



## Explaining reduced consumption of sweet from the perspective of mothers: A qualitative content analysis

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## General Note

 Article is recommended to print as color digital version in recycled paper.

## ABSTRACT

*Introduction:* Several studies have shown that there is a significant statistical relationship between sugar consumption and the prevalence of diabetes. Sugar is the most common sweetener used in the world to prepare sweet products. Studies have shown that changing lifestyles, including appropriate nutrition strategies, can prevent or delay the onset of diabetes. The purpose of this study was to explain the experiences of mothers about the determinants of intention to reduce the consumption of sweets based on the Health Action Process Approach. *Materials and Methods:* The present work is a content analysis. Data were collected through interviewing individual using a semi-structured interview. 15 mothers who had at least one child aged over 6 months were interviewed. Data analysis was carried out simultaneously with the Lundman's and Graneheim method. *Results:* In data analysis, after eliminating repeated codes and merging similar cases, finally 55 codes were obtained in 15 subclasses, 6 classes and 3 main themes of "perceived risk", "outcome expectancies", and "task self-efficacy". *Conclusion:* The present study is qualitative and the findings provide a profound understanding of the determinants of reducing the sweets consumption from the viewpoint of mothers, which can not be achieved in quantitative studies.

**Keywords:** Reduce the consumption of sweets, Mother, Health Action Process Approach, Aualitative Study.

## 1. INTRODUCTION

Today, non-communicable diseases such as diabetes are one of the first concerns about human life and development. According to the World Health Organization, in the next decade, non-communicable diseases will account for about 80% of deaths in developing countries. In developing countries, approximately 8-15 million people die every year from non-communicable diseases which can be prevented (Frier and Fisher, 2006 and Alahverdi and Heidarnia, 2003). The most common non-communicable diseases are cardiovascular disease, diabetes and cancers. Diabetes is the sixth leading cause of death in the world (Chapman-Novakofski and Karduck, 2005). According to the International Diabetes Federation, about 382 million people (3.8%) of the world's adults are diagnosed with type II diabetes. This is while 175 million people have not yet been diagnosed with diabetes (Salas-Salvado et al., 2011).

In Iran, in 2015, diabetics were around 4.6 million people (Afkhani-Ardekani and Zahmatkash, 2009). Reduced visual acuity and blindness, kidney failure, cardiovascular disease, stroke, leg irritation, numbness and ankle bone affliction are complications of diabetes. It's likely that taking sweets, especially glucose, causes diabetes. Several studies have shown that there is a significant relationship between sugar consumption and the prevalence of diabetes. Sugar is the most common sweetener used in the world to prepare sweet products. Studies have shown that changing lifestyles, including appropriate nutrition strategies, can prevent or delay the onset of diabetes. Some of these studies have underscored the use of carbohydrates in preventing diabetes (Montonen et al., 2007).

Parents in the home have a key role in creating nutritional behaviors. Because they are responsible for buying food for home and can be an imitation pattern for their child's nutritional behavior (Mattocks et al., 2008 and Brown and Ogden, 2004). A Survey done by Saadatnia et al. about Food Patterns in Iran showed that one of the food patterns in Iran is consuming a variety of sweets (Saadatnia et al., 2015). Healthy nutrition determinants, especially those who have direct experience in this field, play an important role in designing interventions to promote healthy eating. Therefore, research that can provide people with plans for modifying the nutritional patterns of the population is one of the health priorities of today's society. Therefore, research that can provide people with plans for modifying the nutritional patterns of the population is one of the health priorities of today's society (Ramezani et al., 2012). Behavior in different societies has a different and diverse nature. Since many human behaviors are rooted in the beliefs of people and societies, knowing and understanding the beliefs and attitudes nowadays is considered as a necessity for the promotion of community health programs. Qualitative methods can help health educators to understand the behavioral and environmental causes and their determinants from the perspective of the subjects (Alahverdi and Heidarnia, 2003).

Since the early 1970s, several psychological theories have tried to explain how behavior change and identify the main factors that influence the process of changing health behavior (McNamee et al., 2013). The Health Action Process Approach (HAPA)

approach was introduced by Schwartz in 1988. The Health Action Process Approach assumes that health behavior consists of two consecutive phases, the motivational phase and volitional phase. In the motivational phase, the intention is to change the healthy behavior. Intent development is influenced by three factors. It often starts with perceived risk. After that, the positive and negative outcomes of a change in behavior (outcome expectancies) are important factors.

