Healthy Lifestyle Management of Pediatric Obesity with a Hybrid System of Customized Mobile Technology: The PediaFit Pilot Project

Anna Pia Delli Bovi 1, Giorgia Manco Cesari 1, Maria Chiara Rocco 1, Laura Di Michele 1, Ida Rimauro 1, Anna Lugiero 1, Silvia Mottola 1, Anna Giulia Elena De Anseris 2, Lucia Nazzaro 2, Grazia Massa 1 and Pietro Vajro 1,*.©

Abstract: Pediatric obesity management strategies suffer from a high rate of dropout and persistence of weight excess, despite the use of new tools, such as automated mobile technology (MT). We aimed to compare the efficacy of two 6-month personalized MT protocols in terms of better engagement, adherence to follow-up visits and improved anthropometric and lifestyle parameters. MT contacts consisted of three personalized/not automated What’s App® self-monitoring or challenge messages per week. Messages, sent by a dedicated coach were inserted between three-monthly in-presence regular visits with (PediaFit 1.2) or without (PediaFit 1.1) monthly free-of charge short recall visits carried out by a specialized pediatric team. The sample included 103 children (mean age 10 years, range 6–14) recruited in the Pediatric Obesity Clinic between January 2017 and February 2019, randomized into Intervention group (IG) (n = 24 PediaFit 1.2; n = 30 PediaFit 1.2) and Control group (CG) (total n = 49). Controls received standard treatment only (indications for healthy nutrition and physical activity, and three months in presence regular visits). Overall, both IGs achieved significantly better results than the CGs for all considered parameters. Comparison of the two IGs at the sixth month in particular showed an IG 1.2 statistically significantly lower drop-out rate (10% vs. 62%, p = 0.00009), along with significantly improved BMI (p = 0.003), Screen Time (p = 0.04) and fruit and vegetables consumption (p = 0.02). The study suggests that the hybrid association of messaging through personalized/not automated MT plus monthly free-of charge recall visits may improve the prefixed outcomes of MT weight loss intervention programs.

Keywords: obesity; lifestyle; dropout; mobile technology; attrition; pediatric

1. Introduction

Childhood obesity is a major public health problem that increases the risk of medical comorbidities, health care costs and decreased quality of life. The above factors underline the need for early actions [1]. However, these are often compromised by a high rate of dropout (i.e., abandoning the intervention before reaching the set goals) which may affect from 12%–50%, especially among pediatric participants [2].

Studies suggest that age, ethnicity, anthropometry, health service factors, and lack of treatment preparedness are likely predictors of dropout rates from weight management interventions, together with psychological distress and lower family functioning [3,4]. The latter aspect implies the importance of the household environment and of ongoing support for parents in an empathetic and personalized way rather than simply focusing on weight...
changes [3]. Intensity of the intervention and the frequency of visits are other factors which appear relevant in weight management interventions, as in adult participants they are inversely associated with cure abandonment [5].

The current orientation for improving adherence to treatments in pediatrics focuses on motivation, problem-solving skills, and reduction of post-treatment influence, resorting to a number of tools including web-based programs [6,7], “exergaming” [8–10], school interventions [11], summer camp [12], parent engagement [13–15], and automated mobile technology (MT) [16–24]. Studies focused on mobile phone interventions to improve lifestyle and preventing overweight and obesity are attracting interest in both the adult and pediatric population. In particular, the use of MT in children could be useful if utilised in innovative and complementary ways to traditional strategies (hybrid approach).

Differently from previous automated MT studies, our controlled study aims to evaluate the effectiveness of a personalized/non-automated mobile messaging intervention, with and without in-presence periodic recall visits inserted between regular visits, upon adherence to follow-up and improvement of anthropometric parameters and lifestyle.

2. Materials and Methods

2.1. Participants

Children aged 6–14 years old, affected by obesity (Body Mass Index (BMI) > 95th percentile for age and sex according to the Centers for Disease Control and Prevention (CDC) 2000 growth curves for 2–20 years old) [25] were recruited between January 2017 and February 2019 for this study developed in the Pediatric Obesity Clinic of our University Hospital.

In addition to the presence of obesity, inclusion criteria were consent to participate in the study and willingness to be contacted by phone (What’s App®) by the assigned coach, on their mobile phone or (if under 8 years old) via the mother.

2.2. Study Design

This quasi-experimental study consists of two comparative but separate phases: PediaFit 1.1 (January 2017–January 2018) and PediaFit 1.2 (January 2018–February 2019). In each of the two periods, patients at the end of the first visit were randomly allocated with 1:1 ratio to an Intervention (IG) or a Control group (CG) exclusively on the basis of the chronological order of their outpatient hospital booking. There were no patient transfers from one group to another.

The first pilot study (PediaFit 1.1) compared patients with standard treatment (CG) vs. patients who received standard treatment associated with a personalized messaging program (IG). In the second pilot study (PediaFit 1.2) monthly recall visits were added to the IG protocol. In particular, as illustrated in Figure 1 (panels A and B), patients in the Intervention groups received three regular visits (IG 1.1, n = 24) or seven in presence visits (IG 1.2, n = 30; three regular visits plus four recall visits). The 54 participants of both IGs received from their own coach (assigned during the first visit) three personalized messages/week during the intervals between their three-monthly regular visits. In addition, IG 1.2 had monthly in-presence recall visits which aimed to give better personalized support and reinforce the purpose of the weight and lifestyle management program.

Control groups (CG 1.1, n = 25; CG 1.2, n = 24; total n = 49) received standard treatment (indications for healthy nutrition and physical activity, plus regular visits every three months) without the MT messaging aid and without monthly recall visits.
Both groups received a first visit by a team consisting of a specialized pediatrician, a resident in pediatrics, a dietician and a medical student (IG coach). During the first and the other regular visits, the specialized pediatrician and the resident in pediatrics carried out anamnesis, physical examination and evaluation of the main anthropometric and lifestyle parameters, and the dietician evaluated the food diary. The patients were provided with a poster drawn up along the lines of the “food traffic light”, containing nutritional advice (Appendix A Figures A1 and A2, translated and original versions, respectively). After discussion of the poster, a visit to a dedicated Facebook® page which is constantly updated was recommended [https://www.facebook.com/Pediafit/(accessed on 10 February 2021)].

The designated coach (medical student) in charge of following the patient during the pilot project took care of the data collection and the messaging program throughout the study. The study was conducted according to the Helsinki Declaration [26] and approved by the Ethics Committee of the University of Salerno. Parents signed an informed consent with agreement to participate in the program, be contacted and allowing the use of the clinical data for research purposes.

