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Process evaluation of 'Brains Ahead!': an intervention for children and adolescents with mild traumatic brain injury within a randomized controlled trial

M Irene Renaud[1,2,3], Carina Klees[1], Jolanda CM van Haastregt[4], Coriene E Catsman-Berrevoets[5], Ingrid GL van de Port[1], Suzanne AM Lambregts[1,6] and Caroline M van Heugten[2,3,7]

Abstract

Objective: To investigate whether the 'Brains Ahead! Intervention for children and adolescents with mild traumatic brain injury' was implemented as intended. In addition, involvement in and satisfaction with the intervention among patients, caregivers and professionals delivering the intervention were studied.

Design: Mixed methods, prospective study.

Participants: Children with mild traumatic brain injury and their caregivers, allocated to the intervention group of the randomized controlled trial in the 'Brains Ahead!' study, and the two professionals providing the intervention.

Intervention: The intervention consists of a standardized and individualized psychoeducational session with written take-home information, and follow-up telephone call(s).

Main measures: Registration forms, evaluation questionnaires for patients and caregivers and semi-structured interviews for professionals.

Data analysis: Qualitative data were categorized based on content. Quantitative data were reported as descriptive statistics.

Results: Fifty-five patients and caregivers out of 60 study-participants attended both sessions. All elements of the intervention were delivered to 53 study-participants. Evaluation questionnaires were completed by 21 of the 31 patients aged 12 years and older, and by 41 caregivers. Overall, the sessions

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[1] Revant Rehabilitation Centre, Breda, The Netherlands
[2] Department of Neuropsychology and Psychopharmacology, Faculty of Psychology and Neuroscience, Maastricht University, Maastricht, The Netherlands
[3] Limburg Brain Injury Center, Maastricht University, Maastricht, The Netherlands
[4] Department of Health Services Research and Care and Public Health Research Institute (CAPHRI), Maastricht University, Maastricht, The Netherlands
[5] Department of Paediatric Neurology, Erasmus University Hospital/Sophia Children's Hospital, Rotterdam, The Netherlands
[6] Department of Rehabilitation Medicine, Erasmus University Hospital/Sophia Children's Hospital, Rotterdam, The Netherlands
[7] School for Mental Health and Neuroscience, Maastricht University Medical Centre, Maastricht, The Netherlands

Corresponding author:
Caroline M van Heugten, Department of Neuropsychology and Psychopharmacology, Faculty of Psychology and Neuroscience, Maastricht University, PO Box 616, 6200 MD Maastricht, The Netherlands.
Email: caroline.vanheugten@maastrichtuniversity.nl

were considered useful by 19 patients, 40 caregivers and both professionals. Reassurance, creating a better understanding and recognition of symptoms were rated as important aspects. On a scale from 1 to 10, the intervention was rated by children, caregivers and professionals with 7.6 (SD 1.2), 8.1 (SD .9) and 8.0 (SD .0), respectively.

Conclusion: The 'Brains Ahead!' intervention was largely implemented as intended and the process evaluation revealed that it is considered feasible according to patients, caregivers and professionals.

Keywords

Psychoeducation, intervention, mild traumatic brain injury, children and adolescents, process evaluation

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Introduction

In this study, we present the outcomes of the process evaluation of the 'Brains Ahead!' intervention,[1] which was performed alongside a randomized controlled trial (Netherlands National Trial Register, NTR5153), among the participants allocated to the intervention group of the trial.[2] The effectiveness of the 'Brains ahead!' intervention is evaluated in the randomized controlled trial and results will be presented elsewhere. This process evaluation aimed to examine the feasibility of the 'Brains Ahead!' intervention and to evaluate the extent to which the intervention was implemented according to protocol within the context of the trial.

