do important activities, such as finding a job or studying more. Building on this knowledge, we aimed to develop, implement, and evaluate, using a cluster-randomized trial an intervention targeted at the individual, family, and community levels that we hypothesized would simultaneously improve food security and reduce body weight of women in the Central Canton of the Province of Alajuela, Costa Rica. It was also hypothesized that, when compared with the non-intensive arm, women in the intensive arm would have improved social support for healthy eating, psychological and economic empowerment, and food and physical activity behaviors.

METHODS

The study took place between February and December 2017 in the Central Canton (the capital) of the province of Alajuela in Costa Rica. It was implemented by the School of Nutrition of the University of Costa Rica, the women's and employability office of the Municipality of Alajuela and the local association "Agenda de Mujeres", with the support of the University of South Carolina. The study protocol was approved by the Institutional Review Board at the University of South Carolina (IRB Registration number: 00000204) and by the Ethical-Scientific Committee of the University of Costa Rica. It is registered in clinicaltrials.gov (NCT03492619).

We conducted a cluster-randomized controlled trial design. In these trials, all individuals within a given cluster are assigned to the same study arm (Mazor et al., 2007). In our case, the randomization was at the catchment area of the EBAIS to avoid the contamination between the intervention and the control arm. EBAIS is the acronym for *Equipos Básicos de Atención Integral en Salud* (Basic Provision Units of Integrated Healthcare) which is the first level of care in Costa Rica and provides primary and

preventative health care to all the persons in a catchment area. In the Central Canton of Alajuela, there are 53 EBAISs. We selected the 30 catchment areas of the EBAISs that attend the people with the lowest socio-economic level and with geographic proximity to the center of Alajuela.

To help ensure comparability of the intensive and non-intensive arm with respect to baseline characteristics, we matched EBAISs into pairs according to similar participants characteristics in BMI and food insecurity score at the time of the recruitment. We randomly assigned within each pair 15 EBAISs to the intensive arm and 15 EBAISs to the non-intensive arm. The random allocation sequence was generated using a computer software program and was conducted by one of the authors in Columbia, SC who did not have direct contact with the communities. The first author, in Costa Rica, implemented the assignments. The total duration of the intervention was 6 months. At the individual level, assessments were conducted at baseline, 3 months later, and at the end of the intervention (6 months), except the economic empowerment and social support questionnaires that were applied only at baseline and at the end of the intervention. After each measurement session, women received a gift (t-shirt, water bottle, and sport bag) to motivate them.

Study Sample

We calculated the sample size based on a power calculation using the command *clustersampsi* in Stata (StataCorp,L.P., 2016). At a sample size of 75 women in each arm, assuming a power of 0.9, an intraclass correlation of 0.05, an alpha of 0.05, and a standard deviation (SD) of 2.5, which was taken from previous studies in Costa Rica (Cruz et al., 2015), we intended to detect mean differences in body weight of 1.5 kg. For

food insecurity, stating the same assumptions, with an SD of 5 (González et al., 2008), we intended to detect differences of 3 units in the food insecurity scale. The study teams aimed to recruit up to 105 women, to account for 30% of drop-outs and loss to follow-up, which means that we were recruiting 7 women for each EBAIS. We began the study with 83 women in the intensive arm and 88 in the non- intensive arm, and a median size of 6 per EBAIS.

We recruited women through the database of the Municipality of Alajuela, communal leaders, posters, and social media. At the time of recruitment of potential participants, communities had not been assigned to any intervention. Eligible patients were women who met these criteria: being excess body weight ($BMI \geq 25$) according to the WHO classification, being between 18 and 60 years old, being food insecure (low, moderate, or severe) according to the food insecurity scale of Costa Rica (González et al., 2008), living in the catchment area of the selected EBAIS, know how to read and write, having at least one other adult household member or family member willing to participate fully in the study, not having a diagnosis of diabetes mellitus, and not being pregnant. We organized meetings of interested women. Before to any procedure, we explained them the study. Anthropometric data (weight and height) were taken and interviews conducted in order to know who met the inclusion criteria. Participants also completed the food insecurity scale for Costa Rica (González et al., 2008). The women who were interested in participating, but did not meet the criteria, were invited to participate in healthy lifestyles sessions offered by the Municipality of Alajuela.

After the recruitment and the randomization, but before the interventions began, we organized meetings with all the women who met the study requirements, both in the

intensive and non-intensive arms. We explained them the study, answered their questions, and invited them to participate. Women who decided to participate were invited to the first measurements session and required to sign the consent form prior to initiating any study procedures.

Women in the non-intensive arm received three one-hour sessions about healthy lifestyles, including healthy nutrition. Sessions were held the same day that women completed questionnaires and anthropometric assessments. The intensive arm consisted of activities at the individual, household, and community levels. At individual level, the intervention was comprised of 12 two-hour sessions, three follow-up monthly sessions, one workshop with the participants' household and community members, and one closing session. We carried out the intervention in five different groups of women with around 15 participants. Sessions included three components: 1) eating healthy at low cost, including how to cook healthy and inexpensively, 2) psychological empowerment, for example, assertiveness and self-esteem, and 3) life project, including employability, recognition of their dreams and goals in life, and visualization of themselves in their multiples roles that they play as women in society to finally develop a life project. This project may be defined as a plan about the goals that women may want to reach in all the spheres of their lives such as career, family, spiritual practice, or social life; it may include studying more, finding a job, or starting a micro-business (Table 4.1). The topics of the sessions were based mostly on previous work (Cruz et al., 2015; Martinez- Jaikel, T, 2011; Stephens, M & González, R., 2011). The principal investigator with the support of the professionals of the different participant institutions developed the educational matrices and materials of each session and conducted all sessions and workshops in both arms.

Table 4.1. Overview of intensive- intervention objectives by session

Session number	Name	Content	Homework with family participation
0	Presentation	Presentation of the study and answering questions of the participants. Importance of involving a household member in the intervention	
1 M0	Baseline Measurements Group organization and setting goals	Signing the consent form Presentation of the participants Objectives of the intervention and calendar of sessions Making a group contract, including participation in the community intervention Setting goals	HW 1: Explaining the project to the selected household member
2	Taking care of my needs, and those of others	Living conditions of women in Costa Rican society Taking care of my needs: Nutrition, physical activity and mental health	
3	Impact of food and physical activity in health	What can good nutrition and physical activity do for your life? Food groups Energy Balance: How do we lose weight?	HW 2: Discuss with the family member two things that you learned during the session
4	Eating healthy and saving money	Knowing your portion sizes Strategies for eating healthy at low cost	
5	Saving money	Discussion about food insecurity experiences Strategies to save money Making a budget Sharing experiences about how to save money	HW 3: Discuss with the family member strategies for saving money in the household, including making a budget.
6	Workshop: Cooking healthy and cheap	Healthy low-cost recipes	HW 4: Practicing a at home
7	Understanding anxiety	Relaxation Exercise What is anxiety What causes anxiety	

		What happens when I feel anxiety? How to cope with anxiety	
8	Saying what you really want to say and making decisions	Communication styles: passive, aggressive, assertive Assertiveness techniques Decision-making process	HW 5: Applying one of the learned techniques with a household member
9	Understanding beauty patterns, body image and self esteem	What is self-esteem? How to love ourselves How is body image built? Different beauty patterns through history Different types of bodies	
10	Life project: Dreams and Goals	What is a life project? How to make a life project? What are my dreams and goals in life? Making my life project	HW 6: Share my life project with the selected household member
11	Life project: Available Resources	How to find a job How to write a C.V Services offered by the employability office	
12	The role of sisterhood among women	What is sisterhood How can women support each other	
M3	3-Month Measurements	Process Evaluation	
13	Follow-up Monthly Sessions	Legal Advice Social Defense Services	
14	Follow-up Monthly Sessions	Understanding Food Nutrition Labels	
15	Follow-up Monthly Sessions	How to start your own business	
M6	Final Session Final Measurements	Qualitative Interviews	
15	Closing activity	Some study results were presented to the participants, cultural events carried out by participating women, and they received a participation certificate.	

Sessions were planned based on the stages of interactive education (deBeausette, 2006). These sessions were interactive in that they offered learner-centered education. This educational method is comprised of five stages: opening and framing (40 minutes), including a discussion about whether it was easy or difficult to reach last week's goals and complete the homework; revision of the participant's experiences about the topic (10 minutes); development of the topic (45 min); feedback (10 min), and planning the change (15 minutes). At the beginning of each session, we practiced some physical or recreational activity. The session "How to cook healthy and cheap" took place in the School of Nutrition of the University of Costa Rica. This session had the objective not only that the women learn how to cook in a healthy way but also that they had the experience to attend a course at the university. After each session, women received a healthy snack with the respective recipe, so they could have more ideas about healthy snack options.

At the household level, women were encouraged to invite members of their household to attend a workshop about co-responsibility in the household, and self-care and nutrition. We used non-traditional methodologies, including a theatre performance and a theatre forum. Additionally, six assignments required the household members' participation. At the community level, the research team developed two brochures (one about co-responsibility and another about self-care, including healthy nutrition). They were distributed in the different communities by the participating women. We also carried out the workshop mentioned above with household and community members. They were held after the first 3 months of the individual level-intervention.

We conducted a process evaluation to assess dose delivered, reach, and fidelity. During the sessions, a member of the research team took notes and we evaluated to what extent the educative matrix was followed. All the activities were held as planned. We conducted a total of eight sessions to explain and invite people to participate in the study, 15 educational sessions with the five intensive groups (75 sessions), and three short educational sessions with three non-intensive groups. We offered different schedules (morning, afternoon, night, and Saturday) to promote that women with different life situations could participate. Women in the intensive arm attended a mean of 53.3% of the sessions, and 99% of them indicated that the sessions were very helpful for them. We conducted two similar workshops in two different days so participants could select the more convenient for them. A total of 83 people attended them, 40 participant women, 34 family members, and nine community members.

Measures

At the individual level, the three primary outcomes of interest were food insecurity, BMI, and waist circumference. The secondary outcomes were psychological and economic empowerment, social support, and physical activity and food behaviors. Body mass index (BMI) was calculated as (weight (kg)/(height (m)²)). Weight was measured (to the nearest 0.1 kg) using a Tanita BC-549. Height was obtained only at baseline using a portable stadiometer SECA 213 (to the nearest 0.1 cm). Waist circumference as measured (to the nearest 0.1 cm) in the midpoint between the iliac crest and the lowest rib. To enhance the quality of the measurements, people who took the measures, were trained in the Human Nutrition Labor of the School of Nutrition of the University of

Costa Rica and to decrease the variability of the measure, the principal investigator took all the waist circumference measures.

We applied the Food Insecurity Scale for Costa Rica (González et al., 2008). This scale has 14 items. The response categories were “never”, “sometimes”, and “many times.” The internal consistency reliability for the set of items at baseline (Cronbach’s α) was 0.917. The recall period respondents were asked to consider was one year at baseline and month 3, and 6 months at month 6.

To measure psychological empowerment, we used the agency subscale for the Scale of Personal Agency and Empowerment (Pick et al., 2007). This subscale includes the concepts of self-efficacy, self-determination, autonomy, and control. It is comprised of 35 items. Each item used a 4-point Likert-type scale (1=none, 2=rarely, 3=almost always, 4=always). This subscale had a Cronbach’s α of 0.892 at baseline.

We applied the Social Support and Eating Habits Survey to measure social support (Sallis et al., 1987). This scale was created to measure participants’ perceived support from family and friends for healthy eating in the previous 3 months. It consists of 10 items where ratings were made on a 5-point Likert-type scale ranging from none (1) to very often (5). The Cronbach’s α ranged from 0.786 to 0.906 for the four subscales at baseline. The subscales should be scored separately for family and friends. Items 1-5 represent encouraging support for healthy eating, and items 6-10 represent discouraging support. We translated the scale into Spanish.

We measured economic empowerment through three questions related to household decision-making in relation to food purchasing and contribution to household support. We also used three indicators of economic empowerment which were measured at the

end of the intervention: (1) the number of women that visited the employability office of the Municipality, (2) the number of women that engaged in courses, and (3) the number of women that obtained a job.

We assessed physical activity using two questions: “During the last month, did you practice physical activity?” Yes or No. If the women answered affirmatively, we would then ask additional questions about the type of activity, how many times a week, and how many minutes in each session of physical activity. We calculated the metabolic equivalents per week of physical activity using the Compendium of Physical Activities (Ainsworth et al., 2011).

To evaluate food behaviors, we used a food-frequency questionnaire focused on the most problematic eating behaviors found in previous studies: low consumption of fruits and vegetables, high consumption of fried foods, sugar-sweetened beverages, and fast-food (Cruz et al., 2015; Esquivel et al., 2015; Stephens, M & González, R., 2011). At the beginning of the intervention we also measured the socio-demographic characteristics of participants: age, marital status, occupation, the highest grade of completed education, income, and participation in assistance programs. At the end, we asked about the use and recommendation to family and community members of women’s and the employability office. Before the application we tested all the questionnaires with 28 women with the same characteristics as our target population.

Because we did not find an appropriate scale that reflected our definition of discouragement, we did not measure it. We expected that improvements in psychological and economic empowerment, as well as reductions of food insecurity and weight lead women to feel less discouragement.

Statistical Analysis

Analyses occurred between January and March 2018. Intervention effects were analyzed as intent-to-treat using multi-level, repeated measures models to examine differences between arms in changes from baseline to 3 months and from baseline to 6 months. The interaction of arm and visit was used to test these differences between arms in changes. We considered differences in changes significant at $P < 0.05$ using a one-tail p-value. Before conducting the analysis, we checked for normality using histograms and skewness statistics for all outcomes. The food consumption and physical activity variables were positive skew, so we used square-root transformations. As a robustness check, we also used analysis of covariance (E.A. Frongillo & Rowe, n.d.) to assess the differences between arms, and we obtained similar results for all outcomes. To determine possible differences between people who did or did not complete the 3- or 6-month assessment in the intensive and non-intensive group, we compared their age, BMI, food insecurity score, and psychological empowerment at baseline. People who completed 3- or 6-month assessments were similar at baseline for distributions of these outcomes to people who did not completed the assessments. Statistical analyses were conducted using Stata version 14.1 (StataCorp,L.P., 2016).

RESULTS

There were 329 women of 30 EBAIS screened. Of these, 243 met the study criteria and were randomly allocated by cluster to the intensive or non-intensive arm (Figure 4.1). In the study overall, 171 participants agreed to participate. The intensive arm had 15 EBAIS (median size of 5.53 participants, n=83, range 2–10) and the non-intensive arm had 15 EBAIS (median size 5.87 participants, n=88, range 3–9).

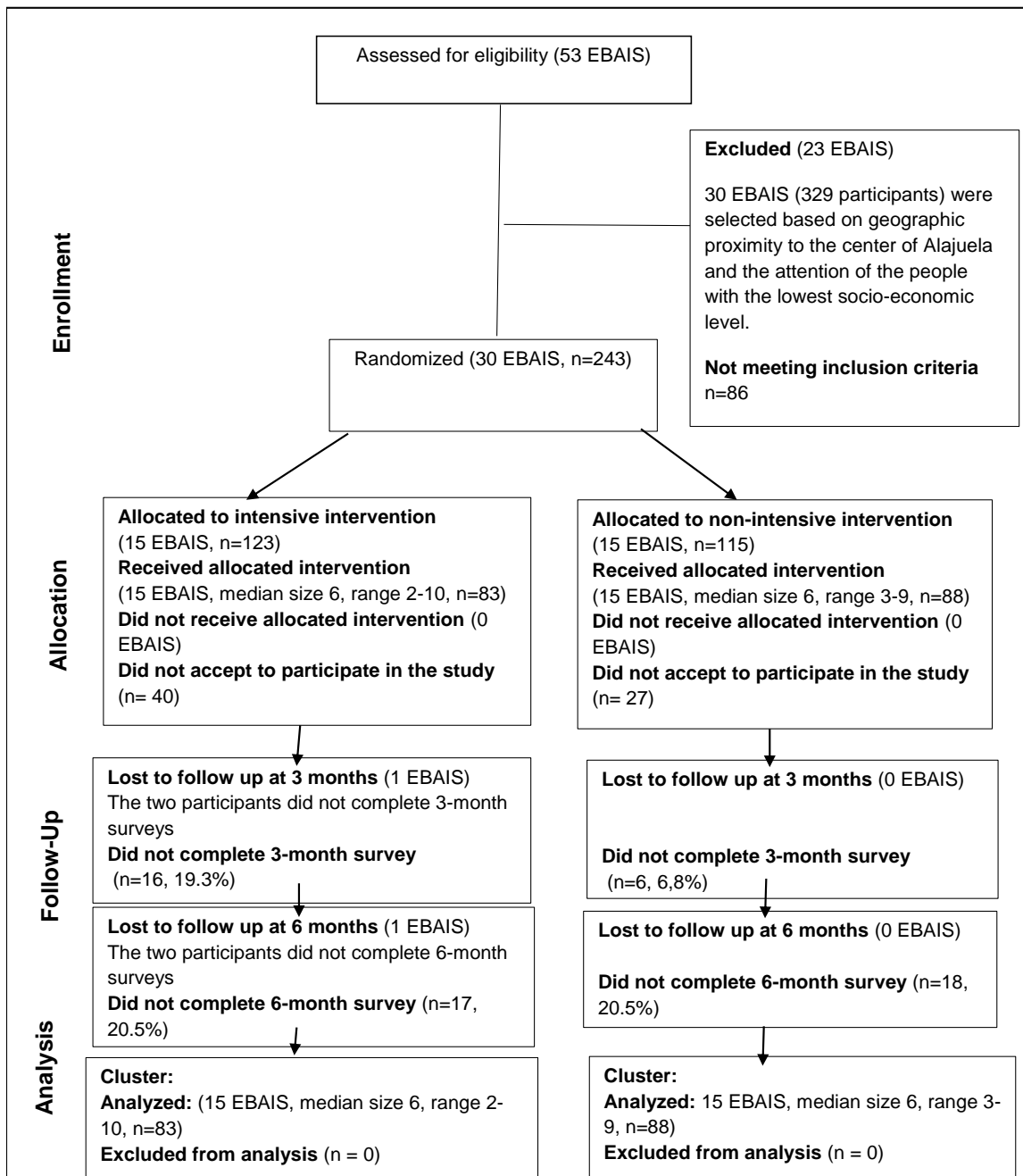


Figure 4.1. CONSORT diagram for the study

At 3 months, 19.3 % and 6.8% did not complete the 3-month surveys in the intensive and non-intensive arms, respectively. Around half the attrition in the intensive arm (11.0% of the participants) took place during the first two sessions. At 6 months, around 80% in both arms completed the surveys. All available data were included in the analysis.

The two arms were similar at baseline for distributions of the primary and secondary outcomes (Table 4.2). The mean age of participants in the intensive arm was 40.1 years (SD= 10.4) and 43.9 years (SD=8.8) in the non-intensive arm. In both arms, most of the women were living with a partner, had children, completed elementary school and were housewives.

Table 4.2. Characteristics of study participants

Variables	Intensive arm (n=83)	Non-intensive arm (n=88)
DEMOGRAPHIC		
Age, years, M (SD)	40.1 (10.4)	43.9 (8.8)
Marital Status (%)		
Living with partner	61.4	63.1
Widowed/separated/divorced	26.5	23.8
Never married	12.0	13.1
SOCIO-ECONOMIC (%)		
Have children, yes (%)	91.6	95.2
Income, fixed	53	44
Participation in assistance programs (%)	21.7	27.4
Educational attainment (%)		
Incomplete Elementary School	12	9.5
Completed Elementary School	45.8	57.1
High School Diploma	20.5	15.5
Technical Education	10.8	10.7
Completed University	10.8	7.1
OCCUPATION (%)		
Housewife	49.4	55.9
Housemaid	7.2	9.5
Business owner	12.0	7.1
Salaried	20.5	21.4
Unemployed	7.2	4.8
Student	3.6	1.2
PRIMARY OUTCOMES		
Body mass index, kg/m ² , M (SD)	34.3 (6.2)	33.9 (5.9)
Waist circumference, cm, M (SD)	99.6 (12.4)	98.8 (11.8)
Food insecurity, range 14-42, M (SD)	20.4 (5.2)	20.8 (5.6)
SECONDARY OUTCOMES		
Psychological empowerment, range 35-140, M (SD)	92.2 (13.7)	91.8 (15.0)
Social support, range 5-25, M (SD)	13.2 (5.2)	12.8 (6.0)

Encouraging support family	14.6 (5.0)	13.1 (4.7)
Discouraging support family	10.5 (4.7)	10.7 (4.9)
Encouraging support friends	12.3 (5.3)	11.2 (4.7)
Discouraging support friends		
Economic Empowerment		
Participation purchase decision, yes (%)	95.2	92.9
Participation going shopping, yes (%)	94.0	88.1
Contribution household support, yes (%)	53.0	60.7
Food consumption, times per month, M (SD)		
Vegetables	15.5 (19.4)	11.3 (12.3)
Salads	16.5 (16.8)	16.1 (14.2)
Fruits	25.7 (23.6)	22.8 (19.8)
Fried foods	17.1 (20.0)	14.8 (16.0)
Sugar drinks	34.6 (31.8)	34.0 (30.7)
Beans	29.0 (23.2)	33.7 (21.3)
Fast Food	3.94 (6.8)	4.6 (10.1)
Exercise METS per week, M (SD)	6.7 (11.5)	6.3 (11.1)

Notes: Means and standard deviations are presented for continuous variables; percentages are shown for categorical measures.

At 6 months, the intensive arm had had significantly greater decreases from baseline in the primary outcomes of BMI, waist circumference, and food security compared with the non-intensive arm (Table 4.3) Women in the intensive arm decreased their BMI 0.648 kg/m² more than did women in the non-intensive arm (p=0.010). In terms of weight, women in the intensive arm lost 2.44 kg, which was 1.65 kg (p=0.007) more than women lost in the non-intensive arm. Also, the intensive arm reduced the prevalence of obesity by 12.6 percentage points (p=0.007) compared to the non-intensive arm. Women in the intensive arm also reduced their waist circumference 2.21 cm (p=0.001) more than women in the non-intensive arm. Women in the intensive arm reduced food insecurity 1.35 units (p=0.004) more compared to women in the non-intensive arm. The intensive arm also had also significantly greater increases in psychological (p=0.014) and economic empowerment, including a greater increase in the contribution to household support (p=0.030), and more women that found a job (p=0.018), compared with the non-intensive arm. Women in the intensive arm increased

their contribution to household support by 18% more and found a job 21% more than women in the non-intensive arm. The intensive arm used 12.5% ($p=0.0011$) more the employability office than women in non-intensive arm; women in intensive arm also recommended more this office than did women in the non-intensive arm. Women in the intensive arm used 9.6% ($p=0.048$) more the women's office than women in the non-intensive arm. They also recommended 20.5% ($p=0.003$) more this office to family and community members than did women in the non-intensive arm. Women in the intervention arm had significantly greater changes from baseline in the expected direction in food consumption of fried foods ($p=0.029$), sausages ($p=0.038$), sugar drinks ($p=0.032$), salads ($p=0.032$), and beans ($p=0.004$) compared to women in the non-intensive arm. We did not find any significant differences between the intensive and the non-intensive arms in social support, exercise, and consumption of fruits, vegetables and fast foods. Except for social support, all these outcomes also had significant changes in the expected direction in the non-intensive arm.

At 3 months, women in the intensive arm had significantly greater changes in the expected direction in BMI ($p=0.005$), waist circumference ($p < 0.001$), and food consumption of vegetables ($p=0.009$), salads ($p=0.001$), fried foods ($p=0.002$), sugar drinks ($p=0.015$), beans ($p=0.014$), and fast foods ($p=0.035$) than women in the non-intensive arm (Table 4.4). The intra-cluster correlation for BMI, waist circumference, and food insecurity was 0.0593, 0.0722, and 0.000559 respectively.

Table 4.3. Baseline and 6-Month differences by group and the effect of the intervention on the main outcomes.