2.3. Messaging Program and Recalls

Messages were sent to the children, if aged >8 years \((n = 29)\), or to a parent, usually the mother \((n = 25)\). Both programs lasted 24 weeks and each was divided into two parts: (a) self-monitoring and (b) challenge messages.

Self-monitoring messages (3 messages/week; Appendix B Tables A1 and A2), sent by the coach during the 12 weeks in the interval between the first and the follow-up regular visit, focused on healthy behavior (topics regarded sugary drinks, fruit and vegetables consumption, breakfast, portions, screen-time, physical activity, hours of sleep) accompanied by empathetic and personalized advice and/or encouragement. The child’s parent was required to submit body weight every weekend.

Challenge messages (3 messages/week; Appendix C Tables A3 and A4), were sent during the 12 weeks in the interval between the second and the third follow-up regular
visit, in order to reinforce the healthy behaviors learned. The messages were preceded by an empathetic and personalized phone call from his/her coach as a reminder, along with a request for feedback.

PediaFit 1.2 (Figure 1, panel B) included, in addition, free intermediate monthly in presence visits (recall visits). Each patient in the PediaFit 1.2 IG underwent a total of four recall visits over six months (respectively at first, second, fourth and fifth month) during which the coach and the dietician recorded on site auxological parameters, current food diary, news about dietary lifestyle, physical activity, and any critical issues.

2.4. Data Collection

During baseline and follow-up regular visits (and also recall visits in the case of Pediafit 1.2) per protocol anthropometric parameters (body weight, height, waist circumference (CV), neck circumference (CC); BMI and BMI z-score), blood pressure, and obesity related acanthosis nigricans (AN) were measured. Standard laboratory and instrumental (abdomen ultrasound to search for hepatic steatosis) investigations were requested during the regular visit.

Lifestyle was investigated by requesting information (at baseline, during follow-up regular visits and also during recall visits only for PediaFit 1.2) about hours of sleep per night, minutes of physical activity per day/week, hours of sedentary lifestyle and screen-time per day, presence or absence of breakfast, number of meals per day, daily consumption of fruit and vegetable portions and calculated consumption of sugary drinks (mL) over the course of a week.

IG and CG data were collected at each regular and recall visit, and compared at the end of each study. At a later stage, the two studies were compared retrospectively.

2.5. Statistical Data Analysis

We carried out an exploratory evaluation of the distribution using a boxplot. Despite the wide variability of the individual data in some of the parameters, no consistent symmetry violations with particular outliers were identified. Continuous normally distributed parameters were reported as means ± standard deviation (SD). Dropout analysis was carried out by comparison of adherence to the follow-up of the two groups at the third and sixth month with Exact Fisher Test. For the analysis of anthropometric results and healthy behavior a T-Student test was performed, comparing the outcomes of compliant patients at the third and sixth month (the dropout at the sixth month in the CG was very high, therefore making the analysis poorly reliable). The analysis was intention-to-treat, without imputation of the missing data.

All analyses were performed using the Statistical Package for the Social Sciences (SPSS, version 17.02). Statistical significance was defined as $p < 0.05$ (two-tailed).

3. Results

The study included a sample of 103 patients (54 males (52%), aged between 6 and 14 years (Mean = 10 years), allocated into PediaFit 1.1 (49 participants, 25 females (57%)), and PediaFit 1.2 (54 participants, 30 males (66%)). The baseline clinical parameters of all the participants are shown in Table 1.

Self-monitoring messaging received at least one feed-back by 100% of both the IG 1.1 and IG 1.2 participants, whereas messages with challenges received at least one feed-back by 67% and 96%, respectively. In the two messaging phases, compliance to messages (answers to more than 50% of the expected messages) was 75% and 81% in the IG 1.1, and 83% and 60% in the IG 1.2 group, respectively. Both the first and second recall visit were attended by 93% of IG 1.2 participants (dropout 7%). The third and fourth recall visits also reached comparable participation (90% and 93% of the IG 1.2, respectively).
Table 1. Clinical parameters of the 103 patients allocated to Intervention and Control Groups of PediaFit 1.1 + PediaFit 1.2 at entry.

| Variable  | Intervention Group Mean (SD) | Control Group Mean (SD) |
|-----------|-----------------------------|-------------------------|
|           | First Visit n = 54 (24 M; age 9.7 years) | First Visit n = 49 (25 M; 10.4 years) |
| BMI (kg/m²) | 29.2 (4.6) | 30.4 (6.1) |
| BMI-zs | 2.97 (0.5) | 2.0 (0.8) |
| WC (cm) | 85.1 (10.2) | 86.3 (19.3) |
| NC (cm) | 33.1 (2.9) | 33.5 (4.8) |
| SBP (mmHg) | 115.2 (13.2) | 112.2 (15.2) |
| DBP (mmHg) | 66.9 (12.2) | 65.7 (12.0) |
| AN (grade) | 1.5 (0.9) | 1.33 (1.0) |
| F&V (portions/day) | 1.2 (1.1) | 1.5 (1.09) |
| SuD (mL/week) | 894.3 (514.0) | 1441.6 (1424.0) |
| Screen T (min/day) | 199.4 (110.0) | 245 (126.9) |
| PA (min/week) | 69.3 (125.7) | 80 (100.8) |
| Sleep (h/night) | 8.2 (1.22) | 7.8 (1.2) |

* AN: Acanthosis Nigricans; BMI: body mass weight; BMI zs: z-score BMI; DBP: Diastolic Blood pressure; F&V: fruits and vegetables; NC: Neck circumference; PA: physical activity; SBP: Systolic blood pressure; Screen T: screen time; Sleep: hours of sleep per night. SuD: Sugary drinks; WC: waist circumference.

As shown in Table 2, adherence to follow-up regular visits in general was better in IG vs CG and in IG2 vs IG1 both at the third and sixth month. The comparison between IG 1.1 and IG 1.2, showed that the latter had a statistically significantly higher adherence to follow-up at 6 months (3/30 = 10% vs. 15/24 = 62%; p < 0.0001).

