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Intervenções nutricionais no Facebook®: Revisão Sistemática

Dietary Interventions using Facebook®: A Systematic Review

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Resumo

A presente revisão sistemática tem como objetivo responder à questão "São as intervenções nutricionais no Facebook® eficazes, viáveis e aceitáveis para a população em geral?".

Como objetivo principal, foi proposto avaliar a eficácia de intervenções mediadas através do Facebook® na alteração dos parâmetros nutricionais e alimentares. Como objetivos secundários, pretendemos avaliar: relação entre a oferta de compensações/incentivos aos participantes e a taxa de retenção, o envolvimento e a aceitabilidade dos participantes em relação ao Facebook®.

Foram identificados um total de 4824 artigos a partir de 5 bases de dados (PubMed: 217, Web of Science: 228, Ovídio: 4211, Scopus: 81 e Cochrane: 87). Destes, 4405 foram mantidos após remoção de duplicados. Após revisão dos títulos e resumos, foram selecionados 116 artigos completos para analisar se cumpriam os critérios de elegibilidade. Foram incluídas intervenções quantitativas, com medição da eficácia nos parâmetros alimentares e nutricionais, do envolvimento e da aceitabilidade dos participantes.

A presente revisão sistemática inclui 18 estudos, nos quais o Facebook® foi utilizado para fornecer conteúdo destinado ao consumo alimentar, conhecimento alimentar e nutricional, comportamento alimentar e nutricional, controlo de peso e medidas antropométricas. Todos os estudos foram desenvolvidos com grupo controlo e de intervenção ou com avaliações dos parâmetros em estudo antes e após a intervenção. A maioria das intervenções tiveram um impacto positivo nos parâmetros nutricionais e alimentares (78%). O envolvimento e a aceitabilidade com o Facebook® foram elevados em todos os estudos.

Os estudos revistos permitiram concluir que o Facebook® é eficaz para mediar intervenções nutricionais, promove o envolvimento dos participantes e é aceite pela população em geral. A heterogeneidade entre os estudos não permite tirar conclusões relativas à relação entre ofertas aos participantes e taxa de retenção.

Palavras-Chave: Facebook, intervenções nutricionais, consumo alimentar, conhecimento nutricional, controlo de peso

Abstract

This systematic review question is “Are Facebook® nutrition-related interventions effective, feasible and acceptable for general population?”. As primary aim it was proposed to evaluate the efficacy of interventions using Facebook® in nutrition-related outcomes. As secondary outcomes we intended to evaluate the relation between offering compensatory/incentive gifts to participants and retention rate and to evaluate the engagement of the participants and the acceptability of dietary interventions using Facebook®.

A total of 4824 records were identified from 5 databases (*PubMed*: 217, *Web of Science*: 228, *Ovid*: 4211, *Scopus:* 81 and *Cochrane*: 87). Of these, 4405 records were retained after duplicates removed. After all the tittles and abstract reviewed, a total of 116 records were selected for full-text reviewed eligibility criteria. Study and intervention designs included quantitative approaches that measure the intervention efficacy in nutrition-related outcomes, engagement and acceptability of Facebook® intervention component.

Eighteen studies among which Facebook® was used to deliver content for dietary intake, food and nutritional knowledge, food and nutritional behavior, weight management or anthropometric measures. All the studies used a control and an intervention group or baseline and post-intervention measures. Interventions had a positive impact in most of the studies (78%). Engagement and acceptability with Facebook® intervention component were high in all studies.

Reviewed studies allowed to conclude that Facebook® is an effective way to deliver dietary interventions, that promotes the engagement of the participants and are acceptable for general population. However, the heterogenicity between

included studies make impossible to conclude about the relation between retention rate and offering gifts to the participants.

Keywords: Facebook, dietary interventions, dietary intake, nutritional knowledge, weight management

Summary

1. Background

Nutrition experts face a big challenge in shaping food meanings and practices to reach an optimal health condition [1, 2]. Empower people with skills to improve their dietary intake is necessary to improve population's nutritional status, wellbeing and to reduce the risk of diet-related diseases [3].

Nutritional interventions are mostly designed for the participation of individuals through counseling, telephone contact, face-to-face meetings and informative pamphlets. A timely follow-up is not inherent in these traditional approaches what hinders the effectiveness of the intervention[4, 5].

Web technology has been used in a diversity of interventions to health promotion, being considered as a potential tool for better engaging participants and communicating information that encourage positive outcomes[6]. Evidence suggests that nowadays public prefer online formats instead to face-to-face, allowing individuals to access information and participate according to the space and time they have available, which may overcome barriers identified in face-to-face interventions, such as time limitation, physical distance of the participants, travel costs and transport difficulties[7-12].

Effective nutrition interventions require use of appropriate delivery channels and a design that can overcome population's barriers[13]. Thus, online social networks are currently the meeting point for most of the population, especially among young adults, with Facebook® being the most common platform. Facebook® is a web-based social network that provides the tools for establishing relationships between peers who share different information and activities but have common goals[14]. The use of social networks for health communication also allows providing support between social and emotional

peers, gives a two-way communication learning, and influencing health policies[15, 16] that seems to be an important determinant for behavior change[17-20].

Public Health Organizations recognize the possibility of using social networks, such as Facebook®, to reach their target population for disseminating credible health-related information[21]. Some of the major benefits of using this approach for health communication includes the ability to share and adapt information to different target audiences, achieving geographical, age and economic diversity[2]. On the other hand, the population is generally receptive to health information through social networks[22].

These online intervention programs seem to be an effective method to behaviors change in individuals with similar needs or barriers [23, 24]. Online health interventions can influence voluntary behavior change, have lower costs and provide communication lines with peers. Facebook® groups, advertisements, pages or games are some of the many ways to connect nutrition with the world[25].

Health professionals, consumers, researchers and policy makers have access to contradictory information about the efficacy, effectivity, acceptability and ethical concerns of Facebook® nutritional interventions, including health research evidences[26]. Evaluate and interpret this evidence and incorporate it into health decisions makes crucial synthesize studies' results.

This systematic review analyses the scientific evidence in order to evaluate if Facebook® could be an effective opportunity to deliver nutrition interventions.

1. Objectives

The review question addressed for this systematic review is: “Are Facebook® nutrition-related interventions effective, feasible and acceptable for general population?” In order to answer the purposed question, the aim of this systematic review was to synthesize the knowledge about the effect of nutritional interventions delivered through Facebook® in nutrition-related outcomes, to general population. As secondary objectives, it was intended to assess:

- The relation between offering compensatory/incentive gifts to the participants and retention rate of nutritional intervention using Facebook®;
- The engagement of the population into nutritional interventions using Facebook®;
- The acceptability of nutritional interventions using Facebook®.

3. Methods

3.1. Design

This systematic review protocol was formulated based on *Cochrane Guidelines for Systematic Reviews of Health Promotion and Public health Interventions[27]* and *Preferred Reported Items for Systematic Reviews and Meta-Analyses* (PRISMA)[28]. The characteristics of each study were presented in summary tables, which includes the target population, sample, study and intervention designs and outcomes. The evaluation of the studies quality was also outlined in a table. The studies were chronologically ordered, by publication date.

3.2. Criteria for selecting studies for this review

3.2.1. Types of studies

This review includes intervention studies, in order to achieve the research aims (randomized and non-randomized controlled trials, experimental and quasi-

experimental and case-study designs). Only published studies were included; protocols, qualitative studies, opinion articles, reports, guidelines and review articles were excluded.

3.2.2. Types of participants

Participants eligible for this review were older than 17 years (could be children under 18 years if Facebook® intervention was delivered through their parents), healthy or having a malnutrition condition, from both sexes.

3.2.3. Types of interventions

Interventions had to be objective and reproducible, delivered only though Facebook® or multicomponent interventions that included Facebook® as a delivery method if the impact/adherence/engagement/acceptability of Facebook® component were measured. Also, it had to compare two or more arms (intervention group and control group) or a pre-post evaluation (baseline data and post-intervention data).

3.2.4. Types of outcome measures

Nutrition-related outcomes were included as following: dietary intake, food and nutritional knowledge, food and nutritional behavior, weight management and anthropometric measures. Engagement and acceptability outcomes were also included.

3.3. Search methods for identification of studies

3.3.1. Literature search strategy

The present review includes a systematic search conducted within *PubMed, Ovid, Web of Science, Scopus* and *Cochrane* databases. Combined variants of relevant terms were used to build the search question, after refinements by the research: [Facebook® AND Dietary intake OR Food and

Nutritional knowledge OR Food and Nutritional behavior OR weight management OR anthropometry]. The search was conducted on June 5, 2019, using a time range between 2013 and 2019 (current).

3.3.2. Data management and screening/study selection

Results from each database were imported into *EndNote* version X8 for an initial duplicate removal process. Then, one reviewer screened all the tittles and abstracts. After remove records that did not fit within inclusion criteria, articles with no accessible full text were excluded. The full text of the remain articles was reviewed in order to assess if they combined the eligibility criteria.

3.3.3. Quality and risk of bias assessment

Risk of bias assessment was performed using a tool *Risk of bias summary*, adapted from *Cochrane Guidelines for Systematic Reviews of Health Promotion and Public Health Interventions[29],* that presents all of the judgements in a cross-tabulation of study by entry, to assess studies quality. This tool allows to assess the methodological quality of studies: qualitative research, randomized controlled trials, non-randomized studies, quantitative descriptive studies and mixed methods studies. Components assessed included selection bias, information bias and bias on the analysis.

3.3.4. Data extraction

Quantitative data extracted included information about intervention and study design, specific objectives of the studies, population and sample, outcomes related with the review question and outcomes' measurements.

3.3.5. Data synthesis and analyses

The included studies investigate the effectiveness, feasibleness and/or acceptability of Facebook® only or multicomponent interventions, which included

Facebook® as a delivery tool. Thus, it was not possible to perform a meta-analysis due to the heterogeneity in the design of the studies, the quality of the studies, the design of the interventions and the populations studied. Some studies included also qualitative findings, which were described narratively to assess the reasons why Facebook® can be an effective, feasible and acceptable platform to deliver nutrition-related interventions. The quantitative findings were able to evaluate not only “how much” participants improved their nutritional behaviors and outcomes, but also the level of their engagement and acceptability with the interventions.

The nutrition-related outcome of each study was classified as positive, neutral or negative by comparing the aims and hypothesis of the studies with their reported results. Studies developed with an intervention and a control arm were classified as having positive outcome when their results reported improvements on the intervention arm participants compared with the control group participants. Studies that only include baseline and post-intervention measures had a positive outcome when their results reported improvements compared with baseline measures. When there were no differences between groups or compared with baseline measures, study outcome was classified as neutral. If control arm were more effective or if the outcome got worse after the intervention it was classified as negative.