From guidelines on how to manage mild traumatic brain injury in children and adolescents and conclusions from a recent review, it was indicated that early interventions aimed at preventing problems on activities and participation should contain information and education on mild traumatic brain injury, with additional follow-up consultation, including individualized advice on step-by-step resumption of activities and participation, and personalized reassurance.[3,4] In addition, it should be offered to child/adolescent and family.[3,4] An evidence-based intervention does, however, not yet exist. Therefore, we have developed the 'Brains Ahead!' intervention for children and adolescents with mild traumatic brain injury (hereafter: patients) and their parent(s) or legal guardian(s) (hereafter: caregivers).[1] The 'Brains Ahead!' intervention focuses on increasing the patients' and caregivers' knowledge about mild traumatic brain injury and possible consequences of the injury, and enabling them to recognize and anticipate on relevant symptoms in an early stage. It was expected that the intervention would prevent limitations in activities and participation in the long term.

The process evaluation is based on the framework of Saunders et al.[5] and assesses the attendance and adherence of patients and their caregivers (reach and dose received exposure), the extent to which the intervention was performed according to protocol (fidelity and dose delivered), and the opinion of patients, caregivers and interventionists about the intervention (dose received satisfaction). The results of this study may be used to optimize the intervention, to facilitate a correct interpretation of the results of the randomized controlled trial and eventually help to facilitate implementation of the intervention in health care.

Method

The intervention was delivered between May 2015 and April 2018, at two hospitals in The Netherlands (Erasmus University Hospital, Rotterdam and Amphia Hospital, Breda) and was offered to patients and their caregivers (when referred to patient and his or her caregiver together, hereafter; participants).[1,2] Two professionals experienced and educated in child rehabilitation after traumatic brain injury (here after; the interventionists) delivered the intervention to participants.[1] The medical ethics committee of Erasmus University Medical Centre, Rotterdam, and the local committees of the two participating hospitals approved the study (MEC-2015-047 and NL51968.078.14).[2] The study was funded by the Johanna Kinderfonds (Award Number 2012/0040-1552) and Handicap.nl (previously the Revalidatiefonds; Award Number R2012175).

The intervention consisted of two sessions, provided within the first two to eight weeks after the injury. It was ensured that each participant received both sessions from the same interventionist. The first session involved a face-to-face contact approximately two weeks after the injury with participants, during which the consequences of mild traumatic brain injury and advice for coping with these consequences to prevent long-term problems were discussed. The second session took place approximately four weeks after the first session and involved a telephone follow-up with the caregiver, during which was checked if the patient's individual consequences of mild traumatic brain injury had been resolved, remained, or worsened. Moreover, additional information was provided in case of specific complaints. The sessions are described in more detail in Table 1 and in the intervention protocol.[1]

For the process evaluation, information was gathered about the attendance and adherence of patients and their caregivers (reach and dose received exposure), the extent to which the intervention was performed according to protocol (fidelity and dose delivered), and the opinion of patients, caregivers and interventionists about the intervention (dose received satisfaction). Table 2 presents an overview of the measurement instruments (questionnaire, registration form and interview) used to collect this information.

Caregivers of all patients and patients aged 12 years and older received a questionnaire after the first follow-up telephone call (session 2) to evaluate the care they received so far. In case the participants used additional telephone sessions, they received an extra questionnaire after each call, to evaluate the additional telephone sessions. The questionnaires were sent to the participants home and assessed: (1) what information had been received and/or read, (2) the perceived usefulness of the intervention and whether expectations were met on a 5-point Likert-type scale (1 = not at all useful – 5 = very useful), (3) their opinion on several statements about the purpose and content of the intervention and their opinion about the interventionist (1 = totally disagree – 5 = totally agree) and (4) open questions in which participants could express their opinion on the intervention.

After each session, the interventionists filled out a registration form, which recorded attendance rate, adherence and deviations from protocol (e.g. whether any items were not discussed and reasons for not discussing these items). Information about the sessions (e.g. date, duration, content and whether more extensive information on certain topics is given) and the use of additional optional follow-up sessions (e.g. date, duration, content), were registered by the interventionist as well.

Finally, the researcher interviewed both interventionists after the final participant enrolled in the randomized controlled trial completed the intervention. The interview contained questions on their opinion about the content of and experience with providing the intervention.

All quantitative data gathered from anonymized evaluation questionnaires and registration forms were analysed with descriptive statistics using IBM SPSS statistics version 25. Answers to structured, categorical questions (e.g. multiple choice, yes/no, Likert-type scales) were described in terms of percentages. Qualitative data as a result of open-ended questions included in the evaluation questionnaire were categorized based on their content and reported if at least half of the participants had given the same answer.

