

Challenges experienced by nutritionists in using Instagram as a medium for education and development of a balanced diet guideline: A qualitative study

Deri Andika Putra^{1*}, Suminah Suminah², Eti Poncorini Pamungkasari³

1- Department of Nutrition, Specializing in Human Nutrition, Postgraduate School, Sebelas Maret University, Surakarta, Indonesia.

2- Agricultural Extension and Communication Study Program, Faculty of Agriculture, Sebelas Maret University, Surakarta, Indonesia.

3- Public Health Study Program, Faculty of Medicine, Sebelas Maret University, Surakarta, Indonesia.

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Abstract

Background and objective: In the last decade, we have observed an increasing interest in the Internet as a source of information, especially social media has become a necessity in daily life. Healthcare professionals have found the potential of social media to provide accessible and enjoyable content for the audiences. Purpose of this study is evaluation of the challenges experienced by nutritionists in using Instagram as a popular medium for people education and development of nutritional guidelines in balanced diet.

Materials and methods: In this qualitative descriptive study, three nutritionists which had Instagram account with more than twenty thousand followers were selected. Data collection was carried out through semi-structured online interviews. After recording the interviews and their transcribing, the concepts were extracted using a content analysis method.

Results and conclusion: Instagram is an audiovisual medium that is accessible and easy to use for the followers. It provides a social network for people around the world. However, our investigation revealed that there are a lot of incorrect myths on Instagram which should be administered by the specialists by development of educational programs and guidelines in their personal Instagram accounts. Although, the role of influencers having a large number of followers is prominent in this regard. What is important is that they should motivate the followers to actively interact and provide them with updated information about balanced diet to attract the audiences and keep them away from incorrect information provided by fake and non-professional accounts.

Keywords: Balanced diet, education, Instagram, nutrition guideline, nutritionist

1. Introduction

Over the last decade, there is a growing interest in the internet as a source of information and

social media has become a necessity in daily life [1,2]. According to definition of Merriam-Webster [3], social media is an interactive tech-

* Correspondence to: Deri Andika Putra; E-mail: deriandika@student.uns.ac.id; Tel: +6282279325025; Fax: 6282279325025

nology toward creating and sharing content among the communities. It provides the users with many requirements, so that more than 3.6 billion people were using social media in January 2020 worldwide. It is estimated that the users will increase to 4.41 billion in 2025 [4,5]. Social media is a popular platform of interaction among teenagers and young adults. It allows them to create, share, and exchange information from long distances in virtual communities and networks. Social media is diverse and under constant changing. Typical platforms include social networking sites, internet forums, blogs and microblogs, photo or video sharing, job postings, podcasts, and virtual games [6].

Adequate nutritional education to the community in order to get benefit from balanced diet is of importance. For this, an effective in-person and/ or virtual communication is required. Social media as a virtual platform can be used for nutritional education without any space and time limit, of which Instagram has been popular in recent years [7]. It is an audiovisual platform which helps the nutritionists to provide beneficial information and get positive feedback from the learners [8]. According to national survey, 71% of Indonesian young adults aged 18-29 years use Instagram, 65% are Snapchat users, and 50% of them use TikTok. It makes Instagram a target for the nutritionists to educate the young adults, as the next generation, to implement a healthy life-style according to standard guidelines focusing on balanced diet. In parallel with the emergence of social media, development of balanced nutrition guidelines has been practiced in many countries since 1992 in accordance with the recommendation of Codex Alimentarius. Accordingly, old guidelines such as 4 Healthy 5 Perfect have been updated to balanced diet pyramid [9,10].

Research shows that many individuals use social networks to find and share health issues. In agreement, in the past few years in Indonesia, the most common searched information was included to symptoms and signs of illnesses, health care advices, healthy eating patterns or eating habits, and available treatment methods [11,12]. Educators and healthcare professionals have also found

social media as beneficial platform in providing accessible and informative content. Indeed, social media has become popular for health promotion because of its availability, despite the physical barriers that hinder face-to-face health education. In addition, it has lower cost for the individuals compared to in-person educations [13,14].