4. Results

4.1. Data extraction and management

A total of 4824 records were identified from the databases (*PubMed*: 217 records, *Web of Science*: 228 records, *Ovid*: 4211 records, *Scopus:* 81 records

and *Cochrane*: 87 records). Of these, 4405 records were retained after duplicates removed. After all the tittles and abstract reviewed, a total of 116 records were selected for full-text reviewed eligibility criteria. In total, 18 studies were included **(Figure I, Appendix A).** The reasons for excluded full text-articles were: type of studies and interventions did not match with the eligible criteria; participants characteristics did not fit with the inclusion criteria defined for “type of participants” and outcomes that did not answer the review question. Outcomes and study details were collected and described narratively using tables.

4.2. Included studies

A total of 18 studies were included in this systematic review. **Table I, Appendix B,** presents the characteristics of the included studies: author, population, outcomes, intervention design, participants, retention and study design. All the studies had dietary intake or food and nutritional knowledge or weight management as primary outcome. This review included 13 randomized controlled trials (70%)[30-42], 2 quasi-experimental studies (12%)[43, 44], 2 case-studies (pre-post without a control group) (12%) [45, 46]and 1 non-randomized controlled trial (6%)[47]. The shortest study duration was 15 days and the longest was 33 months. The number of participants was <30 in 2 studies[31, 45], >30 and <100 in 12 studies[32, 33, 37-44, 46, 47], >100 and <300 in 3 studies[35, 36, 38] and >300 in 1 study[34]. Six studies were published until 2016 [38] [31] [32] [33, 34, 43] and 12 between 2017 and 2019[35-37, 42, 47] [38, 39, 44-46] [40, 41].

4.3. Assessment of risk of bias in included studies

The study quality was assessed using “Risk of bias summary” (**Table II, Appendix C**), making possible to access internal validity of the studies, knowing

if bias were avoided. A selection bias occurs when systematic differences between baseline characteristics of comparison groups were identified. Randomized sequence generation and allocation concealment can minimize this type of bias. Some of the included studies were not randomized or had not allocation concealment, but authors considered the differences between groups in the analyses, reason why they were included on this review.

The information bias could be minimized by blinding or masking the participants, staff and outcomes. This was not considered as exclusion criteria if the results were not affected or if the researchers had provided similar cares to both groups. The majority of the included studies on this review did not perform blinding or masking. Bias in the analyses occurs when studies had losses in follow up or withdrawals, which created missing data. Changing the post-hoc outcomes or omit some of the results could also contribute to the risk of an analyses bias, what wasn't observed in included studies.

4.4. Measures of treatment effect

4.4.1. Aim 1: Efficacy in nutrition-related outcomes of Facebook® mediated interventions

The nutrition-related findings of the 18 included studies were described in **Table III, Appendix D**. All these studies used scientific validated measures to assess their outcomes. No missing data were found. Most of the studies had, as primary outcome, weight management (13 studies). Nutritional knowledge was the primary outcome of two studies and dietary intake of other two. Outcomes were classified as negative, neutral or positive (**Table IV, Appendix E**).

4.4.2. Aim 2: Relation between giving compensatory/incentive gifts to the participants and retention rate of nutritional intervention using Facebook®

"Compensatory/Incentive gifts" englobed monetary contribution for participants that completed study measures/questionnaires/follow-up, gifts to incentivize the engagement with the intervention and cost allowances. From the 18 included studies, 9 did not use gifts. Melinda J. Hutchesson et al[39] study had a retention rate of 100% and gifts were not given. On the other hand, smallest retention rates occurred on studies that did not include compensatory/incentive gifts.

Studies retention rate is presented on **Table V, Appendix F.** Retention rate ranged between 39% and 100%. Melissa A. Napolitano et al[30] study's retention rate was 96% and participants were monetary compensated for completed follow-up. Alexander G. Fiks et al[37] study's retention rate was 82% and each participant received a US $50 monthly stipend for 2 months to offset the approximate cost of their phone data plan.

5.4.3. Aim 3: Engagement and adherence of nutritional interventions using Facebook®

Fourteen multicomponent studies examined engagement to the Facebook® component and the other 4 studies were only delivery through this social network (**Table VI, Appendix G).** For multicomponent interventions, engagement was measured with: Number of times participants "liked", commented and posted at Facebook® group; responses to the events, progress in Facebook® games, challenges met and Likert-scale questions about the number of times they accessed the intervention page or group and how often they

read the entire intervention posts. Engagement measure differ if the intervention was delivery through a Facebook® page, group, game or chat. Facebook® analytics was not available in groups, so users' engagement between studies cannot be compared.

Engagement had a large variation across the interventions, types of posts and the content seems to determinate the engagement level. *Katherine L. Downing et al*[36], described that the participants engagement was more frequent when posts were made by other participants, especially when the content were photos. Also, the engagement seems to decrease overtime even if the investigators keep posting useful content for the behavior change. *Katherine L. Downing et al*[36] study, found a decline on participants engagement: initially, an average more than 90% of the participants saw the posts; after the 13th post (15 months) it declined to less than 80%; there was a sharp decline after the 15th post to 32% . *Job G Godino et al*[34] study found similar results: 98 (9–265) interactions at 6 months, 76 (0–222) at 12 months, 41 (0–198) at 18 months, and 12 (0–161) at 24 months. These findings were also supported by *Alexander G. Fiks et al*[37]: during the prenatal curriculum (7 weeks), there were 1953 participant posts across the Facebook® ® groups; then 1802 from 0 to 3 months postnatal, 1074 from 3 to 6 months, and from 6 to 9 months, there were 553 posts.

4.4.4. Aim 4: Acceptability of nutritional interventions using Facebook®

Acceptability was measured through questionnaires about participants satisfaction with Facebook® as part of the intervention program **(Table VI, Appendix G).** Satisfaction questionnaires and Likert-scales were used to answer

questions like: *“How useful was being a member of Facebook® group?”, “How often do you log into yours group page?”, “Have you enjoyed being part of your Facebook® group?”, “Have you shared Facebook® group content with anybody else?”, “Do you will recommend this program to friends, family?”.* The majority of the participants in each study answered that Facebook® component of multimethod interventions was helpful and that will recommend the program.

5. Discussion

To the best of our knowledge this is the first systematic review on dietary interventions using Facebook®. Those interventions allow to improve and optimize the recruitment, engagement and retention of the participants throughout the study, however the collection of data is mostly carried out subjectively, and this may be a source of information bias. Interventions that also include a face-to-face interaction to collect baseline and post-intervention data, may have a smaller risk of bias and may produce more favorable results[38].

The majority of the studies included in this review were effective for improving nutrition-related outcomes, such as dietary intake, food and nutritional knowledge, food and nutritional behavior and weight management. Even if standard and validated tools were used to measure dietary outcomes it was possible that participants misreported information [32, 38, 41]. Longer follow-up period may be required to achieve cause-effect evidence that represents real life behavior [18, 35, 41, 43, 45, 47].

Retention rate could have a relation with compensatory/incentive gifts that were given to the participants in some interventions. However, it is not possible to conclude in this systematic review, due to the heterogenicity across included

studies (follow-up time, sample size, intervention design, participants characteristics).

Engagement measure used at most of the studies did not have into account the depth of those interactions: liking a post about healthy eating on intervention Facebook® 's page was considered the same level of engagement as posting doubts or ideas. These types of measure did not quantify the common practice of lurking (passively consuming posts but not interacting in a visible way). Evidence suggest that people who use social media for information are more likely to read than to share, comment or like[13]. Some studies reveal that interactive content is more effective to enhance engagement (challenges, videos, discussion forums, coaching sessions, goal setting, feedback) but content that improve nutrition knowledge (recipes, suggestions, news) and motivational messages are the most preferred [36, 48]. Interventions that include friendly-competitiveness between participants for enhance their goals also improve engagement[49]. Results revealed that engagement tend to decline over time in the studies[33, 46]. One of the reasons presented for this is that participants' confidence and self-efficacy with dietary-related practices increase and their perceived need for advice declines[36, 44]. More research is needed to determine the definition and metric of engagement more credible to conclude about intervention effects.

Acceptability was measured with satisfactory questionnaires in most of the studies and had positive results. Trust seems to be an important predictor to improve acceptability to the content of Facebook® nutritional interventions: phrases such "studies show" and "research finds" make posts more valid[6, 36].

Positivity and empowerment messages are effective at individual behavior change, raising awareness[50] and acceptability.

Some qualitative studies related that one ethical concern of using Facebook® is that this social media often contain derogatory remarks pointing to weight stigmatization that can lead to cyberbullying. In other hand, nutritional interventions mediated through this social media can allow participants to find the support they may lack in “real life”[51] and the convenience and accessibility to diverse opinions from peers seems to be an important part of this support, allowing fight against stereotypical ideas and beliefs [52]. The requirement that participants need to have a Facebook® account in order to participate in the interventions can be a bias-boosting factor since many potential participants have no interest in joining a social network or feel uncomfortable with sharing online information with strangers[41]. Protect participants privacy is another challenge addressed, especially when collecting health and personal data[16, 24, 53]. However, public is positively disposed to the use of their personal and health information to benefit general population[54].

Cost-effectivity of these nutritional interventions need more studies to be assessed. However, studies that used Facebook® as a recruitment tool already have some findings on this issue. Recruitment is often a difficult and costly procedure of research studies. Facebook® appears as a way to reach a large number of target people in a short time[55-57]. Facebook® paid advertisements is one of the solutions that this social media offers to enhance cost-effectivity[58-60]. Laura M Adam et al [59] study, used this social network as a recruitment tool after a 3-month period of traditional recruitment approaches. Their results showed that in only 26 nonconsecutive days of Facebook® advertisements,

recruitment rate of eligible participants/day was 0.96 against a rate of 0.21 eligible participants/day of the traditional approaches. In this study, they calculated that the amount of time needed to recruit 70 women using traditional approaches was 34 days and that could be shortened to 73 days using Facebook®. These advertisements had a cost per eligible participant of Cad $20.28 and traditional approaches cost approximately Cad $24.15 per eligible participant. Even if cost-effectivity was not measure in intervention studies, some of them suggest that using this social media can result in decrease researcher time and consequently potential costs[36].

Facebook® interventions could address some ethical issues since this social media allowed brands and companies to create profiles, generating a new marketing strategy, not only for those who choose to follow them but also through advertisements that reach the pages of millions of users. Exposure to these ads could be an ethical concern in dietary interventions using Facebook®, due to allow an uncontrolled contact with this kind of marketing which could influence negatively participants' food behaviors. However, these ads could also be on the way in face-to-face interventions, like hospital appointments or school-based interventions. Public also have access to news at Facebook® with inaccurate nutritional content, given them the perception that nutrition is about opinions and not about science and may increase consumer's confusion, skepticism and avoidance of dietary advices [2, 61].