Outcome ¹	Baseline		6-Month		Difference in changes ²	Standard errors	p-value ³
	Intensive n=83	Non-Intensive n=84	Intensive n=65	Non-Intensive n=69			
PRIMARY OUTCOMES							
BMI, kg/m ² , M (SD)	34.3 (6.17)	33.9 (5.95)	32.7 (6.24)	33.0 (5.58)	-0.648	0.277	0.010
Weight, kg, M (SD)	86.0 (18.2)	82.5 (14.9)	82.1 (18.4)	80.4 (14.2)	-1.65	0.668	0.007
Waist Circumference, cm, M (SD)	99.6 (12.4)	98.8 (11.8)	94.9 (12.4)	96.0 (12.1)	-2.21	0.711	0.001
Food Insecurity, range 14-42, M (SD)	20.4 (5.16)	20.8 (5.55)	17.6 (3.82)	18.9 (4.68)	-1.35	0.513	0.004
SECONDARY OUTCOMES							
Psychological Empowerment, range 35-140, M (SD)	92.3 (13.7)	91.8 (15.0)	99.1 (12.4)	94.4 (15.3)	3.82	1.722	0.014
Social Support range 5-25, M (SD)							
Encouraging support family	13.2 (5.22)	12.8 (6.03)	14.6 (5.08)	13.7 (5.79)	0.203	0.918	0.413
Discouraging support family	14.6 (4.97)	13.1 (4.66)	13.3 (3.71)	13.1 (4.80)	-1.07	0.760	0.080
Encouraging support friends	10.5 (4.73)	10.7 (4.90)	11.0 (4.91)	11.0 (5.55)	0.0577	0.903	0.474
Discouraging support friends	12.3 (5.30)	11.3 (4.70)	11.8 (4.67)	11.5 (5.16)	-0.512	0.945	0.294
Economic Empowerment							
Participation purchase decision, yes (%)	95.2	92.9	95.5	92.9	0.763	4.28	0.429
Participation going shopping, yes (%)	94.0	88.1	93.9	90	-1.71	4.32	0.022
Contribution household support, yes (%)	54.5	60.7	69.7	57.1	17.8	8.34	0.016

101

Found a job, yes (%)			38.0	17.0	21	8.85	0.009
Used employability office, yes (%)			18.2	5.70	0.125	5.42	0.011
Took courses, yes (%)			27.3	24.3	2.99	7.50	0.345
Food consumption, times per month ⁴ , M (SD)							
Vegetables	15.4 (19.4)	11.3 (12.2)	23.9 (20.6)	18.4 (22.3)	0.416	0.391	0.144
Salads	16.5 (16.8)	16.1 (14.2)	27.4 (23.6)	22.9 (22.5)	0.689	0.371	0.032
Fruits	25.7 (23.6)	22.8 (19.7)	39.2 (27.0)	32.8 (25.9)	0.438	0.437	0.158
Fried foods	17.1 (19.9)	14.8±16.0	7.46 (9.01)	11.3 (13.0)	-0.708	0.373	0.029
Sugar drinks	34.5 (31.8)	34.0±30.7	15.5 (23.9)	22.5 (27.8)	-0.964	0.522	0.032
Beans	29.0 (23.3)	33.7 (21.3)	37.9 (22.0)	30.6 (26.7)	1.277	0.388	<0.001
Sausages	12.2 (14.1)	9.09 (11.0)	7.31 (16.0)	7.59 (9.73)	-0.589	0.332	0.038
Fast Food	3.94 (6.78)	4.60 (10.1)	1.99 (2.23)	3.09 (4.28)	-0.241	0.224	0.141
Exercise, METS per week ⁴ , M (SD)	6.72 (11.5)	6.29 (11.1)	9.83 (11.2)	10.4 (12.4)	-0.111	0.354	0.376
USE OF SERVICES							
Used women's office, yes (%)			18.2	8.6	9.61	5.76	0.048
Recommended women's office, yes (%)			83.3	62.9	20.5	7.43	0.003

1 Values are means ± SDs (n)

2 Multi-level, repeated measures analysis for difference in changes accounting for clustering by EBAIS

3 One tail p-values

4 Results in differences and p-values after square-root transformation

Table 4.4. Baseline and 3-Month differences by group and the effect of the intervention on the main outcomes

Outcome ¹	Baseline		3-Months		Differences in changes ²	Standard errors	p-value ³
	Intensive n=83	Non-Intensive n=84	Intensive n=66	Non-Intensive n=82			
PRIMARY OUTCOMES							
BMI, kg/m ² , M (SD)	34.3 (6.17)	33.9 (5.95)	32.9 (5.58)	33.7 (5.86)	-0.683	0.267	0.005
Weight, kg, M (SD)	86.0 (18.2)	82.5 (14.9)	82.3 (16.7)	82.1 (14.8)	-1.72	0.645	0.004
Waist Circumference, cm, M (SD)	99.6 (12.4)	98.8 (11.8)	94.0 (10.7)	97.6 (12.0)	-3.73	0.683	<0.001
Food Insecurity, range 14-42, M (SD)	20.4 (5.16)	20.8 (5.55)	19.3 (4.90)	19.1(4.98)	0.616	0.499	0.108
SECUNDARY OUTCOMES							
Psychological Empowerment, range 35-140, M (SD)	92.3 (13.7)	91.8 (15.0)	96.5 (13.8)	93.2 (14.8)	2.22	1.67	0.093
Food consumption, times per month ⁴ , M (SD)							
Vegetables	15.4 (19.4)	11.3 (12.2)	26.5 (19.6)	16.2 (18.0)	0.894	0.382	0.009
Salads	16.5 (16.8)	16.1 (14.2)	25.5 (20.0)	16.6 (16.2)	1.075	0.361	0.001
Fruits	25.7 (23.6)	22.8 (19.7)	34.0 (27.8)	27.2 (27.3)	0.411	0.426	0.167
Fried foods	17.1 (19.9)	14.8 (16.0)	8.24 (11.1)	12.1 (11.0)	-1.050	0.365	0.002
Sugar drinks	34.5 (31.8)	34.0 (30.7)	18.1 (24.5)	26.6 (26.9)	-1.105	0.509	0.015
Beans	29.0 (23.3)	33.7 (21.3)	33.6 (22.9)	30.3 (26.6)	0.825	0.378	0.014
Sausages	12.2 (14.1)	9.09 (11.0)	7.83 (13.8)	6.65 (9.64)	-0.302	0.323	0.175
Fast Food	3.94 (6.78)	4.60 (10.1)	3.80 (8.33)	5.26 (7.19)	-0.396	0.218	0.035
Exercise, METS per week ⁴ , M (SD)	6.72 (11.5)	6.29 (11.1)	10.0 (12.9)	7.14 (9.54)	0.302	0.345	0.190

1 Values are means ± SDs (n)

2 Multi-level, repeated measures analysis for difference in changes accounting for clustering by EBAIS

3 One tail p-values

DISCUSSION

Our intervention, which was designed to alleviate discouragement through enhancing women's capacities and changing gender norms and certain gendered behaviors on food-insecure women with excess body weight, significantly improved food security while simultaneously significantly reducing weight. In addition, the intervention improved psychological and economic empowerment and food behaviors.

Women in the intensive arm reduced food insecurity by 1.35 units more compared to women in the non-intensive arm. Food insecurity may improve for two reasons. First, women learned about how to eat healthily at low cost, strategies to save money, and create a household budget. This information might have allowed them to manage better their existing resources, including their food budgets. Although economists have argued that we should expect nutrition education to have a minimal impact on food insecurity because food insecurity comes from financial constraints (Dollahite et al., 2003), nutrition education has been recognized as one of the strategies to promote food security (Food and Nutrition Service, 2002; Holben & American Dietetic Association, 2010; Rose, 2008). Second, around 38% of women in the intensive arm who did not have a job at the beginning of the intervention obtained one; that meant new financial resources to cope with food insecurity.

Women in the intensive arm found job around 21% more than women in the non-intensive arm, this result may have two explanations. First, these women increased their psychological empowerment and developed new skills, including communication ones, so they felt more secure to seek and accept jobs. This result is consistent with other studies which have suggested that interventions developing skills, education, and health

of individuals allow them to seek better employment opportunities (Rose, 2008; Skoufias, 2005). Second, these women used and recommended more the services of the employability office of the Municipality. This office may have helped them not just to find a job for themselves, but also for a household member, improving their food security status.

Contrary to the findings of a study in Mexico, which demonstrated that decreasing food insecurity through cash and food transfers may exacerbate weight, particularly in already obese women, (Leroy et al., 2013) our women reduced food insecurity and simultaneously decreased body weight. Women in the intensive arm reduced their BMI on 0.648 kg/m^2 and their weight in 1.65 kg more than women in non-intensive arm, with a total weight loss of 2.44 kg; and reduced the prevalence of obesity by 12.6 percentage points ($p=0.007$) compared to the non-intensive arm. The intensive arm resulted in modest reductions in weight, but are greater than those observed in 6 months in other studies with disadvantaged populations. For example, in two community-based weight loss strategies (case management intervention vs case management plus community level worker intervention) among obese, low-income Latinos in San Mateo County, in the case management intervention the weight loss was 1.6 kg and in the combined one was 2.1 kg (Rosas et al., 2015). In a 2-arm, 24-month randomized effectiveness trial, in three Boston community health centers targeting social disadvantaged populations, at 6 months, the weight loss differences between the intervention and the control arm was 1.11 kg (Bennett et al., 2012). At 6 months our results are also greater than the weight losses of 1.8 kg of a study that offered behavioral weight loss combined with cognitive-behavioral depression management to obese women who have depression (Linde et al., 2011).

Changes in weight may be explained in part by changes in the consumption of certain foods, such as salads, fried foods, sausages, and sugar drinks.

At 3 months, the intensive arm had effects on BMI, waist circumference, and some food behaviors. At 6 months, the intensive arm had also effects in the expected direction in food security and psychological empowerment. It might be argued that it takes a longer time to change food security and psychological empowerment than BMI, waist circumference, and food behaviors. But we may also expect that the activities held during the second three months, such as the workshops with the family and community members, may have contributed to such changes.

In contrast with the significant effects in many outcomes, the intervention did not have significant effects on social support for healthy eating, some food behaviors, and exercise. A possible explanation may be that, except for social support for healthy eating, all these outcomes also had significant changes in the expected direction in the non-intensive arm. In relation to discouragement, we expected that changes in food security, BMI, and psychological and economic empowerment have lead to a decrease in discouragement.

The higher attrition rates in the intensive arm at 3 months compared to the non-intensive arm may be explained by the intensiveness of the intensive arm. Weekly sessions might have prevented women from attending all sessions and also prevented women with greatest need from participating, especially because our women experienced difficult living conditions. For example, women in this study coped with severe food insecurity, difficulties to find a job, being single mothers, dealing with their children's health and behavioral issues, mourning, imprisoned partners, an overload of

responsibilities including taking care of elderly and sick people, and a personal history of depression.

Limitations

The study had many strengths supporting internal and external validity. Matched pairs of EBASs were randomized to conditions. The two arms were treated equivalently in pre-testing and instrumentation, and had similar attrition rates at 6 months.

Anthropometric measurements were taken using standard protocols and people who took measurements, were trained. The Food Insecurity Scale (González et al., 2008) was validated in Costa Rica. The scales measuring secondary outcomes have been validated in Latin American countries, but not in Costa Rica. We tested all scales and revised them for a better understanding with 28 women with similar characteristics to those of participating women.

Contamination may have occurred between the intensive and non-intensive arms. Despite the cluster-randomized design, the geographical area of the study is small and some women in the intensive arm might have had acquaintances or relatives in the non-intensive one and could have transferred some information underestimating the effects of the intensive arm. Contamination may be a particular problem in trials of educational interventions because of their transferability, because it may be difficult to limit the information for the participants for whom it is intended (Keogh-Brown et al., 2007).

This intervention was conducted with food-insecure women with excess body weight in an urban area of Costa Rica, and its findings may not be generalizable to rural areas, to women in other countries, or to women with food security. Given that many Latin

American countries share similar characteristics such as social norms with Costa Rica, however, the results may be applicable to these countries.

Conclusions

Using a strong study design and a careful implementation, we developed and implemented an intensive intervention for women that simultaneously improved food security and reduced--rather than exacerbated--weight gain. Improvements in food security were possible by educating women about how to eat healthy at low costs, increasing their psychological empowerment, working with them on a life project that included employability and recognition of their dreams and goals in life, and changing gendered behaviors in relation to co-responsibility in the household and self-care of family and community members; This intervention strategy is in contrast to just giving food or cash transfers which might contribute to excess body weight, mainly in adult women (Frongillo, 2003; Leroy et al., 2013; Townsend et al., 2001).

Extended follow-up periods are necessary to confirm whether the results obtained are long-lasting, as well as, other possible changes in outcomes, such as social support .Further research is needed to determine if the results of this study may be generalized to other countries with different cultural and economic characteristics, and whether it is also possible to also achieve a positive impact in risk factors of cardiovascular diseases, such as hypercholesterolemia and hypertension.

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4.2 PROMOTING CO-RESPONSIBILITY IN THE HOUSEHOLD AND SELF-CARE THROUGH AN INTERVENTION FOR FOOD-INSECURE WOMEN WITH EXCESS BODY WEIGHT IN COSTA RICA²

² Martínez, T, Frongillo, E, Blake, C, Mann, E, Fram, M. To be submitted to a journal to be decided.

ABSTRACT

Introduction: Gender norms in societies may have a harmful impact on health and well-being. In Costa Rica, gender norms in relation to the distribution of household chores remain one of the most important barriers for women to reach gender equality. Promoting co-responsibility in the household and self-care is a promising way to improve women's health and, in turn, the health and well-being of their household members. We developed, implemented, and evaluated an intervention to alleviate discouragement through enhancing women's capacities, targeting food-insecure women with excess body weight that included their household and community members. The intervention was intended to also change gender norms and gendered behaviors. We conducted a mixed methods sub-study with three research questions. First, what were perceived gender norms, attitudes, intentions, and behaviors of women and their family and community members in relation to co-responsibility in the household and self-care at the beginning of the intervention? Second, what changes in these occurred during the intervention period? Third, how did the changes occur?

Methods: The sample was comprised of 62 participating women, 34 women's family members, and 9 community members. We used three sources of data: pre- and post-test at workshops, non-participant observation and content analysis of the participant's comments during the workshops, pre- and post-semi-structured interviews, and focus groups with participating women.

Results: Participating women and their family members changed attitudes, intentions, gender norms, and behaviors related to co-responsibility in the household and self-care. Family relationships were also improved. In turn, these changes supported the

incorporation of many of these women into the labor market that then contributed to reducing household food insecurity.

Conclusion: Promoting co-responsibility in the household and self-care was an effective way to improve women's health and, in turn, the health and well-being of their household members.

INTRODUCTION

Gender is one of the principal social determinants of health (Fleming & Agnew-Brune, 2015a; Phillips, 2005). Gender norms refer to the social rules or expectations about what women or men should do, e.g., which behaviors, professions, products, or knowledges are appropriate for each of them (Gendered Innovations, 2016; Monda.eu, 2016). Gender norms in societies may have a harmful impact on health and well-being because certain gendered behaviors may be related to health outcomes. For example, women may suffer more depression, anxiety, and somatic complaints than men, because women have a continuous responsibility for the care of others limiting the care of their own health (Fleming & Agnew-Brune, 2015b; Montero et al., 2004; WHO, 2001). On the other hand, alcohol dependence is generally more than twice as high for men as for women because it is normative for men in some cultures to drink alcohol excessively or because it is socially normative for men to use alcohol to "self-medicate" anxiety and depression rather than seek professional help (Flandorfer & Fliegenschnee, 2011; Fleming & Agnew-Brune, 2015; Montero et al., 2004; World Health Organization, 2001).

Although Costa Rica seems to have a high level of gender equality, gender norms in relation to the distribution of household chores remain one of the most important barriers for women to reach gender equality (Camacho de la O et al., 2011; Instituto Nacional de

Estadística y Censos (Costa Rica), 2018; Sandoval, 2013; Valitutti et al., 2015). For example, whereas women spend 35.49 hours weekly doing non-remunerated domestic work, men only spend 13.42 hours. That means that women spend about 22 hours per week more than men in non-remunerated domestic work. The most time-consuming task for women in comparison to men is feeding and taking care of household members. For example, whereas women spend 13.53 hours a week cooking, men spend just 3.5 hours in the same period (Instituto Nacional de Estadísticas y Censos (Costa Rica), 2018). For every 100 women who reported not being able to work due to household responsibilities, there are just 20 men who reported the same (Valitutti et al., 2015). The growing incorporation of females into the labor market has not meant that men have taken more responsibilities in the household; on the contrary, women continue assuming most household responsibilities in addition to responsibilities outside the household. This double workload prevents women from not only assuming other opportunities in society, such as having better paying jobs, but it also has immense implications in women's physical and mental health because they do not have time to take care of themselves (Instituto Nacional de las Mujeres, 2018; Organización Internacional del Trabajo & Programa de las Naciones Unidas para el Desarrollo, 2009; Peña Palacios, 2007).

In addition to this, some authors have referred to the “invisible or emotional work” that women do. Women do more of the mental, intellectual, and emotional work of household maintenance and childcare. That means more decision making, more worries, organizing, and delegating. This work is basically invisible, going unrecognized and unpaid (Caribe, 2016; Peña Palacios, 2007; Walzer, 1996). For example, it is not just cooking, it is deciding what to prepare taking into consideration the nutritional needs and

preferences of all family members, going shopping to have all the ingredients, and creating an adequate atmosphere to eat.

Promoting co-responsibility in the household and self-care is a promising way to improve women's health and, in turn, the health and well-being of their household members. Co-responsibility refers to sharing responsibilities in the household, including taking care of children and the disabled and contributing to household support between all members. Co-responsibility allows household members to have more time to rest, recreate, and take care of their health; conflicts are reduced and all household members are enabled to have more autonomy. At the same time, improving self-care of household members benefits their own health and, in turn, supports women (Organización Internacional del Trabajo & Programa de las Naciones Unidas para el Desarrollo, 2009; Peña Palacios, 2007)

Based on previous qualitative research, (Martinez-Jaikel & Frongillo, 2016) we developed, implemented, and evaluated an intervention to alleviate discouragement through enhancing women's capacities, targeting food-insecure women with excess body weight that included their household and community members. The previous qualitative study found that both food insecurity and excess body weight led women to discouragement, which women described as feeling sad, depressed, hopeless, and lacking drive to do important activities, such as finding a job or studying more. Discouragement was the primary link for the coexistence of food insecurity and obesity. Individual factors contributed to this situation, such as unhealthy dietary habits or lack of physical activity. Other more structural factors, such as the family and the prevailing gender norms in

relation to co-responsibility and self-care, also contributed and compounded this situation.

For the intervention, particularly in the workshops with family and community members, we developed activities intended to change gender norms and gendered behaviors adapting some elements of the Theory of Planned Behavior (Ajzen, I, 1991). This theory explains the relationship between behaviors, beliefs, attitudes, and intentions. It proposes that behavioral intention is the main determinant of behavior (Ajzen, I, 1991). Behavioral intention is determined by a person's attitude toward the behavior (the degree to which a person evaluates the behavior as positive, neutral, or negative); by perceived norms, which are the beliefs about whether people who are important to the person approve or disapprove of the behavior; and for perceived behavioral control, the belief that one can control the behavior. The theory expects that if attitude toward the behavior, the perceived norms, and the perceived behavioral control (self-efficacy) change, then behavior will change. With our intervention, the behaviors that we expected would change were related to sharing responsibilities in the household, including contributing to household support, as well as changes in self-care such as improving nutrition or practicing physical activity. For this study, we understood intention toward behavior as theory does, i.e., the perceived likelihood to performing the behavior; the attitude toward behavior as the advantages and disadvantages that people perceived about co-responsibility in the household and self-care; and perceived norms as perceived gender norms.

The intervention was evaluated using a cluster-randomized design and an intent-to-treat analysis. We found that the intervention reduced food insecurity and weight of

participating women, improved some food behaviors, and increased psychological and economic empowerment, including an increase of about 20% of women contributing to household support.

According to our conceptual model, the intervention would also change gender norms and gendered behaviors. For the current paper, to evaluate these changes, we conducted a mixed methods sub-study which allowed in-depth descriptions and analysis of the experiences of the participating women and their family members. We aimed to answer three research questions. First, what were perceived gender norms, perceived advantages and disadvantages, intentions, and behaviors of women and their family and community members in relation to co-responsibility in the household and self-care at the beginning of the intervention? Second, what changes in these occurred during the intervention period? Third, how did the changes occur?

METHODS

This sub-study is part of a larger study in which an intervention conducted in Costa Rica to alleviate discouragement in food-insecure women with excess body weight was evaluated using a cluster-randomized trial design (registered at www.clinicaltrials.gov as study NCT03492619). The 6-month intervention had two arms. The intensive-arm consisted of activities developed for participating women (12 two-hour sessions, three follow-up monthly sessions, and one closing session), for participating women and their household or family members (one workshop and six homework assignments with one selected household or family member), and for their community members (distribution of two brochures and one workshop). The sessions with women included three components: 1) eating healthy at low cost, including how to cook healthy and inexpensively, 2)

psychological empowerment such as assertiveness and self-esteem, and 3) life project, including employability and recognition of their dreams and goals in life. We carried out these sessions for five different groups with around 15 participating women.

The workshops with women and their family and community members were developed to change the perceived gender norms, attitudes, intentions, and behaviors relating with co-responsibility in the household and self-care. These workshops were conducted after the first 12 sessions. The program consisted of activities, such as sports games, group discussions, educational sessions, and a theater performance. The play was based on a theatrical adaptation of Ramón of the author Sergi Belbel. It tells the story of an argument between a named man and four anonymous women onstage. It revolved around a couple's long-term problems and their separation; we modified it, not only to include messages about co-responsibility in the household and self-care, but also, we changed the ending of the play to promote the communication among men and women. After the performance, there was a discussion in small groups based on a worksheet with questions and a subsequent plenary. The two educational sessions were about co-responsibility in the household and self-care, including healthy nutrition. In both, we discussed traditional gender norms in Costa Rica that influence the behaviors, the advantages of both behaviors for all household members, and some strategies to implement them. We worked with the household members to establish household goals, including a worksheet to distribute household chores. We conducted two similar workshops in different days so that participants could select whichever was more convenient for them. The non-intensive arm was comprised of three one-hour sessions about healthy lifestyles only with participating women.

To understand changes in gender norms, attitudes, intentions, and behaviors of women, their family, and community members in relation to co-responsibility in the household and self-care, we used mixed methods. We applied mainly qualitative methods (Strauss, Corbin & Zimmerman (2002) complemented by a quantitative component to evaluate changes during the workshops (Morse & Cheek, 2014).

Sources of data and data collection

We used four sources of data. First, we assessed participants before and after the workshops. Based on the Theory of Planned Behavior, we assessed the attitude toward the behavior and the behavioral intention corresponding with the two topics of the workshops, co-responsibility and self-care. Participants were asked to rate their agreement with four statements, two related to attitude toward behavior and the other two to behavioral intention, using a 5-point Likert scale ranging from strongly agree to strongly disagree. The four questions were: 1) how much do you agree or disagree with people who think that the household chores, including decision-making, taking care of children and the disabled, and contributing to household support, should be shared among all the household members? 2) How much do you agree or disagree to share responsibilities in your household? 3) How much do you agree or disagree with people who think that both men and women should take care of our body, mind, and emotions? 4) How much do you agree or disagree to take care of your body, mind, and emotions?

Second, during the two theater performances, the discussion in small groups, and subsequent plenary, we conducted observation of the participants' reactions to the messages and afterward performed a content analysis of the participant's comments during the plenary. We attempted to capture not only the non-verbal communication,

such as gestures and expressions, but also comments of the participants that may have reflected their attitudes, intentions and gender norms in relation to co-responsibility in the household and self-care. We used this alternative method to evaluate the attitude toward the behavior and the behavioral intention because people may want to answer the questions of the pre- and post-tests in a socially acceptable way. The observer took notes based on an unstructured observation guide. The sessions were also video-recorded and the recording was verified for accuracy and transcribed verbatim.

