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The Association between Nutrition-Focused Instagram Accounts and Nutrition Knowledge and Food Choices in Instagram Users

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ABSTRACT:

Background: Instagram is a fairly unregulated social media platform that is reported as having over 250 million daily users. As this social network is frequently used to seek out health-related information, misleading nutrition information could potentially have a detrimental effect on the public's health. Thus, it may be beneficial for nutrition and dietetic practitioners to be present on Instagram to offer credible nutrition information to the many Instagram users.

Objective: To examine the effects that nutrition-focused Instagram accounts have on nutrition knowledge and food choices of Instagram users.

Design: A cross-sectional random sample of Instagram users completed an online anonymous survey designed by graduate students and administered via Qualtrics survey software.

Participants: Individuals aged 18 years and above met the inclusion criteria of having an Instagram account and following at least one nutrition-focused Instagram account.

Main outcomes: Assessed that nutrition-focused Instagram accounts are associated with influencing Instagram users in their nutrition knowledge and food choices.

Statistics: A correlation analysis and a Chi-square goodness of fit tests were used to determine the associations between study variables. Data was analyzed using SPSS 25.0, IBM Corp.

Results: One hundred and twenty Instagram users completed the survey. There were significant associations between the trust Instagram users have in nutrition-focused Instagram accounts and influence on their food choices and nutrition knowledge ($p < 0.000$, $p < 0.000$). There was a significant association between frequency of exposure, at least once a day Instagram visits, and food choice ($p < 0.002$) and increase in nutrition knowledge ($p = 0.035$).

Conclusion: Instagram users are interested in learning about a healthy lifestyle, therefore, it is important to educate the public on how nutrition can help people live healthy lives. For this

reason, an increased Registered Dietitian presence on Instagram can potentially benefit the public's health.

INTRODUCTION:

Although it's a bit difficult to remember a time before it all, it wasn't until the late 1990s that Social Network Sites (SNSs) came into existence¹. Since then, SNSs have given numerous people the opportunity to easily connect and share information. *Statista*, online portal for statistics that makes data collected by market and opinion research institutes and data derived from the economic sector, estimated the number of worldwide social media users in 2019 to be 2.77 billion, with the United States being one of the top three countries with the greatest number of social media users^{2,3}. Many of these users are young adults who are at a stage in their lives in which they are constructing their identities and, in this modern world, social media plays a role in shaping it⁴. In 2016, Villanti et al. found that 97.5% of young adults reported regular use of at least one social media site, with Instagram being one of the top five sites being used⁴.

Instagram has given people the opportunity to search and find information relating to a vast number of topics, including nutrition-related topics. Amongst credible health-related information, however, there is misleading advice that has the potential to hurt the public's health. It is no surprise that the Academy of Nutrition and Dietetics encourages nutrition and dietetic practitioners to utilize social media networks, such as Instagram, as tools to communicate nutrition and dietetic information to the public⁵. Practically anyone can post about nutrition-related information on social media networks, so it could be beneficial, and frankly necessary, for nutrition and dietetic practitioners to be present on such networks to offer credible nutrition information to the many Instagram users.

First launched in October 2010, Instagram has become a popular, free social networking site that allows people (13 years and older) to share photos and videos with their followers and gives them the opportunity to view, comment, and like posts shared by others. In 2017 Instagram

reported having over 250 million daily users, with those under the age of 25 spending, on average, more than 32 minutes a day on it and those 25 and older spending, on average, more than 24 minutes a day⁶. In addition to scrolling through photos and videos being posted by others, Instagram users are being exposed to health-related information.

In 2018, Muralidhara and Paul identified acute illness, alternative medicine, chronic illness and pain, diet, exercise, health care and medicine, mental health, musculoskeletal health and dermatology, sleep, and substance use to be categories of health related topics represented on Instagram. With 8.6% and 7.6% of posts, respectively, Muralidhara and Paul identified diet and exercise as the most prevalent topics⁷. Several studies suggest that social media has the potential to change behavior and, as it can conceivably facilitate communication with healthcare professionals, could improve public health outcomes^{5,8-12}. Not to mention, there is also potential to bring awareness and invite the public to be involved in nutrition policy and public health campaigns.