Of course, if a person makes a balance between these positive and negative outcomes. The third factor is the task self-efficacy that will be able to develop a behavioral intention (Gorczyński et al., 2010). Task self-efficacy explains understanding of his ability to behave with obstacles or problems. The motivational phase is complete when it is intended to perform a healthy behavior. In the next volitional phase the desired behavior begins (Bauman et al., 2002 and Weidemann et al., 2009). Considering the necessity of recognizing the views of mothers about the determinants of reducing the consumption of sweets, as well as the limitations of similar studies in Iran using the qualitative research method, this study was first conducted in the country with the aim of explaining the experiences or perceptions of mothers about their intention to reduce the consumption of sweets based on the Health Action Process Approach were designed and implemented.

## 2. MATERIAL AND METHODS

The present study was conducted using Directed Content Analysis. In this method, the basis of the analysis is the existing theory or the results of previous researches as initial codes and guidelines (Sandelowski, 2000). Considering the necessity of using the theory in identifying the causes of behavioral health problem and its determinants, the present study was conducted with a qualitative approach to identify the determinants of intention to reduce the consumption of sweets based on the Health Action Process Approach (HAPA).

Data were collected through a semi-structured interview. Due to the natural environment in which research is conducted, the qualitative research environment is real (Speziale et al., 2010). By doing real-world research, the researcher gained in-depth data and experiences in the real context (Morse and Johnson, 1991). Accordingly, in order to conduct individual interviews in this study, the location was determined according to the willingness of the participants. The duration of the interview and its frequency were determined according to the amount of participant information and their conditions. So the duration of each individual interview lasted 40-60 minutes. The goal-oriented sampling method was maximum diversity in terms of demographic information (age, occupation, educational level, income level). The interview continued until the data saturation was reached. In this study, data were saturated after 15 interviews. Entry requirements for participants including at least one child aged over 6 months, consuming sweets, not participating in similar training programs, attending meetings and expressing experiences. The purpose of the study and how it was done was explained to the participants and participants completed the informed consent form of the study. All of them were assured that the obtained information would remain confidential.

Full explanations were provided for the participants about the purpose of using voice recorder and how to use conversations, and they were assured that the audio recordings would be muted in every part of the interview that they did not want to be recorded, and their remarks will be recorded. The questions were developed openly and based on the principles of the Health Action Process Approach (HAPA). For example, whether or not sweets will expose you to various illnesses? Please explain. What are the consequences various diseases associated with consumption of sweets on your life? Interviews tried to minimize interference in the interview process. At the same time, the pathway to the study was avoided with proper questions. Also, with the leading questions, the interview process was guided to cover the research objectives. The following and follow-up questions were provided based on the information provided by the participant to clarify the subject matter. Also, an in-depth interview questions like "explain more"? What do you mean? Can you give an example? It was also answered during the interview.

Qualitative content analysis method was used in this research and data analysis was performed according to Lundman's method and Graneheim method. In this method, the following five steps were carried out for analysis:

1. Word by word on interviews and studying them several times to gain a general sense
2. Dividing the text into semantic units
3. Abstraction of semantic units and tagging by codes
4. Separation of codes in sub themes by comparing them based on their similarities and differences
- 5- Setting the themes as a hidden text content marker (Morse and Johnson, 1991).

In order to ensure the accuracy of the research findings, four criteria of credibility, reliability, dependability, and convertibility, were used to evaluate qualitative data (Speziale et al., 2010). In this research, in order to provide credibility, the deep and prolonged conflict between the researcher and the topic of research, namely, the allocation of sufficient time for data collection, was also considered. Also, the coded text of the data obtained from the participants was given to them. They were asked to confirm the

accuracy and proportionality of the extracted codes with their experiences and opinions (Creswell and PlanoClark, 2007). In order to assess the reliability of this research, external control was used. In order to evaluate the transferability, the results of the research were provided to a number of mothers with similar characteristics that did not participate in the research to judge the similarity between their research findings and their experiences. Also, by putting all the participants' comments on paper and peer review on the extracted code, they tried to increase their acceptance.