Nutritional education has found its place on Instagram. Interestingly, Zielinska-Tomczak et al. reported that Instagram users believe that food has the most significant impact on health [2]. Instagram is the most popular medium among students that can increase their nutritional knowledge visually by images, graphs, and/or online videos. It helps the educated students to apply what they have learned in the future to avoid the possible diseases arising from unhealthy diet. Potential of such social networks in nutritional education have been demonstrated by other studies [15-17]. Owing to the importance of virtual education on social media, we aimed to investigate the challenges ahead of nutritionists on Instagram as a platform for presentation of nutritional concepts and development of balanced diet education.

2. Materials and methods

This research is a phenomenological qualitative study [18]. We conducted our study through in-depth online interview by Zoom meeting application in March and April 2022. Specifically, three out of ten nutritionists' Instagram accounts were studied. The inclusion criteria were the accounts having at least 20,000 followers, owned by a registered nutritionist in the Indonesian Nutritionist Association, active for more than two years for nutritional education purposes on Instagram, and intended for a balanced diet education. At first, the personal profile was searched by using “#nutrition” and “#nutrition guidelines with a balanced diet”. Then, the account owner was evaluated to find out his/her academic degree in nutrition. Finally, we had three coded accounts as @IG1, @IG2, and @IG3 for our qualitative study [19]. Personal information and account features of the three nutritionists are shown in Table 1 and Table 2.

Table 1- Personal information of the nutritionists engaged in balanced diet education on Instagram

Account	Age (years)	Gender	Academic degree
IG1	24	Female	Bachelor of Science
IG2	30	Male	Master of Science
IG3	24	Female	Bachelor of Science

Table 2- Account features of the nutritionists engaged in balanced diet education on Instagram

Account	Post	Followers	Active years	One-week insight ^a		
				Reached accounts ^b	Interacting accounts ^c	Total active followers
IG1	413	105k	2019-Now	25.700	2.300	62.600
IG2	838	62.9k	2017-Now	20.000	3.300	14.400
IG3	501	24.4k	2020-Now	12.100	1.000	24.100

^a Insight shows the followers' performance

^b It refers to number of the accounts have seen the content at least once within a specific time.

^c It refers to number of the accounts have interacted with the content such as likes, comments, saves, and shares within a specific time.

3. Results and discussion

Nutritionists may act as a dietitian, nutrition counsellor, and nutrition instructor. A nutritionist should educate the community to help them overcome their health issues by a balanced diet protocol. The current condition in Indonesia, especially for children, is still experiencing a double burden of nutrition issues arising from either dietary deficiencies or excessive dietary intake. One possible approach to prevent such issues is education of children about nutrition guidelines and balanced diet so that they learn about quantity and quality of foods essential for health at early ages. In addition, education of young mothers is of importance in this regard. In the past, young mothers were oriented by the experiences of their parents on how to nurture, care, and educate their children.

In the current study, we asked the nutritionists some questions about nutrition guidelines with

balanced diet and nutrition education on Instagram by focusing on how, what, where, and why. Report of our in-depth interview with the three nutritionists about knowledge is presented in Table 3. During the interview we found that the nutritionists know the nutrition guidelines with a balanced diet appropriately. In their opinion, the guidelines are included to fulfilment of daily needs by consumption of foods in appropriate quantity and quality. They also explained their experience in development of successful education on Instagram. Importantly, they tried to correct misleading information and myths with no scientific basis which were trusted by the public. It was in line with opinion of Florenca et al., who believed that food myths are nutritional concept that is less justified or is in contrast to the existing scientific evidences [20].

Table 3- Knowledge of the nutritionists in online education about nutrition guidelines with balanced diet

Question	Answer
Why have you chosen Instagram as social media for education of balanced diet?	IG1: <i>“Instagram is a popular application and has the most users after Facebook. I had an Instagram account before. I created a new account for education.”</i>
	IG2: <i>“We are committed to posting some information related to nutrition every day, right? Our more important commitment is that we use scientific articles. Social media is very broad in scope. It has a very wide scope. You can say that it is extreme. The detailed data can be seen later in a good reference. I have the reference. By using social media, there is no need to open my laptop anymore.”</i>

IG3: "As a nutritionist, I socialize balanced nutrition so that people understand it better. Oh, there are many nutrition accounts, but some of them are inconsistent in education. So, well, I want to provide consistent information and education in my account. The second reason is that nutrition is a science that can be read, so everyone who reads the science can certainly do that. I am a nutritionist and people directly deliver the information from a nutritionist. So, no myth is circulated. Therefore, I created a nutrition account on social media."