Therefore, nutrition experts and public health organizations need to reach social media to give the correct answer at the real time, to change food and health behaviors and believes[62]. Food brands are enhancing the online world with strong marketing strategies that are visually attractive and could influence

consumers' choices. Give the healthier option with even more strength is necessary [24, 61, 63, 64].

6. Author' conclusions

Facebook® is an effective method to deliver dietary interventions. Positive changes in dietary intake, food and nutritional knowledge, food and nutritional behavior and weight management, were observed in studies that used this social media as an intervention component. Even if a positive relation was found between giving compensatory/incentive gifts and retention rate, it is not possible to conclude due the heterogenicity between intervention and study designs.

In general Facebook® intervention component promotes the engagement of the participants and is well acceptable for general population.

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Appendices Index

Appendix A

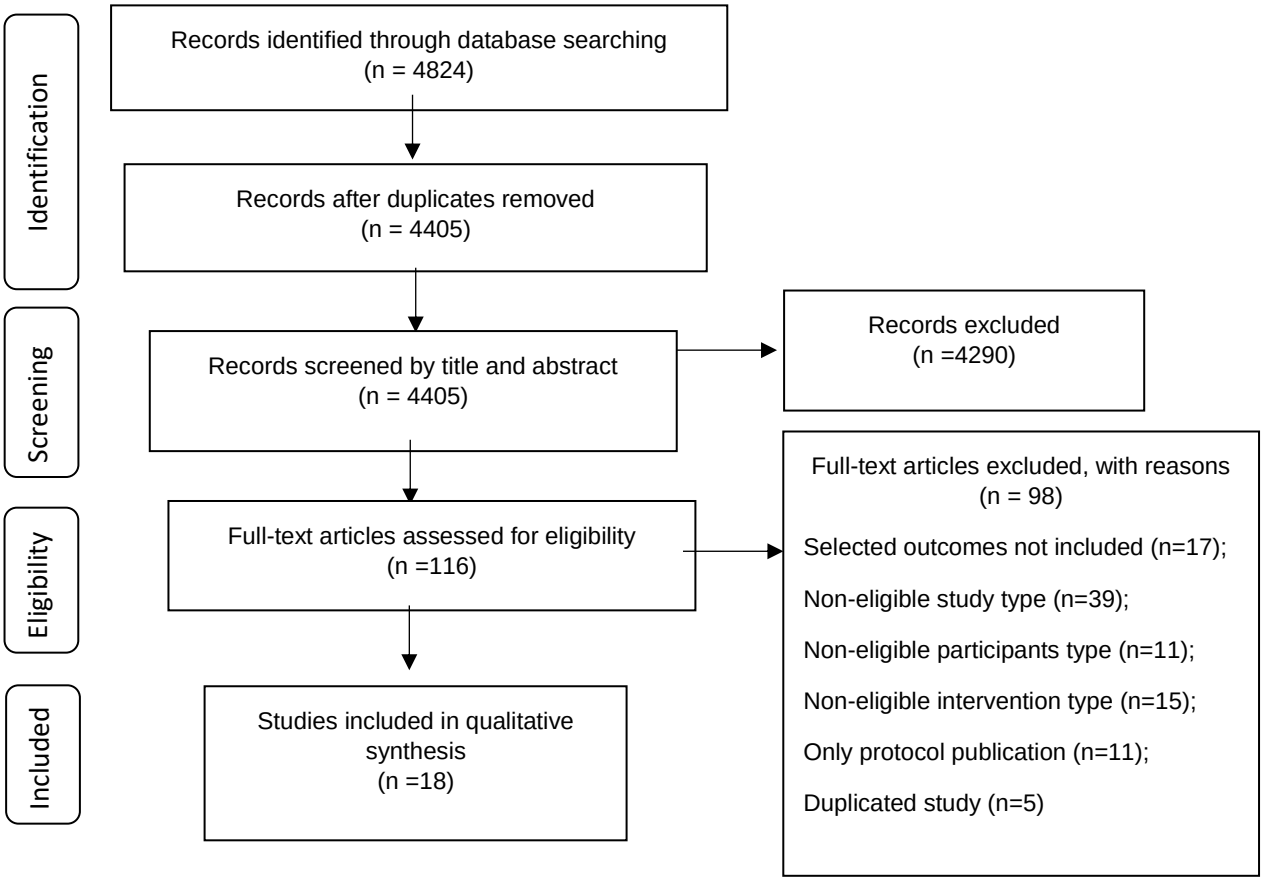

***Figure I**. Preferred Reporting Items for Systematic Reviews and Meta-analyses (PRISMA) flow diagram indicating the number of records identified, screened, included and excluded.*

Appendix B

***Table I**. Characteristics of included studies.*

Author	Population	Outcomes	Methods (intervention sumary)	Participants	Study Design
Melissa A. Napolitano et al, 2013[30]	College students with ages between 18-29 years and body mass index (BMI) of 25-50 kg/m²	Evaluate the feasibility, acceptability, and preliminary efficacy of a novel, technology-based weight loss intervention for college students using adapted evidence-based weight loss content.	The intervention was delivered weekly for 8 weeks. The private Facebook® group served as the portal to access the intervention content: evidence-based handouts adapted for college students and podcasts including video demonstrations. Participants in the Facebook® Plus arm received the same content described above and additional theoretically-driven intervention targets: goal setting, self-monitoring and social support communicated via text messaging. The Facebook® Plus group contained three additional components: daily text messages, personalized feedback via weekly summary reports, and selection of a "buddy" to serve as a support person.	52 students: 86,5% females, mean age was 20.47 years.	Randomized controlled trial, randomly assigned: 17 to the Facebook® only intervention group, 18 to the Facebook® Plus intervention group, 17 to the waiting list control group.
Sharon J.Herring et al, 2014[31]	Obese, ethnic minority, low-income mothers	Examine the feasibility, acceptability and initial efficacy of a technology-based weight loss intervention (postpartum weight loss).	"Healthy4Baby" was 14 weeks intervention. Participants completed a baseline visit, at which trained research assistant measured body weight and height and administered a number of questionnaires assessing demographics, diets quality, physical activity, health literacy and mood. A set of 6 supported weight-related behavior change strategies were identified and self-monitored thought text messaging. Participants were encouraging to set personal goals around each 6 strategies. Strategies were implemented one at a time for 2 to 4 weeks after a problem-solving session with coach by phone. Calls were 15 minutes and conducted biweekly over the 14-week intervention period. Skills training and self-monitoring were done through text messaging and Facebook®. The Facebook® group provided a forum for support and additional behavior skills training via links to websites and videos. Participants were encouraging to post questions, photos and status updates.	18 mothers mean age was 24.2 years	Randomized controlled trail, randomization by computer-generated numbers in sealed envelopes: 9 to intervention group (IG) and 9 to usual care group/control group (CG).
Noa Dagan et al, 2015 [49]	Facebook® users, older than 18 years of age	Evaluate whether the social exposure provided by Social networking site (SNSs) can increase the effect	"Food Hero" was an online platform design for nutritional education in which players feed a virtual character according to their own nutritional needs and complete a set of virtual sport challenges. The full intervention period was 15 game days. During each game day, the user assembled an optimal food menu for the virtual character, based on the user's real-world caloric and nutrient composition needs (calculating according to user's characteristics). The user was presented with some meal options and had to select one. After	63 Facebook® users: 23 males and 40 females; mean age 30.2 years.	Randomized trial randomly assigned to private version PV) and social version (SV): 30 members SV and 33 members PV

		of online public health interventions, specifically by evaluating its influence on the learning curve for nutritional knowledge.	assembling the menu, the user received feedback on his performance. In the PV, only user's own score was presented, and, in the SV, the user's performance was presented in the context of other players, a high-score bar shows the scores of the best 5 players.		
Sharon J. Herring et al, 2016[33]	Pregnant women with overweight or obesity (gestational age <20 weeks)	Determine whether a technology-based behavioral weight control intervention would be effective among low-income African American women with overweight or obesity for decreasing the proportion who exceeded IOM guidelines for gestational weight gain.	The intervention included: (1) empirically supported behavior change goals; (2) interactive self-monitoring text messages; (3) biweekly health coach calls; and (4) skills training and support through Facebook®, delivered until 36 weeks gestational age. Participants received daily text messages tailored to each behavioral goal to build skills and self-efficacy. Participants also received self-monitoring texts three to four times weekly to probe about behavioral adherence. Participants were enrolled in a private Facebook® group to provide a forum for support and additional behavioral skills training via links to websites and videos. Participants were encouraged to "like" weekly coach posts and provide updates. bachelor's level health coach, trained in methods of behavioral weight control, delivered 15 to 20 min counseling calls to participants weekly for the first two study weeks and then twice monthly thereafter. Counseling calls were designed to reinforce skills and provide the opportunity to problem-solve through barriers.	66 low-income African American pregnant women mean age 25,5 years (12.5±3.7 weeks' gestation; 36% overweight, 64% obese).	Two-arm pilot randomized clinical trial: Randomization was computer-generated (by study statistician) with a 1:1 allocation ratio; randomization status was concealed in opaque envelopes prepared by the statistician: allocation to IG (33 participants) and to CG (33 participants)
Job G Godino et al, 2016 [34]	Overweight or obese college students (aged 18–35 years).	Evaluate the efficacy of technology-based interventions for weight control in young adults.	The SMART was a 24 months intervention, that was remotely delivered via six modalities: Facebook®, three study-designed mobile apps, text messaging, emails, a website with blog posts, and technology-mediated communication with a health coach. Intervention participants were instructed to use at least one or more modalities a minimum of five times per week. This approach provided participants with a high level of individual choice and allowed for changes in technological preference. receive feedback and participate in goal review. The health-coach initiated challenges and campaigns that were often culturally themed and promoted changes to weight related behaviors. Participants were then encouraged to make a pledge to participate and set appropriate goals. Facebook® were used to connect participants and allow for social support, accountability, and healthy social norms from existing social networks. Were delivered 17 challenges and campaigns.	404 participants mean age 22,7 years and most were female (284-70%).	Randomized, controlled trial, allocated participants (1:1) to the IG (202 participants) or CG (202 participants) using computer-based permuted-block randomization