Table 2. Adherence to follow-up.

| Time                  | IG 1.1 | CG 1.1 | p Value | IG 1.2 | CG 1.2 | p Value | IG 1.1 + 1.2 | CG 1.1 + 1.2 | p Value |
|-----------------------|--------|--------|---------|--------|--------|---------|--------------|--------------|---------|
| First visit (N)       | 24     | 25     |         | 30     | 24     |         | 54           | 49           |         |
| Regular visit at 3 Months | 12 (50%) | 6 (24%) | 0.079   | 28 (93%) | 7 (29%) | <0.0001 | 40 (74%) | 13 (26%) | <0.0001 |
| Regular visit at 6 Months | 9 (38%) | 2 (8%)  | 0.018   | 27 (90%) | 3 (12%) | <0.0001 | 36 (66%) | 5 (10%)  | <0.0001 |
| At least one check    | 14 (58%) | 6 (24%) | 0.021   | 28 (93%) | 8 (33%) | 0.00025 | 41 (75%) | 16 (32%) | 0.00001 |

IG = Intervention Group; CG = Control Group.

Anthropometric parameters at three months showed a statistically significant improvement in participants of IG1 compared to CG1, in particular for BMI (p = 0.026), BMI-zs (p = 0.018), percent reduction of WC excess (p = 0.02) and NC excess (p = 0.004). Other values also improved but did not reach statistical significance. At the sixth month assessment, the absolute values of parameters were still decreasing more in the IG1 without statistically differences. The improvement of parameters at three months in the IG of PediaFit 1.2 compared to its CG was significant in particular for reduction of BMI (p = 0.04), BMI zs (p = 0.04), SBP (p = 0.02) and DBP (p = 0.02) values, and degree of AN (p = 0.00). The percentage of reduction of WC excess (p = 0.33) and NC (p = 0.30), although
improved, did not reach statistical significance. At six months the comparison continued to show a significant improvement in BMI ($p = 0.003$) and AN degree ($p = 0.0003$) (Table 3).

Table 3. Changes in anthropometric parameters.

| Variable           | 3 Months, Mean (SD) | 6 Months, Mean (SD) | $p$ Value |
|--------------------|---------------------|---------------------|-----------|
|                    | IG 1.1              | CG 1.1              | IG 1.2    | CG 1.2    | IG 1.1              | CG 1.1              | IG 1.2    | CG 1.2    |
| n                  | 24                  | 25                  | 30        | 24        | 24                  | 25                  | 30        | 24        |
| BMI Kg/m$^2$       | −2.36 (1.29)        | −0.94 (1.10)        | 0.026     | −2.2 (0.9) | −1.18 (1.6)        | 0.04     | −2.99 (2.96) | 1 (0.42) | 0.12     | −4.6 (1.8) | +2.7 (2.8) | 0.003    |
| BMI zs             | −0.28 (0.15)        | −0.10 (0.11)        | 0.018     | −1.29 (1.3) | −0.1 (0.2)        | 0.04     | −0.33 (0.32) | 0.06    | 0.14     | −1.8 (0.7) | −0.2 (0.3) | 0.2      |
| Ex WC%             | −36.11 (38.12)      | 3.20 (19.99)        | 0.02      | −30.9 (23.83) | −20.83 (15.94) | 0.33    | −28.89 (43.65) | 0 (0)   | 0.39     | −34.19 (27.07) | −5.00 (7.07) | 0.15    |
| Ex NC%             | −59.58 (42.20)      | 1.42 (25.80)        | 0.004     | −38.41 (40.23) | −20.83 (18.00) | 0.30    | −54.03 (67.19) | 21.25  | 0.199    | −57.18 (44.52) | −12.50 (17.67) | 0.18    |
| SBP mmHg           | −9.58 (9.87)        | −5.00 (17.32)       | 0.453     | −14.03 (8.5) | −3.5 (13.7)    | 0.02    | −6.25 (14.33) | −5.00  | 0.911    | −24.64 (25.79) | −3.5 (2.12)   | 0.27    |
| DBP mmHg           | −3.63 (7.10)        | −1.25 (13.15)       | 0.92      | −11.59 (15.36) | +5.2 (6.4)   | 0.02    | −1.88 (10.67) | 7.50   | 0.29     | −2.37 (17.26) | −5.00 (0.0)   | 0.79    |
| AN grade           | −0.41 (0.51)        | 0.00 (0.63)         | 0.13      | −0.8 (0.5)   | +0.3 (0.5)     | 0.00    | −0.75 (0.89) | 0.00   | 0.36     | −1.0 (1.41) | +1.0 (0.0)    | 0.0003   |

AN: Acanthosis Nigricans decrease; BMI: body mass index; BMI zs: z-score BMI; CG = Control Group; Ex WC: excess waist circumference by 95$^{th}$ percentile; Ex NC: Excess Neck circumference by 95$^{th}$ percentile; DBP: Diastolic Blood pressure; IG = Intervention Group; SBP: Systolic blood pressure.

Comparing the two phases of the study, it appears that at the three-month evaluation patients in the IG PediaFit 1.2 showed a greater reduction of BMI-zs ($p = 0.01$), excess WC% ($p = 0.000$) and degree of AN ($p = 0.03$) compared to patients in the IG PediaFit 1.1. The remaining anthropometric parameters also tended to improve more considerably in PediaFit 1.2 vs. PediaFit 1.1, but without reaching a statistically significant difference. Except for BMI zs and blood pressure, at the sixth month PediaFit 1.2 also performed better, without reaching statistical significance (Supplementary Table S1).

As depicted in Table 4, at the three month visit, improvement in lifestyle parameters of the PediaFit 1.1 IG vs. CG was statistically significant in particular for the reduction in the consumption of sugary drinks ($p = 0.002$), and the increase in daily fruit and vegetable consumption ($p = 0.04$). The other analyzed parameters, although improved in the IG, did not reach statistical significance. At six months there was no statistical significance for any of the parameters analyzed. In PediaFit 1.2, at three months the improvement in lifestyle parameters in the IG was statistically significant for all parameters assessed, except for the increase in sleep hours (but most children already had a standard of 8–9 h of sleep/night). At the sixth month evaluation, statistical significance was maintained only for fruits and vegetables consumption ($p = 0.02$) and screen-time ($p = 0.04$). The other analyzed parameters, although improved in the IG, did not reach statistical significance.