Theory of "Planned Behavior" refers to intentional behavior of individuals. On the other hands, individuals display or perform certain behaviors deliberately [21]. In our study, use of social media such as Instagram (media exposure) generates knowledge in the followers and leads to an attitude towards a behavior, subjective norm, and a perceived behavior control, through which

an intentional behavior (positive or negative) is formed (Figure 1). In this case, a balanced dietary pattern is the behavior. It has been proven that a knowledge-based behavior is more sustainable than others. It means that if a behavior is not based on knowledge and perception, it will not last long [22].

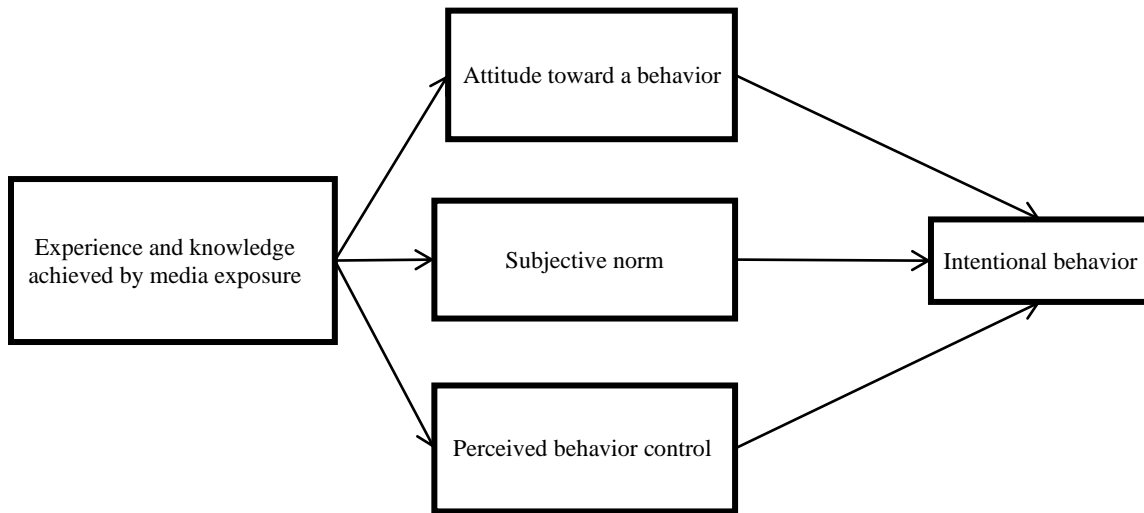


Figure 1- Framework of "Planned Behavior" theory [23]

Aulia Arza et al., reported that nutritional education on Instagram could effectively change the knowledge of young adult respondents about balanced diet [24]. Although, a comprehensive study by Murdiningrum and Handayani showed that the most effective media for nutritional education are, in turn, Instagram, WhatsApp, and Twitter, followed by other media that use educational videos, video games, quizzes, and typical lectures for learning [25]. It seems that use of educational media combined with the complementary methods will be more effective than their separate use in development of

nutritional knowledge. However, duration of education is a significant factor to achieve a positive result. In study of Adiba et al., duration of exposure to food and beverage contents on social media was associated with food choice among young adults. Food choice is closely correlated with energy and protein intake, and a prolonged exposure to food and beverage contents on social media caused higher energy and protein intake [26]. The results of this study were different from those observed by Jefrydin et al., in which a nutritional education on Instagram had a significant effect on attitudes of respon-

dents in understanding the nutritional labels but does not affect their knowledge about nutrition [12]. It could be due to the long videos providing information about nutrition labels in favor of improved attitudes not elevated knowledge.