Delia Smith West et al, 2016 [43]	College students	Examine a novel, technology-mediated weight gain prevention intervention for college students.	The interventions delivered 8 lessons via electronic newsletters and Facebook® postings over 9 weeks, which were designed to foster social support and introduce relevant educational content. The Healthy Weight intervention targeted behavioral strategies to prevent weight gain and provided participants with a Wi-Fi-enabled scale and an electronic physical activity tracker to facilitate weight regulation. A repeated-measures analysis of variance was conducted to examine within- and between-group differences in measures of self-reported weight control practices and objectively measured weight. Use of each intervention medium and device was objectively tracked, and intervention satisfaction measures were obtained.	58 college students mean age 21,6 years, 81% women (47 women)	Controlled, quasi-experimental study: randomly allocated by a coin toss to a behavioral weight gain prevention intervention (IG: 29 participants) or to a human papillomavirus (HPV: 29 participants) vaccination awareness intervention (CG)
Monica Jane et al, 2017 [35]	Overweight and obese individuals with a BMI between 25-40 kg/m² and aged between 21 and 65 years	Measure changes to weight and other obesity-related disease risk factors in overweight and obese participants when a weight management program was delivered using social media, compared to the same program presented in written information only.	The intervention was delivered over a period of 24 weeks: 12-week intervention period with a 12-week follow-up. The Pamphlet (PG) and the Facebook® (FG) groups were instructed to follow the Total Wellbeing Diet, developed by the Commonwealth Scientific and Industrial Research Organization (energy-reduced, low fat, lower carbohydrate, higher protein diet). The PG received the information in written form as a booklet, while the FG received the same information but with pages as snapshots posted within the secret Facebook® group Participants attended clinical appointments in the fasted state at baseline and at weeks 6, 12, 18 and 24.	137 overweight and obese individuals; data only about 67 participants (57 women and 10 men, mean age 50,4 years)	Randomized controlled trial, block randomization of the participants according to age and gender, using research randomizing software, to one of three groups: 45 to the CG, 46 to the PG and 46 to the FG.
Lee M. Ashton et al, 2017[42]	Young men aged 18–25 years	Evaluate the feasibility of a targeted healthy lifestyle program for young adult men aged 18–25 years.	HEYMAN was a 3-month intervention, targeted for young men to improve eating habits, activity levels and well-being. Intervention components included eHealth support (website, wearable device, Facebook® support group), face-to-face sessions (group and individual), a personalized food and nutrient report, home-based resistance training equipment and a portion control tool. Facebook® component was A private discussion group to facilitate social support, send reminders for face-to-face sessions and send notifications for new material added to the website.	50 men mean age 22.1 years	Randomized controlled trial, allocation sequence was generated by a computer based random number algorithm, in block (IG: n = 26; CG: n = 24).
Katherine L. Downing et al, 2017[36, 65]	First-time parents	Test the efficacy of an extended (33 versus 15 month)	The InFANT Extend Program was a 33 months intervention. At baseline (child age 3 months), mothers completed surveys reporting their demographic characteristics. At 6 months mothers were invited to their specific group on Facebook®. The main delivery mode was six 2-hour group face-to-face	508 mothers, data only from 150 participants,	Cluster randomized controlled trial, allocation stratified by local government area

		and enhanced (use of web-based materials, and Facebook® engagement), version of the original InFANT intervention.	sessions, delivered from child age 3 to 18. During the first 15 months of the trial, Facebook® was used predominantly to share resources with mothers and to arrange group sessions. The resources posted were mainly links to websites with information about parenting or children and were focused around nutrition and infant feeding, as well as active play and physical activity. Participants were encouraged to share information or ask questions on their Facebook® groups. From child age 18 to 36, Facebook® were used to deliver newsletter to participants (in addition to receiving them through e-mail) and to direct participants to the InFANT Program website.	mean age 32,2 years	conducted by an independent statistician: 260 parents (31 groups) to the IG and 248 (31 groups) to the CG. Data entry and analyses were conducted with staff blinded to participant's group allocation.
Alexander G. Fiks et al, 2017[37]	Pregnant women, with BMI> 25kg/m²	Evaluate the feasibility, acceptability and the impact on infant food behaviors of an intervention delivered through private Facebook® groups.	The intervention involved a Facebook® group activities for 11 months (2 months prenatal until infant age 9 months). Four separate groups of 9-13 women were formed based on infant age. Each group was facilitated by a psychologist specializing in obesity treatment. The curriculum included infant feeding practices (11 weeks), sleep (7 weeks), positive parenting (12 weeks) and maternal well-being (8 weeks). Facebook® group was structured around video-based curriculum and encourage participant interaction. Videos were posted to the group weekly from the start of the group until infant age 6 months, then biweekly. Participants completed surveys at six time points: T0 (screening/enrollment), T1 (following birth of infant), T2, T4, T6 e T9 (infant ages 2, 4, 6 e 9 months).	87 low-income pregnant women mean age 27 years.	Randomized controlled trial, allocation concealment with sequentially numbered security envelopes to Grow2Gether IG (43 participants) and CG (44 participants).
Smrithi Krishnamoh an et al, 2017 [47]	Medical students, obese or overweight (BMI≥23 kg/m².	Measure the Efficacy of health education using social networking sites to promote healthy lifestyle among medical students in Puducherry.	A baseline survey was conducted among both IG and CG groups using a pretested questionnaire adapted from WHOSTEPS questionnaire which consists of variables on sociodemographic and lifestyle factors. The students belonging to the IG were invited to the Facebook® private group in which health education messages were posted thrice a week for six weeks (pictures, videos, quotes). No such intervention was done for the control group. After 6 weeks of Facebook® intervention, follow-up survey was done for both groups.	61 medical-students, data only from 45 students: 21 females and 24 males. Ages between 18 and 23 years.	Non-randomized controlled trial, allocation by university year: 31 to the IG (with Facebook® account) and 30 to the CG (without Facebook® account).
Molly E. Waring et al, 2018 [45]	Overweight and obese postpartum women.	Evaluate the feasibility and acceptability of a Facebook® - delivered postpartum weight loss intervention.	Participants received a 12-week lifestyle intervention via a secret Facebook® group (a private group in which membership is by invitation only, posts are viewable only by group members, and the group does not appear in searches). The intervention was based on the Diabetes Prevention Program (DPP),13 adapted for the postpartum period and delivery via Facebook®. The DPP curriculum includes behavioral strategies such as self-monitoring, stimulus control, problem solving, social support, environmental restructuring, stress management, and relapse prevention.13 Investigators converted the didactic	19 women mean age 31.5 years.	-Case study

			content of the DPP into Facebook® posts or links to online articles that were included in intervention posts.19 Adaptations for the postpartum period17,18 included specific nutritional needs for breastfeeding women, kid-friendly recipes, links to exercise videos to do with children and/ or at home, negotiating responsibilities to care for self, and challenges to lifestyle change common among postpartum women.		
Valerie J Silfee et al, 2018[46]	Low-income postpartum women	Adapt a Diabetes Prevention Program (based weight loss intervention (Fresh Start)) for Facebook® delivery and to evaluate its feasibility among low-income postpartum women.	3 single-group pilot studies: participants were enrolled into a 16-week weight loss intervention delivered via Facebook®. During the first 8 weeks, Facebook® intervention posts were delivered 2 times per day, with additional posts from coaches aiming to stimulate interaction among participants or respond to participants' questions and challenges. For the following 8 weeks, posts were delivered once per day without additional coaching. To promote interaction among participants in the Facebook® group, all posts ended with an open-ended question regarding the topic of the post. Participants completed the survey and anthropometric measures at baseline (preintervention assessment) and 16-week follow-up (postintervention assessment).	-27 women mean age 32.1 years (pilot 1); -24 women mean age 29.4 years (pilot 2); -16 women mean age 29.4 years.	-Case study single-group pretest-posttest design.
Norliza Ahmad et al, 2018[38]	Parents of children with 8-11 years of age who were either overweight or obese.	Evaluate the effectiveness of using social media and face-to-face sessions in a family-based intervention on the primary outcome of BMI z-score and secondary outcomes of waist circumference percentile and percentage total body fat.	The REDUCE intervention program was a 4 months intervention: 4 weeks of weekly training and 3 months of weekly booster. The training phase was comprised of 8 units: 2 units were delivered though half-day face-to-face sessions (Unit 1:introduction, obesity overview, parenting skills and role modelling; Unit 2: Sugar-sweetened beverages) followed by 2 units delivered weekly via Facebook® for 2 weeks (Unit 3: Fruits and vegetables; Unit 4: Unhealthy snacks; Unit 5: Physical activity; Unit 6: Screen time) and the last 2 units delivered via half-day face-to-face sessions (Unit 7: Risky situations and review of performance; Unit 8: Further roles and actions, exercise tips and success stories). At this phase were use some behavior modification techniques: goal setting, self-monitoring, self-efficacy, problem solving and stimulus control. All 4 units delivered in face-to-face sessions were subsequently uploaded on Facebook®. The booster phase of the program were weekly one-hour sessions using a WhatsApp group that lasted for 12 weeks to strengthen parent's knowledge and skills in promoting the targeted behaviors of the program.	134 parents (mean age 40,6 years, 76 women) and their children (mean age 9,6 years, 78 females)	Randomized controlled trial, computer generated randomization list which allocated parents: 67 to the IG and 67 to the CG.
Melinda J. Hutchesson et al, 2018[39]	Women aged 18–35 years, with BMI 25.0–34.9 kg/m²	Assess the efficacy and acceptability of targeted and tailored eHealth	Be Positive Be Healthe (BPBH) was a 6-month intervention to support participants to modify diet and physical activity behaviors using evidenced-based strategies tailored for young women and delivered using e-health (website, social media, smartphone application, email, text messages). Individualized energy intake and energy expenditure goals were set for each	57 women mean age 27.1 years.	Randomized controlled trial, allocation sequence was generated by a computer-based random number algorithm

