



Contents lists available at [ScienceDirect](http://www.sciencedirect.com)

Journal of Ethnic Foods

journal homepage: <http://journalofethnicfoods.net>

Original Article

The associations between dietary practices and dietary quality, biological health indicators, perceived stress, religiosity, culture, and gender in multicultural Singapore

Rachel Yi-Xin Ng^a, Yi-Sheng Wong^a, Joshua-Yi Yeo^b, Crystal Ling-Zhen Koh^c,
Cynthia Wilson^c, Samuel Ken-En Gan^{a, b, d, *}

^a Dept of Psychology, James Cook University, Singapore

^b Antibody & Product Development Lab, Bioinformatics Institute, Agency for Science, Technology, and Research (A*STAR), Singapore

^c Dept of Mathematics, Nanyang Technological University, Singapore

^d P53 Laboratory, Agency for Science, Technology, and Research (A*STAR), Singapore

ARTICLE INFO

Article history:

Received 24 April 2018

Received in revised form

24 July 2018

Accepted 25 July 2018

Available online xxx

Keywords:

Culture

Dietary practices

Dietary quality

Food habits

Religion

Stress

ABSTRACT

Background: Dietary quality, biological health, culture, religiosity, and perceived stress are co-related. However, there is a dearth of research conducted on Asian populations in secularized and harmonious multicultural societies.

Methods: This study addresses these gaps by conducting an investigation in the multicultural and multireligious Singapore to examine the parameters of culture and gender and the associations with (1) dietary quality, (2) biological health indicators, (3) religiosity, and (4) perceived stress. One hundred fifty participants (18–60 years old) were recruited, and their blood pressure (BP), body mass index (BMI), and body fat percentage (BF%) were also measured along with a 5-part questionnaire on demographics, dietary practice, food frequency, religiosity, and perceived stress.

Results and conclusion: Results showed that cultural differences are associated with certain dietary practices, where the three ethnic groups of Chinese, Malays, and Indians significantly differed in their choices of meal locations such as Western fast food restaurants ($H = 12.369, p = .002061^*$). Our analysis revealed that perceived stress significantly correlated with fat intake ($r_s = .169, N = 150, p = .03865$) and sugar intake ($r_s = .172, N = 150, p = .03575$). On the other hand, biological parameters such as diastolic BP ($r_s = -.0473, N = 150, p = .565$), systolic BP ($r_s = -.00972, N = 150, p = .906$), BMI ($r_s = -.0403, N = 150, p = .6246$), and BF% ($r_s = -.110, N = 150, p = .1811$) did not have significant correlations with perceived stress. Similarly, religiosity did not significantly correlate with perceived stress ($r_s = -.025, N = 150, p = .7616$). In conclusion, our findings provide insights into the changing intersection of food practices mitigated by ethnicity, religiosity, stress, and gender in the harmonious multiracial and multicultural Singapore.

© 2018 Korea Food Research Institute. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

1. Introduction

A plethora of factors influence the selection of food options. For instance, the accessibility of food, cultural/societal norms, human biology/cognition, and economic elements all play into the complex mechanism of food selection. Among them, cultural norms have a very significant influence [1]. Besides cultural influences, psychological factors (particularly, perceived stress [2,3]) are reported to

play a role in diet and are also linked to biological health [4,5]. Within biology, gender can also influence food choices and preference patterns [6], particularly in comfort food preferences [7]. Men were found to prefer meal-related comfort foods while women preferred snack-related comfort foods [7]. There was also different prevalence of psychiatric disorders in gender [8], possibly contributed by different stress-coping styles [9], where women generally experienced more stress than men and having more emotion-focused coping styles [9]. Furthermore, gender differences contributed to health beliefs and dieting, with more women avoiding high-fat foods and consuming more fruits and fiber while limiting salt intake better than men [10].

Above the level of gender, culture plays an overarching role in impacting dietary practices [11] and patterns—i.e., the number of

* Corresponding author. Bioinformatics Institute, A*STAR, 30 Biopolis Street, #07-01, Matrix, 138671 Singapore.

E-mail addresses: samuelg@bii.a-star.edu.sg, Samuel.gan@jcu.edu.au (S. Ken-En Gan).

<https://doi.org/10.1016/j.jef.2018.07.003>

2352-6181/© 2018 Korea Food Research Institute. Published by Elsevier B.V. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

Please cite this article in press as: Ng RY-X, et al., The associations between dietary practices and dietary quality, biological health indicators, perceived stress, religiosity, culture, and gender in multicultural Singapore, Journal of Ethnic Foods (2018), <https://doi.org/10.1016/j.jef.2018.07.003>

meals, snacking behaviors, individual food or nutrient consumption [12], regular meal locations, food product selections, consumption of specific food types, and to an extent, health-conscious behaviors [13]. The consumption of food types is often upheld consistently over certain events and festive periods [14], and food customs have been observed to prevail even when apart from the place of origin, where for example, Southeast Asian refugee families in the United States continue to maintain their cultural diet of native foods [15]. Similarly, obesity was more prevalent in ethnic minorities in the United States due to the local food portions and the tendency to feast [16].

Culture norms also intertwined with religion to determine the acceptability of food types (e.g., vegetarianism, Kosher, Halal, etc.), as well as offer protective effects from migrant stress in the example where Latin American immigrants exhibited an inverse correlation between religiosity and perceived stress in both genders [17]. Such inverse correlation was also found for religiosity and work-related stress and burnout [18]. However, there are also reports of negative religious coping which was positively correlated with increased levels of perceived stress in domestic students [19]. From these, the multidimensional construct of religiosity (i.e., religious beliefs, attitudes, and behavior) may relate differently to perceived stress [20,21] and indirectly influence food habits on top of obvious food-type restrictions. Given that religion is often tied to culture and ethnicity, there is an interesting intersection between these parameters with dietary practices.