Results

In total, 60 participants were assigned to the 'Brains Ahead!' intervention in either Erasmus University Hospital, Rotterdam (N = 31) and Amphia Hospital, Breda (N = 29). Results on attendance and adherence, to what degree the intervention was performed according to protocol, and the opinion on the intervention are presented in Table 3.

Of the 60 participants, 58 participated in at least one of the sessions, and registration form data were collected for 57 participants. During the second

Table 1. Characteristics of the 'Brains Ahead!' intervention.

Target group	Children and adolescents (6–18 years) with mild traumatic brain injury and their caregivers			
Interventionist	Professional, experienced and educated in child rehabilitation after mild traumatic brain injury in children and adolescents			
Intervention	When and where	Component	Content	Duration
	Face-to-face at the hospital	Inventory of symptoms	– Introduction	5 minutes[a]
			– Fill out the list of complaints	10 minutes
		Psycho-education Standardized	– A verbal explanation of standardized information and individualized advice	25 minutes
	2–4 weeks after hospital discharge		– Provision of standardized information take-home booklets	3 minutes
		Additional	– Additional verbal information on specific symptoms experienced based on the inventory of symptoms	15 minutes
			– provision of take-home hand-outs per specific experienced symptom	2 minutes
	Telephone 6–8 weeks after hospital discharge	Follow-up Standardized	– Questions about inventory of symptoms, psychoeducation, and booklets	5 minutes
	Telephone Available on demand by the participant until 6 months after the mild traumatic brain injury		– Checking up on the experienced symptoms (if any) after mild traumatic brain injury	5–10 minutes
			– any new symptoms after mild traumatic brain injury that they did not experience before	5–10 minutes
			– indicate additional follow-up and provide contact information	5 minutes
		Additional contact(s)	– any of the above-mentioned	5–15 minutes per contact

[a] The described time periods, durations and frequencies are referred to as guidelines. The interventionist is allowed to modify these guidelines, for example, if participants experience many symptoms after the mild traumatic brain injury and more time for explanation is needed.

session, registration form data were collected for all 55 participants. Only one participant used an additional follow-up session. Evaluation questionnaires were completed by 41 caregivers and by 21 of the 31 patients with mild traumatic brain injury aged 12 years and older. Active participation of the participants during the session was assessed by asking whether the participants asked questions during the meeting. Most participants actively asked questions about the information provided during session 1 but less during session 2.

For most participants, the first session took place two to four weeks after the injury, and the mean duration of session 1 was 47 minutes, ranging from 33 to 70 minutes. This is 13 minutes less than the planned duration of 1 hour. The intended components of session 1 of the 'Brains Ahead!' intervention were delivered to participants according to protocol in 79%–100% of the cases, depending on the specific component (see Table 3). For session 2, the mean duration of session 2 was 15 minutes, ranging from 10 to 36 minutes. This is 15 minutes

Table 2. Measurement instruments process evaluation.

Element[a]	Operationalization	Participants' evaluation questionnaire	Interventionists' registration form	Interventionists' interview
Performance according to protocol (fidelity and dose delivered)	The extent to which intervention was implemented as planned		X	X
	Number, frequency and duration of the sessions		X	
	The extent to which all of the intended components of the 'Brains Ahead!' were delivered to participants	X	X	
	The extent to which all materials (written and verbal) were delivered	X	X	
Attendance and adherence (reach and dose-delivered exposure)	The proportion of target audience that participated in the intervention		X	
	Attendance rate		X	
	Overall engagement	X	X	
Opinion on the intervention (dose received – satisfaction)	Overall opinion about the intervention	X		X
	Opinion about the value of the intervention	X		X
	Opinion about the value of the main elements of the intervention	X		X
	Opinion about the interventionist	X		X
	Suggestions for improvement	X		X
	Barriers to implementation			X

X = element processed within the questionnaire, registration form and/or interview.
[a]Elements based on Saunders[5].

less than the planned duration 30 minutes. The intended components of session 2 were delivered to 27 of the participants. The other 28 participants presented no new symptoms and the previous complaints (if any) were resolved at this point, making the provision of additional information and further checking up on experienced symptoms superfluous. Only one of the participants requested an additional follow-up.