Third, we conducted pre- and post-semi-structured interviews with selected participating women on two occasions, at the beginning of the intervention and 6 months later at the end of the intervention, and conducted focus groups at the end of the intervention. Questions for baseline interviews covered categories related with the entire intervention: reasons to participate in the intervention, daily routine, self-description, health status perception, state of mind, self-esteem, dreams and goals in their lives, ability to express their concerns to others and stand up for their own rights, economic situation and how does it affect their food consumption, family support for healthy lifestyles, and co-responsibility in the household. At the end of the intervention, we collected data for the same categories, including changes in co-responsibility in the household and self-care of themselves and their household members. Based on baseline answers, we developed different interview guides for each woman to follow-up on emergent themes. For example, “In the initial interview you told me that you took on all the household responsibilities, is there something different now?”

Interviews were conducted by the first author. Fourth, we conducted five focus-groups at the end of the intervention were conducted by the first author and one recorder

using a semi-structured interview guide. Women were asked about changes due to intervention, including co-responsibility in the household and self-care in themselves, household and community members. All interviews and focus groups were audio-recorded and uploaded to a password-protected computer. To ensure participant anonymity each interview had the participant's code and not their names. The focus-group and interview guides are available upon request.

Recruitment and Study sample

The total sample in the sub-study was comprised of 63 participating women, 34 family members of the women, and 9 community members. The mean age of the participating women was 40.3 ± 10.2 years and their mean BMI 34.1 kg/m^2 . Most women (90.3%) completed at least elementary school and 64.5 % of them living with a partner. About half of them (53.4%) were housewives. About forty percent of them were mildly food-insecure (Table 4.5). The mean age of the family and community members who attended the workshops was 42.3 ± 2.5 . Twenty of them (46.5%) were men and 15 (34.9%) were the participating women's partners. The rest of the family and community members were daughters, sons, neighbors, and parents of the participating women.

Participating women in the main study met the following criteria: being excess body weight ($\text{BMI} \geq 25$) according to the WHO classification, being between 18 and 60 years old, being food insecure (low, moderate or severe) according to the food insecurity scale of Costa Rica, (González et al., 2008) know how to read and write, and having at least one other adult household member or family member willing to participate fully in the study, including the workshops.

Table 4.5. Characteristics of women at the time of the enrollment (n=63)

Characteristics	
Age, years, M (SD)	40.3 (10.2)
BMI, kg/m ² , M (SD)	34.1 (6.1)
Food security status (%)	
Mild food insecurity	41.3
Moderate food insecurity	27.0
Severe food insecurity	31.8
Education (%)	
Less than Elementary School	9.5
Completed Elementary School	42.9
High School Diploma	25.4
Technical Education	11.1
Complete University	11.1
Marital Status (%)	
Living with partner	65.1
Widowed/separated/divorced	25.4
Never married	9.5
Occupation (%)	
Housewife	52.4
Housemaid	9.5
Own Business	11.1
Salaried	19.0
Unemployed	3.2
Student	4.8

We recruited participants in this mixed methods study from the intensive arm of the main study. For the semi-structured qualitative interviews, a maximum variation sampling selected three or four women from each of the five intervention groups. Women with different food insecurity scores, marital status, and occupations were selected. We conducted interviews with 19 women at baseline and 16 of these 19 women at 6 months to evaluate possible changes due to the intervention as well as factors that affected their outcomes. The sample of the focus groups was 49 women who were enrolled in the intervention and attended the last session. From the total sample (63 women), 12 women

participated in interview and focus groups, 11 women in workshops and interviews, 31 in workshops and focus groups, and 9 of them in the three data collection activities (interviews, focus group and workshops).

Data Analysis

All statistical analyses were conducted using Stata version 14.1 (StataCorp, L.P., 2016). We used Wilcoxon sign rank test because the changes from pre- to post-test were not normally distributed.

The qualitative data analysis was based on the constant comparative method. The analysis was done in Spanish, and selected results and quotations were later translated into English. We followed five steps. First, interviews, plenary video-tapes, and focus groups were transcribed verbatim; both transcriptions and field notes were reviewed by two different persons, including the first author, for accuracy. Second, we reviewed the video-recording to complete and verify the field notes. We also transcribed and analyzed the comments of the participants during the theater forum to observe gender norms in relation to co-responsibility and self-care as well as possible changes in attitude toward behavior and behavioral intention. Third, based on the research questions and a preliminary reading of the transcriptions, we prepared a preliminary list of categories.

Fourth, the transcripts from plenaries, in-depth interviews, and focus groups were coded together by first author using the computer software NVivo 11. In our coding process, we either selected a coding category from our preliminary list of categories or created a new one that emerged from the data.

Fifth, different categories were grouped further to address the sub-study research questions as well as questions that emerged during the research process. In case that we

had a doubt in relation to an specific change, we compared the baseline with the final interview. To identify changes in social norms, we did a content analysis of all the sources of data.

To ensure data quality, peer debriefing (Lincoln & Guba, 1985) through meetings of the primary researcher with other members of the research team enabled group discussion of the results and the emergent theme. We collected data with different methods (focus groups, interviews, observation, and analysis of content of the plenary) and with participating women and their family and community members.

The study protocol was approved by the Institutional Review Board at the University of South Carolina on January 23, 2017 (IRB Registration number: 00000204) and by the Ethical- Scientific Committee of the University of Costa Rica.

RESULTS

Co-responsibility at the beginning of the intervention

Baseline individual qualitative interviews with women showed that, at the beginning of the intervention, most women recognized many advantages of sharing the household chores, such as avoiding conflicts among family members, household members would be more independent and give more value to domestic work, and family relationships would improve as every member would be contributing to reach a common goal. The most important advantage for these women was the expectation that they would feel relieved and would have more time to share with family and do things that they really enjoy. For example, one woman told us:

I would have more free time for myself. Sometimes, I tell them, please, give me at least 5 minutes to watch the news, because I really need a time for myself. So, I do not have to be running around crazy all the time.

Many of them said also that domestic work made them feel stressed and frustrated, so sharing it would improve their mood. For example, a young housewife said:

Well, it's... sometimes more or less stressful. I almost always have three men in the house. And I spend all day tidying up the house, and I have a hard time keeping it clean. And they do not value that, because suddenly, I see a dump there and I just picked up there, then it stresses and frustrates me. I think, what I do is useless!

The majority reported to be likely to share the household chores; but they perceived an important disadvantage, because when they were supposed to do it, it has been difficult because they expected that other people do the household chores the way that they would do them, and *“either they do it badly or they do not do it at all, thus they prefer not to get angry, and do it themselves.”*

One woman explained:

It is fair and necessary to me (referring to sharing household chores). He does help me, but he does not do the things as I tell him that he must do them. I tell him ‘please hang the clothes up’, but he hangs everything upside down. So, there is housework that I prefer to do by myself because, as my mom says, ‘if they do not do it the way I want to, I have to do it again’.

Because women feel that they are totally indispensable in their households, and because nobody will do chores, including taking care of the children, as they would, they force themselves to be at home despite other people’s offers to help them. A woman said:

“My sister lives in Spain and she offered to give me everything to visit her. My husband said: Go! But I say: What about the children, who will take care of them?”

All women who were living with a partner reported doing most of the domestic work. Many of the women explained that because they are at home and their partners work outside of the home, the women feel that they should handle most household and child care responsibilities. Women living without a partner generally distributed domestic chore with their children, especially with their daughters.

An important part of co-responsibility is that adult household members can contribute to household expenses. From the baseline qualitative interviews, most of the women perceived working outside home as favorable. They particularly recognized two advantages of working outside home: 1) being able to buy their own things without having to ask for money to someone else, and 2) being able to contribute to household expenses, so all household members may have a better life. More than half of the women who were not working outside the home mentioned being willing to do it, but they also expressed concerns. Women who have little children were worried about who would take care of their children, so they had mixed feelings in relation to getting a job or not. As one mentioned *“it is not that you don't want to have a job, it is just that your priorities changed.”* They would prefer to find a part-time job or a job with flexible schedules.

Some of them used to work before having their children, but after their children were born, they could not find an affordable day-care for their children so they became full-time mothers. They also mentioned that such change was the cause of their discouragement and excess body weight, because *“housework never ends.”* Two of the women told us that when they used to have a job, their husbands used to share domestic

work with them, but as soon as women began to stay at home to take care of their children, they took up all the chores in the household. Some of these women are looking for a job again, but they told us that *“it is difficult to find a job with convenient schedules.”* There are also employers who do not want to hire women who have small children. Women who are older and do not have little children said it has been difficult to find a job due to their age, because employers prefer young women for many positions.

Self-care at the beginning of the intervention

From baseline qualitative interviews with women at the beginning of the intervention, many women had a positive attitude toward self-care and said they intended to change their behavior. Almost all of them also intended to change eating and physical activity behaviors with the purpose of losing weight. Nevertheless, many of them expressed doubts in relation to dedicating time to self-care, because they complained about having a lot of responsibilities in their households, including taking care their children and grandchildren. Many of the women who initially expressed these concerns either left the intervention or did not attend most sessions.

Changes in co-responsibility and self-care during the workshops

In the pre- and post- test conducted at the workshops, participating women had positive significant changes in attitude and intention toward co-responsibility in the household and attitude toward self-care. They did not have significant changes in behavioral intention toward self-care. In contrast, family and community members just had positive significant changes in the behavioral intention toward co-responsibility in the household (Table 4.6).

Table 4.6. Pre- post-test in some elements of theory of planned behavior during the workshops

Outcome Measure, M(SD)	Women (n=40)			Family and Community Members (n=43)		
	Pre-Test	Post-Test	P-value	Pre-Test	Post-Test	P-value
Attitude toward co-responsibility	4.75 (0.44)	4.90 (0.30)	0.058	4.77 (0.48)	4.88 (0.32)	0.152
Behavioral intention co-responsibility	4.75 (0.44)	4.85 (0.36)	0.046	4.58 (0.76)	4.81(0.45)	0.032
Attitude toward self-care	4.75 (0.44)	4.93 (0.27)	0.008	4.77 (0.43)	4.81 (0.39)	0.527
Behavioral intention toward self-care	4.9 (0.30)	4.93 (0.27)	0.564	4.72 (0.45)	4.77 (0.68)	0.108

The non-participant observation during the two different theater performances and the posterior content analysis showed that most of the participants, women and their family and community members, were interested during the theater performance and actively participated in the different groups that we organized after the performance to discuss questions related to the play's messages. During the plenary where we discussed about the work that done in groups, about half of the opinions came from the participating women and the other half from their partners. Community members or other family members had little participation during this plenary, especially the younger people. At the beginning of both plenaries, women participated more than men. Later, men began to participate and discuss different topics with the women. From the 20 men who participated in the workshops, 13 of them also participated in the plenary. Participants

understood the three messages given in the theater performance: the advantages of sharing domestic work, the importance of self-care for both women and men, and the key role of communication living as a couple. In relation to co-responsibility, the comments of the participants demonstrated a favorable attitude toward behavior. Women emphasized that the man should go beyond his role as a breadwinner assuming also part of domestic work and supporting women's emotional needs. *"These are norms that we bring from childhood, they teach us that we, the women, have to take on domestic work while men should be just the breadwinners. We need to change that..."*

Men brought into discussion an aspect that reflected the different expectations that women and men have in relation to domestic work which even affected their couple relationship. On the one hand, men expected women to take on the domestic chores, but at the same time to have the energy and be in the mood to spend time with the men, particularly regarding sexual privacy. On the other hand, women felt that they should meet the social expectations that the house should always be clean and organized, so women should dedicate most of their time to domestic work and taking care of their children. When men returned home, women not only were tired but also felt the need to continue with the rest of domestic work. This is an example from the discussion:

And I sometimes I tell her, 'Why don't you stop doing it, just for today? She answers me: 'Because if I stop, the house will get dirty.' I tell her, 'Please, clean another day, live the day, relax' I expect that my wife waits for me one day at home not as a wife, but as a girlfriend. This is the way how you spice-up a relationship.' Please, women, you have to be more romantic, because if you are all tired and disheveled it is

difficult to get in the right mood. Love is simple, at least it should be, don't you think?

(Participating woman's husband).

Some men would like to arrive home and that their wife threat them exceptionally, as he says, even having a mini honeymoon. But, you, men do not know that when you arrive home, your wives are tired because they have done everything that a house requires. And many times, maybe they have not had time to dress and groom themselves, because it's so much work. But, you men enjoy having your house tidy, the food ready, their children well taken care of, and perhaps you do not value that, because you want to arrive and that women will dedicate themselves completely to you and nobody else (Participating woman).

After the exchange of ideas, we saw positive attitudes toward sharing household chores and the intention to do so. Because men and women understood that if men and other household members contribute to the domestic work, women can spend time on other activities, including more time to share with their partner and children.

You need to balance everything, life is a balance, when there is balance there is health, life is a balance, it is not good to be tired every day of the week, do you understand me? Let's not clean today, tomorrow we will do it, I will help

(Participating woman's husband).

Women also understood that their role, is not limited to staying at home doing domestic work and they deserves time for recreation:

I think, sometimes, women are at fault for being enslaved in the house, the husband says ' come on, let's go out for a coffee' but there are women who tell them, 'I can't go because I need to do something at home'. Sometimes we women must be selfish,

think ourselves, if the house is dirty, give a quick sweep and nothing more

(Participating woman).

Women, when they asked for help, expected that their husband or children will undertake the household tasks immediately and with the same excellence as they would; if this does not happen, they prefer to do the tasks themselves. After discussion, the women changed their attitude and intention in relation to this point.

Women always seeking a level of perfection that we will never achieve. Other people in my home will not do these things like me, because as he said (referring to another participant), I am used to do the same things every day, so I do them very well, but if I want someone else to help me, this person can make mistakes (Participating woman).

From the discussion we could observe changes in relation to the attitude toward self-care, especially in some men. First, the perceived norm was that women know how take care of their health, but not men, so women should take care of their husband's needs. During the workshops we discussed that both women and men should take care of themselves and help each other care for their health. An important point that was discussed, and helped to change the attitude toward self-care in men, was that women motivate their husbands to take care of their health because women appreciate them and not just to bother them.

But it is very important when a woman cares about her husband's health, this is beautiful! Because it shows that she loves him and that she will love him for as long as God lets them live (Participating woman's husband).

Women and men also concluded that doing exercise together or eating healthy is a good way of caring for their relationship. Women concluded that they are responsible for

taking care of themselves, even if that means lowering their expectations about perfection in relation to household chores.

Even when we talked about co-responsibility and self-care, the predominant idea in the plenaries was about communication. We talked about the perceived norm in relation communication between man and woman. In the same sense, both men and women are socially oriented to not express themselves, men because their role is to provide for their household and it should be enough to women's happiness; and women because they are culturally conditioned to not discussing problems or concerns with their partners. Finally, men and women recognized the importance of expressing their concerns and needs to their partners as a first step to improve family relationships, co-responsibility, and self-care.

The communication is very important. The most valuable thing is to learn how to express to our partner, mother or children our thought, desires, and experiences
(Participating women)

We must learn how to communicate with our people, only with communication we could know what this person is thinking about different situations (Participating woman's husband).

Changes in co-responsibility during the intervention period

Final interviews and focus groups with women at the end of the intervention showed that many of them reported changes in the distribution of domestic work. More equitable distributions of the domestic work were achieved with their children and, to some extent, with their husbands and other relatives who live at home. The distribution of domestic work was far from reaching 50/50, but women could see some important changes that

positively affect their quality of life and family relationships. Women told us: *“Yes, and he used to bring me the lunch container without washing, but now he washed it at his workplace.”*; *“Yes, yes, now when my husband is at home, the days that he does not work, we make breakfast together; before, he would sit there and wait for me to do it, now, we do it together.”*; *“Now, he helps me while I'm cooking, he tells me ‘I'm going to wash the dishes’. He helps me now, he was not like that before. He even told me that he wanted to learn cooking.”*; *“Now, everyone washes their plate, I teach them how to hang their clothes up. My 17- year old son cleans the bedrooms.”*

During the intervention period, women increased their positive attitude toward sharing responsibilities in the household. More than half of them also had an important change of attitude toward other people doing chores with the same excellence that they would. Women accepted that their family members are different than them, and due to this, family members do chores in a different way. Thus, the housework should be distributed taking into consideration the abilities of each member. Also, they became more patient and now do not expect that their family members do the chores immediately.

I used to tell him (referring to his son): ‘Put your dirty laundry in the washing machine’ and I used to wait until he did. But, he used to tell me: ‘I will do it soon, mom’ And it used to make me very angry, I used to go and do it myself. And then, he never did it because he knew that I was going to do it immediately.

Additionally, women and their household members experienced the advantages of sharing domestic work, so now they have a better attitude toward that. *“I tell them (her*

children), help mom clean the house, so that mom can finish soon, and we can go to the Mall.”

Different situations limited the changes in family co-responsibility, a lot of them related to the difficulty in changing gender norms. For example, some of them felt that they are capable enough of doing by themselves and that domestic work is their responsibility: *“My husband did not start to domestic work, but he changed in other aspects. I am used to do everything and for me it is not a problem”*

Other husbands have time-demanding jobs, so women think that is difficult for them to take on the domestic chores.

My husband used to have a job during the night, but he earned little money and he was almost never at home. For that, it was difficult for him to do some domestic work. Now, that he got another job, and is working less hours, it will be easier (referring to share domestic work). But in these moment, he does not have any household responsibility.

The quantitative results showed that more than 20% of the women began to contribute to household support. They either obtained a job or began a small business at home, thus being able to balance their job with taking care of their children. For example, some women began to bake and sell cakes. Now, they perceived some other advantages having a job outside home, such as leaving their home and have the possibility to build relationships with other people, to reduce snacking, and to reach a better distribution of domestic work among household members.

Changes in self-care during the intervention period

Final qualitative interviews and focus groups showed that women changed their attitudes and intentions in relation to self-care in comparison to the beginning of the intervention. The change mentioned most often was that they spent time in self-care without feeling guilty or being affected by the negative comments of other people. Most of the women mentioned that they understood during the intervention that they were the leaders and “pillars” of their households, so if they cared for themselves, they would inspire other people, and also have more energy and motivation to care for others.

How did I achieve goals for myself and my family? My husband, my daughters... I achieved that through valuing myself, loving myself and taking care of myself. I managed more by taking care of myself, than by just taking care of others and putting myself aside.

Another woman said: *“Sometimes you think that because you stay at home, you're useless, isn't it? But, no, it's not like that. Rather, I feel that I am like the pillar of everything because without me nothing at home would work.”*

Although at the beginning of the intervention their main intention toward self-care was losing weight, during the intervention they realized that self-care behaviors are important in themselves regardless if they manage to lose weight or not. *“The changes that I have had in my life, not just about losing weight, are about feeling different, looking different, feeling that there is something more for me”*

Women also made considerable changes in self-care, such as eating healthier, losing weight, exercising, sleeping more hours than before, and dedicating time to recreation. They reported different changes in self-care behaviors in their family members, including

exercising, more health awareness, and changes in eating behaviors. Most women said that their family members, including their children, eat healthier than before. These improvements in family eating behaviors made women feel calmer. One mother of two children said:

For example, las night I went and shopping, I feel calm, because my kids have food to eat. Now my children have more fruits, healthy food for my children, I am calmer because I have more healthy food for them.

Some changes in family eating behaviors included: preparing food at home, buying roasted chicken instead of fried, eating more fruits and vegetables, and reducing the portion sizes. One woman said that her husband lost 18 kg of weight during the intervention time.

Women highlighted at the beginning of the intervention that family members struggled to adapt to the change in diet, but once women were used to the change family members easily implemented new eating behaviors.

I taught my family a lot of what I learned. It is no longer a diet, no, it is a healthy lifestyle that I implemented at home. And the kids do not see it as a punishment, 'Oh no, give me squash, how delicious!'

Changes in gender norms related with co-responsibility in the household and self-care of household members

From the interviews, focus groups, and content analysis of the workshops' plenaries, we identified social norms related with co-responsibility and self-care and possible changes in them during the intervention time. For example, one traditional norm prevailing in many of the participants is that men are the breadwinners and women

should stay at home, so women are the only ones responsible of domestic work. If their partner or children would get involved in it, this should be considered “help”, but not their responsibility, so women should be grateful for getting any help at all. Another norm, which affects women’s self-care, is that women should be “mother” first than “woman” and sacrifice their own needs for others’ needs, particularly for their children.

Other women said they have difficulties dealing with the comments from their family members. These comments reflected also traditional gender norms in Costa Rican society. For example, neighbors and family members told them that they were lazy, because they wanted to do exercise or attend sessions instead of being at home doing chores and taking care of their children. Such perceived norm affected the women’s self-care. *“I had many friends with a negative opinion, for example, when I go to the course. They said I was lazy, or things like that, because only lazy women, let’s go on a Monday morning”*

On the other hand, it is perceived that women are responsible of caring for their family’s health, including their partners’ health. Men are not supposed to care for their own health or their children’s.”

Personally, she takes care of me in what I eat, if she gives me a carbohydrate she gives me only one, and she does not give me more, she helps me a lot in that part, in taking care of my health, men don’t know about health, women are more aware of that (Participating woman’s husband).

We identified some changes toward more equitable gender norms during the intervention time. For example, some of them recognized that domestic work is a responsibility of all household members and should not be considered as “help.”

One woman told her children *"Please, do not believe that you are helping me in anything, it is your responsibility"*. Many of the women held the idea that they are receiving "help" when other family members took up some household responsibilities.

A lot of women accepted that it is a priority to take care of their own needs, whether they have a partner or not. Also, taking care of their own needs would benefit both themselves and their families.

Some men accepted that caring of themselves did not make them less masculine. In some cases, however, even if the family made some changes, such as sharing some responsibilities with other household members, traditional gender norms seemed to prevail.

What's happening with you?' said my husband. And I told him, 'nothing is happening', if anyone needs something during dinner, they can bring it themselves. I fulfill my responsibilities as wife and mother to serve you, but I am worthy too, and deserve to enjoy my food.