		weight loss program.	participant. The energy intake and energy expenditure goals were to be achieved by making changes to the eating behaviors and physical activities. During the first 12 weeks of the program, a different topic was covered each week in email newsletters, text messages and social media. For weeks 13–22, two of the 10 Steps to Success were re-visited each fortnight (with a focus on overcoming barriers to change and acknowledging successful behavior change), and in Weeks 23–26, the topics were maintaining behavior change and weight loss maintenance. BPBH participants were provided with access to program components (log-in details for website, joined Facebook® group and followed Instagram account, downloaded self-monitoring app).		producing individual group allocation in block lengths of six and stratified by BMI (overweight BMI: 25–29.9, obese 30–35 kg/m2). A researcher not involved in the study prepared concealed envelopes: BPBH program (29 participants) or waiting list CG (28 participants).
Lorraine B. Robbins et al, 2018 [44]	10 to 13 years-old adolescents and respective parents	Evaluate feasibility, acceptability, and preliminary efficacy of an intervention on 10- to 13-year-old adolescents' body mass index BMI, percent body fat, physical activity (PA), diet quality, and psychosocial perceptions related to PA and healthy eating.	"Guys/Girls Opt for Activities for Life (GOAL)" was a 12-week intervention that included an after-school club for adolescents 2 days/week, parent–adolescent dyad meeting, and parent Facebook® group. The intervention included at week 1 a Parent–Adolescent Dyad Meeting (120 min) conducted at adolescents' school to assist parents in supporting adolescents' PA and healthy eating. Between week 2 and 12 after-school GOAL Club began for adolescents, including PA and healthy eating and cooking skill building. Facebook® group was used to 5-min discussion of the week's themes plus information and behavioral strategies for parents. Facebook® Participation included the weekly healthy eating and PA habit-forming tasks to assist parents in helping their adolescents with PA and healthy eating and cooking (Post a comment or picture about the themes).	84 adolescents; 49,4% males and 50,6% females; 46,9% obese or overweight; mean age 11.6 years.	Pretest–posttest quasi-experimental study, participants randomly assigned by a statistician to receive either GOAL (IG:39 adolescents and 38 parents/guardians) or usual school activities (CG: 45 adolescents and 43 parents/guardians).
Ashlee Lane Bakırcı-Taylor et al, 2019[40]	Parents of children with ages between 3-8 years	Increase accessibility of fruits and vegetables to increase children's intake.	"Mobile Jump2Health" was a 10-week intervention that included 3 components: mobile website (Jump2Health), social media (Facebook® page) and short message service or text messages. Jump2Health was a website with information to promote fruit and vegetable consumption (access only to IG). The Facebook® page provided information that wasn't available on Jump2Health website (cooking videos and recipes, strategies to address picky eating, and food budgeting and meal planning), mentioned and reinforced information and text found on the website and promote linked resources on website (access only to IG). 12 text messages were sent about ways to encourage more fruit and vegetable consumption (access to IG and CG).	30 parents (all women) and their children (15 females and 15 males, mean age 3,7 years)	Randomized controlled trial, allocation to 2 groups with serially numbered, opaque and sealed envelopes: 15 to the IG and 15 to the CG.

Megan L. Hammersley et al, 2019[41]	Parent or carer and child (aged 1-5 years who are overweight or at above the fiftieth percentile for BMI).	Assess the efficacy of a parent-focused, internet-based healthy lifestyle program on child BMI, obesity-related behaviors, parent modeling and parent self-efficacy.	"Time2bHealthy" was a 11-week intervention. The intervention targeted multiple behaviors and consisted of 6 modules including an introduction, nutrition, physical activity, screen time and sleep module. Each module comprised reading material, videos, activities, quizzes and a goal-setting component. Participants received feedback for their goals at the end of each module. Measures were collected at baseline, 3 months and 6 months after baseline. Participants at the IG and CG were asked to post photos, recipes and personal experiences and ideas that they had found helpful for behavior change at their private Facebook® group. Participants at the IG received emails fortnightly for 3 months after the 11-week intervention (until the 6 months follow-up) with infographics summarizing the key points from each of the modules and encouraging them to log back into the website to revise material.	86 children, (43 females and 43 males, mean age 3,5 years) and their parents (83 females and 3 males, mean age 35,2 years)	Randomized controlled trial, randomization using a computerized random number generator. Allocation concealment and blinding: 42 to IG and 44 to CG

Legend: BMI-Body Mass Index; IG- Intervention Group; CG- Control Group; SV- Social version; PV-Private version; PG- Pamphlet Group; FG- Facebook® Group; Be Positive Be Healthe (BPBH); PA- Physical Activity

Appendix C

***Table II**. Risk of Bias assessment.*

Domain / Study	Sequence generation* (1)	Allocation concealment*(2)	Blinding of participants*(3)	Blinding of staff*(4)	Blinding of outcome*(5)	Complete outcome data*(6)	Free of selective reporting*(7)	Free of other bias*(8)
Melissa A. Napolitano et al, 2013[30]	🟢	🟢	🔴	🔴	🔴	🟢	🟢	🟢
Sharon J.Herring et al, 2014[31]	🟢	🟢	🔴	🔴	🔴	🟢	🟢	🟢
Noa Dagan et al, 2015 [49]	🟢	🟡	🟡	🔴	🟡	🟢	🟢	🟢
Sharon J. Herring et al, 2016[33]	🟢	🟢	🔴	🟡	🔴	🟢	🟢	🟢
Job G Godino et al, 2016 [34]	🟢	🟢	🔴	🟡	🔴	🟢	🟢	🟢
Delia Smith West et al, 2016 [43]	🟢	🔴	🔴	🔴	🔴	🟢	🟢	🟢
Monica Jane et al, 2017 [35]	🟢	🟡	🟢	🟡	🟡	🟡	🟢	🟢
Lee M. Ashton et al, 2017[42]	🟢	🟢	🟡	🟡	🟡	🟢	🟢	🟢
Katherine L. Downing et al, 2017[36, 65]	🟢	🟡	🔴	🟡	🟢	🟡	🟢	🟢
Alexander G. Fiks et al, 2017[37]	🟢	🟢	🔴	🔴	🟡	🟢	🟢	🟢
Smrithi Krishnamohan et al, 2017 [47]	🔴	🔴	🔴	🔴	🟡	🟢	🟢	🟢
Molly E. Waring et al, 2018 [45]	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟢
Valerie J Silfee et al, 2018[46]	🔴	🔴	🔴	🔴	🟡	🟢	🟢	🟢
Norliza Ahmad et al, 2018[38]	🟢	🟢	🟢	🟡	🟢	🟢	🟢	🟢
Melinda J. Hutchesson et al, 2018[39]	🟢	🟢	🔴	🟡	🔴	🟢	🟢	🟢
Lorraine B. Robbins et al, 2018 [44]	🔴	🔴	🔴	🔴	🔴	🟢	🟢	🟡
Ashlee Lane Bakırcı-Taylor et al, 2019[40]	🟢	🟢	🟡	🔴	🟡	🟢	🟢	🟢
Megan L. Hammersley et al, 2019[41]	🟢	🟡	🟢	🔴	🔴	🟢	🟢	🟢

Legend:
🟢 **=Yes;** 🔴 **=No;** 🟡 **= Unclear**

*****

1) Describe the method used to generate the allocation sequence in sufficient detail to allow an assessment of whether it should produce comparable groups.
2) Describe the method used to conceal the allocation sequence in sufficient detail to determine whether intervention allocations could have been foreseen in advance of, or during, enrolment.
3,4,5) Describe all measures used, if any, to blind study participants and personnel from knowledge of which intervention a participant received. Provide any information relating to whether the intended blinding was effective.
6) Describe the completeness of outcome data for each main outcome, including attrition and exclusions from the analysis. State whether attrition and exclusions were reported, the numbers in each intervention group (compared with total randomized participants), reasons for attrition/exclusions where reported, and any re-inclusions in analyses performed by the review authors.
7) State how the possibility of selective outcome reporting was examined by the review authors;
8) State any important concerns about bias not addressed in the other domains in the tool.

Appendix D

Table III*. Nutrition-related outcomes.*

Author	Outcome Measure	Results
Melissa A. Napolitano et al, 2013[30]	-Primary outcome: -Weight loss: measure of height and weight, calculate Body Mass Index (BMI); -Secondary outcomes: -Physical activity behavior: modified version of the Godin Leisure-Time Exercise Questionnaire; -Goal setting and planning: 10 item exercise goal-setting scale; -Physical activity self-efficacy: 5-items assessing one's confidence that he/she can be active when faced with 5 common barriers; -Weight self-efficacy: measure perceived control over food-related behaviors, incorporates 20 food-related situations; -Adapted social support for diet and exercise: 48-item measure assesses the degree to which family or friends are sources of support specific to physical activity and dietary behaviors.	-Primary outcome (Weight loss): -At 4 weeks, weight changes were -0,46kg +/- 1,4 for Facebook®, -1,7kg +/- 1,6 for Facebook® Plus and 0,28kg +/- 1,7 for Control Group (CG); -At 8 weeks, weight changes were -0,63kg +/- 2,4 for Facebook®, -2,4kg +/- 2,5 for Facebook® Plus and -0,24kg +/- 2,6 for CG; -Post-hoc contrasts showed that Facebook® Plus weight losses were significantly greater than Waiting list and Facebook®; -Weight changes at 4 and 8 weeks were not significantly different between the Facebook® and Waiting List groups; -Secondary outcomes (physical activity and psychosocial measures): -There were no significant differences within or among the groups on changes in any of the measures.
Sharon J.Herring et al, 2014[31]	-Primary outcome: -BMI: measure of weight (baseline and at 14 weeks from baseline) and height (baseline); -Secondary outcomes: -Dietary intake: "Dietary History Questionnaire II"; -Physical Activity: "Physical Activity Questionnaire";	-Primary outcome: -BMI: significantly greater mean weight losses among technology-based intervention participants compared to usual care. One third of intervention group (IG) participants and no CG participants lost >5% of their initial body weight. -Secondary outcomes: -Dietary intake: greater reductions in IG participants' daily consumption of sugary drinks (78% at baseline vs 38% at follow-up), fried/fast foods (44% at baseline vs. 0% at follow-up) and chips (44% at baseline vs. 0% at follow-up), compared to CG participants (no significative differences); -Physical Activity: no differences between groups.
Noa Dagan et al, 2015 [49]	-Primary outcome: -Nutrition Knowledge: -4 quizzes contained multiple-choice questions based on the information introduced within the platform before each quiz (at game days 2, 6, 10 and 14); -Score of the first menu assembly attempt on 3 fixed days (days 4,8 and 12), during each the user was required to build a menu in a unguided manner; -Secondary outcomes:	-Primary Outcome: -Quizzes: the difference between the improvement variables of both study groups increasingly diverged over time, becoming statistically significant by the fourth quiz (p=0,02) (greater improvement over the SV group); -Score: the average z-score of the second and third menu assembly days was 0.18 above the first menu in the study group (SV), compared with -0.26 in the control group (PV); -Secondary outcome: -43% and 38% answered that the platform had highly affected and moderately affected their desire to improve their eating habits, respectively;