Report of our in-depth interview with the three nutritionists about attitude is presented in Table 4. As an Instagram account owner, one of our informants believed that the created contents are not only for the followers and other people may get benefit from. In their opinion, it is necessary to be careful in education and discussion so that

the contents be consistent and in line with scientific sources. The third informant said that accepting the criticisms and suggestions of the followers is of her attitudes. As seen, there are striking differences in attitudes in online education. Educators who adopt online education and social interaction are closely related to people who receive online education and try to receive positive feedback [27]. Indeed, Instagram-based nutrition education was well accepted by the audiences and nutrition education on Instagram was deemed appropriate and effective to improve the attitudes to nutrition labels [12].

Table 4- Attitude of the nutritionists in online education about nutrition guidelines with balanced diet

Question	Answer
What was your attitude as the owner in creation and promotion of the account in the current form?	<p>IG1: <i>"The first thing is that do not expect feedback. Secondly, it is better to make sure that the content is really useful. Not to post anything today is better than not to be sure it is true. The third, you may always be happy with little appreciation from others"</i>.</p> <p>IG2: <i>"I think Instagram is a good place, it is the right place where people come together and make a big impact. My attitude is actually to be cautious. So, on the way, I should be careful in creating content so that I do not make mistake and make sure that the information is right. So, it is a bit dangerous. We do not want to lie and we do not want to be wrong too. So, we should be more careful today."</i></p> <p>IG3: <i>"I think we should be consistent. I always accept criticisms and suggestions from the audiences who read my contents"</i>.</p>

Report of our in-depth interview with the three nutritionists about intention is presented in Table 5. Intention is a tendency to perform specific action or behavior [28]. Our informants wish to educate and motivate the community to implement a balanced diet. In their opinion, Instagram is accessible by the public and the educational contents would be understandable because it is an audiovisual platform and the content provided by the account owners is summarized so that the subject matters can be better understood. Nonetheless, there are evidences addressing the more impact of in-person than virtual education in change of intention. For example, Dhauvadel et al. found that a nutrition education program could significantly change students' attitude to

consume healthy food, and led to perceived behavioral control and intentional healthy eating behavior [29]. In addition, there was no significant change in healthy eating behavior of students educated on social media in study of Handarbeny and Mahmudiono. It was assumed that school-based nutrition education programs could better change healthy eating intentions possibly due to the deep discussion developed through in-person education [30]. However, we believe that development of virtual nutrition education on social media such as Instagram along with in-person education would be more helpful to increase intentions towards a balanced diet.

Table 5- Intention of the nutritionists in online education about nutrition guidelines with balanced diet

Question	Answer
Why do you intend to educate balanced diet on Instagram?	<p>IG1: <i>"At first, I used Twitter because it was introduced a few months earlier than Instagram. However, I personally prefer Instagram because it is visual and people like contents with images rather than just text. I have nutritional knowledge and I should share it. Whether a person appreciate us or not. We make an effort for ourself as a nutritionist. Aim of education is not appreciation."</i></p> <p>IG2: <i>"I think Instagram is a great place where people get together and make a big impact. That's all".</i></p> <p>IG3: <i>"Because I wanted to summarize the material about balanced nutrition on Instagram. Then, I invited my friend. Yesterday, there were many nutrition students who wanted to spread education as well."</i></p>

Receiving information consists of three elements: information selection, interpretation, and information retention. Unfortunately, fake news and information (hoaxes) are increasingly spread and people receive hoaxes more than once a day. Most of hoaxes are spread on social media in Indonesia and confuse the public. Answer of the three nutritionists in evaluation of their behavior is presented in Table 6. In the in-depth interview, we focused on the informants' experience in their education. They said that nutrition education on Instagram should be developed especially in summarizing the material used as content. Many Indonesians still need to learn about nutrition guidelines and balanced diet. The informants believed that governmental education would help

the nutritionists. Handarbeny and Mahmudiono reported that change of behavior towards a balanced nutrition is occurred by education to convince the audiences about problems arising from fast foods and help them to overcome the problems [30]. Positive effect of virtual education on social media on change of behavior was reported by Masitah and Sulistyadewi. The authors showed that there was a relationship between view of postcards on Instagram and type of snacks selected for consumption (behavior change). On the other hands, teenagers used Instagram content to behave positively towards selection of healthy snack to supply their nutritional needs for optimal growth and development [31].

