

ONLINE BASED NUTRITION EDUCATION: FOOD SAFETY QUIZ FOR ADOLESCENTS

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Abstract – Nowadays, online based nutrition education can be more efficient way in the digital era while the people regularly used mobile sites for updating the information. This program aims to educate adolescent on food safety and balanced nutrition as well as to measure the effectiveness through online based quiz. This program was named "Food Safety Quiz via Online (FOSQO)", which held for four months divided into 8 terms and targeted on teenagers and young-adults (17-35 yrs old). The quiz in each term contained 20 questions regard food safety and balanced nutrition using online forms that available on the website page of Linisehat.com. The results showed that FOSQO had registered 595 adolescents including 303 actual participants. The mean nutrition knowledge score of the eight terms was 58±18 and the mean length of time spent to answer the questions was 215±39 seconds. The mean nutrition knowledge score of the 8 terms for the winners was 85±8 and the mean length of time spent to answer the questions was 194±45seconds. The score of nutrition knowledge among participants who join the quiz repeatedly was rising 21±14. Online based nutrition education of FOSQO could be an effective option to reach more millennial for improving their curiosity on gathering information of food safety and balanced nutrition.

Keywords: Adolescent, digital era, food safety, nutrition education, online based

INTRODUCTION

Lately, food safety policies, programs and studies are increasingly becoming the attention of various parties. Without safe food, it is impossible for the nutrients contained in it to be utilized by the body for healthy living (Tehet *et al.* 2016). Besides that, since February 25, 2014, the Ministry of Health of the Republic of Indonesia has launched a Balanced Nutrition Guidelines (BNG). Three of the 10 BNG messages related to food safety, namely: 7th message (get used to drinking enough and safe water), 8th message (get used to reading labels on food packaging), and the 9th message (hand washing with soap through running water). Adolescence is a critical time for interventions to prevent malnutrition, a double and growing burden (Save the Children 2015). Dietary behaviours established in adolescence may contribute to nutrition-related problems that have consequences for long-term health. Beside that, the rapid growth and development which adolescents experience puts them at risk of micronutrient deficiencies (Lassiet *et al.* 2015). Adolescents are actively engaged in learning through through school, course, mass media, etc (UNICEF 2011).

The digital era were driving a new nutrition education channel. The extend access through gadget make people used to online channel via website, social media and mobile application. Online based nutrition education was a new promising channel and it has been shown to be as or more effective than traditional nutrition education program (Lohseet *et al.* 2013). As online based nutrition education opportunities emerge, recruitment strategies using social networks may facilitate the outcome and impact evaluation (Loehmeret *et al.* 2016). The Food Safety Quiz via Online (FOSQO) was created to improve food safety and balanced nutrition knowledge among millennial. However, there were limited program with significant outcome measured of online and social media platforms for nutrition education, except FOSQO did.