Comparison of the lifestyle changes in the IG PediaFit 1.2 and IG PediaFit1.1 (Supplementary Table S2) showed a statistically significant improvement in Physical Activity ($p = 0.03$ at three months and $p = 0.01$ at six months) and hours of sleep per night ($p = 0.02$ both at three and at six months). The other analyzed parameters also improved, but without reaching statistical significance.
Table 4. Changes in lifestyle parameters.

| Variable       | 3 Months, Mean SD | 6 Months, Mean SD |
|----------------|-------------------|-------------------|
|                | IG 1.1 (n = 12)   | CG1.1 (n = 6)     | p Value | IG 1.2 (n = 12)   | CG1.2 (n = 6)     | p Value |
| SuD (mL/week)  | −673.5 (487.5)    | −57 (419.75)      | 0.002   | −587.0 (367.8)    | (18.9)  | 0.02  | −860.0 (586)    | 0.0    | 0.017 | −718.0 (504.2)  | 0.67  |
|                |                   |                   |         |                   |                   |        |                   |       |       | −683.3 (500.2)  |       |
| ScreenT (min/die) | −45.0 (101.05)    | 6.67 (30.76)      | 0.38    | −83.8 (93.0)      | (80.7)  | 0.02  | −81.4 (95.9)     | 15     | 0.39  | −118.7 (100.2)  | 0.04  |
| Sleep (h/night) | 0.3 (0.5)         | 0.0 (0.0)         | 0.22    | 0.6 (0.9)         | 0.85    | 0.55  | −0.58 (1.65)     | 0.0 (0) | 0.65  | 1.18 (1.5)      | 1.33  |
|                |                   |                   |         |                   | (1.1)   |        |                   |       |       | (1.52)         |       |
| F&V (portion/die) | 1.25 (1.09)       | 0.2 (0.4)         | 0.04    | 1.18 (1.6)        | 0.00    | 0.04  | 2.03 (1.2)       | 0.33   | 0.19  | 2.57 (1.1)      | 0.66  |
| PA (min/week)  | 0.76 (12.55)      | 20 (36.17)        | 0.09    | 71.85 (118.0)     | −30     | 0.03  | 11.2 (63.59)     | 15.0   | 0.59  | 112.2 (113.1)   | 133.3 |
|                |                   |                   |         |                   | (111.0) |        |                   |       |       | (23.09)        |       |

CG = Control Group; F&V: fruits and vegetables; IG = Intervention Group; PA: physical activity; ScreenT: screen time; SuD: Sugary drinks.

4. Discussion

Communication technologies are an important part of children’s and adolescents’ lives and their use to encourage both positive lifestyle changes and adherence to care is an attractive and novel issue. In this study we report that a hybrid association of semi-personalized smartphone messaging plus monthly in-presence recall visits was associated with participants’ high feedback rates to messages, adherence to follow-up regular visits, and significant improvements in obesity and lifestyle parameters over a 6 months period. Overall, the results were remarkably better than in a similar group who had no recall visits, and of controls who followed only the regular visits.

Adherence represents a crucial determinant of the success of a weight loss intervention [4]. Both arms of our intervention studies, especially the group with added recall visits, showed a noticeable low drop-out rate. Three pediatric systematic reviews [21,23,24] agreed on a lower tendency to dropout in participants in the mobile health technology assisted arms when compared to controls. In the most recent pilot study in adolescents with food addiction obesity included in a MT assisted intervention, adherence to face to face visits at six months’ follow-up reached 100% vs. 35% of a similar control group without MT [22], comparable to our own results.

Anthropometric and lifestyle indicators improved, however without reaching statistically significance vs. controls, in most of the literature cases [21,23,24]. In our study, instead, the above parameters of the two MT supported intervention groups showed a significant better outcome vs. their respective controls, and, as for adherence, the performance improved in those with added recall visits. Waist circumference and blood pressure, two important components of metabolic syndrome rarely considered in other MT assisted studies, tended to improve in parallel, mirroring the overall effectiveness of the measures.

Due to the hybrid nature of the interventions performed in the literature, without control groups it is not always easy to separate the merits of the MT vs. standard treatment. Some variables which cannot be objectified such as not-personalized contacts [23], coach’s empathy [22], messages doses, frequency [21,23] and content [23], may furthermore influence the outcome. This should be considered in the data interpretation and in the reproducibility of the study design. In our study a constant better performance of both MT assisted interventions could be appreciated vs. their own controls. In general, the addition of an arm with in presence free of charge recall visits resulted in a further improvement in the prefixed outcomes. This is in agreement with the idea that increasing the frequency of intervention visits is crucial for the management of childhood obesity [27]. This could imply that feedback from frequent visits may lead participants to feel themselves more monitored, as probably happened in our MT intervention group with added recall visits. The economic aspect is an important aspect which can influence the intervention outcome [22]; however, in our study we could not separate the appeal of saving money (i.e., the free of charge...
nature of the recall visits) from the higher intensity of intervention, an aspect which needs further consideration.

A number of other factors are likely to be accountable for some of the encouraging results obtained. We believe that the friendly nature of the MT use was appropriate to the purpose of the intervention. The study protocol with messages promoting healthy information tailored to the patients by a coach known by family and children met at their first visit, rather than by an automatic server, was likely to have facilitated the patient-doctor empathic alliance. Furthermore, the results of our study were likely to have been favored by the presence of a multidisciplinary team adequately trained in the management of obesity and its comorbidities, which may point toward the importance of an adequate medical training in obesity management. Together, these factors might have had possible additive effects.

Our pilot study has, however, a number of limitations which may have impacted or influenced the interpretation of the findings from our research, leaving some unanswered questions not adequately addressed. Firstly, the small size of the sample and, in some instances, the wideness of the standard deviation might have not been representative of the target population and not allowed an adequate statistical evaluation, respectively. On the other hand, the costs and/or time required by a dedicated coach vs. an automated approach might not be easily afforded for future studies with larger samples. Secondly, most lifestyle changes were based on self-reported evidence, which cannot be checked by the investigators. Thirdly, the short follow-up might not have allowed us to catch the process of lifestyle changes which, may require consolidation over years. Patient’s compliance may also have been positively or negatively influenced by the assigned coach’s empathy.

5. Conclusions

In presence and free of charge recall-visits may improve the prefixed outcomes of MT weight loss intervention programs. Future studies are needed to verify whether such an approach can conceivably also have cost/benefit efficacy in terms of the prevention of future obesity comorbidities.

Supplementary Materials: The following are available online at https://www.mdpi.com/2072-6436/13/2/631/s1, Table S1: Changes of anthropometric parameters of PediaFit 1.2 vs PediaFit 1.1 patients, Table S2: Comparison of the changes of lifestyle parameters of PediaFit 1.2 vs PediaFit 1.1.

Author Contributions: A.P.D.B., G.M.C., L.D.M., I.R., A.G.E.D.A., L.N., G.M. and P.V. were involved in the study design and development; M.C.R., A.L., S.M., collaborated in implementing the different phases of the study and in data collection; P.V. was the guarantor of the manuscript and supervised the drafting of the manuscript. All authors were involved in the writing of the draft, have read and approved the final version of the manuscript. All authors have read and agreed to the published version of the manuscript.