Table 6- Behavior of the nutritionists in online education about nutrition guidelines with balanced diet

Question	Answer
How is your experience in education of balanced nutrition?	<p>IG1: <i>"Social media may be same as influencers in general, but you are confused about what you want to write or discuss. So simply, there are still a lot of hoaxes spread in the community or there are many nutrition students who have not applied them in their surroundings."</i></p> <p>IG2: <i>"In terms of experience, for example, a lot of people say "oh I see" or "oh I just found out". Ordinary people are rich, but many of them still have low education about balanced nutrition. I am also a bit sad and I think education must be carried out extensively by the government. The closest people to us do not know nutritional concepts well, even people who are well educated."</i></p> <p>IG3: <i>"So I think the audiences are not interested in balanced nutrition because little people show feedback to the concepts. When it comes to diseases, they usually ask more and show more feedbacks".</i></p>

With respect to subjective norms, different opinions were presented by the nutritionists (Table 7). This difference results in different behavior or action. In this step, we focused on the nutritionists' view or perception. The nutritionists said that students must follow a healthy lifestyle during their learning about nutrition guidelines and balanced diet in school. Indeed, the informants believed that changing the lifestyle from unhealthy to healthy diet must be occurred before their graduation. However, despite the opinion of third informant (IG3), the first and second informants (IG1 and IG2) also said that nutrition education should not be done just by nutritionists and/or nutrition student necessarily

and everyone who truly knows nutrition guidelines can be trusted. The first informant (IG1) said that there are still many people and even nutrition students who do not know enough about balanced diet. These people have a view on nutrition like urban inhabitants who prefer to order foods online, while rural people are more conscious about their diet. Although, several environmental factors affect a balanced eating habit other than educational media. They include family culture, habit of close friends, appetite, and food availability. In agreement, effect of family, friends, school teachers, and health workers on consumption of fruit and vegetable in adolescents was reported by Mariatul et al. [32].

Table 7- Subjective norms of the nutritionists in online education about nutrition guidelines with balanced diet

Question	Answer
Who do you think should inform and educate about balanced nutrition?	<p>IG1: <i>"Anyone who has enough knowledge and is credible. Hmm, not all contain a lot of information. He/she should not have been a nutrition student necessarily. Sometimes, the trainers have taken nutrition certificates abroad. However, teaching of urban community is harder than rural people because they follow balanced nutrition mainly due to the availability of foods. But for people in village, it is due to their knowledge."</i></p> <p>IG2: <i>"I am not sure that people know balanced nutrition, that is all. But a person who knows about nutrition is not only nutritionists or nutrition students. Everyone who knows about ready-to-eat nutrition should not be a nutritionist to educate about nutrition."</i></p> <p>IG3: <i>"People around me do not fully know about balanced nutrition. They do not know what 4 healthy 5 perfect is. In my opinion, what is certain is that nutritionists and other health workers such as doctors can explain about balanced nutrition. With respect to balanced nutrition specifically, in my opinion, the details are easy, but their implementation is difficult. So, nutritionists must explain about balanced nutrition."</i></p>

4. Conclusion

This study illustrates the importance of Instagram as an accessible educational medium and shows some challenges ahead of nutritionists who have Instagram account to educate their followers about balanced diet. Other than education, our nutritionists used Instagram as a popular audiovisual medium to improve knowledge of the public about hoaxes and false nutrition information. Our evaluation revealed that the nutritionists had enough "knowledge" about nutrition guidelines and balanced diet and they were

confident about scientific basis of the contents they presented on Instagram. They also had "intention" to educate balanced diet by "attitude" of getting positive feedback from their Instagram followers. Although, they had different "subjective norms" so that one of them believed that nutrition education must be done just by nutritionists and healthcare professionals. However, there is still a need to extensively develop education of nutrition guidelines and balanced diet in Indonesia. In this regard, the government should support the nutritionists so

that "perceived behavioral control" and "intentional behavior" towards implementation of balanced diet come true in the population.

5. Conflict of interest

The authors declare that there is no conflict of interest.

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