	-Nutritional Behavior: Final questionnaire that included statements to obtain indication of whether the platform also as effects beyond changes in knowledge;	-73% and 55% of respondents stated that their attention to food composition and caloric values were highly improved, respectively.
Sharon J. Herring et al, 2016[33]	-Primary outcome: -Gestational weight gain: calculated as the difference between last measured weight recorded before delivery and first measured weight in early pregnancy (baseline and at 36 weeks gestational age);	-Gestational weight: Participants assigned to the IG were significantly less likely to exceed Institute of Medicine guidelines compared to usual care (37% vs. 66%, P=0.033), no statistical significance; -Weight gain: IG participants gained less weight in pregnancy than controls (8.7 vs. 12.3 kg, respectively, unadjusted mean difference: 23.6, 95% CI: 27.0 to 20.1, P=0.046; adjusted mean difference: 23.1, 95% CI: 26.2 to 20.1, P=0.045), no statistical significance.
Job G Godino et al, 2016 [34]	-Primary outcome: - Effect on weight in kg at 24 months: measured at baseline, 6, 12, 18, and 24 months; -Secondary outcomes: -Waist circumference: measured at baseline, 6, 12, 18, and 24 months; -Blood pressure: measured at baseline, 6, 12, 18, and 24 months; -Dietary intake: self-reported diet measured with the Diet History Questionnaire II and the Automated Self-administered 24-hour Dietary Recall; -Physical Activity: measured with the Paffenbarger Physical Activity Questionnaire and the Global Physical Activity Questionnaire;	-Primary outcome: - Differences in BMI between the SMART IG and the CG paralleled weight in that differences were only significant at 6 months and 12 months. -There were small but statistically significant differences between groups in the proportion of participants who lost 5% of their bodyweight at 6 months, waist circumference at 6 months, and systolic blood pressure at 24 months.
Delia Smith West et al, 2016 [43]	-Primary outcome: -Body weight: was measured to the nearest 0.1 kg in light clothing without shoes using a digital scale (Tanita BWB 800, Arlington Heights, IL) at baseline and outline; -Secondary outcomes: -Behavioral weight control practices: were evaluated with a 28-item checklist that assessed both appropriate behavioral weight management strategies (weigh yourself, record food intake, increase exercise levels) and inappropriate weight management strategies (smoke cigarettes, take diet pills, avoid food for 24 hours).	-Primary outcome: -Body weight: Both groups remained fairly weight stable over the 9-week study period (HW: −0.48±1.9 kg; control: −0.45±1.4 kg), with no significant Group × Time interaction (*P* =.94); -Secondary outcomes: - Behavioral weight control practices: -Significant Group × Time interaction with respect to the total number of appropriate weight control strategies students reported using in the previous month. An increase in the total number of these strategies was observed at postintervention for those in the HW group (2.1±4.5) versus those in the control group who experienced no significant change (−1.1±3.4; *P*=.003); -No Group × Time effect for the total number of reported inappropriate weight control strategies was found (*P*=.11), and the absolute number of inappropriate strategies remained low at both time points.
Monica Jane et al, 2017 [35]	-Primary outcome: -Weight: measure of weight (baseline and at each time point: weeks 6, 12, 18 and 24) and height (baseline only)	-Primary outcome (Weight): -PG and FG had significantly greater loss than the CG at week 6 (-2,7%, p=0,01 and -2,5%, p=0,02, respectively), at week 18 (-4,5%, p=0,02 and -4,9%,

	-Secondary outcome: -Waist and hip circumference: measured at baseline and at each time point -Blood pressure: measure at baseline, week 12 and 24 with an automated, calibrated sphygmomanometer (Dianmap, Comoact T, Critikon, Germany) -Fasting blood glucose: Accu-Chek® Performa glucometer and lancing device (Roche Diagnostics) -Lean mass and fat mass: bioelectrical impedance -Lipids: blood samples at baseline and at weeks 12 and 24 (total cholesterol, triacylglycerols, low density lipoproteins and high-density lipoproteins) -Insulin: blood samples at baseline and weeks 12 and 24 -Dietary intake: Three- Day Food Records at each time point -Physical activity and step count: Three-Day Physical Activity Records and Three- Day step count at each time point.	p=0,02 respectively) and at week 24 (-3,6%, p=0,05 and -4,8%, p=0,01 respectively); -Compared to the CG , the PG showed a significant reduction in BMI at week 6 (-1,0kg/m2, p=0,03), both PG and FG showed a significant reduction at week 18 (-1,6 kg/m2, p=0,04 and -1,5 kg/m2, p=0,04, respectively), but only the FG maintained this change at week 24 (-1,5 kg/m2, p=0,02) -Secondary outcomes: - Waist circumference: The PG and FG participants had statistically significant reductions, compared to the CG group at week 18 (-4,8cm, p=0,01 and -4,6cm, p=0,01), but only the FG sustained this significant change at week 24 (-4,5cm, p=0,04); -Hip circumference: No significant differences between groups across the intervention; -Fasting blood glucose: PG group had significant reductions compared to the CG and FG; -Lean and fat mass: FG showed greater reductions in fat mass than CG and PG. There was a statistically significant reduction compared to CG, at weeks 12 and 24 (-2,6%, p=0,01). FG showed a numerically greater increases in lean mass than CG and PG; -Blood pressure: no significant differences; -Dietary intake: the greatest numerical reduction in energy intake was observed in FG at week 24 (to CG: -1107,4 kJ/day; to PG: -1071,6kJ/day; FG: -1465,9 kJ/day); -Physical activity: significant increase in FG at week 6 (+588 kJ/day, p=0,03), compared to the PG. No significant differences.
Lee M. Ashton et al, 2017[42]	-Outcomes: - Physical activity level: measured via seven days of pedometric with Yamax digiwalker SW200 pedometers (Yamax Digi-Walker SW200, Kunamoto City, Japan); -Diet quality: Australian Eating Survey FFQ; -Well-being: Satisfaction with Life Scale (SWLS); -Weight, fat mass and skeletal muscle mass: bioelectrical impedance analysis (model 720; Inbody); -Fasting Total cholesterol, HDL-Cholesterol, LDL-Cholesterol and Triglycerides (composite measures): finger prick blood sample and analyzed using the handheld CardioChek® device.	-No significant differences between groups: physical activity, diet quality and well-being; -Significant within group differences in the intervention group for pedometer steps/day (1588.2 steps/day, 95% CI = 534.7, 2641.6) and diet quality score (5.9 95% CI = 3.1, 8.7); - Significant differences favoring the IG were observed for daily vegetable servings ($p < 0.05$, $d = 0.62$), weight ($p < 0.05$, $d = 0.63$), percentage weight loss ($p < 0.05$, $d = 0.67$), waist circumference ($p < 0.001$, $d = 0.89$), BMI ($p < 0.01$, $d = 0.81$), body fat mass ($p < 0.05$, $d = 0.67$), plasma total cholesterol ($p < 0.05$, $d = 0.60$), LDL cholesterol ($p < 0.01$, $d = 0.83$) and ratio of total cholesterol-to-HDL cholesterol ($p < 0.05$, $d = 0.60$).
Katherine L. Downing et al, 2017[36, 65]	-Primary outcome: - Height and Weight: measured at 18 and 36 months of age. BMI z score will be calculated using WHO growth standards;	-Primary outcome:

	-Waist circumference: measured using a non-stretchable tape measure at 18 and 36 months of age; -Secondary outcomes: -Child's dietary intake: Children's dietary intake was assessed at 18 months and 36 months, with a parent completed food frequency questionnaire; -Physical activity and sedentary behaviors: Seven days of objectively assessed physical activity data was collected using accelerometers at 18 and 36 months. At this time children will be fitted with an ACTi Graph accelerometer which they will wear for eight consecutive days (which will capture weekday and weekend day activity and sedentary patterns) (LMVPA). Parents also reported television viewing (min/day).	-No significant differences for BMI z-score and waist circumference z-score between children whose mothers joined and children whose mothers did not join their Facebook® groups. -Secondary outcomes: -No significant differences for vegetable intake, water intake, non-core drink intake, non-core sweet snack intake, non-core savory snack intake, television viewing or LMVPA between children from both groups; -Significantly higher fruit intake at the IG compared to the CG fruit intake ($p<0,05$).
Alexander G. Fiks et al, 2017[37]	-Primary outcome: -Maternal infant feeding practices: 10 items from the "Infant Feeding Style Questionnaire (IFSQ); -Secondary outcomes: -Infant sleep and activity: simple questions; -Maternal well-being: "Multidimensional Scale of Perceived Social Support (MSPSS)", "Parental Stress Scale", "Karitane Parenting Confidence Scale" and simple questions; -Infant growth: weight and length (duplicate measures)	-Primary outcome: -Infant feeding: mothers in the IG reported significantly healthier infant feeding behaviors. At 9 months, mothers in the intervention group had higher IFSQ healthy feeding behavior scores (10 items; $\alpha=0,70$) compared to the CG ($p=0,01$, effect size 0,45) and were less likely to pressure their child to finish food ($p=0,02$, effect size 0,47). -Secondary outcomes: -Infant sleep: No significant differences between groups; -Infant activity: No significant differences between groups; -Maternal well-being: No significant differences between groups. -Infant growth: Infants in both groups significantly increased their BMI z-score over the course of the study. No significant differences between groups.
Smrithi Krishnamohan et al,2017 [47]	-Outcomes: -BMI: weight and height measures. -Dietary intake and Physical activity: WHOSTEPS questionnaire.	-Outcomes: -Physical activity levels: no statistically significant difference between groups; -Dietary pattern: mean numbers of days of junk food intake per week was reduced from 3,27 days/week at baseline to 2 days/week at follow up (IG); no more statistically significant findings; -BMI: a significant decrease in the BMI was found among the CG (baseline:25.57, follow-up:25.15).
Molly E. Waring et al, 2018 [45]	-Weight loss: -Participants self-reported pre-pregnancy weight and gestational weight gain. Postpartum weight retention (in pounds) was calculated by subtracting self-reported pre-pregnancy weight from measured baseline weight, and significant postpartum weight retention was defined as ≥5 kg; - Clinically significant weight loss was defined as ≥5%.	-Outcomes: -Weight loss: -Eighteen women lost weight and 1 gained weight; -On average, women lost 7.7 lb (SD 8.1; range, 16.9 lb gained to 20.8 lb lost), representing 4.8% of baseline weight (SD 4.2%; range, 6.7% gained to 11.8% lost). Fifty-eight percent of participants lost ≥5%.