With the exposure that Instagram garners and the trust of the followers, it's not a far leap to say that there is a need for dietitians to use the social media platform to their advantage to spread nutrition education and healthy lifestyle choices to Instagram followers across the world. This study has supplied vital information to support the idea that credible nutrition information from dietitians can prove to have an impact on the Instagram network. Instagram promises a very large platform, and the more dietitians use the social networking site, the more the media is saturated with helpful and useful information accessible to a large part of the population. The purpose of this graduate student research study is to determine the effects that nutrition-focused Instagram accounts have on nutrition knowledge and food choices in Instagram users.

SUBJECTS:

The subjects of this study included Instagram users. The inclusion criteria were that each individual must be 18 years and older, must have an Instagram account, and must follow at least one nutrition-focused Instagram account. Subjects were recruited through emails, approved social media sites, and word of mouth. All methods and procedures were approved by the Institutional Review Board of Loma Linda University prior to the start of the study. The purpose and basic design of the study and their role in the study were described to participants in an information sheet. By clicking on the link to the anonymous online survey, subjects provided consent to participate in the study.

METHODS:

A cross-sectional random sample of adults aged 18 years or older completed an anonymous online survey regarding their use of Instagram and the effects associated with following nutrition-focused Instagram accounts. The survey was designed by graduate students and administered via Qualtrics survey software (see supplementary materials) and took approximately ten minutes to complete.

Example of survey questions:

How do you feel the nutrition-focused Instagram accounts have influenced the foods you choose to eat?

- Positively
- Somewhat positively
- Negatively
- Somewhat negatively
- Not at all

PROCEDURES:

Recruitment was multipronged. Potential participants came across a social media post, received an email, and/or heard by word of mouth about the opportunity to participate in our anonymous online survey. If by word of mouth, subjects were shown a flyer pertaining to the study and then accessed the survey by scanning a QR code on the flyer. By clicking on the survey's link, the subject indicated his or her consent. The survey consisted of 20 multiple choice questions that took no more than 10 minutes to complete.

RESULTS:

One-hundred and twenty participants completed the survey, although two omitted answering demographic questions. Table 1 presents the demographic information of the participants. Most participants were female (80.7%), between 18 and 29 years of age (57.1%), possessed a bachelor's degree (50.4%) and had no previous nutrition-related education (57.1%). As Figure 1 illustrates, the main reasons participants follow nutrition-focused Instagram accounts were determined to be for a *healthy lifestyle* (45.8%) and *weight loss* (44.2%). Such reasons were followed by *improve health after a diagnosis or illness* (7.5%) and *food/recipe inspiration* (2.7%).

Table 1. Frequency and Percentage of Selected Demographics (N=120)

Variable	N (%)
AGE (years)	18-29 68 (57.1)
	30 years and older 51 (42.9)
NUTRITON EDUCATION	None 45 (37.8)
	Taken one or some nutrition course(s) 40 (33.6)
	Completed or currently completing a nutrition-related degree 34 (28.6)
GENDER	Female 96 (80.7)
	Male 21 (17.6)

	Other	2 (1.7)
EDUCATION	Bachelor's degree	60 (50.4)
	Post-graduate degree	29 (24.4)
	Trade/technical/vocational training/Associate degree	22 (18.5)
	Some high school or high school diploma or equivalent	8 (6.7)
ETHNICITY	Hispanic or Latino	46 (39.0)
	White	44 (37.3)
	Asian/Pacific Islander	20 (16.9)
	Other	8 (6.8)

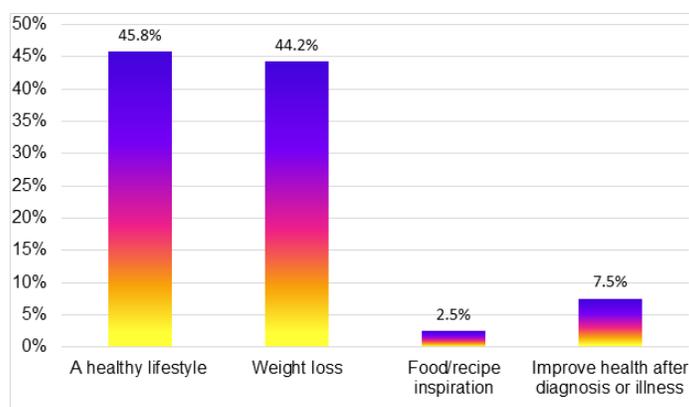


Figure 1. Response frequency regarding the reasons participants follow nutrition-focused Instagram accounts.