Funding: This research received no external funding.

Institutional Review Board Statement: The study was conducted according to the guidelines of the Declaration of Helsinki and approved by the Institutional Review Board (or Ethics Committee) of the University of Salerno, Italy.

Informed Consent Statement: Informed consent was obtained from all subjects involved in the study.

Data Availability Statement: Data supporting the findings of this study are available from the corresponding author [P.V.] on request.

Acknowledgments: We acknowledge the psychologist Chiara Massa, and the following pediatric residents for their participation to some parts of the study overtime: Rossella Colantuono, Ida D’Acunzo, Milena Lettieri, Giuseppe Schiano, Maria Anna Siano, Enrico Sierchio (in alphabetical order). We also thank prof. Dario Bruzzese for his assistance with the statistics.

Conflicts of Interest: The authors declare no conflict of interest.
Appendix A

Figure A1. Food traffic light - English version.
Figure A2. Original “Food traffic light” Italian Version.
Appendix B

Table A1. Scheme of “self-monitoring messaging” (English version).

| Week       | Self-Monitoring                                      | Information and Training                                                                 |
|------------|------------------------------------------------------|------------------------------------------------------------------------------------------|
| week 1     | Sugary drinks                                       | Hi!!! Question of the day: Did you drink sugary drinks yesterday (fruit juices, sodas, iced tea)? |
|            |                                                      | Tip of the day: Did you know that a can of soda contains about eight teaspoons of sugar? So much sugar in addition to being an enemy to your diet is harmful to the whole body. Always prefer a nice glass of fresh water, or homemade plain fruit-iced tea which is good for you and quenches your thirst much more! (with attached photo of a can of soda with the equivalent in sugar) |
| week 2     | Physical activity                                   | Hello xxx. Question of the day: did you exercise yesterday? If so, how many hours or minutes? |
|            |                                                      | Tip of the day: Exercise is necessary! Do not use the elevator-taking the stairs or walking to school are great ways to get moving. Try to exercise for at least 30–60 min a day, you will feel better and lose the excess pounds much faster. |
| week 3     | Breakfast                                            | Question of the day: did you have breakfast this morning? If so, what did you eat?         |
|            |                                                      | Tip of the day: Never skipping breakfast makes your metabolism more efficient and decreases hunger throughout the day. It has also been shown that those who eat breakfast have a lower risk of developing overweight and obesity! A healthy breakfast every morning is essential. For your weight loss journey, always prefer healthy foods and limit packaged ones like snacks and cookies. |
| week 4     | Screen-time                                          | Hello!!! Question of the day: how many hours did you spend yesterday in front of TV, mobile phone and computer? |
|            |                                                      | Tip of the day: Try to limit the use of tablets/PCs/TVs to one hour a day. A sedentary lifestyle is one of the most important risk factors for weight gain; try to do physical activity instead of spending time near screens!!! |
| week 5     | Sleep                                                | Good morning! Question of the day: how many hours did you sleep last night?                |
|            |                                                      | Tip of the day: During sleep, in addition to recovering the energy lost during the day, you produce hormones that you need to grow. Moreover, those who sleep regularly tend to eat less and not accumulate weight excess! During growth it is important to sleep at least 9/10 h a night. A good habit is to always go to sleep at the same time and not use PCs, mobile phones and tablets before falling asleep. |
| week 6     | Fruits and vegetables                                | Question of the day: How many servings of fruit and vegetables did you eat yesterday?      |
|            |                                                      | Tip of the day: if you want to lose weight permanently it is important to eat five portions of fruit every day, combining them with vegetables whenever possible! In this way, the right amount of vitamins and minerals is introduced. It is also essential to vary the fruit and vegetables eaten, preferring the one that is part of the green list, with a lower sugar content. |

Table A2. Scheme of “self-monitoring messaging” (Italian version).

| Settimana  | Automonitoraggio                                      | Informazione E Formazione                                                                 |
|------------|-------------------------------------------------------|------------------------------------------------------------------------------------------|
| Settimana 1 | **Beverde zuccherate**                                | Ciao!!! Domanda del giorno: Ieri hai bevuto bevande zuccherate (sucri di frutta, coca cola, Fanta, Thè)? |
|            |                                                      | Consiglio del giorno: Sapere che una lattina di Coca Cola o di Fanta contengono circa 8 cucchiaini di zucchero? Così tanto zucchero oltre ad essere un nemico per la tua dieta è dannoso per tutto l’organismo. Preferisci sempre un bel bicchiere d’acqua fresco, che fa bene e ti disseta molto di più! [con foto allegata di una lattina di Fanta con il corrispettivo in zucchero] |
| Settimana 2 | **Attività fisica**                                   | Ciao xxx. Domanda del giorno: hai fatto attività fisica ieri? Se si, quante ore o minuti? |
|            |                                                      | Buongiorno. Consiglio del giorno: Fare movimento è necessario! Non usare l’ascensore ma prendere le scale o andare a scuola a piedi sono degli ottimi modi per fare movimento. Cerca di fare attività fisica almeno 60 minuti al giorno, ti sentirai meglio e perderai i chili in eccesso molto più velocemente. |
**Settimana 3**

**Colazione**

Domanda del giorno: hai fatto colazione stamattina? Se sì, cosa hai mangiato?

Consiglio del giorno: non saltare mai la colazione rende il tuo metabolismo più efficiente e diminuisce la fame durante il giorno. Inoltre, è stato dimostrato che chi fa colazione ha minor rischio di sviluppare sovrappeso e obesità! È fondamentale una colazione sana ogni mattina; per il tuo percorso verso la perdita di peso, preferisci sempre alimenti salutari e limita quelli confezionati come merendine e biscotti.

**Settimana 4**

**Screen-time**

Ciao!!! Domanda del giorno: quante ore hai passato ieri davanti a tv, cellulare e computer

Consiglio del giorno: Cerca di limitare l’uso di tablet/pc/tv ad un’ora al giorno. La sedentarietà è uno dei più importanti fattori di rischio per l’aumento di peso, prova a fare attività fisica invece di passare tempo vicino agli schermi!!!

**Settimana 5**

**Sonno**

Buongiorno! Domanda del giorno: quante ore hai dormito ieri notte?

Consiglio del giorno: Durante il sonno, oltre a recuperare l’energia persa durante la giornata, produci ormoni che ti servono per crescere e memorizzi le informazioni che hai ricevuto durante il giorno. Inoltre chi dorme in modo regolare tende a mangiare di meno e non accumulare chili in eccesso! Durante la crescita è importante dormire almeno 9/10 ore per notte. Una buona abitudine è quella di andare a dormire sempre allo stesso orario e non usare pc, cellulari e tablet prima di addormentarsi.