One woman, who has a daughter and a son explained that she always gets angry with her daughter and she has told her *"it's a shame, that your brother who is a boy does it (clean the house) so fast and you do not."*

In relation to self-care some men understood that it is important to take care of their own health, as well as that of their partner and children. For example, one man insisted that his wife go visit the doctor due to a mass in her breast because she never wanted to go to the doctor (Table 4.7)

Table 4.7. Changes in traditional vs more equitable genders norms in relation to self-care and responsibility in the household

Traditional gender norms	Changes toward more equitable gender norms
<p>Men are the breadwinners and women should stay at home.</p> <p><i>"Some time ago, I started looking for a job, but my husband did not want that, because he thought that her woman should be at home while he works. So, he got angry and he did not talk to me for a while. But at the same time, he used to cry because he could not support his family. I wanted to help, but he is very proud. "</i></p>	<p>Both men and women can be the breadwinners.</p> <p><i>"He is very organized with the money. We, with the money that we earn, get ahead. We both collaborate, and he learned. Because, before, if he did not have money he would not say anything to me, he would see how he solved the problem. He believed that he had to solve the problem by himself and now, he has learned that we are a family, we are four; and the problems are ours"</i></p>
<p>Women are the only responsible of the domestic work and take care of children, if the partner or children participate; it should be considered "help" but not their responsibility and women should be grateful for that.</p> <p><i>"I always say to them: 'I am your mom and I know that it is my obligation, but if you see shoes, toys, the bed disorganized, please, help me.'"</i></p>	<p>It is not help, it is the responsibility of each household member to assume the domestic work.</p> <p><i>"Please, do not believe that you are helping me in anything, it is your responsibility."</i></p>
<p>Women should not communicate their needs and desires. Their partner should understand what they really want.</p> <p><i>"There are women who get angry because he does not understand her messages, for example, a couple told us that she got angry with her husband because she told him: Peanut are delicious!" And he did not understand that she wanted to eat peanuts"</i></p>	<p>Women should clearly communicate their needs and desires, so other people, including her partner, can understand them.</p> <p><i>"Now, I do not say 'How delicious a cup of coffee', now I say 'Honey, please make coffee'."</i></p>
<p>Women should be "mother" before "woman" and sacrifice their own needs for other people, particularly for their children.</p>	<p>Women should take care their own needs as well as the others.</p> <p><i>"There is an expression that has been sold to women cheaply: 'Before I am a woman I am a mother', I analyzed that phrase, and it is true that one, as a mother, gives</i></p>

<p><i>"For me, my children have always been first, even first than me, that is not right, but for me they are first."</i></p>	<p><i>oneself to her children until the end, but although one gives everything for the children, one must think of one self as a woman also."</i></p>
<p>A "good woman" should do household work "perfectly" and keep the house clean and tidy at all times. This is the way to please their partner. To achieve this, she should stay at home most of the time. If women dedicate time to themselves such as exercising, they are considered "lazy women".</p> <p><i>"My husband told me 'that is a waste of time (referring to going to the sessions), and who will take care of the children?'"</i></p>	<p>Home should not be perfect all time. Women can spend time in other activities that benefit themselves, including recreation and exercise.</p> <p><i>"It was also the burden imposed on one, 'I cannot leave the house messy and no, now what I think is 'it stays messy or whatever, but I will go and do something for myself first.' Then I come to the house and I see what to do."</i></p>
<p>It is important to take care of the physical appearance to "capturing" a man, after marring or having a partner, you should take care of your home and others but not yourself. So, your partner will be jealous if you tried to lose weight or look better because that means that you may want another partner.</p> <p><i>"But I have to fight with my husband, I have to go to the Municipality (referring to women's office) because he has been attacking me, saying that I have lost weight because I have another man, and that I have lost weight for the others. And I fight for that, every day, because he wants me to be fat."</i></p>	<p>Women should take care of themselves for their own well-being, whether they have a partner or not.</p> <p><i>"One sometimes loses even the sense of oneself, that one can look nice, and that just because you look good or because you are taking care of yourself, does not means that now you are less a mom or a wife or a housewife."</i></p>
<p>Man should not take care of themselves or seeking health care because it is sign of weakness.</p>	<p>Caring for themselves or seeking health care do not make men less masculine, on the contrary, they will be more productive and will have a better quality of life.</p> <p><i>"A brother told me ' we will die of something, anyway. One day we're going to die' Then my husband says "if you knew you were going to die at once, that's fine. But if you have to live with an illness and live without a leg, after you have an arm cut off, that is not a nice way to live "</i></p>

<p>Women are the responsible of taking care of their family health. Men are not responsible of caring for their own health nor their children's.</p> <p><i>“Personally, she takes care of me in what I eat, if she gives me a carbohydrate she gives me only one, and she does not give me more, she helps me a lot in that part, to take care of my health, men don't know about health, women are more aware of that”</i> (participant's husband)</p>	<p>Both men and women are responsible of their own health and their children's. Men and women can support each other to take care of their health.</p> <p><i>“Some time ago, I had a little ball in my breast (crying), but I had not wanted to have any exams because I do not want to know about diseases, if I had something, I would die first. After the workshops, my husband deceived me, and took me to have an ultrasound... he told me that he loves me and that he does not want anything bad to happen to me.”</i></p>
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How did the changes occur?

The women noted many changes in family dynamics after the workshop, but also women increased their psychological empowerment; in other words, they felt more confident now to ask for help. Also, they learned during the intervention about assertiveness and how to express themselves in an honest and respectful way. *“Now, I do not say ‘How delicious a cup of coffee’, now I say ‘Honey, please make coffee’.*

Women now feel that they also deserve time for themselves, for example, sitting at the table with her family members and enjoying lunch or dinner. The women also felt less discouraged; a woman told us that she felt less discouraged, so she had more energy to do domestic work. Before she did not want to do domestic chores by herself but neither distribute them with other household members. Finally, some of them began to work outside the home, so the women felt more comfortable sharing responsibilities and the household members also reacted better.

Not now, now the house is divided into 4. My husband must mow the lawn, or pay someone to do it. My daughters must clean the house and feed the dogs. I have to do

the rest, but I can't be working and doing everything like I used to when I was just at home... but now, now it's different.

Women attributed that they could find a job, a second job, or began to make money, for three reasons. First, having understood that they are responsible of their own lives, they do not need to depend economically of someone else. Second, feeling more confident of their own abilities, skills, and strengths allowed them to gather the courage to find a job or accept jobs that they have rejected before due to their own insecurities.

Yes, because I have always been afraid to start something new. I tough, 'what if I cannot do it, and if I make a mistake, what if the lady does not like me, or if the children do not like me, and then I think, better no, no, no, I do not want the job.

Third, for some women it was important to have the support of the employability office of the Municipality. They learned, for example, how to do a curriculum vita or how to face a job interview. They recommended this office to their family members and two of their partners also got a job.

Changes in women's attitudes, perceived norms, and intentions were important in improving their self-care behaviors. Additionally, most of the women thought that changes in self-care of their family members occurred for four reasons. First, because they themselves changed first, their family members changed. One woman said: *"They realized that I was doing fine, and that motivated them to follow me."*

This motivation to change took place in many spheres of their lives. Some women explained that, because they developed a life project, their husbands were motivated to do the same, so their husbands also set new goals in different domains, such as studying more, searching for a better job or starting their own business. *"And...with my husband*

too, I told him to finish studying, to begin his own body shop, now we are dreaming and setting goals together.”

Second, women increased their self-efficacy; in other words, they felt that have the tools to make changes, such as more knowledge and confidence in themselves. So, they wanted to share their knowledge with other people, including family members.

Third, the workshop was important for the family members because they learned together with their partners about self-care.

One day my husband came with a roast chicken, he loves fried chicken, so I said to him ‘What a miracle’, but he said, ‘today in the workshop I got shocked by how much fat we eat so now I prefer to buy roast chicken.

Fourth, almost all the women mentioned that family communication and relationships had improved due to this intervention. In turn, these improvements contributed to changes in self-care and co-responsibility, and these changes at the same time, reinforced improvements in family relationships.

DISCUSSION

This study demonstrated the possibility to change attitudes, intentions, gender norms, and gendered behaviors related to co-responsibility in the household and self-care in participating women and their family members. This intervention to alleviate discouragement through enhancing women’s capacities (skills, knowledges, assertiveness, self-esteem, economic autonomy) in food-insecure women with excess body weight, promoted co-responsibility in the household and self-care, as an effective way to improve women’s and family member’s eating behaviors and well-being, including improvements in family relationships. In turn, these changes supported the

incorporation of many of these women into the labor market that, in turn, contributed reducing household food insecurity.

At the beginning of the intervention, the women mentioned that the main advantage of sharing domestic work was the feeling of relief, and that on the other hand household chores made them feel frustrated and discouraged. These feelings may be related to the “invisible or emotional work” that women do that demand women doing more of the mental, intellectual, and emotional work of household maintenance and childcare.

Participating women also thought that domestic work is exclusively their responsibility, so the chores that other household members do should be considered as “help”, but not the family member’s responsibility. This perception may be explained by the sexual division of labor. For hundreds of years, men were expected to participate in the productive work and the public sphere, whereas women were expected to be in the private sphere doing reproductive work (household responsibilities and caring activities), which was unpaid and had little social recognition. Moreover, it is considered that the reproductive work is “innate” in women, thus it should be undertaken for them (Economic Commission for Latin America and the Caribbean, 2018; Instituto Nacional de las Mujeres, 2018).

Our women mentioned undertaking most of the domestic and care work. This was expected, because in Latin America, as well as in the rest of the world, these unpaid works are undertaken almost exclusively by women (Economic Commission for Latin America and the Caribbean, 2018; Instituto Nacional de las Mujeres, 2018; Lazaro, Moltó, & Sánchez, 2004). In Costa Rica, women spend 35.49 hours weekly doing non-remunerated domestic work, men only spend 13.42 hours. Although in the U.S the gap is

closer than in Costa Rica, this gap remains. According to the U.S. Bureau of Labor Statistics' American, 84.0% of women were engaged in household chores, whereas just 68 % of men did. In relation to caring and helping household and non-household members, 29% of women versus 20% of men were engaged (U.S Bureau of Labor Statistics, 2017). Such differences have been recognized as one of the central causes of the wage gap of women. In Costa Rica, in 2010, women earned just 84.8% in comparison to men (Valitutti et al., 2015); a fundamental limitation to reach gender equality (Economic Commission for Latin America and the Caribbean, 2018; Instituto Nacional de las Mujeres, 2018; Lazaro et al., 2004). In our study, all women with a partner mentioned undertaking most of the domestic work whereas women without a partner living with their children shared the domestic work with them. This is consistent with a study that explored housework patterns across marital status (South & Spitze, 1994). Authors concluded that in all possible situations, women spent more time than men doing domestic work, but the gender gap was widest among married persons.

In relation to contributing to household support, women who had little children expressed their difficulties to work outside home after their children were born. On the one hand, they wanted and needed to obtain a job, on the other hand, they had problems finding an affordable and appropriate children's daycare. So, they had mixed feelings in relation to getting a job or not. It is well-recognized that the overload of responsibilities that culturally are assigned to women make them difficult to enter the labor market. Food-insecure women may be particularly affected in relation to this, because women who belong to households in the lowest deciles of income, used to have the lowest level of formal education and the highest number of dependent members (Organización

Internacional del Trabajo & Programa de las Naciones Unidas para el Desarrollo, 2009). Our women also preferred flexible jobs that allowed them to balance work and household responsibilities. This is coincident with a study that intended to understand parent's evaluation of the way they integrated work-family demands to manage food and eating. Authors found that participating mothers evaluated satisfaction on their ability to balance work and family demands because due to flexible work and family schedules (Blake et al., 2009). Some of our women achieved such work conditions through began a productive activity in their own home, such as baking and selling cakes.

Women and their family members also improved their self-care behaviors. Women mentioned that one of the main reasons for their family members' changes in self-care behaviors was because they themselves changed first. This may be explained for two reasons. First, in the quantitative study, we found that around 95% of the women had their household's purchase decision because they are also responsible of the food preparation, changes in women's food behaviors would benefit all household members. Second, the gender role of women relates to being responsible of the care and health of the family members, so if the woman of the house leads a healthy lifestyle, it can be expected that she will also want to improve the overall health of her family. This perceived gender norm is consistent with a study aimed to understand the gender gap in life expectancy in Austria; the role of women was strongly associated with nurturing, being a mother and caring for the entire family as well as for themselves (Flandorfer & Fliegenschnee, 2011). On the contrary, the gender role for men is connected to be strong, dominant, and in charge all the time. This role encouraging men to put their health at risk, encourages men to avoid seeking medical care (Addis & Mahalik, 2003). Men also seem

to set their own responsibility aside, counting on their partners to care for them. As a result, the life expectancy of women is longer than men. For example, in the U.S, women can expect to live 81.2 years, whereas the life expectancy for men is 76.3 years. Men also suffer more severe chronic conditions and have higher death rates for all 15 leading causes of death (Courtenay, 2000; National Center for Health Statistics, 2018).

Based in our conceptual model and Theory of Planned Behavior, changes in co-responsibility and self-care of women may be explained, partially, by changes in attitudes and intention toward co-responsibility and attitude toward self-care that were observed in the pre-post-test applied before and after the workshops. Changes in the intention toward behavior were not significant because the pre-test already showed a high intention toward self-care. In contrast, their family and community members just have changes in their intention toward co-responsibility in the household. These results are expected because women had been involved in previous sessions, so they were more prepared to make the changes; by contrast other participants just had received information through other women. Also, these responses may be biased, because people, may want to answer in a social desirable way. Despite these results, the non-participant observation and the content analysis of the plenary showed possible changes, not only for women but also for their family members. These possible changes may later lead to changes in co-responsibility and self-care behaviors.

The combination of three sources of data, including three different types of participants (women, family, and community members), as well as, four different methods of data collection (pre- and post-test questionnaires, non-participant observation, semi-structured interviews, and focus groups) increased the validity of this study because

the strengths of one method can compensate for the weaknesses of another (Patton, 2002). Our findings were limited by the characteristics of the women we studied and the geographical area. This intervention was conducted in an urban area of Costa Rica with food-insecure women who had excess body weight. So, findings may not be generalizable to rural areas, to women with food security, or women in other countries. The results may be applicable to other Latin American countries which share similar characteristics, including similar social norms with Costa Rica. Changes in co-responsibility in the household and self-care of the household members were mentioned for the participating women and not directly by them. Despite this, we obtained an approximation of the possible changes through the analysis of the workshop's plenary.

This study investigated gender norms in relation to co-responsibility and self-care in Costa Rican society. Since changing gender norms is fundamental to change health behaviors, (Caroli & Weber-Baghdiguian, 2016; Flandorfer & Fliegenschnee, 2011; Fleming & Agnew-Brune, 2015b; Roller, 2013) further research is necessary to understand the whole set of gender norms that are affecting women's and men's health in Costa Rica. Given, the particular effect that gender norms may have in men's health; (Mahalik, Burns, & Syzdek, 2007) future research should be oriented to understand men perceptions about self-care and health to develop interventions targeting the male population.

In this intervention, we took a step forward in relation to interventions aimed to enhanced women's capacities only at the individual level. We also promoted changes in co-responsibility and self-care in women and their family members that benefited their health and well-being, and in turn, supported women changes. One of the central points

of the Costa Rican National Policy for Effective Equality between Women and Men 2018-2030 is promoting co-responsibility in relation to unpaid domestic work. This intervention has an enormous potential to contribute to reach this goal and, in turn, contribute to gender equality between men and women in Costa Rica. In addition, this intervention was successful reaching more equitable gender norms, promoting women incorporation to the labor market, as well as improving family relationships. All these factors may also contribute to the prevention of violence against women.

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CHAPTER 5

SUMMARY, IMPLICATIONS, AND RECOMMENDATIONS

5.1 Summary of Major Findings

This research was guided by two specific aims. The following is a summary of the main findings for each aim.

Specific Aim 1 was to determine the impact of an intervention that focuses on alleviating women's discouragement through enhancing women's capacities among food-insecure women with excess weight. The primary outcomes of the study were body mass, food insecurity, and waist circumference. The secondary outcomes were psychological and economic empowerment, food and physical activity behavior and perceived social support for healthy eating. The study hypothesized that after the intervention, the participants in the intensive arm, compared to the non-intensive arm, would have:

1. higher household food security status
2. lower body mass index (BMI) and waist circumference.
3. higher psychological and economic empowerment
4. higher perceived social support for healthy eating
5. better food and physical activity behaviors

The complete results for this specific aim are presented in manuscript 1, *Intervention for Women in Costa Rica Who Are Discouraged and Have Food Insecurity and Excess Body Weight: A cluster randomized trial*. In summary, a total of 171 participants were enrolled (83 in the intensive and 88 in the non-intensive arm). The two arms were similar at baseline for distributions of the primary and secondary outcomes. The mean age of participants in the intensive arm was 40.1 years (SD= 10.4) and 43.9 years (SD=8.8) in the non-intensive arm. In both arms, most of the women were living with a partner, had children, completed elementary school and were housewives. To test the hypothesis, a cluster-randomized design was used, and the intervention effects were analyzed as intent-to-treat using multi-level, repeated-measures models to examine differences between arms in changes from baseline to 3 months and from baseline to 6 months.

At 6 months, the intensive arm had significantly greater decreases in BMI ($p= 0.010$), waist circumference ($p=0.001$), and food insecurity ($p=0.004$) compared with the non-intensive arm. The intensive arm also had also significantly greater increases in psychological ($p=0.014$) and economic empowerment, including a greater increase in the contribution to household support ($p=0.030$), and more women that found a job ($p=0.018$), compared with the non-intensive arm. Women in the intensive arm increased their contribution to household support by 18% more and found a job 21% more than women in the non-intensive arm.

Women in the intervention arm had significantly greater changes from baseline with a decrease in food consumption of fried foods ($p=0.029$), sausages ($p=0.038$), and sugary drinks ($p=0.032$), and an increase in salads ($p=0.032$), and beans ($p=0.004$), compared to women in the non-intensive. We did not find any significant differences between the

intensive and the non-intensive groups in anxiety, social support, discouragement, exercise, and consumption of fruits, vegetables, and fast foods.

Specific Aim 2 aimed to determine changes due to the intervention on perceived gender norms, perceived advantages and disadvantages, intentions, and behaviors of women and their family and community members in relation to co-responsibility in the household (i.e., sharing responsibilities in the household, including taking care of children and the disabled and contributing to household support), and self-care, including healthy nutrition. For this specific aim, we used mixed-methods, applying mainly qualitative methods (i.e., focus groups, semi-structured in-depth interviews, and non-participant observation) and complemented by a quantitative component. We had three research questions:

1. What were the perceived gender norms, perceived advantages and disadvantages, intentions, and behaviors of women and their family and community members in relation to co-responsibility in the household and self-care at the beginning of the intervention?
2. What changes in these occurred during the intervention period?
3. How did the changes occur?

The results for specific aim 2 are presented in Manuscript 2: *Promoting co-responsibility in the household and self-care through an intervention for food-insecure women with excess body weight in Costa Rica*. In this sub-study, the sample was comprised of 62 participating women, 34 women's family members, and 9 community members. We found that, at the beginning of the intervention, participating women had a positive attitude toward co-responsibility in the household and self-care. They recognized

many advantages of sharing household responsibilities, such as feelings of relief, an improved mood, having more time, and promoting the autonomy of household members. A perceived disadvantage was that other family members do not do the household chores the way that the women would do them. All women who were living with a partner reported doing most of the domestic work. Women without a partner generally distributed domestic work with their children, especially with their daughters. Most of the women also perceived working outside the home as favorable; those who have little children were worried about who would take care of their children, however, so they had mixed feelings in relation to getting a job or not. In relation to self-care, almost all of the women intended to change eating and physical activity behaviors with the purpose of losing weight.

In the pre- and post- test conducted at the workshops, participating women had positive significant changes in attitude and intention toward co-responsibility in the household and attitude toward self-care. They did not have significant changes in behavioral intention toward self-care. In contrast, family and community members only had positive significant changes in the behavioral intention toward co-responsibility in the household. Despite these results, the non-participant observation and the content analysis of the plenary showed possible changes in attitudes, intentions, and gender norms, not only for women but also for their family members.

At the end of the intervention, many of the women reported changes in the distribution of domestic work. More equitable distributions of the domestic work were achieved with their children and, to some extent, with their husbands and other relatives who live at home. Women changed their attitude toward other people doing chores in

with a different method than they personally would. About 20% of the women either obtained a job or began a small business at home. Women also changed their attitudes and intentions in relation to self-care and their self-care behaviors. Their family members also had important improvements in their self-care behavior, including eating healthier than at the beginning of the intervention.

They also had changes in gender norms, for example, women understood that they should take care of themselves as well, as others. Changes may be explained for different reasons, such as the attendance to the workshops, improvements in family communication and relationships and women are more able to communicate better their desires and concerns to others.

5.2 Strengths and limitations

The study had many strengths supporting internal and external validity. Matched pairs of EBAlSs were randomized to conditions. The two arms were treated equivalently in pre-testing and instrumentation and had similar attrition rates at 6 months.

Anthropometric measurements were taken using standard protocols, and the people who took the measurements were trained. All the questionnaire scales were tested and revised for a better understanding with 28 women with similar characteristics to those of participating women prior to the main data collection. The mixed-methods sub-study combined three sources of data from three different types of participants (women, family, and community members), as well as, four different methods of data collection (pre- and post-test questionnaires, non-participant observation, semi-structured interviews, and focus groups); the multiple sources and methods increased the validity of this study

because the strengths of one method can compensate for the weaknesses of another (Patton, 2002).

This intervention was conducted with food-insecure women with excess body weight in an urban area of Costa Rica, and its findings may not be generalizable to rural areas, to women in other countries, or to women with food security. Given that many Latin American countries share similar characteristics such as social norms with Costa Rica, however, the results may be applicable to these countries. Also, *contamination* may have occurred between the intensive and non-intensive arms. Despite the cluster-randomized design, the geographical area of the study is small and some women in the intensive arm might have had acquaintances or relatives in the non-intensive one and could have transferred some information, thus underestimating the differences in effects between the intensive and non-intensive arms. Changes in co-responsibility in the household and self-care of the household members were referred by the participating women and not directly by their household members. Despite this, we obtained some data from household members during the workshops.

5.4 Study implications

This study makes several contributions to our understanding. First, this study emerged from a previous qualitative work which provided us with an in-depth understanding of the social, economic, and cultural characteristic of our women, and the possible pathways through an intervention with food-insecure women with excess body weight might work.

Second, promoting co-responsibility in the household and self-care though changes in gender norms benefited the health and well-being of women and their family members,

including improvements in family relationships; this, in turn, supported women's changes in many spheres of their lives. For example, the incorporation of many women to the labor market, in turn, contributed to reducing household food insecurity.

Third, this intervention has an enormous potential to contribute to achieving a better distribution of household responsibilities, contributing to gender equality between men and women in Costa Rica. Fourth, this project builds on a productive partnership between the School of Nutrition of the University of Costa Rica, the association Agenda de Mujeres, the Hospital of Alajuela and the Women's Office of the Municipality of Alajuela. For the last twelve years, these organizations have been working together to implement health promotion interventions in low-income women with excess weight. This intervention provided a good opportunity for the participating institutions (i.e., Municipality of Alajuela, Agenda de Mujeres, and School of Nutrition) to refine a beneficial public health intervention that will be sustained and replicated in the future. Finally, this study also adds to an existing concern about how policies and programs may alleviate food insecurity without exacerbating weight gain. We did not offer either food or cash transfers but using a strong study design and a careful implementation, we developed, implemented and evaluated an intervention for women that simultaneously reduced food insecurity and body weight. These results were obtained by educating women about how to eat healthy at low costs, increasing their psychological empowerment, alleviating discouragement, working with them on a life project that included employability and recognition of their dreams and goals in life. We connected women to different free-services offered in the city for public institutions, such as the employability office, the women's' office, and the social defense. We also connected

women with free training in different fields that might help them to find a job. Moreover, participants could change gendered behaviors in relation to co-responsibility in the household and self-care of family and community members. These results demonstrated the need to provide cost-effective health promotion interventions that complement food assistance programs.

5.5 Recommendations for future research

Further research is required to determine whether the results of this study may be scaled in Costa Rica through a similar collaborative work between public institutions. Also, if this intervention can be implemented in other countries with different cultural and economic characteristics. Future studies should be oriented to investigate whether it is also possible to achieve a positive impact on risk factors of cardiovascular diseases, such as hypercholesterolemia and hypertension. Extended follow-up periods are necessary to confirm whether the results obtained are long-lasting, as well as other possible changes in outcomes such as social support and discouragement. Given that the 98% of these women had a smartphone and used the social network WhatsApp, future implementations may include different strategies to using more extensively this technological resource.

More studies are necessary to understand the whole set of gender norms that are affecting women's and men's health in Costa Rica. Since the particular harmful effect that traditional gender norms may have in men's health; (Mahalik et al., 2007) future studies should be oriented to understand men's perceptions about self-care and health to develop interventions targeting the male population. This intervention was successful in achieving more equitable gender norms, promoting women incorporation to the labor

market, as well as improving family relationships. Given that all these factors have been recognized as successful strategies to prevent domestic violence; future research may address whether our intervention might also help to prevent the domestic violence.

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**APPENDIX A: CONSENT FORMS INTENSIVE AND NON-INTENSIVE
GROUPS**

UNIVERSITY OF SOUTH CAROLINA

CONSENT TO BE A RESEARCH SUBJECT

**Intervention for Women in Costa Rica Who Are Discouraged and Have Food Insecurity
and Excess Body Weight**

PURPOSE AND BACKGROUND:

You are being asked to volunteer for a research study conducted by Tatiana Martinez-Jaikel. I am a graduate student in the Department of Health Promotion, Education, and Behavior at the University of South Carolina. This research is being done in collaboration with the Municipality of Alajuela, Agenda de Mujeres and, the University of Costa Rica. This study will involve about 210 volunteers.

The purpose of this study is to investigate an Intervention that focuses on discouragement among women who are overweight and who have difficulty obtaining enough food for their families. You are invited to participate, because you are a woman, between 18 and 60 years old, who has excess body weight, and has expressed concern that in your home, there is not enough food and you are unable to obtain more.

If you decide to participate in this study this form will explain what you will be asked to do. Please read it carefully and feel free to ask questions before you make a decision about participating.