Participants were also asked to identify the administrator(s) that run the nutrition-focused Instagram account(s) they follow. As illustrated in Figure 2, at 45.8%, nearly half of the participants reported they did not know who manages the nutrition-focused Instagram accounts they follow. From the remaining participants, 38.3% reported an influencer managed the account(s) they follow and 5.8% revealed a health professional was the administrator of the account(s) they follow. Additionally, 10% of participants selected *other*, but were not asked to identify the administrator(s).

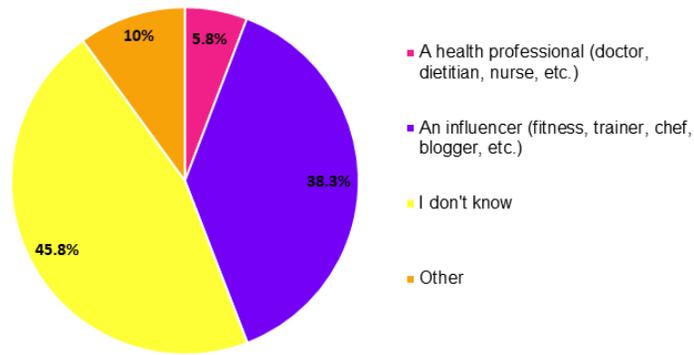
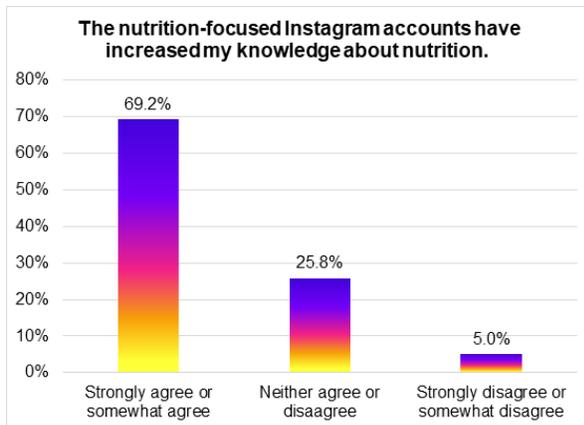
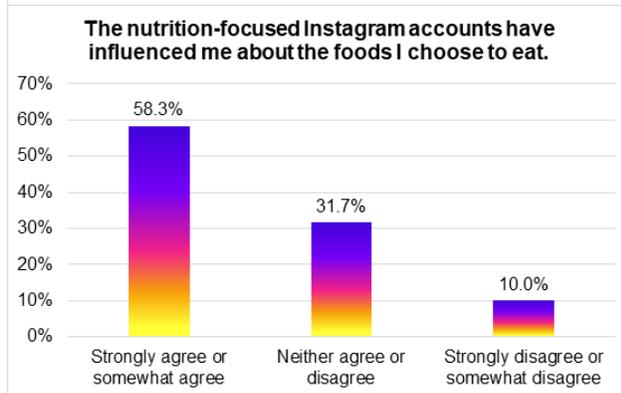


Figure 2. Response frequency of who are the administrators of nutrition-focused Instagram accounts.