THEORETICAL FRAMEWORK

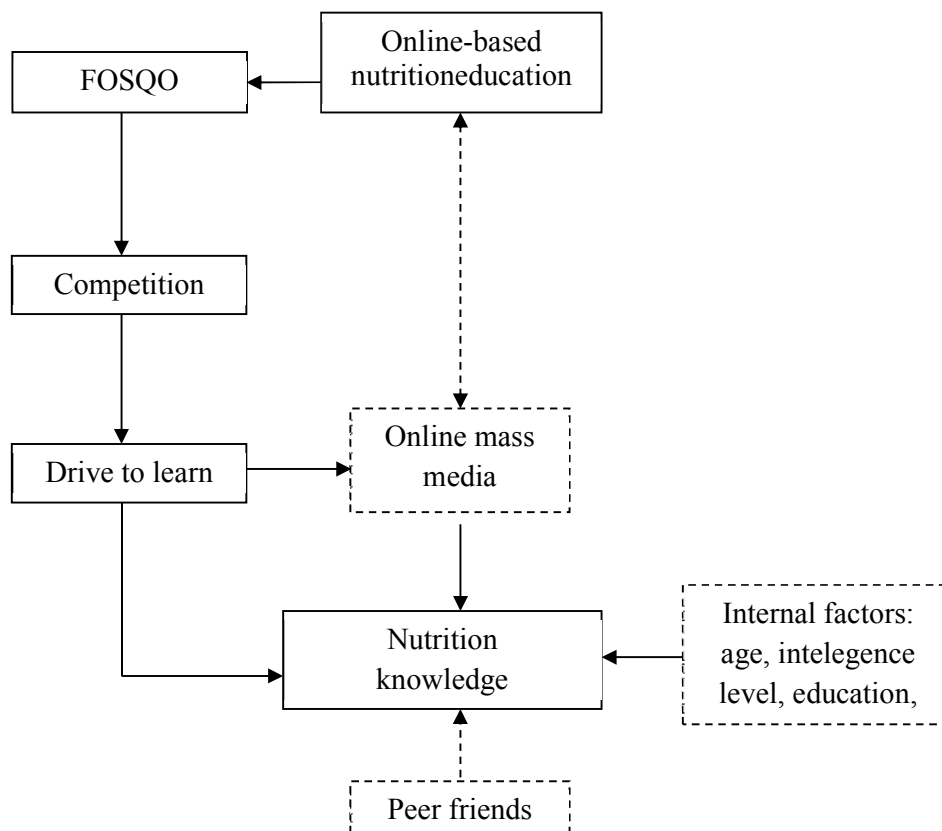


Figure 1. Theoretical framework of Online-based nutrition education

METHOD

Participants and Mechanisms

The target of FOSQO was teenagers and young-adults at aged 17-35 years old. FOSQO was divided into 8 terms with one winner for each term. It was held in four months from August to November 2017. It provided food safety and balanced nutrition quiz which was contained 20 multiple choice questions regard food safety and balanced nutrition using online forms that available on the website page of *Linisehat.com*. There were five steps to join FOSQO. Firstly, online registration that linked to *Linisehat.com*. Then, the participants received automatic reply in their email regard the link, date, and time of the quiz. After that, The link for quiz questions will be sent via email which is entered into the registration form at the specified time. Then, winners announced via the link *linisehat.com/fosqo* according to the specified date. Last, the distribution of prizes for the winners by attaching proof of identity during registration.

Terms and Conditions

There were 9 terms and conditions of FOSQO. First, the quiz is open to the public and various professions with diverse backgrounds can take part in this quiz. Second, the participants were individuals and free charged during the registration process. Third, the requirements to enter the competition were to fill out the registration form first in the online form. Fourth, the participants were required to like fanpage Lini sehat and PERGIZI PANGAN, follow @linisehat and @pergizi twitter and follow Instagram @linisehat and @pergizi. Fifth, participants worked on the quiz can start from

when the link has been sent until the quiz filling time is up. Sixth, there is a deadline for filling in 20 quiz questions, the quiz will be closed if it has exceeded the time limit provided (4 minutes). Seventh, the participants who have not succeeded in the current term, can register in the next term. Eighth, the winners are the people who answer the questions correctly in the shortest possible time and if there are more than one person with the same value, the winner will be drawn by the committee.

RESULT AND DISCUSSION

The results showed that the FOSQO had registered 595 adolescents, and it was including 303 actual participants (Table 1). Each terms has various number participants, scores, and length of time spents. Overall, the mean nutrition knowledge score of the 8 terms was 58 ± 18 and the mean length of time spent to answer the questions was 215 ± 39 seconds. The highest number of participants and scores and the fastest length of time spent was in 4th term compare to other terms. However, the highest mean nutrition knowledge score was 64 ± 14 and the fastest length of time spents was 206 ± 36 .

Table 1. The number of participants, mean of nutrition knowledge scores, and the length of time spents

Terms	n	Scores mean \pm SD	Time spents(seconds) mean \pm SD
1	43	58 ± 20	219 ± 40
2	40	52 ± 18	223 ± 32
3	41	61 ± 17	227 ± 24
4	44	64 ± 14	206 ± 36
5	29	57 ± 19	219 ± 30
6	39	59 ± 17	211 ± 43
7	42	55 ± 17	212 ± 46
8	25	57 ± 24	196 ± 52
Total	303	58 ± 18	215 ± 39

Table 2 shows that the mean nutrition knowledge and the length of time spent to answer the quiz among the winners was far from than others participants. The highest quiz's scores of the winners was in 1st and 6th term while the fastest length of time spent to answer the quiz was in 4th term. The winners was credible to answer the quiz appropriately and quickly. According to Khomsan (2004), nutrition knowledge score divided into three category namely: good (>80); moderate (60-80); and poor (<60). Overall, the score of nutrition knowledge among the FOSQO's participants categorize as a poor while the lowest score of the winners still remain in moderate level. This indicate that most of adolescents still need nutrition knowledge improvement.