PROCEDURES:

If you agree to be in this study, the following will happen:

1. At three different times (at the beginning, after 3 months, and at the end of the study) you will be:

- a) Asked to complete questionnaires about personal and family information such as age and marital status, your diet and exercise behaviors, and the decisions you made about food for your household. Additional questionnaires will ask about: i) your mood, ii) support from family and friends, iii) your food security status (i.e. if you and your household have access to sufficient, safe, and nutritious food), and iv) your beliefs about being able to accomplish important goals.
 - b) Your height, waist, and weight will be measured.
2. You will be asked to participate in 12 monthly group sessions lasting two hours each, and two monthly follow-up sessions, then a graduation day. The sessions will revolve around:
 - a) Eating healthy at low cost and includes how to cook healthy inexpensive meals.
 - b) Psychological Empowerment (i.e. how to make decisions, how to be assertive, and how to improve your self-esteem).
 - c) Employability (i.e. learn to identify your goals in life, and visualize yourself succeeding in the multiple-roles you play in society). You may want to study more, in order to find a job, or to begin a micro-business. In such cases, you will have the support of the Employability Office and the Women's Office of the Municipality of Alajuela.
 3. You will be asked to attend two workshops about co-responsibility and self-care. You should invite a member of your household, and a member of your community, whose support you consider important.
 4. You will be asked to participate in a group interview to talk about your experience in the study. You may be asked to participate also in an individual interview to describe your experiences in more detail. Both interviews will be recorded.

DURATION:

The total duration of the study is 6 months. It will consist of 12 two-hour sessions, two follow-up monthly sessions, two workshops with the household members and community members who support you, and one final session for graduation day.

RISKS/DISCOMFORTS:

You may experience some embarrassment related to answering questions about your food security status, your emotional status, social support, diet, as well as, measurements of body weight, height, and waist circumference.

In addition, attending the group sessions may represent some risks to your privacy, because you will be sharing your experiences with other group members. The interviewers and facilitators cannot guarantee what you say will remain completely private, but they will emphasize to the group the importance of participants maintaining confidentiality. Research staff will be instructed on the importance of maintaining confidentiality.

BENEFITS:

You may benefit from participating in this study by receiving group sessions that promote nutrition, physical activity, and improve your state of mind. Being part of a group may provide additional support for you.

COSTS:

There will be no costs to you for participating in this study, other than for transportation.

PAYMENT TO PARTICIPANTS:

You will not be paid for participating in this study; however, in return for your time and effort you will receive healthy snacks during the sessions, and small gifts, such as, a pen or a key chain after the measurements.

CONFIDENTIALITY OF RECORDS:

Any information that is obtained in connection with this study will remain confidential, and the information will be disclosed only with your express written permission, unless required by law. Names will not appear on the surveys. Each participant will be assigned a unique Study Identification number to be used instead of her name. The information will be securely stored in locked files and on password-protected computers. The results of the study may be published, or presented at seminars, but the report will not include your name or other identifying information about you.

VOLUNTARY PARTICIPATION:

Participation in this study is voluntary. You are free not to participate, or to stop participating at any time, for any reason without negative consequences. If you withdraw from this study, the information you have already provided will be kept in a confidential manner. If you wish to withdraw from the study, please call or email the Principal Investigator, Tatiana Martinez Jaikel at +506 60043007 or email tatimartinez@hotmail.com.

I have been given a chance to ask questions about this research study. These questions have been answered to my satisfaction. If I have any more questions about

my participation in this study or study related injury, I may contact Tatiana Martinez Jaikel at +506 60043007 or email tatimartinez@hotmail.com.

Questions about your rights as a research subject are to be directed to, Lisa Marie Johnson, IRB Manager, Office of Research Compliance, University of South Carolina, 1600 Hampton Street, Suite 414D, Columbia, SC 29208, phone: (803) 777-7095 or email: LisaJ@mailbox.sc.edu

I agree to participate in this study. I have been given a copy of this form for my own records.

If you wish to participate, you should sign below.

Signature of Person Obtaining Consent Date Signature of Participant Date

UNIVERSITY OF SOUTH CAROLINA
CONSENT TO BE A RESEARCH SUBJECT

Intervention for Women in Costa Rica Who Are Discouraged and Have Food Insecurity and Excess Body Weight

PURPOSE AND BACKGROUND:

You are being asked to volunteer for a research study conducted by Tatiana Martinez-Jaikel. I am a graduate student in the Department of Health Promotion, Education, and Behavior at the University of South Carolina. This research is being done in collaboration with the Municipality of Alajuela, Agenda de Mujeres and, the University of Costa Rica. This study will involve about 210 volunteers.

The purpose of this study is to investigate an Intervention that focuses on discouragement among women who are overweight and who have difficulty obtaining enough food for their families. You are invited to participate, because you are a woman, between 18 and 60 years old, who has excess body weight, and has expressed concern that in your home, there is not enough food and you are unable to obtain more.

If you decide to participate in this study this form will explain what you will be asked to do. Please read it carefully and feel free to ask questions before you make a decision about participating.

PROCEDURES:

If you agree to be in this study, the following will happen:

1. At three different times (at the beginning, after 3 months, and at the end of the study) you will be:
 - a) Asked to complete questionnaires about personal and family information such as age and marital status, your diet and exercise behaviors, and the decisions you made about food for your household. Additional questionnaires will ask about: i) your mood, ii) support from family and friends, iii) your food security status (i.e. if you and your household have access to sufficient, safe, and nutritious food), and iv) your beliefs about being able to accomplish important goals.
 - b) Your height, waist, and weight will be measured.

DURATION:

The total duration of the study is six months.

RISKS/DISCOMFORTS:

You may experience some embarrassment related to answering questions about your food security status, your emotional status, social support, diet, as well as, measurements of body weight, height, and waist circumference.

In addition, attending the group sessions may represent some risks to your privacy, because you will be sharing your experiences with other group members. The interviewers and facilitators cannot guarantee what you say will remain completely private, but they will emphasize to the group the importance of participants maintaining confidentiality. Research staff will be instructed on the importance of maintaining confidentiality.

BENEFITS:

You may benefit from participating in this study by receiving short group sessions that promote healthy life-styles.

In addition you will be invited to participate in a longer intensive intervention in 2018. You will receive more information about this after the study is complete.

COSTS:

There will be no costs to you for participating in this study other than those you may incur for transportation to and from the study sessions.

PAYMENT TO PARTICIPANTS:

You will not be paid for participating in this study; however, in return for your time and effort you will receive healthy snacks during the sessions, and small gifts, such as, a pen or a key chain after the measurements.

CONFIDENTIALITY OF RECORDS:

Any information that is obtained in connection with this study will remain confidential, and the information will be disclosed only with your express written permission, unless required by law. Names will not appear on the surveys. Each participant will be assigned a unique Study Identification number to be used instead of her name. The information will be securely stored in locked files and on password-protected computers. The results of the study may be published, or presented at seminars, but the report will not include your name or other identifying information about you.

VOLUNTARY PARTICIPATION:

Participation in this study is voluntary. You are free not to participate, or to stop participating at any time, for any reason without negative consequences. If you withdraw from this study, the information you have already provided will be kept in a confidential manner. If you wish to withdraw from the study, please call or email the Principal Investigator, Tatiana Martinez Jaikel at +506 60043007 or email tatimartinez@hotmail.com.

I have been given a chance to ask questions about this research study. These questions have been answered to my satisfaction. If I have any more questions about my participation in this study or study related injury, I may contact Tatiana Martinez Jaikel at +506 60043007 or email tatimartinez@hotmail.com.

Questions about your rights as a research subject are to be directed to, Lisa Marie Johnson, IRB Manager, Office of Research Compliance, University of South Carolina, 1600 Hampton Street, Suite 414D, Columbia, SC 29208, phone: (803) 777-7095 or email: LisaJ@mailbox.sc.edu

I agree to participate in this study. I have been given a copy of this form for my own records.

If you wish to participate, you should sign below.

Signature of Person Obtaining Consent	Date	Signature of Participant	Date
---------------------------------------	------	--------------------------	------

APPENDIX B: LETTER OF INVITATION FOR FAMILY AND COMMUNITY MEMBERS

UNIVERSITY OF SOUTH CAROLINA

LETTER OF INVITATION

Intervention for Women in Costa Rica Who Are Discouraged and Have Food Insecurity and Excess Body Weight

Dear _____

I would like to invite you to participate in the study conducted by Tatiana Martinez-Jaikel. I am a graduate student in the Health Promotion, Education, and Behavior Department at the University of South Carolina. This research is being done in collaboration with the Municipality of Alajuela, Agenda de Mujeres, and the University of Costa Rica. The purpose of this study is to investigate an intervention that focuses on discouragement among women who have excess weight and difficulty with access to food, their families, and community members in the Central Canton of Alajuela. You are being asked to participate in this study because your name was suggested by one of the women who is already in the study. This study will involve approximately 210 volunteers and one member of their families and communities.

If you agree to be in this study, the following will happen:

1. You will participate in two workshops about the importance of sharing responsibilities at home and self-care, including healthy nutrition. You were invited by one of the women participating in this project. She invited you because she considers your support important. At the beginning, and at the end, of the workshops you will complete some questions about your agreement or disagreement with some statements that will be presented during the session.

2. These workshops will be video-taped. Later, they will be observed by some members of the research team, in order to know your reaction to the topics that were developed during the workshops. After completing the data analysis, the videos will be deleted in order to protect your privacy.

The total duration of each of the two workshops is two hours. The two workshops may be held on different days or the same day depending on the availability of the participants. Attending the workshops may represent some risks to your confidentiality because participants share experiences with other participants. We cannot guarantee what you say will remain completely private, but interviewers and facilitators will emphasize the importance of participants maintaining confidentiality.

You may benefit from participating in this study by receiving training on issues that are expected to improve your quality of life. For example, sharing household responsibilities may improve family relationships. Learning about how to eat healthy, may improve your health. There will be no costs to you for participating in this study (other than transportation). You will not be paid for participating in this study. But, In return for your time and effort you will receive healthy snacks during the workshops and a small gifts, such as a pen or a key chain.

Any information that is obtained in connection with this study will remain confidential and will be disclosed only with your express written permission, unless required by law. The information will be securely stored in locked files and on password-protected computers. The results of the study may be published or presented at seminars, but the report will not include your name or other identifying information about you. Participation in this study is voluntary. You are free not to participate, or to stop participating at any time, for any reason without negative consequences.

We will be happy to answer any questions you have about the study. You may contact me at Tatiana Martinez Jaikel at +506 60043007 or email tatimartinez@hotmail.com. Questions about your rights as a research subject are to be directed to, Lisa Marie Johnson, IRB Manager, Office of Research Compliance, University of South Carolina, 1600 Hampton Street, Suite 414D, Columbia, SC 29208, phone: (803) 777-7095 or email: LisaJ@mailbox.sc.edu. The Office of Research Compliance is an administrative office that supports the University of South Carolina Institutional Review Board (USC IRB). The Institutional Review Board consists of representatives from a variety of scientific disciplines, non-scientists, and community members for the primary purpose of protecting the rights and welfare of human subjects enrolled in research studies. Thank you for your consideration. If you would like to participate, please contact me, Tatiana Martinez Jaikel at +506 60043007 or email tatimartinez@hotmail.com, at the number listed below to discuss participating.

With kind regards,
Tatiana Martínez Jaikel
Phone Number: +506 60043007
E-mail address: tatimartinez@hotmail.com

**APPENDIX C: SOCIO-DEMOGRAPHIC AND ANTHROPOMETRIC
INFORMATION-FIRST AND FINAL APPLICATION-**

INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE DISCOURAGED AND HAVE FOOD INSECURITY AND EXCESS BODY WEIGHT First application		
<p>Good morning/afternoon. This survey has the purpose of getting to know your socio-economic characteristics, eating habits and lifestyle. Therefore, we would really appreciate your cooperation. Your participation is voluntary and the information you provide us is completely confidential.</p>		
A. QUESTIONNAIRE INFORMATION		
A.1. Participant ID _____	A.2. Questionnaire number _____	A.3. Date (Day/Month/Year) ____/____/____

B. SOCIO-ECONOMIC CHARACTERISTICS

B.1. Date of birth (Day/Month/Year) ____/____/____

B.2. Current age _____ years old

B.3. Current marital status

1. () Married	4. () Separated
2. () Cohabiting	5. () Widowed
3. () Divorced	6. () Single
	9. () Don't know/ No answer

B.4. What is the highest level of education you have completed?

- | | |
|----------------------------------|------------------------------|
| 1. () No studies | 5. () Completed high school |
| 2. () Incomplete primary school | 6. () Incomplete college |
| 3. () Primary school | 7. () Completed college |
| 4. () Incomplete high school | 8. () Other _____ |
| | 9. () Don't know/ No answer |
-

B.5. Place of residence

a. Province _____ b. Canton _____ c. District _____

B.6. Are you insured by Caja Costarricense de Seguro Social?

1. () Yes 2. () No (*Skip to question B.8.*)
-

B.7. What kind of insurance?

- | | |
|-------------------------------|------------------------------|
| 1. () Direct insurance | 4. () Retired |
| 2. () Insurance by own means | 5. () By Government |
| 3. () Family insurance | 9. () Don't know/ No answer |
-

B.8. What is your current work status? _____

B.9. Do you receive any kind of economic remuneration for this work?

1. () Yes 2. () No
-

B.10 How many people in your home do not receive any income? _____

B.11. How many people (including yourself) live in your household?

a. Over 18 years old _____ b. Under 18 years old _____

B.12 How many people in your house depend economically on you? (Children, elder, people with disabilities)

B.13. Do you have children?

1. () Yes 2. () No (*Skip to question D.1.*)

B.14. How many children are under 18? _____

B.15. Who takes care of your children? _____

B.16 Who besides you take care your children? _____

B.17 How do you know about this project?

1. () Poster 3. () A friend or family member
2. () Facebook 4. () Other _____

C. FOOD FREQUENCY

C.1. In the past 30 days, did you eat no-starch vegetables in picadillos or other recipes?

1. () Yes 2. () No (*Skip to question D.2.*)

During the past 30 days, how frequently did you eat no-starch vegetables in picadillos or other recipes?

_____ **a.** Times a day _____ **b.** Times a week _____ **c.** Times a month

C.2. In the past 30 days, did you eat no-starch salads?

1. () Yes 2. () No (*Skip to question D.3.*)

In the past 30 days, how often did you eat no-starch salads?

_____ **a.** Times a day _____ **b.** Times a week _____ **c.** Times a month

C.3. In the past 30 days, did you eat fruits?

1. () Yes 2. () No (*Skip to question D.4.*)

In the past 30 days, how frequently did you eat fruits?

_____ **a.** Times a day _____ **b.** Times a week _____ **c.** Times a month

C.4. In the past 30 days, did you eat fried food?

-
1. () Yes 2. () No (*Skip to question D.5.*)

In the past 30 days, how frequently did you eat fried food?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.5. In the past 30 days, did you consume sugar-sweetened beverages such as soft-drinks, sugar added juices or powdered beverages?

1. () Yes 2. () No (*Skip to question D.6.*)

In the past 30 days, how frequently did you consume these?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.6. In the past 30 days, did you eat desserts or pastries?

1. () Yes 2. () No (*Skip to question D.7.*)

In the past 30 days, how frequently did you eat desserts or pastries?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.7. In the past 30 days, did you eat sausages?

1. () Yes 2. () No (*Skip to question D.8.*)

In the past 30 days, how frequently did you eat sausages?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.8. In the past 30 days, did you eat beans?

1. () Yes 2. () No (*Skip to question D.9.*)

In the past 30 days, how frequently did you eat beans?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.9. In the past 30 days, did you consume meals prepared out of home?

1. () Yes 2. () No (*Skip to question E.1.*)

In the past 30 days, how frequently did you consume meals prepared out of home?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

d. What were those meals?

D. PHYSICAL ACTIVITY

D.1. Do you practice physical activity during the week?

1. () Yes 2. () No (*Skip to question F.1.*)

D.2. Please, describe the type of physical activity, the number of times per week and the minutes that you dedicate to each session.

D.2.a. Type of physical activity	D.2.b. Times per week	D.2.c. Minutes per session

E. ECONOMIC EMPOWERMENT

E.1. Who in your family decides which foods to buy in the household

1. () Only you (*Skip to question F.3.*) 2. () You and other household member(s) 3. () Only other household member(s)

E.2. Who are those other members?

E.3. Who is the person in charge of food shopping in your household?

1. () Only you (*Skip to question F.5.*) 2. () You and other household member(s) 3. () Only other household member(s)
-

E4. Who are those other members?

E5. Who contributes to household support?

1. () Only you (*Skip to question G.1.*) 2. () You and other household member(s) 3. () Only other household member(s)
-

E.6. Who are those other members?

F. FAMILY INCOME AND PORCENTAGE DESTINED FOR FOOD SHOPPING

F.1. Your family income is

1. () Fixed 2. () Changeable
-

F.2. About how much is your family income?

1. () Less than 100.000 4. () Between 200.000 and 300.000
2. () Between 100.000 and 150.000 5. () Between 300.000 and 400.000
3. () Between 150.000 and 200.000 6. () Over 400.000
9. () Don't know/ No answer
-

F.3. If there is less money, which groceries do you stop buying?

F.4 Which groceries do you buy the least?

F.5 . Does someone in your family benefit from a state complementary nutritional program or something similar?

1. () Yes 2. () No (*Skip to question G.16.*)

G. LIFE PROJECT

G.1. Do you have goals and dreams in your life?

1. () Yes 2. () No (*End of questionnaire*)

G.2. What are they?

G.3. What do you think you need to achieve those goals?

H. ANTHROPOMETRIC INFORMATION

Measure	a. Measure 1	b. Measure 2	c. Measure 3
H.1. Weight (kg)			
H.2. Height (cm)			
H.3. Waist circumference (cm)			

INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE DISCOURAGED AND HAVE FOOD INSECURITY AND EXCESS BODY WEIGHT		
Final application		
Good morning/afternoon. This survey has the purpose of getting to know your socio-economic characteristics, eating habits and lifestyle. Therefore, we would really appreciate your cooperation. Your participation is voluntary and the information you provide us is completely confidential.		
A. QUESTIONNAIRE INFORMATION		
A.1. Participant ID _____	A.2. Questionnaire number _____	A.3. Date (Day/Month/Year) ___/___/___

B. SOCIO-ECONOMIC CHARACTERISTICS
--

B.1. Date of birth (Day/Month/Year) ___/___/___

B.2. Current age ___ years old

B.3. Current marital status

1. <input type="checkbox"/> Married	4. <input type="checkbox"/> Separated
2. <input type="checkbox"/> Cohabiting	5. <input type="checkbox"/> Widowed
3. <input type="checkbox"/> Divorced	6. <input type="checkbox"/> Single
	9. <input type="checkbox"/> Don't know/ No answer

B.8. What is your current work status? _____

B.9. Do you receive any kind of economic remuneration for this work?

1. Yes 2. No

C. FOOD FREQUENCY

C.1. In the past 30 days, did you eat no-starch vegetables in picadillos or other recipes?

1. Yes 2. No (*Skip to question D.2.*)

During the past 30 days, how frequently did you eat no-starch vegetables in picadillos or other recipes?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.2. In the past 30 days, did you eat no-starch salads?

1. () Yes 2. () No (*Skip to question D.3.*)

In the past 30 days, how often did you eat no-starch salads?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.3. In the past 30 days, did you eat fruits?

1. () Yes 2. () No (*Skip to question D.4.*)

In the past 30 days, how frequently did you eat fruits?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.4. In the past 30 days, did you eat fried food?

1. () Yes 2. () No (*Skip to question D.5.*)

In the past 30 days, how frequently did you eat fried food?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.5. In the past 30 days, did you consume sugar-sweetened beverages such as soft-drinks, sugar added juices or powdered beverages?

1. () Yes 2. () No (*Skip to question D.6.*)

In the past 30 days, how frequently did you consume these?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.6. In the past 30 days, did you eat desserts or pastries?

1. () Yes 2. () No (*Skip to question D.7.*)

In the past 30 days, how frequently did you eat desserts or pastries?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.7. In the past 30 days, did you eat sausages?

1. () Yes 2. () No (*Skip to question D.8.*)

In the past 30 days, how frequently did you eat sausages?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.8. In the past 30 days, did you eat beans?

1. () Yes 2. () No (*Skip to question D.9.*)

In the past 30 days, how frequently did you eat beans?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

C.9. In the past 30 days, did you consume meals prepared out of home?

1. () Yes 2. () No (*Skip to question E.1.*)

In the past 30 days, how frequently did you consume meals prepared out of home?

_____ a. Times a day _____ b. Times a week _____ c. Times a month

d. What were those meals?

D. PHYSICAL ACTIVITY

D.1. Do you practice physical activity during the week?

1. () Yes 2. () No (*Skip to question F.1.*)

D.2. Please, describe the type of physical activity, the number of times per week and the minutes that you dedicate to each session.

D.2.a. Type of physical activity	D.2.b. Times per week	D.2.c. Minutes per session

E. ECONOMIC EMPOWERMENT

E.1. Who in your family decides which foods to buy in the household

1. () Only you (*Skip to question F.3.*) 2. () You and other household member(s) 3. () Only other household member(s)

E.2. Who are those other members?

E.3. Who is the person in charge of food shopping in your household?

1. () Only you (*Skip to question F.5.*) 2. () You and other household member(s) 3. () Only other household member(s)

E.4. Who are those other members?

E.5. Who contributes to household support?

1. () Only you (*Skip to question G.1.*) 2. () You and other household member(s) 3. () Only other household member(s)

E.6. Who are those other members?

E.7. When you started to participate in the program, were you looking for a job?

1. () Yes 2. () No

E.8. Did you obtained a job during this time?

1. () Yes 2. () No (*Skip to question E.10.*)

E.9. ¿What? _____

E.10. During the time of participation in this program, did you attend any of the courses offered by the Municipality of Alajuela?

1. Sí 2. No (***Skip to question E.11.***)

E.11 Which ones?

E.12. During the time of participation in this program, did you enroll in any other type of course or training?

1. Yes 2. No (***Skip to question E.13.***)

E.12. ¿Which ones?

E.13. Did you use the services that are offered by the women's office?

1. Yes 2. No (***Skip to question E.15.***)

E.14. Which ones?

E.15. Did you use the services that are offered by the employability office?

1. Yes 2. No (***Skip to question E.17.***)

E.16. Which ones?

E.17. Did you use the services that are offered by the Social Defense?

1. Yes 2. No (***Skip to question E.19.***)

E.18. Which ones?

E.19. Did you attended the exercise sessions offered by the women's office?

1. Yes 2. No

E.20. Do you think that the program has helped you achieve some of your dreams and goals?

1. () Yes 2. () No (*Skip to question E.22.*)

E.21. Which ones?

E.15. After finishing this program, do you plan to study more or to be trained in something? 1. () Yes 2. () No (*Skip to question E.16.*)

In which? _____

E.16. Did you recommend to a family or community member the services of the women's office?

1. () Yes 2. () No (*Skip to question E.18.*)

E.17. Did they use these services?

1. () Yes 2. () No 3. () I don't know

E.18. Did you recommend to a family or community member the services of the employability office?

1. () Sí 2. () No (*Pase a sección H.*)

E.19. Did they use these services?

1. () Yes 2. () No 3. () I don't know

H. ANTHROPOMETRIC INFORMATION

Measure	a. Measure 1	b. Measure 2	c. Measure 3
H.1. Weight (kg)			
H.2. Height (cm)			
H.3. Waist circumference (cm)			

APPENDIX D: FOOD INSECURITY SCALE TO COSTA RICA

	INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE DISCOURAGED AND HAVE FOOD INSECURITY AND EXCESS BODY WEIGHT	
<p>Good morning/afternoon. This questionnaire has the purpose of knowing your level of food insecurity, that is, how safe is the access to nutritious food in my house. So, we would greatly appreciate your cooperation. Your participation es voluntary and the information you provide us is completely confidential.</p>		
K. QUESTIONNAIRE INFORMATION		
A.1. Participant ID _____	K.2. Questionnaire number _____	K.3. Date (Day/Month/Year) ____/____/____

Please, for the following questions, use an X to select the option that identifies how frequently in the past year you have gone through the described situation.