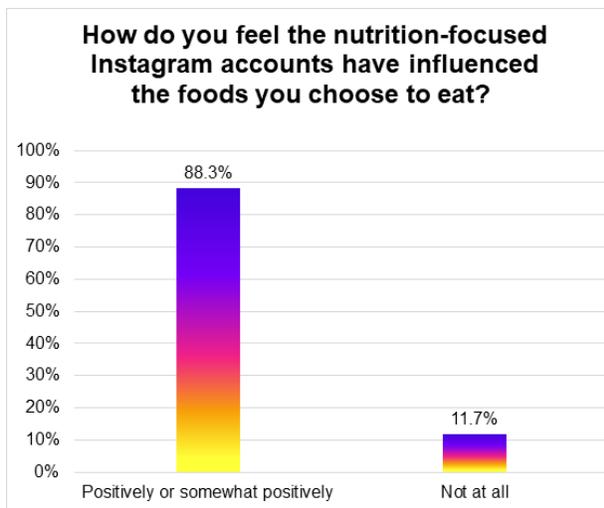
As part of four different questions, participants were asked to identify if the nutrition-focused Instagram account(s) they follow impacted their nutrition knowledge, food choices, and trust and whether the account(s) had a positive influence on their food choices (Figure 3 A-D). With respect to the impact nutrition-focused Instagram accounts have on participants, 69.2% of participants *strongly agree or somewhat agree* the accounts increased their knowledge about nutrition (Figure 3A). At 58.3%, more than half of participants *strongly agree or somewhat agree* the accounts have influenced them about the foods they choose to eat, with 88.3% declaring such influence is *positively or somewhat positively* (Figure 3B and 3C, respectively). Regarding trust, 80% of participants confidently feel most of the information that is posted by nutrition-focused Instagram accounts is true (Figure 3D).



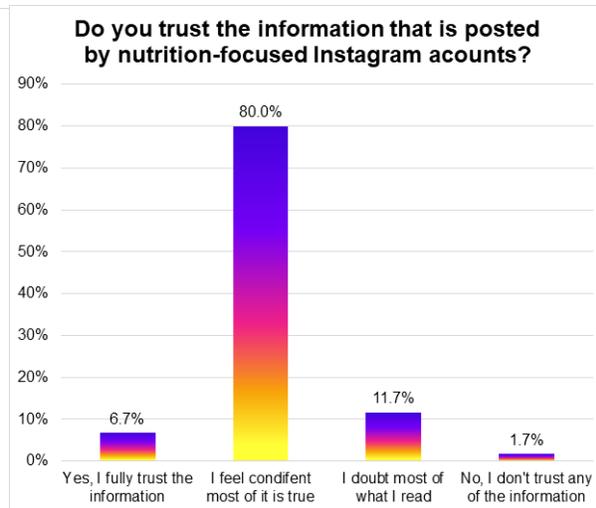
3A



3B.



3C.



3D.

Figure 3 (A-D): Frequency response of nutrition knowledge (A), food choices (B), positive influence (C), and trust (D).

As Table 2 presents, significant associations between trust, food choice, nutrition knowledge, and exposure to nutrition-focused Instagram were determined. Trust was significantly associated with food choice, influence on food choice, and nutrition knowledge ($p < 0.000$). Additionally, daily exposure to nutrition-focused Instagram accounts was significantly associated with food choice ($p < 0.002$) and nutrition knowledge ($p = 0.035$).

Table 2. Frequency and significance between trust, food choice, knowledge and exposure

QUESTION	% agree	p value
Do you trust the nutrition information that is posted by these accounts	80.0	<0.000
The nutrition focused Instagram accounts have influence me about the food I choose to eat	58.3	
Do you trust the nutrition information that is posted by these accounts	80.0	<0.000
How do you feel the nutrition-focused Instagram accounts have influenced the food you choose to eat (positively or somewhat positively)	88.3	
Do you trust the nutrition information that is posted by these accounts	80.0	<0.000
The nutrition-focused Instagram accounts have increased my knowledge about nutrition (strongly agree or somewhat agree)	69.2	
How often do you visit the nutrition-focused Instagram accounts daily (once a day)	77.5	<0.01
The nutrition-focused Instagram accounts have influence me about the food I choose to eat	58.3	
How often do you visit the nutrition-focused Instagram accounts daily (once a day)	77.5	0.035
The nutrition-focused Instagram accounts have increased my knowledge about nutrition (strongly agree or somewhat agree)	69.2	

DISCUSSION:

With the emergence of Social Network Sites (SNSs) in recent years, researchers have become interested on the impact they may have on the health of individuals. This study aimed to determine the effects nutrition-focused Instagram accounts have on nutrition knowledge and food choices in Instagram users. To the best of our knowledge, this is the first study to evaluate the effects such Instagram accounts have on nutrition knowledge and food choices in Instagram users. With the use of an online questionnaire, we were able to determine that the users' trust in the nutrition-focused Instagram accounts were associated with food choice, type of influence on food choice, and nutrition knowledge; and between user frequency and food choice and nutrition knowledge.