### Ethical committee approval code & details

This research in Shahid Sadoughi University of Medical sciences is endorsed by the Code of Ethics IR.SSU.SPH.REC.1394.108.

## 3. RESULTS

Participants in this study were 20 mothers with a mean age of  $30.93 \pm 10.20$ , with an age range of 18- 48 years. Other demographic characteristics of mothers are listed in Table 1.

**Table 1** Demographic characteristics of interviewed mothers

variables		frequency	percentage
Educational level	Under Diploma	4	26.67
	Diploma	6	40
	High education	5	33.33
Occupation	House wife	6	40
	clerk	4	26.67
	worker	3	20
	University student	2	13.33
Number of children	one	4	26.67
	two	6	40
	More than two	5	33.33

Since the purpose of this study was to reduce the consumption of sweets from mothers' point of view based on the Health Action Process Approach. In data analysis, after eliminating repeat codes and merging similar cases, 55 codes were obtained in 15 subclasses, 6 classes and 3 main themes "Perceived risk", " outcome expectancies " and " task self-efficacy" which will be explained in detail:

### 1. Perceives risk

This theme has two categories and several sub-categories:

#### A. perceived vulnerability

Perceived vulnerability is person's belief about being vulnerable to a health hazard (Melamed et al., 1996). Most of the mothers who took part in the interview, in he subcategory, understood the possibility of developing diseases and physical disorders, blood lipids, blood glucose, endocrine disorders, hypertension and cardiovascular disease by using sweets, and they also found that abnormalities, tooth decade, overweight, obesity, and abdominal obesity were thought to be due to the high consumption of sweets.

"If I eat a lot of sweets, it will rase my weight, and the possibility of a cardiovascular event comes will increase (48-year-old mother, diploma, employee with two children) "

"When you eat a lot of sweets, the whole body is shedding, the fat is high, the blood sugar goes up, and tooth will be decade." (40-year-old mother, diploma, 4-year-old housewife)

"If I consume a lot of sweets, my belly becomes big which I hate, because my body is very important. Blood glucose goes up by taking sweets and possibly leads in diabetes". (18-year-old mother, one child)

#### B. perceived severity

The perceived severity of the individual's perception about how serious and how dangerous a risk is what consequences it might have for a person (Melamed et al., 1996). In this study, mothers believed that suffering from diseases associated with high

consumption of sweets would cause labor and economic problems, including reduced income and increased absenteeism. Also, the ability to do work might be reduced.

They also believed that with the onset of illnesses associated with high consumption of sweets, they would be deprived of many foods, such as bread and rice, and many fruits, as well as being forced to follow certain diets. They also believed that excessive amounts of sweets and diabetes would damage the kidneys and eyes, and may result in hand and leg amputation. And they were afraid of having sicknesses associated with high amounts of sweets. Also, many mothers believed that they felt depressed and confused after taking sweets.

"Due to diabetes, my life definitely gets disturbed, I have to take a diet, and I cannot eat bread and rice that I really like. I do not have to go to work more often and this can affect my income." (31 years old mother, Master's degree, employee and one child)  
 ""When I eat lots of sweets, I'm depressed, I'm angry, I'm bored, and I feel this very well." (38 years old mother, cyclist, housewife and 4 children).

"If my blood sugar goes up and is not controlled, I may get diabetes and my kidneys get out of work, they say blood glucose is a silent disease that greatly destroys. If it gets scarred, it will not be good soon enough and I will be deprived of many foods. Especially bread and rice, which is our main food, I cannot eat sweets, I do not have to eat a lot of fruits because I cannot eat sugar, and that's very bad. (Mother, 25 years old, cyclist, worker and two children) ".

## 2. Outcome expectancies

Individual's mental belief is about the consequences of changing behavior. One may evaluate these consequences positively or negatively. The more an individual understands more positive outcomes of behavioral change, the more he is likely to behave (Weinstein, 1987). The aim of this study was to evaluate the mental beliefs of mothers about the positive and negative outcomes resulting from decreased consumption behavior of sweets. This theme includes two categories and several sub categories, which includes:

### A. Understanding the positive consequences

Participants felt a sense of happiness and well-being by reducing the consumption of sweets. They also made positive changes in their appearance, such as abdominal shrinkage, fitness and weight loss, with reduced sweet consumption. They also believed that reducing the consumption of sweets would reduce blood glucose and lipids. It also prevents cardiovascular disease, diabetes and cancers.