L.1. Have you ever worried that in your home there was not enough food and you could not obtain more?

1. () Never 2. () Sometimes 3. () Many times

L.2. Did you or any adult in your home have to limit the variety of food because of lack of resources?

1. () Never 2. () Sometimes 3. () Many times

L.3. Did you or any adult in your home have to eat the same meal for several days in a row because you didn't have food to prepare a different one?

1. () Never 2. () Sometimes 3. () Many times

L.4. Did you have to serve less food because there weren't resources to obtain enough food?

1. () Never 2. () Sometimes 3. () Many times

L.5. Because there was not enough food at home, were you unable to prepare one of the meals of the day?

1. () Never 2. () Sometimes 3. () Many times

L.6. Did you or any adult in your home have to skip one of the meals of the day because there was not enough food?

1. () Never 2. () Sometimes 3. () Many times

L.7. Did you or any adult in your home have to go to sleep without eating because there was not enough food at home?

1. () Never 2. () Sometimes 3. () Many times

L.8. Did you or any adult in your home have to go a whole day without eating because there was not enough food?

1. () Never 2. () Sometimes 3. () Many times

L.9. Did you have to stop giving the children the food they should have because you couldn't obtain it?

1. () Never 2. () Sometimes 3. () Many times

L.10. Because there was not enough food at home, did you have to serve less food to the children?

1. () Never 2. () Sometimes 3. () Many times

L.11. Did any of the children have to skip one of the meals of the day because there was not enough food at home?

1. () Never 2. () Sometimes 3. () Many times

L.12. Did any of the children have to skip one of the meals of the day because there was not enough food at home?

1. () Never 2. () Sometimes 3. () Many times

L.13. Did any of the children have to go a whole day without eating because there was not enough food?

1. () Never

2. () Sometimes

3. () Many times

L.14. In order to have food in your home, did you have to do things that make you feel ashamed?

1. () Never

2. () Sometimes

3. () Many times

APPENDIX E: SCALE OF PERSONAL AGENCY AND EMPOWERMENT

	INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE DISCOURAGED AND HAVE FOOD INSECURITY AND EXCESS BODY WEIGHT	
<p>Good morning/afternoon. This questionnaire has the purpose of knowing about your capacity to establish and fight for your own goals, so we would greatly appreciate your cooperation. Your participation is voluntary and the information you provide us is completely confidential.</p>		
M. QUESTIONNAIRE INFORMATION		
A.1. Participant ID _____	M.2. Questionnaire number _____	M.3. Date (Day/Month/Year) ____/____/____
<p>You will be presented with a series of statements, please use an X to select the option that responds to how often you feel identified with that statement.</p>		

N.1. It's hard for me to express my opinion publicly.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.2. I feel insecure about my decisions.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.3. I quit things halfway through.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.4. I have initiative to do things.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.5. I have a hard time finishing what I'm doing.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.6. I have a hard time knowing what to expect from life.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.7. I demand my rights even if others don't agree.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.8. I look for solutions to problems even if others tell me there are none.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.9. I'm embarrassed when I'm wrong.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.10. Fulfilling my plans is out of my control.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.11. When I have a problem, I know what I need in order to solve it.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.12. I'm embarrassed to speak in public.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.13. I cover up my mistakes so no one notices them.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.14. I find innovative solutions to complex problems.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.15. I get desperate when in tough situations.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.16. I like to plan my activities.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.17. I feel I have little control over what happens to me.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.18. I do less than I'm capable of.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.19. I feel incapable of achieving the goals I set for myself.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.20. I have a hard time determining whom I can count on.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.21. I only work hard on the things I find easy.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.22. I take other people's opinion to heart.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.23. I feel uncomfortable when I get a compliment.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.24. I like to have responsibilities.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.25. I come forward with authorities when an injustice occurs.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.26. It's better to make decisions instead of watching what happens.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.27. I'm aware of why things happen to me.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.28. I like being the first one to do new things.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.29. I find it easy to make decisions.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.30. I do what I believe is best for me, no matter what others think.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.31. I'm afraid to charge for what I'm owed.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.32. I have to deal with the life I was given.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.33. I have full knowledge of the laws of my country.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

N.34. I believe people with power are the ones who rule this world.

1. () Never 2. () Almost never 3. () Almost always 4. () Always

APPENDIX F: SOCIAL SUPPORT SCALE

INTERVENTION FOR WOMEN IN COSTA RICA WHO ARE DISCOURAGED AND HAVE FOOD INSECURITY AND EXCESS BODY WEIGHT		
<p>Good morning/afternoon. This questionnaire has the purpose of knowing the support you have had when you have tried to change your eating habits, so we would greatly appreciate your cooperation. Your participation is voluntary and the information you give us is completely confidential.</p>		
O. QUESTIONNAIRE INFORMATION		
A.1. Participant ID _____	O.2. Questionnaire number _____	O.3. Date (Day/Month/Year) / /

Below is a list of things people might do or say to a person who is trying to improve their eating habits. If you are not trying to do any of these dietary changes, then some of the questions may not apply to you, but please read and give an answer to every question.

Please rate each question *twice*. Under *family* rate how often anyone living in your household has said or done the action described during the past three months. Under *friends* rate how often your friends, acquaintances, or coworkers **have said or done the action described during the past three months.**

P.1. Encouraged me not to eat “unhealthy foods” (cake, chips), when I’m tempted to do so.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
--------------	---------------	------------------	-------------------	------------------------	-----------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
--------------	---------------	------------------	-------------------	------------------------	-----------------------

P.2. Discussed my eating habit changes with me (they asked me how I'm doing with it).

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.3. They reminded me about not eating unhealthy food.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.4. They complimented me about the changes in my eating habits (“Keep it up”; “We are proud of you”).

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.5. They commented if I went back to my old eating habits.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.6. They ate unhealthy food in front of me.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.7. They refused to eat the same food I ate.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.8. They brought home food I'm trying not to eat.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.9. They got upset when I encouraged them to eat healthier food.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

P.10. They offered me food I'm trying not to eat.

a. Family

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

b. Friends

1. () Never	2. () Rarely	3. () Sometimes	4. () Frequently	5. () Very frequently	8. () Does not apply
-----------------	------------------	---------------------	----------------------	------------------------------	--------------------------

APPENDIX G: QUESTIONNAIRE: OPINIONS ABOUT CO-RESPONSIBILITY AND SELF-CARE

Code of the participant: _____

Good Morning! The purpose of this questionnaire is to know your opinions regarding to co-responsibility and self-care. We would greatly appreciate your cooperation. Your participation is voluntary and the information that you will give us is completely confidential.

A set of affirmations will be presented, please mark with an X in the option that corresponds to how strongly you agree or disagree with that statement.

Initial application

1. How much do you agree or disagree with people who think that the household chores, including decision-making, taking care of children and the disabled, and contributing to household support, should be shared among all the household members?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

2. Are you likely or unlikely to share household chores?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

3. How much do you agree or disagree with people who think that both men and women should take care of our body, mind, and emotions?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

4. Are you likely or unlikely to take care of your body, mind, and emotions?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

Final Application

1. How much do you agree or disagree with people who think that the household chores, including decision-making, taking care of children and the disabled, and contributing to household support, should be shared among all the household members?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

2. Are you likely or unlikely to share household chores?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

3. How much do you agree or disagree with people who think that both men and women should take care of our body, mind, and emotions?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

4. Are you likely or unlikely to take care of your body, mind, and emotions?

Strongly agree	Agree	Neither agree nor disagree	Disagree	Strongly disagree

THANK YOU!

APPENDIX H: BASELINE QUALITATIVE INTERVIEW

Intervention for Women in Costa Rica Who Are Discouraged and Have Food Insecurity and Excess Body Weight

Baseline qualitative interview guide

Date: _____

Start time: _____ End time: _____

Place: _____

Participant's code: _____

Good morning/afternoon, (name of the participant)!

Thank you for accepting to participate in our interview.

First, let me introduce myself and our study. My name is Tatiana, I am conducting the sessions in which are you participating. The purpose of this interview is to learn about your daily life and opinions about your participation in the project. The interview will take us around 30 minutes.

Your answers are confidential, that means, that only some people in the research team, can see your answers and that your interview will have a code, but not your name.

You have the right to stop the interview at any time or refuse to answer any question that makes you feel uncomfortable.

To ensure we could note all your valuable information, would you mind letting us record this interview? Thank you.

Opening questions

- Could you, please, describe in your own words, why do you want to participate in this program?

Main and follow-up questions

- Could you tell me about yourself? How would you describe yourself? Could you tell me the 5 words that best describe yourself? What are your strengths? What are your weaknesses?

Perception of health

- How do you feel about your health status?

Mood

- How is usually your mood?

Satisfaction with body image

- How do you feel about your body?

Assertiveness

- How would you evaluate your ability to express what do you feel and think to others?

Economic situation

- How would you describe your economic situation? How does this situation affect your diet?

Family support and co-responsibility

- How have your family members reacted when you have tried to start healthy lifestyles?
- In your home, who uses to make the domestic work, that means, cooking, washing the clothes, going shopping? If would be someone sick, who take care of her/him? What do you think about the possibility to share household chores with other household members? Which advantages would you have if the household chores would be sharing with other household members Which disadvantages?

Closing question

Is there anything else that you consider important and you would like to share?

APPENDIX I: FINAL QUALITATIVE INTERVIEW

Intervention for Women in Costa Rica Who Are Discouraged and Have Food Insecurity and Excess Body Weight

Final Qualitative Interview

Date: _____

Start time: _____ End time: _____

Place: _____

Participant's code: _____

Good morning/afternoon, (name of the participant)!

Thank you for accepting to participate in our interview.

It is a joy to conclude this process. You could finish this process. I would like to know your experiences during this time. Your answers are confidential, that means, that only some people in the research team, can see your answers and that your interview will have a code, but not your name.

You have the right to stop the interview at any time or refuse to answer any question that makes you feel uncomfortable.

To ensure we could note all your valuable information, would you mind letting us record this interview? Thank you.

Opening question

- Could you, please, describe me in your own words, how do you feel at the end of these 6 months of the program?

Main and follow-up questions

Perception of health

- How do you feel about your health status now in relation to the beginning of the program?Mood

- How is your mood now?

Confidence

- How do you feel about yourself now?

Satisfaction with body image

- How do you feel about your body?

Assertiveness

- How would you evaluate your ability to express what you feel and think to others now? Did it change in some way?

Economic situation

- How would you describe your financial situation now? Did your economic situation change in some way?

Life Project

- Do you think that the program has helped you achieving some of your dreams and goals?
- After finishing the program, have new goals and dreams emerged? Which ones?
- With respect to your dreams and goals, do you have now a better idea about how achieving them?
- How do you think about contributing to household support?

Family support and co-responsibility

- Have your family dynamics changed somehow during this time, such as communication or division of responsibilities in the home?
- How have your family members reacted when you tried to carry out healthy lifestyles?

Closing question

- Is there anything else that you consider important and you would like to share with me?

APPENDIX J: FOCUS GROUP GUIDE

Date:.....

Starting time:....., Ending time:.....

Location:.....

Good morning/afternoon, everyone! Thank you for your accepting to participate in our group interview. All of you have been participating with us in the group sessions. We have learned many things and I would like you to share with us some of the experiences and changes that you have had during this time. We really need your input and we would like you to be honest and open in your answers. We will conduct a group interview. It is a kind of conversation, but we should follow some rules:

- 1) We would like everyone to participate. I may call on you if I haven't heard from you in a while.
- 2) There are no right or wrong answers. Every person's experiences and opinions are important. Speak up whether you agree or disagree. We want to hear all the possible opinions.
- 3) What is said in this room stays here: We want everyone to feel comfortable sharing when sensitive issues come up.
- 4) We will be tape recording the group: We want to capture everything you have to say. We don't identify anyone by name in our research. You will remain completely anonymous

Opening question:

- Could you please, describe in your own words the program that you just concluded?
- To what extent was the program what you expected it to be?

Main Questions and follow up questions

- Please, try to visualize yourself before coming to the group. Try to remember how you were before you came to the group in relation to now. First, we will talk about: Did the course affect you personally? How so?
- Did you perceive something different in yourself as a result of this experience?

Self-Confidence/ Self-esteem

- How did you feel about yourself before joining the group? How do you feel now? Please give me examples.

Assertiveness

Did you remember the day that we talked about how to say the things that we really want to say? How would you describe your capacity to express your concerns, needs, and discomforts to others before you joined this group? How would you describe it now?

Discouragement and Anxiety

- How would you describe your state of mind? How about before the intervention? How about now? Tell me more about that. How about anxiety?

Physical Health and Excess Body Weight

- How did you perceive your health? How do you perceive it now?
- How did you feel about your body? How do you feel now?
- You are telling me that you lost some weight, could you please tell more about why do you think you lost weight? (or tell me more about why do you think you did not lost weight?)

Food Security

- How about your economic situation? Is there something different from before and after the group? (If she answer “yes” ask about What is different? Why is it different?)

Project of Life

- Could you, please, tell me about, what are the dreams and goals in your life?
- How do you feel about the possibility of reaching your own goals and dreams?
- How do you feel about the possibility of contributing to household support?

- How do you feel about sharing the responsibilities of the household with other family members?

Household level and social support from household members

- Did one or more of your household members attend the workshops? Tell me about that; how easy or difficult was it for you that he/she attend? What is her/his opinion about the workshops? What is the opinion of your other household members about your participation in this project? Do you think that they encourage or discourage you to reach your goals, for example, in relation to diet or physical activity? Could you, please, give examples?
- Is there something different in your family dynamic during this time? Please tell me more. (If yes, give examples of these changes. (If the participant does not mention them, ask her about household members' possible changes in self-care, including physical activity and nutrition, communication with the household members, division of responsibilities in your household). What do you think are the reasons of such changes? How do you feel about these changes?
- Is there something different in your capacity to make household decisions for yourself or jointly with other family members? For example, in relation to buying food, buying other household supplies, decisions related to children.

Community level

- Did one or more of the members of your community attend the workshops? Tell me about that, how easy or difficult was that he/she attend? What is her/his opinion about the workshops?
- What do you think about the participation of community members in the workshops? Did their participation help you to reach your goals? Explain more, please.
- How do you feel about sharing the information that you learn here with other people? Do you think that you may have some role changing gender social norms? Tell me more about that.

A closing question

- What else do you think is important for our research and do you want to share more?

APPENDIX K: CONSENT FORMS AND DATA COLLECTION INSTRUMENTS IN SPANISH

UNIVERSIDAD DE CAROLINA DEL SUR

CONSENTIMIENTO PARA SER UN SUJETO DE INVESTIGACIÓN

Intervención para mujeres con inseguridad alimentaria y exceso de peso corporal en Costa Rica

PROPÓSITO Y ANTECEDENTES

Se le está solicitando que sea voluntaria para un estudio dirigido por Tatiana Martínez-Jaikel. Soy estudiante de Doctorado del Departamento de Promoción de la Salud, Educación y Comportamiento de la Universidad de Carolina del Sur. Este proyecto se está llevando a cabo con la colaboración de la Municipalidad de Alajuela, Agenda de Mujeres y la Universidad de Costa Rica e involucrará alrededor de 210 voluntarios.

El propósito de este estudio es investigar una intervención que se concentra en el desánimo o abatimiento en las mujeres que tienen exceso de peso y a la vez tienen dificultad para obtener la comida necesaria para sus familias. Se le invita a participar ya que usted es mujer, tiene entre 18 y 60 años, presenta exceso de peso y ha expresado alguna preocupación referente a no contar con suficiente comida ni con las posibilidades de conseguirla.

Si usted decide participar en esta investigación, el presente documento le explicará lo que se le solicitará hacer a su persona. Por favor lea cuidadosamente el documento y siéntase libre de realizar cualquier pregunta antes de tomar la decisión de participar en la investigación.

PROCEDIMIENTOS:

Si usted accede a formar parte de este estudio, sucederá lo siguiente:

1. En tres determinados momentos (al inicio del estudio, a los tres meses y al final del estudio) se le solicitará que:

a) Complete cuestionarios sobre aspectos personales y familiares como lo son la edad, estado civil, dieta y hábitos de ejercicio, además de las decisiones que usted toma alrededor de la comida en su hogar. Adicionalmente, estos cuestionarios le harán preguntas sobre i) su estado de ánimo, ii) apoyo por parte de familiares y amigos, iii) su estado de seguridad alimentaria (por ejemplo, si en su casa cuentan con alimentos nutritivos y en cantidad suficiente) y iv) sus creencias acerca de su capacidad de poder cumplir metas importantes.

b) Se le medirá su altura, cintura y se le tomará el peso.

2. Se le solicitará que participe en 12 sesiones grupales, una al mes, con duración de dos horas cada sesión. Adicionalmente, se le pedirá que participe en dos sesiones mensuales de seguimiento y un día de graduación.

Las sesiones girarán alrededor de las siguientes temáticas:

Consumo de alimentos saludables y de bajo costo, incluyendo maneras de cocinar comidas saludables con poco presupuesto.

Empoderamiento psicológico (por ejemplo toma de decisiones, asertividad, cómo mejorar la autoestima).

Empleabilidad (por ejemplo, aprender a identificar metas de vida, visualizarse de una manera exitosa en los diferentes roles que se cumplen en la sociedad). Usted podría llegar a tener deseos de estudiar más, conseguir un trabajo o empezar su propio negocio. En estos casos, existe la posibilidad de contar con el apoyo de la Oficina de Empleabilidad y la Oficina de la Mujer de la Municipalidad de Alajuela.

3. Se le solicitará que asista a los talleres de corresponsabilidad y autocuidado. Se recomienda invitar a un miembro de la familia y a un miembro de la comunidad cuyo apoyo sea importante para usted.

4. Se le solicitará que participe en una entrevista grupal para discutir su experiencia en el estudio. También se le podría pedir que participe en una entrevista individual con el fin de describir sus experiencias con más detalle. Ambas entrevistas son grabadas.

DURACIÓN: La duración total del estudio es de 6 meses. Consiste en 12 sesiones de 2 horas, dos sesiones de seguimiento, dos talleres con miembros de la familia y de la comunidad que brinden apoyo, además de una sesión final de graduación.

RIESGOS/INCOMODIDADES: Usted podría llegar a experimentar pena relacionada a responder preguntas relacionadas a su estado de seguridad alimentaria, su estado emocional, apoyo social, dieta, además de mediciones de peso corporal, altura y

circunferencia de la cintura. Adicionalmente, la asistencia a las sesiones grupales puede representar un riesgo a su privacidad, ya que usted va a estar compartiendo sus experiencias con el resto de miembros del grupo. Los entrevistadores y facilitadores no pueden garantizar que lo que usted diga vaya a mantenerse en completa privacidad, pero sí van a enfatizar en la importancia de que los participantes mantengan la debida confidencialidad.

BENEFICIOS: Usted podrá verse beneficiada de la participación en este estudio al recibir sesiones grupales que promueven una nutrición adecuada, actividad física y mejorar su estado mental. El formar parte de un grupo puede representar un apoyo para usted.

COSTOS: No existe ningún costo para que usted pueda participar en este estudio aparte de los gastos que usted pueda tener para trasladarse al sitio de las sesiones.

PAGO A PARTICIPANTES: A usted no se le pagará por participar en este estudio; sin embargo, a cambio de su tiempo y esfuerzo se le brindarán meriendas saludables durante las sesiones y pequeños regalos como lapiceros y llaveros después de las mediciones.

CONFIDENCIALIDAD DE LOS REGISTROS: Cualquier información obtenida en conexión a este estudio se considerará confidencial, y la información será divulgada solamente si usted provee una autorización escrita, al menos de que se requiera dicha información por cuestiones legales. No aparecerán nombres en el estudio. A cada participante se le asignará un número de identificación para la investigación en lugar del nombre. La información obtenida será guardada de forma segura en archivos protegidos en computadoras con contraseñas. Los resultados del estudio podrían ser publicados o presentados en seminarios, pero el reporte no incluirá su nombre ni otro tipo de información que la identifique.

PARTICIPACIÓN VOLUNTARIA: La participación en este estudio es voluntaria. Usted es libre de no participar, o de dejar de participar en cualquier momento, por cualquiera que sea la razón sin ninguna consecuencia negativa. Si usted se retira de este estudio, la información que usted ya ha proporcionado va a ser guardada de manera confidencial. Si usted desea retirarse del estudio, por favor llamar o envíe un correo a la investigadora principal Tatiana Martinez Jaikel al +506 60043007 o al correo tatimartinez@hotmail.com.

Se me ha dado la oportunidad de hacer preguntas relacionadas a esta investigación. Dichas preguntas han sido contestadas de manera satisfactoria. Si tengo alguna otra pregunta sobre mi participación en este estudio o un daño relacionado, puedo contactar a Tatiana Martinez Jaikel al +506 60043007 o al correo tatimartinez@hotmail.com.

Preguntas relacionadas a sus derechos como sujeto de investigación deben ser dirigidas a Lisa Marie Johnson, IRB Manager, Office of Research Compliance, University of South Carolina, 1600 Hampton Street, Suite 414D, Columbia, SC 29208, phone: (803) 777-7095 or email: LisaJ@mailbox.sc.edu.

Estoy de acuerdo en participar en este estudio. Se me ha proporcionado una copia de este documento para mi propio registro.

Si usted desea participar, firme en el espacio de abajo.

_____	_____	_____	_____
Firma de la persona que recibe el consentimiento	Fecha	Firma del Participante	Fecha

UNIVERSIDAD DE CAROLINA DEL SUR

CONSENTIMIENTO PARA SER UN SUJETO DE INVESTIGACIÓN

Intervención para mujeres con inseguridad alimentaria y exceso de peso corporal en Costa Rica

PROPÓSITO Y ANTECEDENTES

Se le está solicitando que sea voluntaria para un estudio dirigido por Tatiana Martínez-Jaikel. Soy estudiante de Doctorado del Departamento de Promoción de la Salud, Educación y Comportamiento de la Universidad de Carolina del Sur. Este proyecto se está llevando a cabo con la colaboración de la Municipalidad de Alajuela, Agenda de Mujeres y la Universidad de Costa Rica e involucrará alrededor de 210 voluntarios.

El propósito de este estudio es investigar una intervención que se concentra en el desánimo o abatimiento en las mujeres que tienen exceso de peso y a la vez tienen dificultad para obtener la comida necesaria para sus familias. Se le invita a participar ya que usted es mujer, tiene entre 18 y 60 años, presenta exceso de peso y ha expresado alguna preocupación referente a no contar con suficiente comida ni con las posibilidades de conseguirla.

Si usted decide participar en esta investigación, el presente documento le explicará lo que se le solicitará hacer a su persona. Por favor lea cuidadosamente el documento y siéntase libre de realizar cualquier pregunta antes de tomar la decisión de participar en la investigación.

PROCEDIMIENTOS

Si usted accede a formar parte de este estudio, sucederá lo siguiente:

1. En tres determinados momentos (al inicio del estudio, a los tres meses y al final del estudio) se le solicitará que:

a) Complete cuestionarios sobre aspectos personales y familiares como lo son la edad, estado civil, dieta y hábitos de ejercicio, además de las decisiones que usted toma alrededor de la comida en su hogar. Adicionalmente, estos cuestionarios le harán preguntas sobre i) su humor, ii) apoyo por parte de familiares y amigos, iii) su estado de seguridad alimentaria (por ejemplo, si en su casa tienen acceso a suficiente y nutritiva comida, además de que esta se obtenga en condiciones adecuadas) y iv) sus creencias acerca de su capacidad de cumplir metas importantes.

b) Se le medirá su altura, cintura y se le tomará el peso.

DURACIÓN: La duración total del estudio es de seis meses.

RIESGOS/INCOMODIDADES: Usted podría llegar a experimentar pena relacionada a responder preguntas relacionadas a su estado de seguridad alimentaria, su estado emocional, apoyo social, dieta, además de mediciones de peso corporal, altura y circunferencia de la cintura.