As social network sites (SNSs), like Instagram, continue to emerge and evolve on the internet, the opportunity for dietetic professionals to educate the public about nutrition increases. Such opportunity has previously been recognized and promoted by the Academy of Nutrition

and Dietetics due to social media's potential to impact the health of individuals⁵. As anyone can create an Instagram account centered on nutrition-related content, it is imperative that dietetic professionals join the Instagram network and share credible nutrition-related information.

With diet playing a vital role in the health of individuals, it comes as no surprise that *a healthy lifestyle* and *weight loss* were the main reasons why participants in our study follow nutrition-focused Instagram accounts. These results possibly indicate that Instagram users utilize Instagram as a resource to learn about measures that may improve one's health and prevent disease. Muralidhara and Paul previously reported diet to be one of several prevalent health-related topics on Instagram⁷. Because Instagram users may be turning to the Instagram network for health-related information, it is imperative for Registered Dietitians (RDs), as food and nutrition experts, to be present on SNSs and share credible nutrition information with their followers.

Additionally, our study determined most participants believe nutrition-focused Instagram accounts increase their nutrition-related knowledge and positively or somewhat positively influences their food choices. Because repeated exposure to information may influence one's mind, such influence-based results were expected. Furthermore, seeing that most participants trust most of the information on nutrition-focused Instagram accounts, the positive effects of these results are reasonable. Previous studies, such as those by Laranjo et al. and Maher et al., have suggested social media has the potential to change behavior and improve health outcomes^{9,10}. That idea is exemplified in our study, and possibly explains how much impact Instagram has on its users when it comes to nutrition knowledge and choosing foods to eat. Such effects could potentially result in health improvements that lead to improved community health.

Limitations that were identified in this study included participation for the survey and follow-up interviews. It was increasingly difficult to recruit participation after exhausting email and social media platforms. There was also confusion for Instagram users on the definition of nutrition-focused Instagram accounts, and whether they followed those accounts. In terms of the follow-up interview, at the end of the survey participants were invited to participate in a follow-up interview to gather qualitative data for the study. However, there were no individuals who were interested in participating in the follow-up interview. The major strength of our study is that it is the only study to assess the impact of social media on nutrition and diet related trends. There is opportunity for future studies to build off our study and consider the specific nutrition trends that users seek out on Instagram and other social medias.

CONCLUSION:

In conclusion, we believe our study shows there are potentially significant benefits to an increased Registered Dietitian presence on Instagram, and possibly even other social networks. These results may also increase awareness among Instagram users of their frequency and trust attached to nutrition-focused Instagram accounts, and encourage them to seek out credible nutrition-related accounts. It is important to note public awareness of a dietitian's role is crucial. Instagram users put a lot of faith into the network and the information that is posted there. And it seems, Instagram users are interested in learning about health and nutrition, therefore it is essential to provide education to the public on these topics and utilize the network that they frequent. As experts in nutrition, dietitians would be able to saturate the Instagram feeds with the hottest nutrition topics and most credible information.

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APPENDIX:

The Nutrition-Focused Instagram Research

Start of Block: Default Question Block

Q1 How many nutrition-focused Instagram accounts do you follow?

- 1 (1)
- 2-5 (2)
- 6-10 (3)
- 11 or more (4)

Q2 Most of the Instagram nutrition-focused accounts I follow are run by:

- Health professional (doctor, dietitian, nurse, etc.) (1)
- Influencer (fitness trainer, chef, blogger, etc.) (2)

I don't know (3)

Other: (4) _____

Q3 What is the main reason you follow the nutrition-focused Instagram account(s)?

A healthy lifestyle (1)

Weight loss (2)

Food/recipe inspiration (3)

Improve health after diagnosis or illness (4)

Q4 How often do you visit the nutrition-focused Instagram accounts daily?

Once a day (1)

2-5 times a day (2)

6-10 times a day (3)

11 or more times a day (4)

Q5 How often do you visit the nutrition-focused Instagram accounts weekly?

One day a week (1)

2-3 days a week (2)

4-5 days a week (3)

6-7 days a week (4)

Q6 Do you trust the nutrition information that is posted by these accounts?

Yes, I fully trust the information (1)

I feel confident most of it is true (2)

I doubt most of what I read (3)

No, I don't trust any of the information (4)

Q7 In relation to the nutrition accounts you follow, which type of posts do you prefer?