Valerie J Silfee et al, 2018[46]	-Outcome: -Weight loss: Height and weight were measured at baseline and after 16 weeks by trained research staff using a stadiometer and digital scale, respectively.	-Pilot 1: -Weight: Mean weight loss was 2.6 (SD 8.64) pounds; -Pilot 2: -Weight: Mean weight loss was 2.5 (SD 9.23) pounds; -Pilot 3: -Weight: Mean weight loss was 7.0 (SD 11.6) pounds.
Norliza Ahmad et al, 2018[38]	-Primary outcome: -BMI z-score: determined using WHO Anthroplus software with weight in kg, height in cm, gender and age; -Secondary outcome: -Waist circumference: was measured and converted to waist circumference percentile for Malaysian children; -Percentage of body fat: Omrom Karada Scan (model HBF 212),	-Primary outcome: -BMI z-score: at the end of 6 months, significantly higher proportion of children in the IG than in the CG had reduced BMI z-score for all (F (6,517) =2,817, p=0,010); -Secondary outcomes: - Waist circumference: Among obese children (F (6,297) =6,072, p=<0,001), more children in the IG had reduced their ways circumference percentile (F6 (6,297) =3,998, p=0,001) compared to the CG; - Percentage of body fat: More overweight children in the IG had reduced their body fat percentage compared to the CG (F (6,201) =2,526, p=0,022).
Melinda J. Hutchesson et al, 2018[39]	-Primary Outcome: -Weight: measured from baseline to 6 months. Weight was measured on a digital scale (Inbody 720, Inbody Australia, Miami, QLD, Australia); -Secondary Outcomes: - Waist circumference: at baseline and after 6 months; - Body fat (kg and percentage): was determined using bioelectrical impedance (Inbody 720, Inbody Australia, Miami, QLD, Australia), at baseline and 6 months; - Blood pressure (systolic and diastolic): was measured using an automatic sphygmomanometer (Inbody BPBIO320, Inbody Australia, Miami, QLD, Australia); - Energy/Dietary intake: were assessed using the 120-item semi-quantitative Australian Eating Survey Food Frequency Questionnaire.	-Primary outcome (Weight): - No significant difference between groups in change from baseline was observed; - Significant within-group changes in weight were found in IG, regardless of whether measured weight only was included in the analysis (-2.04 kg (-4.07, -0.01), p = 0.049); -Secondary Outcomes: - Significant differences between groups favoring the intervention group were observed for body fat (kg, p = 0.019, Cohen's d = -0.44), alcohol intake (g, p = 0.037, d = -0.41), vegetable intake (% energy/day, p < 0.001, d = 1.07) and intake of nutrient-dense healthy (% energy/day, p = 0.018, d = 0.77) and EDNP foods (% energy/day, p = 0.018, d = -0.76); - Significant positive within-group changes were also found in the IG for BMI, body fat (kg and %), waist circumference, systolic and diastolic blood pressure, total cholesterol and daily intakes of fruit (grams), vegetables (% energy and grams), take-away foods (% energy), nutrient-dense healthy foods (% energy) and EDNP foods (% energy).
Lorraine B. Robbins et al, 2018 [44]	-Primary outcome: -Diet quality: At baseline and postintervention, adolescents completed the web-based Automated Self-Administered 24-Hour (ASA24) Dietary Assessment Tool; -Physical Activity: ACTi Graph GT3Xþ (Version 3.2.1), a triaxial accelerometer; -Secondary outcome:	-Primary outcome: -Diet quality: diet quality was not significantly different between groups, but the effect sizes were close to being moderate (d ¼ .46 and .44, respectively); -Physical Activity: were significantly higher in the IG than CG at postintervention (d=0.64); -Secondary outcomes:

	-BMI: Two research assistants (RAs) measured each adolescent's height and weight, at baseline and postintervention (2 measurements); -Fat Mass: measured using a Foot-to-Foot Bioelectric Impedance Scale (Tanita Corporation, Tokyo, Japan).	- No significant between-group differences occurred for percent body fat, and BMI percentile; -The proportion of overweight/obese did not change significantly in the IG (55.9% at both baseline and postintervention, p=1.00; n=34) or CG (40.5% vs. 50.0%, p=0.13; n=42) from baseline to postintervention.
Ashlee Lane Bakırcı-Taylor et al, 2019[40]	-Primary outcome: -Fruit consumption: reflectance spectroscopy via "Veggie Meter" to measure carotenoid levels and "Focus on Veggies Survey" questionnaire (10 questions); - Fruits and vegetables accessibility: Parents took electronic food photos to assess the frequency of appearance of total fruit and vegetables for children's meals and snacks; -Secondary outcome: -BMI (kg/m2): height and weight measurements of children were collected in triplicate at baseline and after the intervention.	-Primary outcome: -Skin carotenoids: Veggie Mater values for children and adults showed significant week x treatment interaction values in the IG compared with the CG for both children (P<0,001) and adults (P=0,001) for midpoint and postintervention values; -"Focus on Veggies Survey": only the question "My child eats >1 kind of vegetable a day" had a significant average difference (0,69 vegetables [+0,45 vs -0,29]; P<0,02) between intervention and control group. The question "I buy vegetables" suggested a positive improvement in vegetable buying in the IG compared with the CG (0,55 vegetables [+0,45 vs -0,14]; P<0,6); -Dietary Measures: The photos showed no significant effect for week x treatment or treatment of frequency of fruits and vegetables. -Secondary outcome: -BMI percentiles: 1 child in the IG changed from the higher end of normal or healthy weight to overweight. No more differences between baseline data were observed.
Megan L. Hammersley et al, 2019[41]	-Primary outcome: -BMI: height and weight were measure twice at baseline, 4 and 6 months; -Secondary outcomes: -Dietary intake: parent-reported food questionnaire (modified from "Eating and Physical Activity Questionnaire" and a parent-reported 24-hour recall of child dietary intake ("Easy Diet Diary" app); -Physical Activity: ACTi Graph GT3X + accelerometer; -Sleep habits: 4 questions from the "Children's Sleep Habits Questionnaire".	-Primary outcome: -BMI: No significant differences between groups. A significant within-group difference in BMI in the IG; -Secondary outcomes: -Dietary intake: some positive group-by-time outcomes (reduced frequency of discretionary food intake at the intervention group compared with children in CG (-1.36, 95% CI – 2.27 to -0.45; p=0,004); -Physical Activity, Screen time and Sleep: no significant differences between groups; -Child feeding and nutrition parent self-efficacy: some positive group-by-time outcomes at the IG (child feeding pressure to eat practices (-0.30, 95% CI 0.06 to -0.00; p=0,048) and nutrition self-efficacy (0.43, 95% CI 0.10 to 0.76;p=0,1).

Legend: BMI-Body Mass Index ; IG- Intervention Group; CG- Control Group; SV- Social version; PV-Private version; PG- Pamphlet Group; FG- Facebook® Group

Appendix E

Table IV. *Classification of nutrition-related outcomes.*

Study	P/S *	Nutrition related outcomes	Classification
Melissa A. Napolitano et al, 2013[30]	**P**	Weight management	NEUTRAL
Sharon J.Herring et al, 2014[31]	**P**	Weight management	POSITIVE
	S	Dietary intake	POSITIVE
Noa Dagan et al, 2015 [49]	**P**	Food and Nutritional Knowledge	POSITIVE
	S	Food and Nutritional Behavior	POSITIVE
Sharon J. Herring et al, 2016[33]	**P**	Weight management	NEUTRAL
Job G Godino et al, 2016 [34]	**P**	Weight management	POSITIVE
Delia Smith West et al, 2016 [43]	**P**	Weight management	NEUTRAL
	S	Food and Nutritional Behavior	POSITIVE
Monica Jane et al, 2017 [35]	**P**	Weight management	POSITIVE
Lee M. Ashton et al, 2017[42]	**S**	Dietary intake	POSITIVE
	S	Weight management	POSITIVE
Katherine L. Downing et al, 2017[36, 65]	**P**	Weight management	NEUTRAL
	S	Dietary intake	POSITIVE
Alexander G. Fiks et al, 2017[37]	**P**	Food and Nutritional Knowledge	POSITIVE
Smrithi Krishnamohan et al, 2017 [47]	**P**	Weight management	NEGATIVE
Molly E. Waring et al, 2018 [45]	**P**	Weight management	POSITIVE
Valerie J Silfee et al, 2018[46]	**P**	Weight management	POSITIVE
Norliza Ahmad et al 2018[38]	**P**	Weight management	POSITIVE
Melinda J. Hutchesson et al, 2018[39]	**P**	Weight management	NEUTRAL
	S	Dietary intake	POSITIVE
Lorraine B. Robbins et al, 2018 [44]	**P**	Dietary intake	NEUTRAL
	S	Weight management	NEUTRAL
Ashlee Lane Bakırcı-Taylor et al, 2019[40]	**P**	Dietary intake	POSITIVE
Megan L. Hammersley et al, 2019[41]	**P**	Weight management	NEUTRAL
	S	Dietary intake	POSITIVE

Legend: *P- Primary outcome; *S-Secondary outcome

Appendix F

***Table V**. Compensatory/incentive gifts to the participants and Retention rate of dietary interventions using Facebook®.*

Study	Participants (pre-intervention)	Participants (post-intervention)	Retention rate	Gifts
Melissa A. Napolitano et al, 2013[30]	**52**	50	96%	YES
Sharon J.Herring et al, 2014[31]	**18**	17	94%	YES
Noa Dagan et al, 2015 [49]	**63**	25	39%	NO
Sharon J. Herring et al, 2016[33]	**66**	56	84%	YES
Job G Godino et al, 2016 [34]	**404**	341	84%	YES
Delia Smith West et al, 2016 [43]	**58**	56	97%	NO
Monica Jane et al, 2017 [35]	**137**	54	40%	NO
Lee M. Ashton et al, 2017[42]	**50**	47	94%	NO
Katherine L. Downing et al, 2017[36, 65]	**150**	86	57%	YES
Alexander G. Fiks et al, 2017[37]	**87**	71	82%	YES
Smrithi Krishnamohan et al, 2017 [47]	**61**	45	74%	NO
Molly E. Waring et al, 2018 [45]	**19**	19	100%	YES
Valerie J Silfee et al, 2018[46]	**67**	58	87%	NO
Norliza Ahmad et al 2018[38]	**134**	122	91%	NO
Melinda J. Hutchesson et al, 2018[39]	**57**	57	100%	NO
Lorraine B. Robbins et al, 2018 [44]	**84**	77	92%	YES
Ashlee Lane Bakırcı-Taylor et al 2019[40]	**30**	25	83%	YES
Megan L. Hammersley et al, 2019[41]	**86**	78	91%	NO

Appendix G

Table VI. *Engagement and acceptability of dietary interventions using Facebook®.*

Author	Engagement measure	Results	Acceptability measure	Results
Melissa A. Napolitano et al, 2013[30]	Number of times participants "liked" a post, posted comments and responded to events. For Facebook® Plus participants, were also tracked the text response time.	-Facebook® only: -23,5% of the participants "liked" the study related posts on the Facebook® group; -41,2% of the participants posted or commented on the study-related content at least once; -88,2% of the participants responded to event invitations at least once during the program. - Facebook® Plus: -22,2% of the participants "liked" the study related posts on the Facebook® group; -77,8% of the participants posted or commented on the study-related content at least once; -72,2% of the participants responded to event invitations at least once during the program.	23 item questionnaire measure assessed program satisfaction and perceived level of involvement with the program.	-Facebook® only + Facebook® Plus: -97% of the participants found the program helpful; -81,3% found the videos and handouts helpful; -100% would recommend the program to others; -Facebook® Plus (text messages): -93,3% reported that the text messages were helpful; -100% reported that the tailored weekly reports were helpful.
Sharon J.Herring et al, 2014[31]	No measures.	No findings.	-Program satisfaction questionnaire	-80% reported that the skills they learned in the program were extremely helpful; -80% found the text messages, Facebook® posts and coach calls extremely useful; -100% reported that the program was extremely successful in promoting weight control.
Noa Dagan et al, 2015 [49]	- Greater time and effort trying to progress through the stages of the educational platform.	- SV group spent an average of 3 minutes and 40 seconds on each menu assembly, as opposed to 2 minutes and 50 seconds in the control group (PV); -study group members performed an average of 1.42 attempts to build the menu on each game day,compared with 1.37 attempts in the control group.	-Final questionnaire: participants' perception of the Social Networking Sites' effect.	-64% expressed a medium or high level of agreement with a statement that they were interested with another players' performance; -67% expressed a medium or high level of agreement that other players' performance encouraged their engagement with the platform and increased their motivation to succeed.