**Settimana 6**

**Frutta e verdura**

Domanda del giorno: Quante porzioni di frutta e verdura hai mangiato ieri?

Consiglio del giorno: se si vuole perdere peso in modo permanente è importante mangiare cinque porzioni di frutta ogni giorno, associandole quando possibile alla verdura! In questo modo si introduce la giusta quota di vitamine e minerali. È fondamentale, inoltre, variare spesso la frutta e la verdura mangiata, preferendo sempre quella che fa parte della lista verde, con minor contenuto di zuccheri.

**Appendix C**

**Table A3. Scheme of “Challenging messaging”. (English version).**

| Week     | Challenges                                                                 | Information and Training                                                                 |
|----------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| week 1   | Sugary drinks First challenge: Goodbye sugar!!! No fruit juices, sodas,    | Before the next challenge I wanted to remind you why sugary drinks should be avoided;   |
|          | canned tea, for a whole week. Get the whole family involved and let me    | they quickly increase blood sugar levels and this causes the pancreas to produce a      |
|          | know every day or in a week how many days you passed the challenge!        | huge amount of insulin, the hormone that brings sugar into cells. In the long run it    |
|          |                                                                            | induces a dysfunction of the pancreas which first leads the body to be resistant to    |
|          |                                                                            | your own insulin and subsequently to diabetes! The challenge is over but continuing to |
|          |                                                                            | avoid these drinks can only do you good!                                              |
| week 2   | Physical activity Second challenge: jump rope! The challenges get          | Hi! Challenge over! How did it go?Did you know that jumping rope allows you to burn a   |
|          | complicated but I know you will still succeed! Have you ever tried to    | lot of calories and train all the muscles in the body? With this activity you burn      |
|          | jump rope? Try it every day and let me know how you do. You will need to  | twice the calories that you burn with running: 15 min of jumping rope corresponds to    |
|          | train every day this week, even if only for 15 min. Try it please, let me | 30 min of running! Isn’t it convenient? Rope is an excellent ally for training and      |
|          | know how many jumps you do per minute! Good luck.                         | staying in shape in these last months of school when time for sports or walks is always  |
|          |                                                                            | short. Now let’s catch our breath and on Monday we start with the next challenge!     |
Table A3. Cont.

| Week | Challenges                                                                 | Information and Training                                                                 |
|------|---------------------------------------------------------------------------|--------------------------------------------------------------------------------------------|
| week 3 Breakfast | Third challenge: Chef breakfast! This is a cooking challenge, by Sunday you will have to prepare a delicious but also very healthy breakfast, then you will send me photos, ingredients and recipe! | The challenge is finished and you have been great with your healthy and tasty breakfast! As you well know it is important to eat healthily but we must not give up on taste!!! Here is another idea for a super tasty breakfast, Yogurt and strawberry smoothie: 125 g of 0% fat white Greek yogurt with no added sugar; 100 gr of strawberries; ½ orange; ¼ teaspoon of cinnamon powder. The recipe is very simple, just blend all the ingredients to have a fantastic breakfast! |
| week 4 Fruits and vegetables | Challenge of the Week: Vegetables! Now the costume test is upon us and we certainly cannot be caught unprepared! What’s better than eating lots of fruit and vegetables? You will have to eat at least 5 portions of fruits and vegetables a day until the weekend... let me know how many days you did it. I already know that you will be very good this time too! | Hi!!! So, this challenge? As you already know it is important to eat five servings of fruit and vegetables every day; in this way you introduce the right amount of vitamins and minerals. It is also essential to often vary the fruit and vegetables eaten, always preferring those that are part of the green list with a lower sugar content. |
| week 5 Screen-time | Challenge of the week: LET’S REDUCE THE SCREEN-TIME! This challenge will be a little more difficult for you than usual. You will have to minimize the screen-time (TV, tablet, PC, mobile phone) for a whole week! I give you a maximum of 2 h a day, but every day try to tell me how long you’ve been doing screen-time! | Challenge finished! How did it go? Were you able to reduce the screen-time? A very recent study has highlighted how a sedentary lifestyle (and therefore screen-time) is one of the factors most related to weight gain, even more than an incorrect diet! Try to keep making more limited use of it! |
| week 6 Sleep | Challenge of the week: sleep is good for you! The new challenge is about regular sleep: you will have to try to go to sleep and always wake up at the same time, sleeping about 9 h a night. So if for example you wake up at 7/7.30 you will have to go to sleep at the latest at 22/22.30. It would be ideal to mark the time you go to sleep and the time you wake up for this week so that at the weekend we can make a good final balance together. | Do you know that at any age it is necessary to sleep a certain number of hours? In your case, 8 to 10 h of sleep are needed per night. Sleeping is necessary and you don’t have to stay up late and wake up too early to go to school! An insufficient amount of sleep can promote, along with other factors, the onset of diseases such as hypertension, diabetes, obesity. So I recommend engaging in this seemingly trivial challenge and try to keep this habit! |

Table A4. Scheme of “Challenging messaging” (Italian version).

| Settimana | Sfida | Informazione E Formazione |
|-----------|-------|---------------------------|
| Settimana 1 Bevande zuccherate | Prima sfida: Addio zucchero!!! Niente succhi di frutta, cola-cola, thè confezionati. Per una settimana intera. Coinvolgi tutta la famiglia e fammi sapere ogni giorno o tra una settimana per quanti giorni hai superato la sfida! | Prima della prossima sfida volevo ricordarti perché le bevande zuccherate vanno evitate; fanno aumentare velocemente i livelli di zucchero nel sangue e questo induce in pancreas a produrre un’enorme quantità di insulina, l’ormone che porta lo zucchero nelle cellule. A lungo andare si induce una disfunzione del pancreas che porta l’organismo ad essere insulinico-resistente e successivamente al diabete!! La sfida è finita ma continuare ad evitare queste bevande può farti solo bene! |
### Table A4. Cont.