However, the FOSQO program gave a cash prize in each term as many as Rp. 500.000,00. This prize was be able as a curiosity trigger to collect nutrition knowledge for the participants to answer the quiz. This program allowed participants to join the quiz in many terms in order to improve their curiosity to win competition. Table 3 shows that there are 53 participants who were joining more than one term. Most of them were improving their nutrition knowledge score, the score was rising around 20 points after the first time joined. Beside that, there were participants who joined the quiz till six times.

Table 2. The mean of nutrition knowledge scores, and the length of time spents of the winners

Terms	Scores	Time spents (seconds)
1	95	219
2	75	240
3	85	199
4	90	134
5	85	240
6	95	123
7	80	218
8	75	180
Mean \pm SD	85 ± 8	194 ± 45

The proportion of participants who have improvement score were higher than the sagging ones. This implies that the online based nutrition education such as Food Safety Quiz via Online (FOSQO) had a significant result in enhancing the enthusiasm of finding nutrition information and upgrading nutrition knowledge among the participants.

Graciaet. al. (2013) said that the competitiveness able to enhance self-evaluation process – that was, how people evaluate their present state relative to others. The FOSQO program can compete each participants to get higher score as fast as possible. Furthermore, the participants had bigger motivation to learn more from the past so that they try to achieve more score and win in the next term. The other study using online quiz intervention showed that subject who joined had potential behavior changes related to the topics and this program was efficient and effective to improve nutritional knowledge (Belogianniet al. 2018).

Table 3. The improvement of nutrition knowledge among participants who joined the quiz more than once

Participants	1	2	3	4	5	6	Δ Last - first	n Repetition
1	30	60	85	-	-	-	55	3
2	30	75	90	55	75	-	45	5
3	15	55	45	55	-	-	45	4
4	5	50	50	55	-	-	45	3
5	45	65	80	55	85	-	40	5
6	40	50	70	55	75	75	35	6
7	30	45	50	55	65	-	35	5
8	35	70	-	55	-	-	35	2
9	45	65	75	55	-	-	30	4
10	20	40	50	55	-	-	30	3
11	35	70	65	55	-	-	30	3
12	40	70	-	55	-	-	30	2
13	70	100	-	55	-	-	30	2
14	40	75	65	55	-	-	25	3
15	70	65	80	55	-	-	20	4
16	55	60	75	55	-	-	20	3
17	45	65	-	55	-	-	20	2
18	55	75	-	55	-	-	20	2
19	50	65	70	55	95	-	15	5
20	40	55	55	55	-	-	15	3
21	45	85	60	55	-	-	15	3
22	45	60	-	55	-	-	15	2
23	30	45	-	55	-	-	15	2
24	80	95	-	55	-	-	15	2
25	60	75	-	55	-	-	15	2
26	55	70	75	55	75	65	10	6
27	60	70	-	55	-	-	10	2
28	55	65	50	55	-	-	5	4
29	70	70	75	55	-	-	5	3
30	50	55	-	-	-	-	5	2
31	55	60	-	55	-	-	5	2
32	55	60	-	55	-	-	5	2
33	65	70	-	55	-	-	5	2
34	30	35	-	55	-	-	5	2
35	75	80	-	55	-	-	5	2
36	70	75	-	55	-	-	5	2
37	65	65	75	55	-	-	0	4
38	35	35	-	55	-	-	0	2
39	70	70	-	55	-	-	0	2
40	85	65	55	55	-	-	-5	4

Participants	1	2	3	4	5	6	Δ Last - first	n Repetition
41	65	60	-	55	-	-	-5	2
42	70	65	-	55	-	-	-5	2
43	65	60	-	55	-	-	-5	2
44	45	55	55	55	-	-	-10	4
45	65	55	-	55	-	-	-10	2
46	85	75	-	55	-	-	-10	2
47	80	70	-	55	-	-	-10	2
48	95	85	-	55	-	-	-10	2
49	55	65	45	55	-	-	-15	4
50	85	75	70	55	-	-	-15	3
51	60	45	-	55	-	-	-15	2
52	80	65	45	55	-	-	-20	4
53	60	35	-	55	-	-	-25	2
Score of Nutrition Knowledge (Δ Last – first)					n	%	Mean	SD
Increase					36	67.92	21	14
Stable					3	5.66	0	0
Decrease					14	26.42	-11	6

CONCLUSION

Online based nutrition education of Food Safety Quiz via Online (FOSQO) could be an effective option to reach more millennial for improving their curiosity on gathering information of food safety and balanced nutrition. Considering most of millennial used android for online access, the online based nutrition education such as FOSQO is promising method for disseminating nutrition and food safety information for millennial.

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