Adicionalmente, la asistencia a las sesiones grupales puede representar un riesgo a su privacidad, ya que usted va a estar compartiendo sus experiencias con el resto de miembros del grupo. Los entrevistadores y facilitadores no pueden garantizar que lo que usted diga vaya a mantenerse en completa privacidad, pero sí van a enfatizar en la importancia de que los participantes mantengan la debida confidencialidad.

BENEFICIOS: Usted podrá verse beneficiada con su participación en este estudio al recibir breves sesiones grupales que promueven estilos de vida saludables. Además, a usted se le invitará a participar en una intervención intensiva más larga en el año 2018. Se le proporcionará más información al respecto una vez el estudio haya terminado.

COSTOS: No se presentará ningún costo para que usted pueda participar en este estudio aparte de los recursos necesarios para el transporte hacia y desde las sesiones del estudio.

PAGO A PARTICIPANTES: A usted no se le pagará por participar en este estudio; sin embargo, a cambio de su tiempo y esfuerzo se le brindarán meriendas saludables durante las sesiones y pequeños regalos como lapiceros y llaveros después de las mediciones.

CONFIDENCIALIDAD DE LOS REGISTROS: Cualquier información obtenida en conexión a este estudio se considerará confidencial, y la información será divulgada solamente si usted provee una autorización escrita, al menos de que se requiera dicha información por cuestiones legales. No aparecerán nombres en el estudio. A cada participante se le asignará un número de identificación para la investigación en lugar del nombre. La información obtenida será guardada de forma segura en archivos protegidos en computadoras con contraseñas. Los resultados del estudio podrían ser publicados o presentados en seminarios, pero el reporte no incluirá su nombre ni otro tipo de información que la identifique.

PARTICIPACIÓN VOLUNTARIA: La participación en este estudio es voluntaria. Usted es libre de no participar, o de dejar de participar en cualquier momento, por cualquiera que sea la razón sin ninguna consecuencia negativa. Si usted se retira de este estudio, la información que usted ya ha proporcionado va a ser guardada de manera confidencial. Si usted desea retirarse del estudio, por favor llamar o envíe un correo a la

investigadora principal Tatiana Martinez Jaikel al +506 60043007 o al correo tatimartinez@hotmail.com.

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Si usted desea participar, firme en el espacio de abajo.

_____	_____	_____	_____
Firma de la persona que recibe el consentimiento	Fecha	Firma del Participante	Fecha

UNIVERSIDAD DE CAROLINA DEL SUR

Carta de invitation

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica

Estimado(a): _____

Me da el gusto invitarla a participar en el estudio dirigido por Tatiana Martínez-Jaikel. Soy graduada del departamento de Promoción de la Salud, Educación y Comportamiento de la Universidad de Carolina del Sur. Esta investigación se está llevando a cabo con la colaboración de la Municipalidad de Alajuela, Agenda de Mujeres y la Universidad de Costa Rica. El propósito de este estudio es investigar una intervención que se concentra en el desánimo o abatimiento en mujeres con sobrepeso y que tienen dificultad para obtener la comida necesaria para sus familias y comunidades en el Cantón Central de Alajuela. Se le está solicitando participar en este estudio ya que su nombre ha sido sugerido por una de las mujeres que ya forma parte de la investigación. Esta investigación involucrará alrededor de 210 voluntarias y un miembro de sus familias y comunidades.

Si usted accede a participar en este estudio, sucederá lo siguiente:

1. Usted participará en dos talleres sobre la importancia de compartir responsabilidades en la casa y autocuidado, incluyendo una nutrición saludable. Usted ha sido invitada por una de las mujeres que participa en este proyecto. Ella la ha invitado a usted ya que considera que su apoyo es importante para ella. Al inicio y al final de los talleres usted contestará unas preguntas sobre su acuerdo o desacuerdo con algunas declaraciones presentadas durante la sesión.
2. Estos talleres van a ser video grabados. Después, van a ser observados por algunos miembros del equipo investigador para indagar en las reacciones a los diferentes temas que fueron desarrollados durante los talleres. Una vez completado el análisis de datos, los videos serán eliminados para proteger su privacidad.

La duración total de cada uno de los dos talleres es de dos horas. Los dos talleres podrían darse en días distintos o el mismo día, dependiendo de la disponibilidad de los participantes. El asistir a los talleres puede representar un riesgo a su

confidencialidad, ya que los participantes comparten experiencias con otros participantes. No podemos garantizar que lo que usted exprese se mantenga completamente privado, pero los entrevistadores y facilitadores enfatizarán en la importancia de que los participantes respeten la confidencialidad.

Usted puede verse beneficiado por su participación en este estudio al recibir entrenamiento en asuntos que podrían mejorar su calidad de vida. Por ejemplo, el compartir responsabilidades en el hogar puede mejorar las relaciones familiares. Aprender a comer saludable puede mejorar su salud. La participación en este estudio no tiene ningún costo (aparte del transporte). No se le proporcionará ningún pago por participar en este estudio. Sin embargo, a cambio de su tiempo y esfuerzo usted recibirá meriendas saludables en los talleres y pequeños regalos como lapiceros o llaveros.

Cualquier información obtenida en conexión a este estudio va a ser mantenida confidencial y será divulgada solamente en caso de obtener su permiso escrito, al menos de que se requiera divulgar por cuestiones legales. La información será guardada de manera segura en archivos bloqueados y en computadoras protegidas por contraseña. Los resultados del estudio podrían ser publicados o presentados en seminarios, pero el reporte no incluirá su nombre u otra información identificativa. La participación en este estudio es voluntaria. Usted es libre de no participar o de dejar de participar en cualquier momento, por cualquier razón sin consecuencias negativas.

Nos complace contestar cualquier duda que usted pueda tener sobre el estudio. Puede contactarme a mí, Tatiana Martínez Jaikel al +506 60043007 o al correo electrónico tatimartinez@hotmail.com.

Gracias por su consideración. Si usted desea participar, por favor contarme a mí, Tatiana Martínez Jaikel al +506 60043007 o al correo electrónico tatimartinez@hotmail.com, para discutir su participación.

Saludos cordiales,

Tatiana Martínez Jaikel

Número telefónico: +506 60043007

Correo electrónico: tatimartinez@hotmail.com

<p align="center">CUESTIONARIO DE CARACTERÍSTICAS SOCIOECONÓMICAS, HÁBITOS DE ALIMENTACIÓN Y ESTILO DE VIDA</p> <p align="center">Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica</p> <p align="center">Primera aplicación</p>												
<p>¡Buenos días/tardes! Este cuestionario tiene como finalidad conocer sus características socio-económicas y sus hábitos de alimentación y de estilos de vida, por lo que agradeceríamos mucho su cooperación. Su participación es voluntaria y la información que nos brinde es totalmente confidencial.</p>												
<p>A. INFORMACIÓN DEL CUESTIONARIO</p>												
<p>A.1. Código de la participante _____</p>	<p>A.2.1 Número de cuestionario _____</p>	<p>A.3.1 Fecha (Día/Mes/Año) _____/_____/_____</p>										
<p>B.1. Fecha de nacimiento (Día/Mes/Año) _____/_____/_____</p>												
<p>B.2. Edad actual _____ años cumplidos</p>												
<p>B.3. Estado civil</p> <table border="0"> <tr> <td>1. () Casada</td> <td>4. () Separada</td> </tr> <tr> <td>2. () Unión Libre</td> <td>5. () Viuda</td> </tr> <tr> <td>3. () Divorciada</td> <td>6. () Soltera</td> </tr> <tr> <td></td> <td>9. () No sé/ No respondo</td> </tr> </table>			1. () Casada	4. () Separada	2. () Unión Libre	5. () Viuda	3. () Divorciada	6. () Soltera		9. () No sé/ No respondo		
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3. () Divorciada	6. () Soltera											
	9. () No sé/ No respondo											
<p>B.4. ¿Cuál es su último grado de enseñanza aprobado?</p> <table border="0"> <tr> <td>1. () Sin estudios</td> <td>6. () Educación técnica</td> </tr> <tr> <td>2. () Primaria incompleta</td> <td>7. () Universitaria incompleta</td> </tr> <tr> <td>3. () Primaria completa</td> <td>8. () Universitaria completa</td> </tr> <tr> <td>4. () Secundaria incompleta</td> <td>9. () Otro _____</td> </tr> <tr> <td>5. () Secundaria completa</td> <td>99. () No sé/ No respondo</td> </tr> </table>			1. () Sin estudios	6. () Educación técnica	2. () Primaria incompleta	7. () Universitaria incompleta	3. () Primaria completa	8. () Universitaria completa	4. () Secundaria incompleta	9. () Otro _____	5. () Secundaria completa	99. () No sé/ No respondo
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5. () Secundaria completa	99. () No sé/ No respondo											
<p>B.5. Lugar de residencia</p> <p>a. Provincia _____ b. Cantón _____ c. Distrito _____</p>												
<p>B.6. ¿Está usted asegurada por la Caja Costarricense de Seguro Social?</p> <p>1. () Sí 2. () No (<i>Pase a la pregunta B.8.</i>)</p>												

B.7. ¿Con que tipo de seguro?

- | | |
|---|--|
| 1. <input type="checkbox"/> Asegurada Directa(Por mi patrono) | 4. <input type="checkbox"/> Pensionada |
| 2. <input type="checkbox"/> Asegurada por Cuenta Propia | 5. <input type="checkbox"/> Por el Estado |
| 3. <input type="checkbox"/> Asegurada por un familiar | 9. <input type="checkbox"/> No sé/ No respondo |
-

B.8. ¿Cuál es su ocupación actual?

B.9. ¿Recibe algún pago por esta ocupación?

1. Sí 2. No (*Pase a la pregunta B.11.*)
-

B.10. ¿Cuántas personas en su hogar no reciben ingresos propios? _____

B.11. ¿Cuántas personas, sin contarse usted, viven en su hogar?

- a. Mayores de 18 años _____ b. Menores de 18 años _____
-

B.12. ¿Cuántas personas en su hogar dependen económicamente de usted (niños, adultos mayores, personas con discapacidad o que no reciben ingresos propios)?

B.13. ¿Tiene usted hijos?

1. Sí 2. No (*Pase a la pregunta B.17.*)
-

B.14. ¿Cuántos de sus hijos son menores de edad? _____ (*Si la respuesta es 0 pase a la pregunta B.17.*)

B.15. ¿Alguien además de usted cuida de sus hijos?

1. Sí 2. No (*Pase a la pregunta B.17.*)
-

B.16. ¿Quién además de usted cuida de sus hijos?

B.17. ¿Cómo se enteró del programa?

1. () Afiches o posters
2. () Por Facebook

3. () Me contó una amiga o familiar
4. () Otro

B. CARACTERÍSTICAS SOCIOECONÓMICAS

C. FRECUENCIA DEL CONSUMO

C.1. ¿En los últimos 30 días, comió usted vegetales no harinosos, por ejemplo, chayote, ayote, vainica, zanahoria etc. en picadillos o preparaciones cocidas?

1. () Sí 2. () No (*Pase a pregunta C.2.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted vegetales no harinosos en picadillos o preparaciones cocidas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.2. ¿En los últimos 30 días, comió usted ensaladas no harinosas, como por ejemplo, ensalada de pollo con tomate, ensalada verde etc.?

1. () Sí 2. () No (*Pase a pregunta C.3.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted ensaladas no harinosas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.3. ¿En los últimos 30 días, comió usted frutas?

1. () Sí 2. () No (*Pase a pregunta C.4.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted frutas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.4. ¿En los últimos 30 días, comió usted alimentos fritos como por ejemplo, plátano frito, papas fritas o carnes fritas?

1. Sí 2. No (*Pase a pregunta C.5.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted alimentos fritos?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.5. ¿En los últimos 30 días, consumió usted bebidas con azúcar como por ejemplo, gaseosas, jugos de caja, frescos de paquete, fresco natural con azúcar, bebidas calientes, etc.?

1. Sí 2. No (*Pase a pregunta C.6.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente consumió usted bebidas con azúcar?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.6. ¿En los últimos 30 días, comió usted repostería o postres?

1. Sí 2. No (*Pase a pregunta C.7.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted alimentos repostería o postres?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.7. ¿En los últimos 30 días, comió usted embutidos, como por ejemplo, mortadela, salchichón, jamón, chorizo, etc.)?

1. Sí 2. No (*Pase a pregunta C.8.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted embutidos?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.8. ¿En los últimos 30 días, comió usted frijoles?

1. () Sí 2. () No (*Pase a pregunta C.9.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted frijoles?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.9. ¿En los últimos 30 días, comió comidas rápidas, como por ejemplo, hamburguesas, tacos, pollo frito?

1. () Sí 2. () No (*Pase a pregunta D.1.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted comidas rápidas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

d. ¿Cuáles fueron las comidas rápidas que consumió?

D. ESTILO DE VIDA

D.1. ¿Realizó usted ejercicio el último mes? Como por ejemplo, ir a caminar, bailar o zumba?

1. () Sí 2. () No (*Pase a pregunta D.3.*)
-

D.2. Por favor describa qué tipo de ejercicio realiza, así como la frecuencia en veces por semana y el tiempo en minutos por sesión que le dedica a esta.

D.2.a. Tipo de ejercicio	D.2.b. Veces por semana que lo realiza	D.2.c. Minutos por sesión

D.3. Por favor indique de cuales de las siguientes enfermedades padece

- | | |
|--|--|
| 1. <input type="checkbox"/> Colitis | 8. <input type="checkbox"/> Acidez |
| 2. <input type="checkbox"/> Formación de gases | 9. <input type="checkbox"/> Ácido úrico |
| 3. <input type="checkbox"/> Pérdida de apetito | 10. <input type="checkbox"/> Presión alta |
| 4. <input type="checkbox"/> Estreñimiento | 11. <input type="checkbox"/> Diabetes |
| 5. <input type="checkbox"/> Gastritis | 12. <input type="checkbox"/> Colesterol alto |
| 6. <input type="checkbox"/> Diarrea | 13. <input type="checkbox"/> Triglicéridos altos |
| 7. <input type="checkbox"/> Náusea | 14. <input type="checkbox"/> Otra _____ |
-

D.4. ¿Toma algún medicamento regularmente?

1. Sí 2. No (*Pase a la pregunta D.6.*)
-

D.5. Por favor indique cuales medicamentos toma y en que dosis.

D.5.a. Medicamento	D.5.b. Dosis

D.6. ¿Consume usted alcohol de forma frecuente?

1. Sí 2. No (*Pase a la pregunta D.9.*)
-

D.7. ¿Cuántos tragos a la semana? _____

D.8. ¿Qué tipo de licor consume principalmente?

D.9. ¿Usted fuma habitualmente?

1. Sí 2. No (*Pase a pregunta E.1.*)
-

D.10. ¿Cuántos cigarrillos a la semana? _____

E. EMPODERAMIENTO ECONÓMICO

E.1. ¿Quién decide en su hogar cuáles alimentos comprar?

- | | | |
|---|---|--|
| 1. () Solo usted (<i>Pase a pregunta E.3.</i>) | 2. () Usted y otro(s) miembro(s) de su hogar | 3. () Sólo otro(s) miembro(s) de su hogar |
|---|---|--|

E.2. ¿Quiénes son esos otro(s) miembro(s) del hogar?

E.3. ¿Quién va a comprar los alimentos en su hogar?

- | | | |
|---|---|--------------------------------------|
| 1. () Solo usted (<i>Pase a pregunta E.5.</i>) | 2. () Usted y otro miembro de su hogar | 3. () Sólo otro miembro de su hogar |
|---|---|--------------------------------------|

E.4. ¿Quiénes son esos otros miembros del hogar?

E.5. ¿Quiénes contribuyen con el mantenimiento de los gastos de su hogar?

- | | | |
|---|---|--|
| 1. () Solo usted (<i>Pase a pregunta F.1.</i>) | 2. () Usted y otro(s) miembro(s) de su hogar | 3. () Sólo otro(s) miembro(s) de su hogar |
|---|---|--|

E.6. ¿Quiénes son esos otro(s) miembro(s) del hogar?

F. INGRESO FAMILIAR Y PORCENTAJE DEL INGRESO DESTINADO A LA ALIMENTACIÓN

F.1. ¿El ingreso familiar en su hogar es?

- | | |
|-------------|-----------------|
| 1. () Fijo | 2. () Variable |
|-------------|-----------------|

F.2. ¿Alrededor de cuánto es el ingreso familiar mensual?

- | | |
|---------------------------------------|---------------------------------------|
| 1. () Menos de 50000 | 4. () Entre 200000 a menos de 300000 |
| 2. () Entre 50000 a menos de 100000 | 5. () Entre 300000 a menos de 400000 |
| 3. () Entre 100000 a menos de 200000 | 6. () Más de 400000 |
| | 9. () No sé/ No respondo |

F.3. ¿Si por motivos económicos tuviera que dejar de comprar algunos alimentos, cuáles serían esos alimentos?

F.4. ¿Y si también tuviera que comprar algunos alimentos en menor cantidad, cuáles serían esos alimentos?

F.5. ¿Su familia se beneficia de algún tipo de programa de ayuda estatal u otro, por ejemplo, CEN- CINAI, bonos del IMAS, donación de diarios, etc.?

1. () Sí 2. () No (*Pase a pregunta G.1.*)

F.6. ¿De qué programas se benefician?

G. PROYECTO DE VIDA

G.1. ¿Usted tiene algunas metas o sueños en su vida?

1. () Sí 2. () No (*Fin del cuestionario*)

G.2. ¿Cuáles son?

G.3. ¿Qué cosas cree que necesitaría para lograr estas metas?

H. INDICADORES ANTROPOMETRICOS

Indicador	a. Medida 1	b. Medida 2	c. Medida 3	Promedio
H.1. Peso (Kg)				
H.2. Talla (m)				
H.3. Circunferencia de Cintura CC (cm)				

¡Gracias por su colaboración!

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica		
Cuestionario # 1		
¡Buenos días/tardes! Este cuestionario tiene como finalidad conocer sus características socio-económicas y sus hábitos de alimentación y de estilos de vida, por lo que agradeceríamos mucho su cooperación. Su participación es voluntaria y la información que nos brinde es totalmente confidencial.		
A. INFORMACIÓN DEL CUESTIONARIO		
A.1. Código de la participante _____	A.2.2 Número de cuestionario _____	A.3.2 Fecha (Día/Mes/Año) _____/_____/_____

B. CARACTERÍSTICAS SOCIOECONÓMICAS

B.3. Estado civil

1. <input type="checkbox"/> Casada	4. <input type="checkbox"/> Separada
2. <input type="checkbox"/> Unión Libre	5. <input type="checkbox"/> Viuda
3. <input type="checkbox"/> Divorciada	6. <input type="checkbox"/> Soltera
	9. <input type="checkbox"/> No sé/ No respondo

B.8. ¿Cuál es su ocupación actual? _____

B.9. ¿Recibe alguna remuneración económica por esta ocupación?

1. Sí 2. No

C. FRECUENCIA DEL CONSUMO

C.1. ¿En los últimos 30 días, comió usted vegetales no harinosos, por ejemplo, chayote, ayote, vainica, zanahoria, etc. en picadillos o preparaciones cocidas?

1. Sí 2. No (*Pase a pregunta C.2.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted vegetales no harinosos en picadillos o preparaciones cocidas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.2. ¿En los últimos 30 días, comió usted ensaladas no harinosas, como por ejemplo, ensalada de repollo con tomate, ensalada verde, etc.?

1. Sí 2. No (*Pase a pregunta C.3.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted ensaladas no harinosas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.3. ¿En los últimos 30 días, comió usted frutas?

1. Sí 2. No (*Pase a pregunta C.4.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted frutas?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.4. ¿En los últimos 30 días, comió usted alimentos fritos como por ejemplo, plátano frito, papas fritas o carnes fritas?

1. Sí 2. No (*Pase a pregunta C.5.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted alimentos fritos?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.5. ¿En los últimos 30 días, consumió usted bebidas con azúcar como por ejemplo, gaseosas, jugos de caja, frescos de paquete, fresco natural con azúcar, bebidas calientes, etc.?

1. Sí 2. No (*Pase a pregunta C.6.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente consumió usted bebidas con azúcar?

_____ **a.** Veces al día _____ **b.** Veces a la semana _____ **c.** Veces al mes

C.6. ¿En los últimos 30 días, comió usted repostería o postres?

1. () Sí 2. () No (*Pase a pregunta C.7.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted alimentos repostería o postres?

_____ a. Veces al día _____ b. Veces a la semana _____ c. Veces al mes

C.7. ¿En los últimos 30 días, comió usted embutidos, como por ejemplo, mortadela, salchichón, jamón, chorizo, etc.)?

1. () Sí 2. () No (*Pase a pregunta C.8.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted embutidos?

_____ a. Veces al día _____ b. Veces a la semana _____ c. Veces al mes

C.8. ¿En los últimos 30 días, comió usted frijoles?

1. () Sí 2. () No (*Pase a pregunta C.9.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted frijoles?

_____ a. Veces al día _____ b. Veces a la semana _____ c. Veces al mes

C.9. ¿En los últimos 30 días, comió comidas rápidas, como por ejemplo, hamburguesas, tacos, pollo frito?

1. () Sí 2. () No (*Pase a pregunta D.1.*)

Pensando siempre en los últimos 30 días, ¿qué tan frecuentemente comió usted comidas rápidas?

_____ a. Veces al día _____ b. Veces a la semana _____ c. Veces al mes

D. ACTIVIDAD FÍSICA

D.1. ¿Realizó usted ejercicio el último mes? Como por ejemplo, ir a caminar, bailar o zumba?

1. () Sí 2. () No (*Pase a pregunta E.1.*)
-

D.2. Por favor describa qué tipo de ejercicio realiza, así como la frecuencia en veces por semana y el tiempo en minutos por sesión que le dedica a esta.

D.2.a. Tipo de ejercicio	D.2.b. Veces por semana que lo realiza	D.2.c. Minutos por sesión

E. EMPODERAMIENTO ECONÓMICO

E.1. ¿Quién decide en su hogar cuáles alimentos comprar?

1. () Solo usted (*Pase a pregunta E.3.*) 2. () Usted y otro(s) miembro(s) de su hogar 3. () Sólo otro(s) miembro(s) de su hogar

E.2. ¿Quiénes son esos otro(s) miembro(s) del hogar?

E.3. ¿Quién va a comprar los alimentos en su hogar?

1. () Solo usted (*Pase a pregunta E.5.*) 2. () Usted y otro miembro de su hogar 3. () Sólo otro miembro de su hogar

E.4. ¿Quiénes son esos otros miembros del hogar?

E.5. ¿Quiénes contribuyen con el mantenimiento de los gastos de su hogar?

1. () Solo usted (*Pase a pregunta E.7.*) 2. () Usted y otro(s) miembro(s) de su hogar 3. () Sólo otro(s) miembro(s) de su hogar

E.6. ¿Quiénes son esos otro(s) miembro(s) del hogar?

E.7. ¿Cuándo comenzó a participar en el programa andaba usted buscando trabajo?

1. Sí 2. No
-

E.8. ¿Ha encontrado trabajo durante este tiempo?

1. Sí 2. No (*Pase a pregunta E.10.*)

E.9. ¿En qué? _____

E.10. ¿Durante el tiempo de participación en este programa ha podido asistir a alguno de los cursos que ha ofrecido la Municipalidad de Alajuela? Por ejemplo: ¿promotoras de la salud, lideresas, microempresarias?

1. Sí 2. No (*Pase a pregunta E.11.*)

E.11. ¿Cuál o cuáles?

—

E.12. ¿Durante el tiempo de participación en este programa, ha podido matricularse algún otro tipo de curso o capacitación?

1. Sí 2. No (*Pase a pregunta E.13.*)

E.12. ¿Cuál o cuáles?

—

E.13. ¿Ha hecho uso de los servicios de la Oficina de la Mujer?

1. Sí 2. No (*Pase a pregunta E.15.*)

E.14. ¿Cuál o cuáles?

—

E.15. ¿Ha hecho uso de los servicios de la Oficina de Empleo?

1. Sí 2. No (*Pase a pregunta E.17.*)

E.16. ¿Cuál o cuáles?

E.17. ¿Ha hecho uso de los Servicios de la Defensoría Social?