"The benefits are high, diseases go away, and then blood sugar is a factor that affects blood lipids, and when we reduce the consumption of sweets, these are also controlled, the belly becomes smaller and fitness is also created (39-year-old mother, a graduate, Housewife with 2 children)"

"The most important thing is weight control and weight control affects everything: sweets consumption causes cancers, cardiovascular, diabetes and it can be controlled 100% by reducing sweet consumption control (48-year-old mother, masters, employee with two children)."

"For example, when I eat smaller sweets, I find good spirits. Most of my soul's spirit is that I'm happy. For example, I've used sweets in the month of Ramazan. I am very pleased with this spirit and I think this aspect of morale is very important (48 years old mother, Master's degree, employee with two children)."

### B. Understand the negative consequences

In addition to the positive outcomes that mothers understood from reducing the consumption of sweets, mothers also believed that negative consequences such as unpleasant feelings after reducing the consumption of sweets such as tiredness, lack of energy to do things, feeling weak and weakened by reducing the consumption of sweets. They also realized the cost of effort and cost of reduced consumption of sweets. The need for a lot of time to reduce the consumption of sweets was another negative consequence that was perceived by mothers. Also, most mothers understood the pleasure of not participating in parties and ceremonies by reducing the consumption of sweets.

"Of course, I say that when I do not eat sweets during the day, I feel that I do not have energy to do my work. My body is weak. I'm tired of it." (46-year-old mother, cyclist, worker, 3 children)"

"At parties and birthday parties I would not enjoy if I do not eat sweet, especially the birthday cake or eating it (18-year-old mother, a housewife with a diploma, one child)"

### 3. Task self efficacy

Task Self-efficacy explains the task of understanding a person's ability to face with obstacles or problems. In this study, mothers' believes were about their ability to reduce the consumption of sweets. This theme includes two categories and several sub categories, which includes:

#### A. Ability to reduce sweet consumption despite stimulant

Most mothers said they were able to reduce sweets, even if they tended to consume them. They also said that, even if others encourage them to eat sweets, they have the ability to not consume sweets. Mothers' experiences with their ability to reduce sweet consumption also showed that most mothers had the ability to reduce sweet consumption, even with stimulants such as cookies at home or participation in parties and celebrations.

"For example, I went to the birthday party of my nephew, I did not eat cookies at all, or I could not go to a place on the eve of the day, and I did not eat sweets at all, or I did not drinks at weddings, despite being eager to drink (a 40-year-old mother, a bachelor, 2 children)"

"For example, at parties I can refuse eating sweets. I can refuse eating jelly and cakes. (Mother, 39 years old, diploma, housewife, 3 children)"

#### B. Ability to reduce the consumption of sweet despite barriers

Mothers stated that they have the ability to reduce the consumption of sweets even though they have problems in their lives, such as disorder in their lives. They also said that they even had the ability to reduce the consumption of sweets, even if they were in contact with friends and colleagues interested in sweets.

"Many times I go to my co-worker's room who likes sweets and they always have candies on the table. I can refuse eating sweets. (Mother, 40, Bachelor, and with 2 children)"

## 4. DISCUSSION

The findings of this study indicated that the intention to reduce the consumption of sweets in mothers based on the Health Action Process Approach (HAPA) approach is influenced by three perceived risk, outcome expectancies, and task self-efficacy. Perceived risk included perceived vulnerability and perceived severity. Perceived vulnerability means that a person feels he or she is at risk of developing a condition or disease, and that the perceived severity is an individual's understanding of the severity of a particular condition or disease (Inauen et al., 2013).