Although there has been extensive research on the interactions among the variables of gender, culture, diet, perceived stress, health, and religiosity, limitations exist in that they are usually conducted against a backdrop of relatively homogenous populations. In fact, the majority of such studies on religiosity and perceived stress involved mainly Western participants [22–25], lacking the exploration of the various religious dimensions and stress. Even in multicultural places like Singapore, the last National Nutrition Survey (NNS) in Singapore was conducted in 2010 [13] without in-depth consideration of religion. Thus, this study aims to investigate the interactions of culture, stress, religiosity, health, and diet in greater detail, utilizing the diverse yet harmonious multicultural, multiethnicity, and multireligion backdrop of Singapore.

This study thus aims to study the following hypotheses:

There would be significant differences in dietary practices as captured in the Dietary Practice Questionnaire (DPQ) between the three major ethnic groups in Singapore (i.e., Chinese, Malay, and Indian).

Dietary quality, as measured by total fat and sugar intake in the past month would be positively correlated with perceived stress levels.

Biological well-being parameters, such as blood pressure (BP), body fat, and body mass index (BMI), would be positively correlated with perceived stress.

Religiosity would be negatively correlated with perceived stress.

The three dimensions of the Religiosity scale (RS; i.e., religious activity, religious devotion, and religious belief) would correlate differently with their level of perceived stress.

There would be gender differences, even when accounting for demographics and stress on food habits and behavior.

There would be significant differences in perceived stress levels among ethnic and gender groups respectively.

There would be significant differences in RS among ethnic and gender groups respectively.

2. Materials and methods

The DPQ was adapted from the Singapore Health Promotion Board 2010 NNS [13]. It collects information on individual dietary

practices and consists of 25 multiple choice questions on “usual eating places,” choices of food products, consumption of selected foods, and several food-related health-conscious behaviors.

Food frequency questionnaire (FFQ) adapted from the NNS 2010, assesses the consumption of various food items in the past month, for the estimation of energy, major nutrients, and selected food group intake. The FFQ includes a total of 182 food items tailored to the typical Singaporean food variety. It gathers information on the dietary quality (i.e., total fat and sugar intake in the past one month) and calculates energy value of the food based on the “Energy and Nutrient Composition of Foods” system created by the Health Promotion Board of Singapore [26].

The RS by Reisig et al [27], consists of 10 survey items that reflect the three important domains of religiosity: activity, devotion, and belief. The religious activity component is a two-item scale: “How often do you pray?” and “How often do you attend religious services?” with a response scale ranging from 1 (*never*) to 4 (*frequently*). The devotion dimension captures intrinsic motivation through questions such as: “My religious beliefs lie behind my whole approach to life” and “I try hard to carry religion over to all my other dealings in life” with response scales ranging from 1 (*strongly disagree*) to 4 (*strongly agree*). The belief dimension is a single-item of “Do you believe in a life after death?” (1 = yes, 0 = no). The RS has an overall high internal consistency (Cronbach $\alpha = .943$). High scores reflect high levels of the reported religiosity.

The perceived stress questionnaire (PSQ) by Levenstein et al [28] is a questionnaire in which participants respond to 30 statements based on their experiences in the past month. The response scale ranges from 1 (*almost never*) to 4 (*usually*). Eight statements are reverse-scored to ensure accuracy of response. A PSQ index was derived from the raw scores, varying from 0 (lowest possible level of stress) to 1 (highest possible level of stress).

3. Procedure

Upon ethics approval (H5431) by the James Cook University Human Research Ethics Committee, the participants were recruited, and informed consent was obtained; 150 volunteers (60 males, 90 females) with the ethnic makeup of 106 Chinese (70.7%), 16 Malay (10.7%), and 28 Indian (18.6%) participants aged between 18 and 60 years [mean (M) = 28.35, standard deviation (SD) = 12.00] were recruited by convenience sampling from Singapore tertiary institutions with no incentives. This ethnic distribution was reflective of the Singaporean ethnic group makeup of Chinese 74.2%, Malays 13.3%, and Indians 9.2% [29]. Recruitment excluded participants with pacemakers [due to electrical impedance measurement for body fat percentage (BF%) measurement present on the device] and those with a history of having existing eating disorders. The participants were provided with an information sheet and consent forms of the study, stating that they could withdraw without prejudice from the study at any time. They were then asked to complete the demographics form while seated for the 10 minutes to allow the BPs to enter resting states. Three consecutive BP readings were taken (using the automated BP machine on the left arm) at 2-minute intervals (adapted from a study by Gan et al [30]). To improve the accuracy, the average of all three BP readings was utilized although additional BP measurements were not taken when the readings differed by more than 5 mmHg. BF% was measured using bioelectrical impedance analysis [31], factoring the age, sex, and height of the participants with the fat analyzer weighing machine. Participants were advised to remove accessories and step barefooted onto the designated areas on the machine. A small electrical signal was sent through the body via signaling electrodes linked to the footpad. The displayed BF% and

Download English Version:

<https://daneshyari.com/en/article/10211431>

Download Persian Version:

<https://daneshyari.com/article/10211431>

[Daneshyari.com](https://daneshyari.com)