During the interviews, the interventionists confirmed that the intervention was implemented as planned in most cases. For one patient and caregiver, the Dutch language made it more difficult to fill out the inventory of complaints. The interventionist improvised and helped them filling out the inventory by explaining the symptoms verbally. For another patient and caregiver, the psychoeducation was not provided completely due to many worries and uncertainties about coping with the trauma and posttraumatic stress. The interventionist improvised by giving this patient and caregiver the chance to relieve some stress and trying to provide more reassurance. Both interventionists noticed that the psychoeducational part of session 1 may have been somewhat too long for the youngest patients (aged six and seven years). For these patients (11 of 58 cases), they tried to shorten the information and improvised to fit the information to the patient's age.

On a scale from 1 to 10, caregivers and patients rated the intervention with mean scores of 8.1 (SD .9; range 5.0–10.0), and 7.6 (SD 1.2; range 5.0–10.0), respectively, and the interventionists both rated the intervention with an 8.0.

The usefulness of the intervention according to the caregivers and patients and the extent to which they believed the intervention met their expectations is presented in Table 3. Both interventionists scored

Table 3. Results of the process evaluation.

Attendance and adherence	Participants *N* (%)	
Participants assigned to intervention	60	
Attendance rates		
First session	58 (97%)	
Both sessions	55 (92%)	
No sessions	2 (3%)	
Additional follow-up	1 (2%)	
Collected registration form data		
First session	57 (98%)	
Second session	55 (100%)	
Completed evaluation questionnaires		
Caregivers	41 (71%)	
Patients aged 12 years and older	21 (68%)	
Active participation by participants		
First session	48 (83%)	
Second session	18 (31%)	
Performance according to protocol		
First session		
2–4 weeks after the injury	36 (62%)	
Mean duration (minutes)	47	
Inventory of complaints filled out	57 (98%)	
Standardized psychoeducation elements delivered to	53 (91%)	
Standardized take-home booklets handed out to	58 (100%)	
Individualized information and advice delivered to	48 (83%)	
Additional take-home hand-outs handed out to	40 (79%)	
Second session		
6–8 weeks after the injury	33 (60%)	
Mean duration (minutes)	15	
Standardized follow-up elements delivered to	27 (49%)	
Opinion on the intervention	Patients ($N=21$)	Caregivers ($N=41$)
Usefulness		
Very useful	–	13 (32%)
Useful	11 (52%)	23 (56%)
Somewhat useful	8 (38%)	4 (10%)
Not very useful	1 (5%)	1 (2%)
Not useful at al	1 (5%)	–
Expectation met		
Much more than expected	1 (5%)	1 (2%)
More than expected	4 (19%)	14 (34%)
As expected	12 (57%)	23 (56%)
Less than expected	3 (14%)	3 (8%)
Much less than expected	1 (5%)	–
Creating understanding of the consequences of MTBI		
Sufficient	20 (95%)	32 (78%)
Neutral	1 (5%)	9 (22%)
Insufficient	–	–
Helpful in return to activities and participation	13 (62%)	35(88%)

MTBI, mild traumatic brain injury.

Table 4. The proportion of participants indicating elements as valuable.

Element of the intervention	Patients (*N*=21)	Caregivers (*N*=41)
Inventory of complaints	8 (38%)	21 (51%)
Psychoeducational part	14 (59%)	25 (60%)
Verbal additional information on specific symptoms	10 (43%)	24 (59%)
Take-home information booklet	6 (24%	14 (34%)
Hand-out additional information of specific symptoms	6 (24%)	13 (32%)
Telephone follow-up	1 (5%)	12 (29%)

the intervention as very useful, and felt that the intervention met the expectations of the participants and was individualized to an appropriate extent. The intervention sufficiently helped most of the caregivers and patients to a better understanding of the consequences of mild traumatic brain injury and return to activities and participation (see Table 3). Both interventionists also reported that they felt that the content of the intervention sufficiently helped participants in a better understanding of the consequences and to a safe and full return to activities and participation after mild traumatic brain injury.