Based on the Health Action Process Approach, perceived risk is one factor that makes a person think about health behaviors, in other words, perceived risk initiates intent on an individual. In the present study, most mothers who felt they were at risk of developing diseases and physical dysfunctions due to high levels of sweets, said they wanted to reduce the use of sweets. In the study conducted by Godinho, those who considered themselves to be at risk of developing diseases were more likely than others to exercise healthy eating habits (Godinho et al., 2013). Therefore, it is advisable to take into account that in developing educational programs for reducing sweet consumption, increased severity and perceiving of diseases and their complications must be taken into consideration. So that people can better understand the complications of sweet consumption and, consequently, intend to reduce the consumption of sweets and adopt healthy eating habits. Outcome expectancies are the consequence of a person's belief in positive and negative messages of a change in behavior (Gorczyński et al., 2010). To create an individual's intent to perform healthy behavior, one must balance the positive outcomes and the negative consequences of the health behavior (Schwarzer et al., 2011). The findings of this study showed that most mothers had a high understanding of the positive effects of reducing the consumption of sweets, and the most positive perceived effects included control of blood lipids, blood glucose and weight control which was in consistent with the findings of research done previously (Pawlak and Colby, 2009 and López-Azpiazu et al., 1999), since there is a relationship between the positive perceived consequences of a behavior and the rate of follow-up of that behavior (Gristwood, 2011). Therefore, teaching positive effects of reducing sweet consumption with different educational methods is recommended to mothers. Mothers also found negative outcomes of sweets consumption with the most negative perceived consequences including tiredness, reduced consumption of sweets, lack of energy for doing things, and pleasure in not participating in parties and ceremonies. By consuming healthy alternatives such as dates, figs, sweet fruits instead of consuming sweets it can be effective in reducing perceived negative effects. In this regard, it is recommended to train people for using dates instead of sugar which might be more effective. Another perceived negative consequence of reducing the sweets consumption was the perceived costs of

reducing the sweets consumption, such as the need for a long time to reduce sweets consumption. By teaching time management skills, mothers will be able to find free time for preparing healthy food.

Task self-efficacy explains one understands of his ability to behave in the face of obstacles or problems (Gorczyński et al., 2010 and Bauman et al., 2002). Self-efficacy is a direct predictor of intent and, consequently, a behavior (Glanz et al., 2008). The importance of the role of perceived task self-efficacy is shown in various studies in all stages of health behavior change, including the changing of nutritional behaviors (Bandura, 1997 and Franko et al., 2008 and Neumark-Sztainer et al., 2003).

In the present study, most mothers were confident in their ability to reduce sweet consumption despite barriers such as the tendency to consume sweets, contact with people interested in sweets and the presence of sweets at home. Mothers who had higher ability to reduce the sweets consumption had a higher intention to reduce the consumption of sweets. Other studies also confirm this finding (Luszczynska et al., 2007).

Given the importance of the role of task self-efficacy in facilitating the onset of healthy eating behavior, health professionals need to provide the necessary training to improve the self-efficacy of mothers in reducing sweet consumption. Bandura sees verbal encouragement as one of the ways to promote self-efficacy (Bandura, 1997). In educational programs, teaching mothers to write motivational sentences and install them in the kitchen can be effective in promoting self-efficacy to reduce the sweets consumption in mothers. One of the strategies to promote perceived self-efficacy is to break down and divide the behavior into small steps (Saffari et al., 2008). Therefore, in educational programs designed to reduce the sweets consumption in mothers, the gradual reduction of sweets can help to improve the self-efficacy. Designing a notebook for daily consumption of sweets for mothers and comparing sweet consumption with previous days can help reduce the consumption of sweets.

The findings of this study indicated that the intention to reduce the sweets consumption in mothers is influenced by various factors. Identifying these factors helps planners to choose appropriate methods and strategies to educate mothers properly for reducing their sweets consumption, because the most immediate effect of an intervention is on identifying behavioral patterns. Also, considering that according to the health process approach, the most important predictors that lead to the formation of intent are the perceived risk, outcome expectancies, and task self-efficacy (Schüz et al., 2009). So, in order to reduce the sweets consumption, these perceptions can be the most important goals of intervention.

## 5. CONCLUSION

The present study is qualitative and the findings provide a profound understanding of the determinants of reducing the sweets consumption from the viewpoint of mothers, which cannot be achieved in quantitative studies. The findings of this qualitative study belong to the studied population and are not available for generalizability. Contrary to these limitations, variation in sampling was one of the advantages of this study, which improved and increased the portability and possibility of generalizability of findings in the same society.

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### Conflicts of Interest:

The authors declare no conflict of interest.

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