1. Sí 2. No (*Pase a pregunta E.19.*)

E.18. ¿Cuáles o cuáles?

E.19. ¿Pudo asistir a las sesiones de ejercicios que se ofrecieron los martes y jueves en el Salón del Adulto Mayor?

1. Sí 2. No

E.20. ¿Siente que el programa le ha ayudado a lograr algunos de sus sueños y metas?

1. Sí 2. No (*Pase a pregunta E.22.*)

E.21. ¿Cuáles o cuáles?

E.15. Después de finalizar este programa, ¿tiene en mente estudiar más o capacitarse en algo?

1. Sí 2. No (*Pase a pregunta E.16.*)

¿En qué? _____

E.16. ¿Le recomendó a algún miembro de su familia o comunidad los servicios de la Oficina de la Mujer?

1. Sí 2. No (*Pase a pregunta E.18.*)
-
-

E.17. ¿Hicieron ellos uso de estos servicios?

1. Sí 2. No 3. No sé

E.18. ¿Le recomendó a alguien de su familia o comunidad los servicios de la Oficina de Empleo?

1. Sí 2. No (*Pase a sección H.*)
-
-

E.19. ¿Hicieron ellos uso de estos servicios?

1. Sí 2. No 3. No sé
-
-

H. INDICADORES ANTROPOMETRICOS				
Indicador	a. Medida 1	b. Medida 2	c. Medida 3	Promedio
H.1. Peso (Kg)				
H.2. Talla (cm)				
H.3. Circunferencia de Cintura CC (cm)				

¡Gracias por su colaboración!

L.6. ¿Usted o algún adulto del hogar ha tenido que saltarse algunas de las comidas del día por no tener suficiente?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.7. ¿Usted o algún adulto del hogar ha tenido que irse a dormir por la noche sin comer por no tener suficiente comida en la casa?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.8. ¿Usted o algún adulto del hogar ha tenido que pasar un día entero sin comer por no tener suficiente comida?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.9. ¿Ha tenido que dejar de darle a los niños los alimentos que deben comer por no poder obtenerlos?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.10. ¿Por no tener suficientes recursos, ha tenido que servir menos comida a los niños?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.11. ¿Alguno de los niños ha tenido que saltarse alguna de las comidas del día por no tener suficiente comida en la casa?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.12. ¿Alguno de los niños ha tenido que irse a dormir por la noche sin comer por no tener suficiente comida en la casa?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.13. ¿Alguno de los niños ha tenido que pasar un día entero sin comer por no tener suficiente comida en la casa?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

L.14. ¿Para tener comida en el hogar, ha tenido que hacer cosas que le hayan avergonzado?

1. () Nunca 2. () Algunas veces 3. () Muchas veces

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica Escala de Depresión y Ansiedad		
Buenos días/tardes. Este cuestionario tiene como finalidad conocer su estado de ánimo, por lo que agradeceríamos mucho su cooperación. Su participación es voluntaria y la información que nos brinde es totalmente confidencial.		
I. INFORMACIÓN DEL CUESTIONARIO		
A.1. Código de la participante _____	I.2. Número de cuestionario _____	I.3. Fecha (Día/Mes/Año) ____/____/____

Instrucciones: Este cuestionario ha sido diseñado para conocer cómo se siente usted afectiva y emocionalmente. Lea cada pregunta y marque con una “X” la respuesta que usted considere que coincida con su propio estado emocional en la última semana. **No es necesario que piense mucho tiempo cada respuesta; en este cuestionario las respuestas espontáneas tienen mayor valor que las que se piensan mucho.**

J.1. Me siento tensa o nerviosa.

0. () Nunca 1. () De vez en cuando 2. () Casi todo el día 3. () Todo el día

J.2. Sigo disfrutando con las mismas cosas de siempre.

0. () Nunca 1. () De vez en cuando 2. () Casi todo el día 3. () Todo el día

J.3. Siento una especie de temor, como si algo me fuera a suceder.

0. () Nunca 1. () De vez en cuando 2. () Casi todo el día 3. () Todo el día

J.4. Soy capaz de reírme y ver el lado gracioso de las cosas.

0. () Nunca 1. () De vez en cuando 2. () Casi todo el día 3. () Todo el día

J.5. Tengo la cabeza llena de preocupaciones.

0. () Nunca 1. () De vez en cuando 2. () Casi todo el día 3. () Todo el día

J.6. Me siento alegre.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.7. Soy capaz de permanecer sentada, tranquila y relajadamente.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.8. Me siento lenta y torpe.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.9. Experimento una desagradable sensación de nervios y vacío en el estómago.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.10. He perdido interés por mi aspecto personal.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.11. Me siento inquieta como si no pudiera dejar de moverme.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.12. Espero las cosas con ilusión.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.13. Experimento de repente una sensación de gran angustia y temor.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

J.14. Soy capaz de disfrutar con un buen libro, programa de radio o televisión.

0. Nunca 1. De vez en cuando 2. Casi todo el día 3. Todo el día

¡Gracias por su colaboración!

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica		
Escala de Agencia Personal		
Buenos días/tardes. Este cuestionario tiene como finalidad conocer acerca de su capacidad para establecer y luchar por metas propias, por lo que agradeceríamos mucho su cooperación. Su participación es voluntaria y la información que nos brinde es totalmente confidencial.		
M. INFORMACIÓN DEL CUESTIONARIO		
A.1. Código de la participante _____	M.2. Número de cuestionario _____	M.3. Fecha (Día/Mes/Año) _____/_____/_____
A continuación se le van a presentar una serie de afirmaciones, por favor marque con una X en la opción que corresponda a que tan a menudo se siente usted identificada con esa afirmación.		

N.1. Me es difícil expresar mi opinión públicamente.

1. () Nunca 2. () Casi nunca 3. () Casi siempre 4. () Siempre
-

N.2. Me siento insegura con mis decisiones.

1. () Nunca 2. () Casi nunca 3. () Casi siempre 4. () Siempre
-

N.3. Dejo las cosas a medias.

1. () Nunca 2. () Casi nunca 3. () Casi siempre 4. () Siempre
-

N.4. Tengo iniciativa para hacer las cosas.

1. () Nunca 2. () Casi nunca 3. () Casi siempre 4. () Siempre
-

N.5. Me cuesta trabajo terminar lo que estoy haciendo.

1. () Nunca 2. () Casi nunca 3. () Casi siempre 4. () Siempre
-

N.6. Me es difícil saber que esperar de la vida.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.7. Exijo mis derechos aunque otros no estén de acuerdo.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.8. Busco la solución a un problema, aunque otros me digan que no hay.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.9. Me da pena equivocarme.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.10. Cumplir con mis planes está fuera de mi control.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.11. Cuando tengo un problema, sé lo que necesito para solucionarlo.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.12. Me da pena hablar en público.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.13. Tapo mis errores para que nadie se dé cuenta.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.14. Encuentro soluciones novedosas a problemas difíciles.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.15. Me desespero ante situaciones difíciles.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.16. Me gusta planear mis actividades.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.17. Siento que tengo poco control sobre lo que me pasa.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.18. Hago menos cosas de las que soy capaz.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.19. Me siento incapaz de cumplir lo que me propongo.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.20. Me es difícil saber con quién cuento.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.21. Solo le pongo ganas a lo que me es fácil.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.22. Le doy demasiada importancia a las opiniones de los demás.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.23. Me da miedo que me elogien.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.24. Me gusta tener responsabilidades.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.25. Me quejo con las autoridades cuando hay abuso.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.26. Es mejor tomar decisiones que esperar a ver lo que pasa.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.27. Sé porque me pasan las cosas.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.28. Me gusta ser la primera en hacer cosas nuevas.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.29. Me es fácil tomar decisiones.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.30. Hago lo que creo que es mejor para mí sin importar lo que otros crean.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.31. Me da pena cobrar lo que me deben.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.32. Tengo que aguantarme la vida que me tocó.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.33. Conozco las leyes de mi país.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

N.34. Pienso que este mundo lo dirigen aquellos que tienen poder.

1. () **Nunca** 2. () Casi nunca 3. () Casi siempre 4. () Siempre

¡Gracias por su colaboración!

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica Escala de Apoyo Social		
Buenos días/tardes. Este cuestionario tiene como finalidad conocer el apoyo con el que usted cuenta cuando ha intentado cambiar sus hábitos de alimentación, por lo que agradeceríamos mucho su cooperación. Su participación es voluntaria y la información que nos brinde es totalmente confidencial.		
O. INFORMACIÓN DEL CUESTIONARIO		
A.1. Código de la participante _____	O.2. Número de cuestionario _____	O.3. Fecha (Día/Mes/Año) ____/____/____

Abajo se encuentra una lista de cosas que las personas podrían decirle a alguien que intenta mejorar sus hábitos alimenticios. **Si usted no está tratando de hacer ninguno de estos cambios en su dieta, entonces algunas de las preguntas podrían no aplicar para usted, sin embargo, por favor lea y responda cada una.**

Por favor califique cada pregunta *dos veces*. En la opción de *familia*, califique qué tan frecuentemente alguien viviendo en su casa ha dicho o hecho la acción descrita en los pasados tres meses. En la opción de *amigos*, califique qué tan frecuentemente sus amigos, conocidos o compañeros de trabajo han dicho **o hecho la acción descrita en los pasados tres meses.**

P.1. Me incentivaron a no comer “alimentos poco saludables” (queque, papas tostadas), cuando me siento tentada a hacerlo.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	--------------------	-------------------------	--------------------------	------------------------------	---------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	--------------------	-------------------------	--------------------------	------------------------------	---------------------

P.2. Discutieron sobre cambios en mis hábitos alimenticios conmigo (me preguntaron cómo me va con estos cambios).

a. Familia

1. () Nunca	4. () Frecuentemente	5. ()
-----------------	--------------------------	--------

	2. () Rara vez	3. () Algunas veces		Muy frecuentemente	8. () No aplica
b. Amigos					
1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica

P.3. Me recordaron sobre no comer alimentos no saludables.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

P.4. Hicieron cumplidos sobre mis cambios en hábitos alimenticios (“siga así”; “estamos orgullosos de usted”).

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

P.5. Hicieron comentarios si volvía a mis viejos hábitos alimenticios.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

				5. ()	
--	--	--	--	--------	--

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	-----------------------	------------------------

P.6. Comieron alimentos no saludables frente a mí.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

P.7. Se rehusaron a consumir la misma comida que yo.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

P.8. Trajeron a la casa alimentos que yo estoy tratando de evitar.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

P.9. Se molestaron cuando los motivé a comer alimentos más saludables.

a. Familia

5. ()

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	-----------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

P.10. Me ofrecieron comida que estoy tratando de evitar.

a. Familia

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

b. Amigos

1. () Nunca	2. () Rara vez	3. () Algunas veces	4. () Frecuentemente	5. () Muy frecuentemente	8. () No aplica
-----------------	-----------------------	----------------------------	--------------------------	---------------------------------	------------------------

¡Gracias por su colaboración!

CUESTIONARIO DE OPINIONES CON RESPECTO A CORRESPONSABILIDAD Y AUTO-CUIDADO

Código del participante: _____

¡Buenos días/tardes! Este cuestionario tiene como finalidad conocer sus opiniones con respecto a los temas de corresponsabilidad y auto-cuidado, por lo que agradeceríamos mucho su cooperación. Su participación es voluntaria y la información que nos brinde es totalmente confidencial.

Por favor marque con una X en la opción que corresponda a que tan de acuerdo o desacuerdo está usted con esa afirmación.

Aplicación inicial

1. ¿Qué tan de acuerdo o desacuerdo está usted con las personas que piensan que las responsabilidades del hogar, tales como cubrir los gastos del hogar, las labores domésticas y el cuidado de los niños deben ser compartidas entre todos los miembros de la familia independientemente de si son hombres o mujeres?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

2. ¿Qué tan de acuerdo o desacuerdo está usted de compartir las responsabilidades del hogar con otros miembros de su familia?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

3. ¿Qué tan de acuerdo o desacuerdo está usted con las personas que piensan que tanto los hombres como las mujeres debemos cuidar nuestro cuerpo, nuestra mente y nuestras emociones?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

4. ¿Qué tan de acuerdo o desacuerdo está usted en comenzar a cuidar su cuerpo, su mente y sus emociones?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Aplicación Final

1. ¿Qué tan de acuerdo o desacuerdo está usted con las personas que piensan que las responsabilidades del hogar, tales como cubrir los gastos del hogar, las labores domésticas y el cuidado de los niños deben ser compartidas entre todos los miembros de la familia independientemente de si son hombres o mujeres?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo

2. ¿Qué tan de acuerdo o desacuerdo está usted de compartir las responsabilidades del hogar con otros miembros de su familia?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo

3. ¿Qué tan de acuerdo o desacuerdo está usted con las personas que piensan que tanto los hombres como las mujeres debemos cuidar nuestro cuerpo, nuestra mente y nuestras emociones?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo

4. ¿Qué tan de acuerdo o desacuerdo está usted en comenzar a cuidar su cuerpo, su mente y sus emociones?

Totalmente de acuerdo	De acuerdo	Ni de acuerdo ni en desacuerdo	En desacuerdo	Totalmente en desacuerdo

MUCHAS GRACIAS!

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica

Guía de entrevista cualitativa inicial

Fecha: _____

Hora de inicio: _____ Hora de finalización: _____

Lugar: _____

Código de participante: _____

Bienvenida / Asentimiento Verbal: Buenos días / tardes! Gracias por su interés en participar en las sesiones grupales y los talleres con nosotros. Antes de comenzar este proceso, nos gustaría conocer sus sentimientos y opiniones sobre usted.

Todas las respuestas serán confidenciales. Esto significa que sus respuestas a la entrevista sólo serán compartidas con los miembros del equipo de investigación y nos aseguraremos de que cualquier información que incluimos en nuestro informe no lo identifique como el entrevistado. Recuerde, usted tiene el derecho de detener la entrevista en cualquier momento o puede negarse a contestar cualquier pregunta que le haga sentir incómoda. ¿Hay alguna pregunta sobre lo que le acabo de explicar? ¿Está usted dispuesta a participar en esta entrevista?

Voy a tomar algunas notas durante la entrevista, sin embargo, no puedo escribir lo suficientemente rápido como para anotar todo. Por lo tanto, para asegurarme de poder anotar toda su valiosa información, ¿me permite grabar esta entrevista? Gracias.

Información Socio-demográfica

¿Dónde vive?

¿Con quién vive?

¿Tiene hijos? ¿Cuántos hijos tiene?

Pregunta de apertura

- Podría describirme con sus propias palabras, por qué quiere usted participar en este programa?

Preguntas principales y de seguimiento:

Podría usted contarme acerca de usted misma? Cómo es usted? Podría decirme las 3 palabras que mejor la describan? Cómo es su rutina diaria? Podría contarme un día típico en su vida?

Percepción de la salud

Cómo se siente usted con su estado de salud?

Estado de ánimo

- Cómo es usualmente su estado de ánimo? ¿Cómo varía su ánimo durante el día? ¿Cómo le afecta esto su alimentación?

Satisfacción con la imagen corporal

- Cómo se siente usted con su cuerpo?

Asertividad

- Cómo evaluaría su capacidad de expresar lo que siente y piensa a los otros?

Situación Económica

- Cómo describiría su situación económica? Cómo afecta esto su alimentación?

Apoyo y corresponsabilidad Familiar

- En su casa quién realiza el trabajo doméstico, es decir, cocinar, lavar, ir de compras? Si hay alguien que atender, quién lo hace? Qué piensa usted acerca de la posibilidad de que las tareas de la casa sean compartidas por todos los miembros de la familia? Qué ventajas le ve a esto? Qué desventajas?
- Cómo han reaccionado los miembros de su familia cuando usted ha intentado llevar a cabo estilos de vida saludable?

Pregunta de cierre

- Hay algo más que usted considere importante y qué le gustaría compartir conmigo?

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica

Guía de entrevista cualitativa Final

Fecha: _____

Hora de inicio: _____ Hora de finalización: _____

Lugar: _____

Código de participante: 25_____

Bienvenida / Asentimiento Verbal: Buenos días / tardes! Gracias por su interés en participar en las sesiones grupales y los talleres con nosotros. Es una alegría saber que llegamos al final de estos 6 meses. Ustedes todas fueron capaces de finalizar este proceso. Realmente nos gustaría conocer sus experiencias durante este tiempo.

Todas las respuestas serán confidenciales. Esto significa que sus respuestas a la entrevista sólo serán compartidas con los miembros del equipo de investigación y nos aseguraremos de que cualquier información que incluimos en nuestro informe no lo identifique como el entrevistado. Recuerde, usted tiene el derecho de detener la entrevista en cualquier momento o puede negarse a contestar cualquier pregunta que le haga sentir incómoda. ¿Hay alguna pregunta sobre lo que le acabo de explicar? ¿Está usted dispuesta a participar en esta entrevista?

Voy a tomar algunas notas durante la entrevista, sin embargo, no puedo escribir lo suficientemente rápido como para anotar todo. Por lo tanto, para asegurarme de poder anotar toda su valiosa información, ¿me permite grabar esta entrevista? Gracias.

Pregunta de apertura

- Podría describirme con sus propias palabras, cómo se siente al finalizar estos 6 meses de programa?

Preguntas principales y de seguimiento

Percepción de la salud

- Cómo se siente usted con su estado de salud en relación al inicio?

Estado de ánimo

- Cómo es usualmente su estado de ánimo? Usted me comentaba que se había metido por esto, le ha ayudado?

Seguridad en si misma

¿Cómo se siente usted con usted misma?

Satisfacción con la imagen corporal

- ¿y con su cuerpo?

Asertividad

- Cómo evaluaría su capacidad de expresar lo que siente y piensa a los otros en este momento?

Situación Económica

- Cómo describiría su situación económica en este momento?

Proyecto de Vida

- ¿Siente que el programa le ha ayudado a lograr algunos de sus sueños y metas?
- Después de finalizar el programa le han surgido nuevas metas y sueños.
- ¿Cuáles?
- Con respecto a sus sueños y metas ¿tiene ahora una idea más concreta de cómo lograrlos?
- Cómo se siente usted ante la posibilidad de contribuir al soporte de su familia?

Apoyo y corresponsabilidad Familiar

- Cómo han reaccionado los miembros de su familia cuando usted ha intentado llevar a cabo estilos de vida saludable?
- Ha cambiado la dinámica familiar? Ha sentido que los miembros de su familia han cambiado en algo? En qué?
- Ha cambiado el reparto de responsabilidades en su casa?

Pregunta de cierre

- Hay algo más que usted considere importante y qué le gustaría compartir conmigo?

Intervención para mujeres desanimadas, con inseguridad alimentaria y exceso de peso corporal en Costa Rica

Guía de grupo focal

Fecha: _____

Hora de inicio: _____ Hora de finalización: _____

Lugar: _____

Código de participante: _____

Bienvenida/Consentimiento verbal: ¡Buenos días/buenas tardes! Gracias por participar en las sesiones de grupo y los talleres con nosotros. Hemos aprendido mucho y me gustaría que compartiera con nosotros algunas de las experiencias que ha tenido en este tiempo. Realmente necesitamos su aporte y nos gustaría que fueran honestas y abiertas con sus respuestas. Todas estas se mantendrán completamente confidenciales. Esto significa que sus respuestas serán compartidas únicamente con los miembros del equipo de investigación y nos aseguraremos de que cualquier información que incluyamos en nuestro reporte no la identifique a usted como la persona que respondió.

Vamos a realizar una entrevista de grupo. Es un tipo de conversación, pero se deben seguir algunas reglas:

- 1) Nos gustaría que todos puedan participar, por lo tanto si usted no ha hablado durante un tiempo, yo podría pedirle que lo haga. Además, deseamos que ésta sea una discusión en grupo, por lo tanto tengan libertad de contestar las preguntas sin importar que se les conceda la palabra, pero una persona deberá hablar a la vez, para que sea escuchada claramente la opinión que la persona está dando.
- 2) No existen respuestas correctas o incorrectas. Las experiencias y opiniones de cada persona son importantes. Por favor, háganos saber si está de acuerdo o en desacuerdo. Queremos escuchar todas las opiniones posibles.
- 3) Lo que se dice en esta sala se queda aquí, no vamos a contarle a nadie lo que se dijo acá. Queremos que todos se sientan cómodos compartiendo temas sensibles cuando surgen.
- 4) Mi compañera estará tomando algunas notas durante la sesión, sin embargo, probablemente no pueda escribir tan rápido para anotar todo. Así que, para asegurarme de poder guardar toda su valiosa información, ¿nos permiten grabar esta entrevista?

Muchas gracias.

A. Preguntas de apertura:

- Podrían describir este programa con sus propias palabras?
- En qué medida el programa cumplió con las expectativas que ustedes tenían?

B. Preguntas principales y de seguimiento:

- Trate de imaginarse usted antes de venir al programa y ahora: El curso afecto en alguna manera su vida?

1. Auto-estima

- Cómo se siente acerca de usted misma antes de venir al grupo? Cómo se siente ahora? Deme ejemplos.

2. Asertividad

- Cómo expresaría usted su capacidad para expresar sus preocupaciones, opiniones y necesidades a otros ahora si la compara a antes de venir al grupo?

3. Desánimo y Ansiedad

- Cómo describiría su estado de ánimo ahora en relación con antes de venir al grupo? Y la ansiedad por comer?

4. Salud física y exceso de peso

- Muchas de ustedes han perdido peso, ¿por qué creen ustedes que pudieron hacerlo?
- Las que no lograron perder lo que deseaban, cuáles pudieron ser los motivos?
- Seguridad Alimentaria
- En relación a su situación económica, hay algo diferente entre cuando iniciaron y ahora? Qué es lo diferente?

5. Proyecto de Vida

- ¿Siente que el programa le ha ayudado a lograr algunos de sus sueños y metas?
- Después de finalizar el programa le han surgido nuevas metas y sueños.

¿Cuáles?

- Con respecto a sus sueños y metas ¿tiene ahora una idea más concreta de cómo lograrlos?
- Cómo se siente usted ante la posibilidad de contribuir al soporte de su familia?

6. Familia

- Usted u otros miembros de su familia fueron a los talleres? Cuénteme que tan fácil o difícil fue para ellos asistir?Cuál fue su opinión acerca de los mismos?
- Cómo se siente ahora usted ante la posibilidad de compartir las responsabilidades del hogar con otros miembros de su familia? Y ellos?
- Hay algo diferente en su dinámica familiar durante este tiempo? (por ejemplo: cambio en alimentación, actividad física, auto-cuidado, comunicación, división de responsabilidades en el hogar)
- Hay algo diferente en su capacidad de tomar decisiones en conjunto con otros miembros de la familia? Por ejemplo, comprar comida, cosas para la casa o decisiones con respecto a los niños?

7. Comunidad

- Alguno de los miembros de la comunidad asistió a los talleres? Veo que muy pocos asistieron, por qué creen que esto ocurrió?Cuál es su relación con los miembros de su comunidad?
- Lograron compartir alguna información del programa con otros miembros de su comunidad? Cómo se sienten ante la posibilidad de ayudar ustedes información que permita a más personas practicar la corresponsabilidad y el auto-cuidado?

8. Pregunta Final:

- ¿Hay algo que usted quisiera agregar?

APPENDIX L: COMPARISON BETWEEN PEOPLE WHO COMPLETE OR NOT THE 3- OR 6-MONTH ASSESSMENT

Table L.1 Comparison between people who complete or not the 3-or 6-month assessments

	3-month assessment				6-month assessment			
	Intensive		Non-intensive		Intensive		Non-intensive	
	Completed (n=67)	Not completed (n=16)	Completed (n=82)	Not completed (n=6)	Completed (n=66)	Not completed (n=17)	Completed (n=70)	Not completed (n=18)
Age	40.8	37.2	43.9	44.5	40.8	37.2	43.4	46.1
Body mass index	34.1	35.5	33.7	36.1	33.9	35.8	34.1	33.2
Food insecurity	20.6	19.6	20.7	21.0	20.8	18.9	20.9	19.9
Psychological Empowerment	92.3	91.0	91.8	86.9	91.6	93.7	91.2	91.9