Photo posts on profile (1)

Video posts on profile (2)

Instagram story posts (3)

Instagram live posts (4)

End of Block: Default Question Block

Start of Block: Nutrition Knowledge

Q9 The nutrition-focused Instagram accounts have increased my knowledge about nutrition.

Strongly agree (1)

Somewhat agree (2)

Neither agree nor disagree (3)

Somewhat disagree (4)

Strongly disagree (5)

Q10 What diets have you learned most about from the nutrition-focused Instagram accounts?

- Weight loss diets (calorie counting, macro counting, etc.) (1)
- Specialty diets (paleo, keto, etc.) (2)
- Exclusion diets (carb free, fat free, etc.) (3)
- Vegetarian varieties (vegan, raw vegan, etc.) (4)
- Intermittent fasting (meal skipping) (5)

End of Block: Nutrition Knowledge

Start of Block: Food Choices

Q11 The nutrition-focused Instagram accounts have influenced me about the foods I choose to eat.

- Strongly agree (1)
- Somewhat agree (2)
- Neither agree nor disagree (3)

Somewhat disagree (4)

Strongly disagree (5)

Q12 How do you feel the nutrition-focused Instagram accounts have influenced the foods you choose to eat?

Positively (1)

Somewhat positively (2)

Negatively (3)

Somewhat negatively (4)

Not at all (5)

Q13 For the following questions, choose the best answer that applies to you.

Q14 How have the nutrition-focused Instagram accounts influenced your salt intake?

Influenced me to read nutrition labels to keep track of how much salt I consume in a day (1)

Influenced me to not salt my foods as much (2)

Made me aware that salt intake should be low, but I have not made any changes to do so

(3)

The accounts have not posted about salt (4)

The accounts have not influenced me at all about salt (5)

Q15 How have the nutrition-focused Instagram accounts influenced your sugar intake?

Influenced me to read nutrition labels to keep track of how much sugar I consume in a day

(1)

Influenced me to not eat as many high-sugar foods (2)

Made me aware that sugar intake should be low, but I have not made any change to lower

my sugar intake (3)

The accounts have not posted about sugar (4)

The accounts have not influenced me at all about sugar (5)

Q16 How have the nutrition-focused Instagram accounts influenced your portion sizes?

- Influenced me to follow nutrition labels serving sizes (1)
- Influenced me to eat smaller portions of food (2)
- Encouraged me to eat smaller portions of food, but I have not changed the portion sizes of my meals (3)
- The accounts have not posted about portion sizes (4)
- The accounts have not influenced me at all about portion sizes (5)

Q17 How have the nutrition-focused Instagram accounts influenced your fruit and vegetable intake?

- Influenced me to work fruits and/or vegetables into every meal (1)
- Influenced me to replace some snack items with fruits and vegetables (2)
- Encouraged that fruits and vegetables should be a priority, but I have not made any changes to increase my fruit and vegetable intake (3)

The account(s) have not posted about fruits and vegetables (4)

The account(s) have not influenced me to eat more fruits and vegetables (5)

End of Block: Food Choices

Start of Block: Demographics

Q18 In relation to nutrition and dietetics, which best describes you below?

Taken one or some nutrition course(s) (1)

Current or past nutrition and dietetic student (Bachelor's degree, Master's degree, PhD.) (2)

Current or past nutrition and dietetic professional (RD, DTR) (3)

None (4)

Q19 To which gender identity do you most identify?

Female (1)

Male (2)

Transgender Female (3)

Transgender Male (4)

Gender variant/non-conforming (5)

Prefer not to answer (6)

Q20 Age:

18-29 years old (2)

30-39 years old (3)

40-49 years old (4)

50 years and older (5)

Q21 Highest education level reached:

Some high school, no diploma (1)

High school graduate, diploma or the equivalent (for example: GED) (2)

Trade/technical/vocational training/ Associate degree (3)

Bachelor's degree (4)

Post-graduate degree (5)

Q22 Ethnicity:

Asian / Pacific Islander (1)

Black or African American (2)

Hispanic or Latino (3)

Native American or American Indian (4)

White (5)

Other: (6) _____

End of Block: Demographics