| Settimana | Sfida | Informazione e Formazione |
|-----------|-------|---------------------------|
| **Settimana 2**<br>Attività fisica | Seconda sfida: salto alla corda! Le sfide si complicano ma so che tu ci riuscirai lo stesso! Hai mai provato a saltare la corda? Provaci ogni giorno e fammi sapere come te la cavi. Dovrai allenarti tutti i giorni in questa settimana, anche solo per 15 minuti. Provaci mi raccomando, fammi sapere poi quanti salti fai al minuto! In bocca al lupo. | Ciao! Sfida finita! Com’è andata? Lo sapevi che il salto alla corda permette di bruciare molte calorie e di allenare tutti i muscoli del corpo? Con la corda si brucia il doppio delle calorie che si bruciano con la corsa: 15 minuti di salto alla corda corrispondono a 30 minuti di corsa!! Convieno no? La corda è un’ottima alleata per allenarsi e restare in forma in questi ultimi mesi di scuola in cui il tempo per fare sport o passeggiare è sempre poco. Adesso riprendiamo fiato e lunedì si parte con la prossima sfida! |
| **Settimana 3**<br>Colazione | Terza sfida: Colazione chef! Questa è una sfida di cucina, entro domenica dovrai preparare una colazione buonissima ma anche tanto sana. poi mi invierai foto, ingredienti e ricetta! | La sfida è finita e tu sei stata bravissima con la tua colazione sana e gustosa! Come ben sai è importante mangiare in modo sano ma non per questo dobbiamo rinunciare al gusto!!! Ecco a te un’altra idea per una colazione super gustosa, Frullato di yogurt e fragole: − 125 gr di yogurt greco bianco 0% grassi senza zuccheri aggiunti; − 100 gr di fragole; − ½ arancia; − ½ cucchiaino di cannella in polvere. La ricetta è semplicissima, basta frullare tutti gli ingredienti per avere una colazione fantastica! |
| **Settimana 4**<br>Frutta e verdura | Sfida della settimana: Verdure! Ormai la prova costume è alle porte e di certo non possiamo farci trovare impreparati! Cosa c’è di meglio di mangiare tanta frutta e verdura? Dovrai mangiare almeno 5 porzioni tra frutta e verdura al giorno fino a fine settimana. fammi sapere per quanti giorni ci sei riuscita. Già so che sarai bravissima anche questa volta! | Ciao!!! Allora questa sfida? Come già sai è importante mangiare cinque porzioni di frutta e verdura ogni giorno, in questo modo si introduce la giusta quota di vitamine e minerali. È fondamentale, inoltre, variare spesso la frutta e la verdura mangiata, preferendo sempre quella che fa parte della lista verde con un minor contenuto di zuccheri. |
| **Settimana 5**<br>Screen-time | Sfida della settimana: RIDUCIAMO LO SCREEN-TIME! Questa sfida sarà per te un po’ più difficile del solito. dovrai ridurre al minimo lo screen-time (tv, tablet, pc, cellulare) per una settimana intera! Ti concedo al massimo 2 ore al giorno, però ogni giorno prova a dirmi per quanto tempo hai fatto screen-time! | Sfida terminata! Com’è andata? Sei riuscita a ridurre lo screen-time? Uno studio recentissimo ha messo in evidenza come la sedentarietà (e quindi lo screen-time) sia uno dei fattori maggiormente correlati all’aumento di peso, anche più di un’alimentazione scorretta! Prova a continuare a farne un utilizzo più limitato! |
| **Settimana 6**<br>Sonno | Sfida della settimana: dormire fa bene! La nuova sfida riguarda il sonno regolare: dovrai cercare di andare a dormire e svegliarti sempre alla stessa ora, dormendo circa 9 ore per notte. Quindi se ad esempio di vegli alle 7/7.30 dovrai andare a dormire al massimo alle 22/22.30. Sarebbe l’ideale segnare per questa settimana l’orario in cui vai a dormire e l’orario in cui ti svegli così che a fine settimana possiamo fare insieme un bel bilancio finale. | Sai che ad ogni età è necessario dormire un determinato numero di ore? Nel tuo caso sono necessarie dalle 8 alle 10 ore di sonno per notte. Dormire è necessario e non bisogna fare le ore piccole e svegliarsi troppo presto la mattina per andare a scuola! Una quantità insufficiente di sonno può favorire, insieme ad altri fattori, la comparsa di malattie quali l’ipertensione, il diabete, l’obesità. Quindi mi raccomando impegnati in questa sfida apparentemente banale e cerca di mantenere quest’abitudine! |
References

1. Vasileva, L.; Marchev, A.S.; Georgiev, M.I. Causes and solutions to “globesity”: The new fa(s)t alarming global epidemic. Food Chem. Toxicol. 2018, 121, 173–193. [CrossRef]

2. Nobles, J.; Griffiths, C.; Pringle, A.; Gately, P.; Pringle, A. Design programmes to maximise participant engagement: A predictive study of programme and participant characteristics associated with engagement in paediatric weight management. Int. J. Behav. Nutr. Phys. Act. 2016, 13, 76. [CrossRef]

3. Park, J.; Woo, S.; Ju, Y.-S.; Seo, Y.-G.; Lim, H.; Kim, Y.; Noh, H.-M.; Lee, H.-J.; Park, S.I.; Park, K.H. Factors associated with dropout in a lifestyle modification program for weight management in children and adolescents. Obes. Res. Clin. Pract. 2020, 14, 566–572. [CrossRef] [PubMed]

4. Ball, G.D.C.; Sebastianski, M.; Wijesundera, J.; Keto-Lambert, D.; Ho, J.; Zenlea, I.; Perez, A.; Nobles, J.; Skelton, J.A. Strategies to reduce attrition in managing paediatric obesity: A systematic review. Pediatr. Obes. 2020, 22, 12733. [CrossRef]

5. Svetkey, L.P.; Stevens, V.J.; Brantley, P.J.; Appel, L.J.; Hollis, J.F.; Loria, C.M.; Vollmer, W.M.; Gullion, C.M.; Funk, K.; Smith, P.; et al. Comparison of Strategies for Sustaining Weight LossThe Weight Loss Maintenance Randomized Controlled Trial. JAMA 2008, 299, 1139–1148. [CrossRef] [PubMed]

6. Verdaguer, S.; Mateo, K.F.; Wyka, K.; Dennis-Tiwary, T.A.; Leung, M.M.; Riiser, K.; Taki, S.; Brutton, J.P.; Wright, J. A Web-Based Interactive Tool to Reduce Childhood Obesity Risk in Urban Minority Youth: Usability Testing Study. JMIR Form. Res. 2018, 2, e21. [CrossRef] [PubMed]

7. Leung, M.M.; Mateo, K.F.; Verdaguer, S.; Wyka, K. Testing a Web-Based Interactive Comic Tool to Decrease Obesity Risk Among Minority Preadolescents: Protocol for a Pilot Randomized Control Trial. JMIR Res. Protoc. 2018, 7, e10682. [CrossRef] [PubMed]