Sharon J. Herring et al, 2016[33]	- Number of self-monitoring response texts received, number of participant comments or "likes" and number of coach calls completed.	- Few participants (11%) commented or "liked" posts on Facebook®, average number of weekly coach posts was 1.760.9, which waned over time.	-Surveys at 36 weeks' gestation to assess treatment acceptability.	-No results about Facebook® component.
Job G Godino et al, 2016 [34]	- Number of times participants "liked", commented and posted at Facebook® group.	Among those in the SMART intervention group, median (IQR) level of engagement with the intervention declined over time: 98 (9–265) interactions at 6 months,76 (0–222) at 12 months, 41 (0–198) at 18 months, and 12 (0–161) at 24 months. Participants with high levels of engagement as determined by a median split, did not achieve greater weight loss than participants with low levels of engagement (p>0・05 at all timepoints).	- At 24 months, satisfaction with the SMART intervention was assessed using a Likert scale that asks about level of satisfaction with the program as well as program features.	Among those who received the SMART intervention, most (119 [78%] of 153) reported that they were satisfied with the intervention and most (123 [80%] of 153) would recommend it to others. Given its numerous features and capacity to encourage content creation,33 Facebook® emerged as the primary modality through which dynamic content was delivered at the group level.
Delia Smith West et al, 2016 [43]	- Total number of Facebook® likes and comments by each participant were tallied.	- The total number of participants who had at least one interaction on the private Facebook® page (liked or commented on a post) when study investigators posted ranged from 23 out of 29 (79%) during week 1 to 29 out of 29 (100%) during weeks 3 and 7; - Participants made a total of 862 comments and likes over the intervention period, resulting in an average of 3.3 ±1.4 per person per week.	-Participants were asked how useful they found the program and how likely they were to recommend the program to a friend or family member: 5-point Likert-scale.	-Participants rated the intervention positively, with 90% (26 out of 29) indicating they enjoyed it, 86% (25 out of 29) reporting it was helpful, and 83% (24 out of 29) saying that they would recommend the program to a friend; - Participants (26 out of 29; 90%) reported that they were satisfied with the number of lessons, the number of Facebook® postings (23 out of 29; 79%), the length of the Facebook® postings (24 out of 29; 82%), and the extent of interaction with the study investigators on Facebook® (21 out of 29; 72%).
Monica Jane et al, 2017 [35]	No measures.	No results.	No measures.	No results.
Lee M. Ashton et al, 2017[42]	-Number of members who saw, liked, or commented on the posts.	-Average of 20 views and 1.8 "likes" per post. In total, 75% (n = 18) reported meeting the recommended frequency of use (reading weekly Facebook® posts).	-Participants were asked to rank the individual program components on a 5-point Likert scale.	Facebook® group were supportive in answering any queries/questions (mean scores, 3.7–4.5);
Katherine L. Downing et al, 2017[36, 65]	-Number of members who saw, liked, or commented on the posts;	-At the beginning, 90% of the participants saw the posts; -At children 18 months of age, 80% of the participants saw the posts;	-Questions (at 12, 15 and 18 months):	-1: 12,15 and 18 months:75%, 50%, 47,5% of mothers' answer was "quite a bit" or "Very useful";

	-Number of participants who completed process evaluation questionnaires.	- Lasts posts were saw by 32,1% of the participants; -There were an average 1.0 “likes” per participant post compared to 0.2 “likes” per facilitator post; -86 participants (57,3%) completed process evaluation questionnaires.	-1: “How useful was being a member of Facebook® group?”; -2: “How often do you log into yours group page?”; -3: “Have you enjoyed being part of your Facebook® group?”; -4: “Have you shared Facebook® group content with anybody else?”	-2: 12,15 and 18 months:70,1%, 42,1%, 49,1% mothers answered at least “weekly”; -3: 12,15 and 18 months:50%, 38,1%, 42,1% of mothers’ answer was “Quite a bit” or “A lot”; -4: 12, 15 and 18 months: 7,4 %, 41%, 35,6% answred “Yes”.
Alexander G. Fiks et al, 2017[37]	-Active engagement was defined at the group level as at least 2 posts/comments per group per day on average. In addition, were collected follow-up rates.	-Group members posted a mean of 30 times per group per week, which is more than twice the rate of posting that we had defined as ‘‘active engagement’’ (an average of 2 posts/group/day, or 14/week). No significant differences between the groups; -Participants were most active in the groups around the perinatal period (7 weeks), with 1953 participant posts across the 4 groups; then 1803 from 0 to 3 months postnatal, 1074 from 3 to 6 months, and from 6 to 9 months, there were 553.	Likert scale to some statements about acceptability and questions about the Facebook® group content: T2, T6 and T9	-88% of the GG participants responded “agree” or “strongly agree” to the statements “The program was helpful” and “I would recommend this program”; -60% of the GG participants responded “nothing” when asked “What could be improved about the group?” and 24% suggested additional in-person meetings.
Smrithi Krishnamohan et al, 2017 [47]	No measures.	No results.	No measures.	No results.
Molly E. Waring et al, 2018 [45]	-Engagement data were downloaded from Facebook® using NCapture add-on to NVivo 10 software, and the number of posts and replies written by each participant and the number of posts or replies liked by each participant were summed.	- Participants posted a median of 2 original posts (IQR, 1–3; range, 0–5) and 24 replies (IQR, 15– 31; range, 6–76) and liked a median of 32 posts or comments (IQR, 16– 51; range, 10–172); -42% of participants posted, commented, or liked a post or comment on the last day of the intervention, 63% during the last week, and 100% in the last 4 weeks.	-5-point Likert scales: how likely participants would be to recommend the program to a postpartum friend and whether they would participate again after a subsequent pregnancy.	-88% of women said they would be likely or very likely to participate again if they had another baby (41% very likely, 47% likely, 6% neutral, 6% unlikely, and none very unlikely); -82% would be likely or very likely to recommend the program to a postpartum friend (29% very likely, 53% likely, 12% neutral, 6% unlikely, and none very unlikely).
Valerie J Silfee et al, 2018[46]	-Participants’ behavior and interactions with the Facebook® group,	Pilot 1: -62% (17/27) of women actively engaged with the group each week during the 8-week coached phase;	-Likert-scale with several questions to assess the acceptability-	Pilot 1: - 79% (19/27) would recommend the program to a friend;

	including all likes, comments, and posts in each week; -Likert-scale: how often they read the entire intervention posts and how often they read part of the intervention posts.	Pilot 2: - 55% (13/24) of women actively engaged with the group weekly during the 8-week coached phase; Pilot 3: - 67% (11/16) of women actively engaged with the group weekly during the 8-week coached phase.		Pilot 2: - 80% (16/24) would recommend the program to a friend; Pilot 3: - 100% (16/16) would recommend the program to a friend.
Norliza Ahmad et al 2018[38]	-Programe aderence	-96,9 % of parents participated in WhatsApp and 81,3% in Facebook® respectively, compared to 68,8% for session one and 42,2% for session 2 of the face-to-face sessions.	No measures.	No results.
Melinda J. Hutchesson et al, 2018[39]	- Each participant's use of intervention components were objectively tracked, including number of website log-ins, completion of online quizzes and goal setting, number of email newsletters opened, number of self-monitoring entries (weight, food or exercise) made in the Easy Diet Diary app and number of posts/likes to the Facebook® group and Instagram account.	-For Facebook®, there was a total of 138 posts, 86 by the facilitator and 52 by participants. The mean number of posts by participants was 1.8±2.5. There was a total of 319 'likes' made on Facebook® posts, with a mean of 11.0 ±16.5 likes per participant. There were 359 comments made on Facebook®, with a mean of 12.4 ± 19.8 comments per participant; -All participants engaged with the social media accounts, particularly Facebook®, throughout the six-month program.	-Participants completed a process evaluation survey and were asked to rank overall program acceptability/satisfaction on a 5-point Likert scale.	- The social media posts were perceived as providing the most useful information about healthy eating, exercise and weight loss.
Lorraine B. Robbins et al, 2018 [44]	- Session and parent posting completion rates.	-92.1% of parent–adolescent dyads attended the meeting; -After-school club attendance by adolescents was approximately 67% (average of 12 of the 18 club days offered); -Of the 38 parents, 20 (52.6%) and 19 (50.0%) completed over half of the 11 requested postings for healthy eating (mean=8 postings) and PA (mean=7 postings), respectively.	-Measured by: -(1) intervention evaluation surveys to assess parents' (14 items) and adolescents' (29 items) perceptions; -(2) data collected in focus groups with adolescents and parents, followed a semi-structured interview guide.	-All parents reported they were "somewhat satisfied" or "very satisfied" with the after-school club and meeting with the chef; -Regarding Facebook®, 86.9% of parents were somewhat satisfied or very satisfied; -The majority of adolescents (93.9%) agreed that they liked the club activities, and all (100.0%) agreed the program was fun;

Ashlee Lane Bakırcı-Taylor et al, 2019[40]	-Number of observed interactions (likes/comments) that posts received; -Observed interaction summed with the consumption of post content (number of clicks anywhere in the post or click-through rate).	-The 177 fruit and vegetable posts generated 147 unique likes and comment interaction. This was an engagement rate of approximately 83%, or 13 interactions/participant on average for all posts; -The rate calculation using clicks, likes and comments was 347%. Each participant interacts with posts 55 times on average.	-Mobile learning survey: questions about mobile website (IG), text messages (IG and CG) and Facebook® (IG).	-Participants more readily used the Facebook® page than the mobile Jump2Health website (11 participants who completed the intervention indicated that they had visited the Facebook® page or had seen content from the page in their Facebook® News); -Participants reported that on average, they visited Facebook® page ≤1-2 times/week (55%), 3-4 times/week (36%) or >5 times/week (9%).
Megan L. Hammersley et al, 2019[41]	-No measure.	-No findings.	-Process evaluation questionnaire	-39% of the participants agreed or strongly agreed that the Facebook® content was useful.