



Are Snack-Loving Doctoral Students Happier?

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Abstract

2019 Global doctoral student (Ph.D.) survey shows a high risk of depression faced by Ph.D. cohort - 36% of PhD students reported seeking help for depression or anxiety, and this percentage was 12% in 2017. Does a Ph.D. require a willingness to give up entertainment, read dry and boring literature, spend years and years in labs and offices, and work hard regardless of time or pay? Some Ph.D. students choose to relieve stress and continue their motivation by eating snacks. This study examined the snack intake behavior of doctoral students and found that snacks have a role in regulating stress. Snacking brings three effects: firstly, it is additional nutritional support, a supplement to or partial replacement of regular meals; secondly, it enhances peer relationships, and peers have a positive role in helping Ph.D. students to reduce academic stress, social isolation, or frustration; finally, it is a quick way to regulate low moods and maintain study motivation, for Carbohydrate-rich foods help the brain to produce the serotonin that makes people happy. Despite potential effects such as obesity, snacking shows more positive effects on Ph.D. students.

Introduction

Doctoral education is an important part of the talent training system in universities, for doctoral students (PhDs) undertake many basic tasks and academic publications in universities [1]. High-quality doctoral education is not only about the continuation of the academic community, but also helps to promote the sustainable development of the country's scientific and technological innovation capacity [2]. The identity label given to doctoral students by the public is "elite", "high knowledge", and the expectation for doctoral students are often "excellence" and "great future". However, in recent years, incidents of psychological crisis among doctoral students have been frequently reported in the press[3-4]. Inevitably, the intensification of performance evaluation and academic competition has spawned tremendous academic pressure that is gradually filtering down to the doctoral student population. Thus, the mental health condition of this group needs urgent attention.

Many doctoral students choose to snack when they are under pressure or in a difficult situation. It is undeniable that snacks are an important partner in the "academic process". Snacks are usually foods consumed outside of the three meal times of the day. Among the various ways that doctoral students regulate stress, snacking is less discussed. This study examined the snack intake behavior of

doctoral students and found that snacking had a multifaceted moderating effect on stress among doctoral students.

Materials and methods

The study was conducted for doctoral students in universities, and the questionnaire was filled in centrally, individually and online. The research content mainly includes gender, major studied, snack taste frequency, snack spending, snack help on mood, etc. The questionnaire method was used, and the questionnaire was designed by ourselves after literature review and discussion in the panel, and the formal questionnaire was revised and formed after the pre-survey. Coffee is not included in the snacks.

Participant consent was obtained for this experiment and the statistics were anonymous.

Results and discussion

A total of 280 questionnaires were distributed, and 237 valid questionnaires were collected. Of the valid sample, 131 were male and 106 were female; 63 were first-year PhDs, 85 were second-year PhDs, and 59 were third-year PhDs and above. The frequency and emotional change was shown in Table 1. The alternatives and constraints of snacking were shown in Table 2. The social aspect of snacking was shown in Table 3.

Some studies have found that female students are depressed at a much higher rate than male students[5], it may be that men are less likely to

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Table 1. General conditions and snack intake of survey respondents.

	Gender		Frequency			Emotional change		
	Male	Female	Daily	Weekly	Monthly	Stress relief	No impact	Emotional deterioration
Number	131	106	57	134	46	169	32	37
Percentage (%)	55.3	44.7	24.1	56.5	19.4	71.3	13.1	15.6

Table 2. Alternatives and constraints of snacking.

	Alternative breakfast frequency			Reasons for less snacking (Multiple Options)			
	Daily	Weekly	Monthly	Obesity	Dental caries	Economic	Quality
Number	38	32	167	160	87	58	44
Percentage (%)	16	13.5	70.5	67.5	36.7	24.5	18.6

Table 3. The social aspect of snacking.

	Promoting communication			Helps of peer' communication			
	Agree	Opposition	Abstention	Significantly	Generally	Poorly	Reversely
Number	151	46	40	57	106	35	39
Percentage (%)	63.7	19.4	16.9	24.1	44.7	14.8	16.4

seek out help for mental health issues than women [6]. In this study, it was found that similar to female PhDs, male PhDs also had a high rate of snacking. Thus, snacking is not gendered.

Individuals will try to reduce the discrepancy through efforts when they perceive the inconsistency between the current situation and the goal. However, when the problem exceeds the individual's ability, the discrepancy will gradually increase, leading to a greater degree of anxiety. Facing and accepting one's emotions feelings, instead, can help individuals have a more positive experience. Self-acceptance means one can compare one's qualities with those of others and adopt the opinions of others to enrich understanding and revise the self-evaluation [7].

Snacks provide nutritional supplements and replace regular meals to some extent. The carbohydrates in food contain effective carbohydrates that the body can absorb and use, such as monosaccharides, disaccharides, and polysaccharides. 16.9% of PhDs would replace breakfast with a snack, which provides an alternative to breakfast. They may give up breakfast if they don't have snacks. Eating breakfast usually makes PhDs feel better. The earliest known evidence of mammalian dental caries is provided by oral fossils of a prehistoric primate species called *Microsyops latidens*, which date back to 54 million years ago, and this caries may have been caused by high-sugar foods [8].

During the long process of doctoral studies, doctoral students will have negative feelings such as loneliness, helplessness, struggle, and self-doubt, so perseverance is very important to succeed in obtaining a doctoral degree[9]. At this time, eating snacks can quickly regulate the mood of PhDs. The need for sweets after a stressful experience represents a response to various psychological mechanisms, either the stimulation of endorphins or the conditioning that occurs in childhood when your parents comfort you with sweets. Therefore, when people feel stressed, they want to eat sweets. Carbohydrate-rich foods help the brain to produce the serotonin that makes people happy. The rustle of the package and the pleasant sensation of chocolate

melting on the tongue will stimulate positive emotions and provide comfort.

Snacks have an important social role and can quickly bring PhDs closer to each other. These assertions are further supported by Table 3, 63.7% said snacks helped them make friends and develop relationships more easily, and only 19.4% held an opposing view. Emotional hindrances and interpersonal conflicts have a direct impact on the quality of doctoral training [10]. Snacks are a start; students can eat snacks to exchange life anecdotes, academic information. It is confirmed that peer mentoring not only serves part of the function of mentoring, but also provides more targeted advice [11]. In addition, peers have a positive role in helping Ph.D. students to reduce academic stress, social isolation or frustration [12]. More than 68% felt that interaction with peers was positive (Table 3). PhDs can learn about the solutions used by their peers when facing difficulties in their research projects, which gives them the courage to face up to difficulties and the confidence to solve problems. The key phrase "I heard it through the grapevine" was used to reveal the transmission of various types of important information in peer groups [13].

Snacks can help Ph.D. students balance their studies with their lives and avoid excessive mental stress. Snacks also help to enhance the relationship of classmates, and of course, the understanding, tolerance and companionship of people around are the sources of strength to help Ph.D. students get out of difficult situation. Snacks serve a variety of purposes, both as a useful supplement to the diet and as a potential source of imbalance in nutrient intake. Eating too much sweet food increases the risk of obesity, diabetes and heart disease. Complete reliance on snacks to regulate emotions is not appropriate, a reasonable diet is necessary. A little snack and a bit of exercise seem like a good way to regulate the bad mood, and smaller and more frequent meals are also a good way to go.

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Competing interest statement

The authors declare no conflict of interest.

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