8. Stajano, A.E.; Marker, A.M.; Bely, R.A.; Hsia, D.S.; Katzmarzyk, P.T.; Newton, R.L. A randomized controlled trial of dance exergaming for exercise training in overweight and obese adolescent girls. Pediatr. Obes. 2017, 12, 120–128. [CrossRef]

9. Dias, J.D.; Domingues, A.N.; Tibes, C.M.; Zem-Mascarenhas, S.H.; Fonseca, L.M.M. Serious games as an educational strategy to control childhood obesity: A systematic literature review. Rev. Latino-Am. Enferm. 2018, 26, 26. [CrossRef]

10. Charlier, N.; Zupecnic, N.; Fieuws, S.; Denhaerynck, K.; Zaman, B.; Moons, P. Serious games for improving knowledge and self-management in young people with chronic conditions: A systematic review and meta-analysis. J. Am. Med Inform. Assoc. 2016, 23, 230–239. [CrossRef]

11. Kalantari, N.; Mohammadi, N.K.; Rafieifar, S.; Ein-Zinab, H.; Aminifard, A.; Malmir, H.; Ashtoori, N.; Abdi, S.; Gholamalizadeh, M.; Doaei, S. Indicator for Success of Obesity Reduction Programs in Adolescents: Body Composition or Body Mass Index? Evaluating a School-based Health Promotion Project after 12 Weeks of Intervention. Int. J. Prev. Med. 2017, 8, 8. [CrossRef]

12. Rahelić, V.; Glaβska, D.; Guzek, D.; Pavić, E.; Rumora, S.I.; Bogdanić, A.; Špehar, U.A.; Rojnić, P.N.; Knrić, N. Role of Parents in Body Mass Reduction in Children with Obesity—Adherence and Success of 1-Year Participation in an Intervention Program. Medicina 2020, 56, 168. [CrossRef]

13. Wong, W.W.; Barlow, S.E.; Mikhail, C.; Wilson, T.A.; Hernandez, P.M.; Shypailo, R.J.; Abrams, S.H. A Residential Summer Camp Can Reduce Body Fat and Improve Health-related Quality of Life in Obese Children. J. Pediatr. Gastroenterol. Nutr. 2013, 56, 83–85. [CrossRef]

14. Bergmann, K.; Mestre, Z.; Strong, D.; Eichen, D.M.; Rhee, K.; Crow, S.; Willfley, D.; Boutelle, K.N. Comparison of Two Models of Family-Based Treatment for Childhood Obesity: A Pilot Study. Child. Obes. 2019, 15, 116–122. [CrossRef]

15. Song, M.; Lee, C.S.; Lyons, K.S.; Stoules, S.; Winters-Stone, K.M. Assessing the feasibility of parent participation in a commercial weight loss program to improve child body mass index and weight-related health behaviors. SAGE Open Med. 2018, 6, 2050312118801220. [CrossRef]

16. Lee, J.; Piao, M.; Byun, A.; Kim, J. A Systematic Review and Meta-Analysis of Intervention for Pediatric Obesity Using Mobile Technology. Stud. Heal. Technol. Inform. 2016, 225, 491–494. [CrossRef]

17. Nyström, C.D.; Sandin, S.; Henriksson, P.; Trolle-Lagerros, Y.; Larsson, C.; Maddison, R.; Ortega, F.B.; Pomery, J.; Ruiz, J.R.; Sifvenmagel, K.; et al. Mobile-based intervention intended to stop obesity in preschool-aged children: The MINISTOP randomized controlled trial. Am. J. Clin. Nutr. 2017, 105, 1327–1335. [CrossRef] [PubMed]

18. Ek, A.; Nyström, C.D.; Chirita-Emandi, A.; Tur, J.A.; Nordin, K.; Bouzas, C.; Argelich, E.; Martinez, J.A.; Frost, G.; Garcia-Perez, J.; et al. A randomized controlled trial for overweight and obesity in preschoolers: The More and Less Europe study—An intervention within the STOP project. BMC Public Health 2019, 19, 1–13. [CrossRef] [PubMed]

19. Gabrielli, S.; Dianti, M.; Mainone, R.; Betta, M.; Filippi, L.; Ghezzi, M.; Forti, S. Design of a Mobile App for Nutrition Education (TreC-LifeStyle) and Formative Evaluation with Families of Overweight Children. JMIR mHealth uHealth 2017, 5, e48. [CrossRef]

20. Chen, J.L.; Guedes, C.M.; Cooper, B.A.; Lung, A.E. Short-Term Efficacy of an Innovative Mobile Phone Technology-Based Intervention for Weight Management in Overweight and Obese Adolescents: Pilot Study. Interact. J. Med. Res. 2017, 6, e12. [CrossRef] [PubMed]

21. Chaplais, E.; Naughton, G.A.; Thivel, D.; Courteix, D.; Greene, A.D. Smartphone Interventions for Weight Treatment and Behavioral Change in Pediatric Obesity: A Systematic Review. Telemed. e-Health 2015, 21, 822–830. [CrossRef]

22. Vidmar, A.P.; Salvy, S.J.; Pretlow, R.; Mittelman, S.D.; Wei, C.P.; Fink, C.; Fox, D.S.; Raymond, J.K. An addiction-based mobile health weight loss intervention: Protocol of a randomized controlled trial. Contemp. Clin. Trials 2019, 78, 11–19. [CrossRef] [PubMed]
23. Turner, T.; Spruijt-Metz, D.; Wen, C.K.F.; Hingle, M.D. Prevention and treatment of pediatric obesity using mobile and wireless technologies: A systematic review. *Pediatr. Obes.* 2015, 10, 403–409. [CrossRef] [PubMed]

24. Darling, K.E.; Sato, A.F. Systematic Review and Meta-Analysis Examining the Effectiveness of Mobile Health Technologies in Using Self-Monitoring for Pediatric Weight Management. *Child. Obes.* 2017, 13, 347–355. [CrossRef]

25. Centers for Disease Control and Prevention, National Center for Health Statistics. Clinical Growth Charts. Percentile Data Files with LMS Values. Available online: https://www.cdc.gov/growthcharts/clinical_charts.htm (accessed on 10 January 2021).

26. Rickham, P.P. Human experimentation. Code of ethics of the world medical association. Declaration of Helsinki. *BMJ* 1964, 2, 177. [PubMed]

27. Sorg, M.J.; Yehle, K.S.; Coddington, J.A.; Ahmed, A.H. Implementing family-based childhood obesity interventions. *Nurse Pract.* 2013, 38, 14–21. [CrossRef]