



ORIGINAL ARTICLE

Management of Sodium-reduced Meals at Worksite Cafeterias: Perceptions, Practices, Barriers, and Needs among Food Service Personnel

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Abstract

Objectives: The sodium content of meals provided at worksite cafeterias is greater than the sodium content of restaurant meals and home meals. The objective of this study was to assess the relationships between sodium-reduction practices, barriers, and perceptions among food service personnel.

Methods: We implemented a cross-sectional study by collecting data on perceptions, practices, barriers, and needs regarding sodium-reduced meals at 17 worksite cafeterias in South Korea. We implemented Chi-square tests and analysis of variance for statistical analysis. For *post hoc* testing, we used Bonferroni tests; when variances were unequal, we used Dunnett T3 tests.

Results: This study involved 104 individuals employed at the worksite cafeterias, comprised of 35 men and 69 women. Most of the participants had relatively high levels of perception regarding the importance of sodium reduction (very important, 51.0%; moderately important, 27.9%). Sodium reduction practices were higher, but perceived barriers appeared to be lower in participants with high-level perception of sodium-reduced meal provision. The results of the needs assessment revealed that the participants wanted to have more active education programs targeting the general population. The biggest barriers to providing sodium-reduced meals were *use of processed foods* and *limited methods of sodium-reduced cooking* in worksite cafeterias.

Conclusion: To make the provision of sodium-reduced meals at worksite cafeterias more successful and sustainable, we suggest implementing more active education programs targeting the general population, developing sodium-reduced cooking methods, and developing sodium-reduced processed foods.

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1. Introduction

More than 25% of Koreans (13.9 million) use institutional food services everyday [1]. The worksite food service has the second highest number of customers (3.43 million) among users of institutional food services. When comparing the sodium content by meal type, the mean amount of sodium for a meal was greatest (2,236 mg) at the worksite cafeterias, followed by 1,959 mg from restaurant meals and 1,342 mg from home meals [2]. The sodium content of meals at the worksite itself is already over the tolerable upper intake level (2,000 mg/d). Excessive sodium consumption is associated with a significantly higher incidence of cardiovascular diseases and stroke [3,4]. Taking into consideration that a large portion of the Korean population and the large amount of sodium provided at worksite cafeterias, a sodium reduction intervention program is urgently needed to improve the nutritional status of workers in South Korea.

The Ministry of Food and Drug Safety has conducted a pilot project to increase the opportunities of employees for sodium-reduced meals at worksite cafeterias in 2014 [5]. A total of 18 worksite cafeterias participated in this sodium-reduction pilot project. Worksite cafeterias were required to gradually reduce the sodium content of meals from May to September 2014. They aimed to provide a lunch with $\leq 1,300$ mg of sodium by the end of September. The mean sodium content was 1,542 mg for a lunch at the start of this project, which was reduced to 1,261 mg at the end of September. To expand the number of worksite cafeterias providing sodium-reduced meals at the national level, it is critical to identify sodium reduction-related perceptions, practices, barriers, and needs of food service personnel at worksite cafeterias.

A number of studies regarding the sodium reduction of institutional food services have been conducted in South Korea. We found that most of these studies were implemented in schools, child-care centers, and hospitals [6–8]. Although a few studies were implemented at worksite cafeterias, they only targeted consumers or showed the sodium content of meals consumed by workers [9,10]. Therefore, very limited research has been conducted on how food service personnel's factors are related to sodium reduction at worksite cafeterias. We aimed to identify the relationships between sodium-reduction related practices, perceived barriers, and the perception of food service personnel. We also assessed the need for the provision of sodium-reduced meals at worksite cafeterias.

2. Materials and methods

2.1. Participants and procedure

We conducted a cross-sectional study to examine the perceptions, practices, barriers, and needs regarding the provision of sodium-reduced meals among food service personnel at 17 worksite cafeterias. We collected data

from 3–10 food service personnel at each worksite cafeteria in November, 2014. Before implementation of this survey, we received approval from the institutional review board at Hanyang University (IRB-HYI-14-083-1).

We initially collected data from 120 individuals; however, after eliminating those with missing data for the variables of interest, our data set finally included 104 participants.

2.2. General characteristics of participants

The self-reported questionnaire contained demographic characteristics such as age, sex, and education level. We also collected job-related information including job title, years of career, and number of customers at the worksite cafeterias.

2.3. Perceptions related to sodium reduction

We measured the degree of agreement to identify perceptions related to sodium-reduction among food service personnel. Each respondent was required to check the degree of agreement from strongly disagree to strongly agree regarding the following statement: *It is important to provide sodium-reduced meals at worksite cafeterias* [11].

2.4. Sodium-reduction practices

We assessed sodium-reduction practices related to the institutional food service. Sodium-reduction practices consisted of three parts: (1) cooking; (2) measuring the salinity; and (3) serving the menu. Regarding the cooking, we asked the participants about the use of measuring cups or spoons when adding seasonings and use of low sodium ingredients or alternative seasonings. Regarding the measurement of salinity, we examined the sodium content of soup, *kimchi*, and sauce. Regarding the serving, we examined the following two items: (1) serving appropriate portion size of meal; and (2) informing customers about the sodium content of meals. Participants identified the frequency of their sodium-reduction practices at the worksite cafeterias based on three categories: (1) ≤ 1 time/2 wk; (2) 1–4 times/wk; and (3) 5 times/wk.

2.5. Education for sodium reduction

The assessment of education regarding sodium reduction practices among food service personnel employed three items: (1) educating personnel on the significance of sodium reduction; (2) educating personnel on cooking methods or the use of alternative seasonings; and (3) educating personnel on methods of assessing the sodium content. Each question was measured by indicating one of two categories: (1) ≤ 5 times/y; and (2) ≥ 6 times/y.

2.6. Perceived barriers to providing sodium-reduced meals

We measured the perceived barriers regarding sodium reduction using seven items: (1) low perception of food service personnel; (2) low perception of customers; (3) limited number of sodium-reduced menu items; (4)

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