Table 4 presents the elements of the intervention rated on their value by the participants. Both interventionists reported that none of the elements were thought to be superfluous. With regard to the additional follow-up consults, the interventionists reported that the option to use this seemed to have a reassuring effect, though was not used. A shorter version for children aged six and seven years was recommended.

Concerning the satisfaction with the interventionist, 39 caregivers and 18 patients reported that their trust in and contact with the interventionist was satisfactory. The other caregivers reported neutral on their trust in and contact with the interventionist, as well as one of the patients. Two patients reported to be unsatisfied about the contact with the interventionist, although their trust in the interventionist was neutral.

Some other useful responses were gathered through open-ended questions, on which caregivers reported that the information in the intervention was reassuring (*N*=20), helpful in creating a better understanding of symptoms and recognizing them (*N*=34), helpful in explaining to their child why it was best to take some time to rest (*N*=24), helpful in making a safe plan to return to activities and participation (*N*=24) and provided suitable information for schools and the environment as well, resulting in a better overall understanding (*N*=8). Furthermore, almost half of the caregivers (49%) reported that they were happy to receive information and answers to their questions, but they would have preferred to receive the information right away at discharge from the emergency department.

Patients with mild traumatic brain injury reported on the open-ended questions that; it was appreciated that someone took time to listen to and converse about what happened and what to expect (*N*=10), the information provided useful tips and reassurance (*N*=11), and helpful in understanding when to take some extra rest and how to return to activities and participation (*N*=10). Two patients with mild traumatic brain injury reported that it was a lot of information for those who did not suffer from any symptoms.

The interventionists reported that it was important to acknowledge that the personal background was different for every participant. This emphasizes the added value and importance of the individualized approach of the intervention, ensuring that it is about that specific child, each with different symptoms. Since not all children with mild traumatic brain injury may be reached at the early stage after injury, the interventionists emphasized that the content of the intervention would be valuable for rehabilitation care as well.

Discussion

This study showed that the intervention 'Brains ahead!' was largely performed according to protocol.

The intended participants were reached and overall participants and interventionists were satisfied with the degree to which the intervention had helped the participants to better understand symptoms and to help the patient return to activities and participation after sustaining the mild traumatic brain injury. In addition to previous recommendations for early interventions directed at paediatric mild traumatic brain injury,[3] our study adds to the literature that an intervention designed highly in agreement with these recommendations (such as the ‘Brains Ahead!’ intervention) is sufficiently feasible and found to be very useful among both providers and receivers.

In line with earlier results about the importance of reassurance and education for parents about the signs and symptoms of mild traumatic brain injury,[3,6] our results confirm that the appreciation for information was very high among children with mild traumatic brain injury and their caregivers. We also found that although the first session was performed in most cases conform intervention protocol, the second session was not. According to the interventionist this was due to the fact that most participants lacked the need for more information at that point. This is in accordance with the results of an earlier study by Bell et al.[7] which showed that one telephone follow-up, during which individual concerns can be addressed (comparable to what is provided in our session 1), is effective to optimize reassurance for the child and their caregivers.

Duration of most sessions was shorter than expected and the interventionists shortened the psycho-education for the youngest patients even more to better fit the information to the patient’s age. Regarding the content of the intervention, we found that the psychoeducational and individualized parts of the intervention were most valuable to participants. Furthermore, almost half of the participants indicated on open-ended questions that the information was preferably received at an earlier stage after the injury, for example at discharge from the hospital. This might be possible for the standardized information part, but not so much for the individualized part since this is for example subjected to the complaints the child experiences during the first days after the injury.

An important strength of this process evaluation was the use of both qualitative and quantitative research methods. Furthermore, since the outcomes of the trial were not known yet when the data of the process evaluation was analysed, the outcomes of the latter were not biased.[8] An important limitation of process evaluations in general is that these are only possible by self-report evaluation questionnaires. As a result, there will always be a risk of socially desirable answers. In this study, an attempt was made to reduce this risk as much as possible by anonymizing the evaluation questionnaires. Another limitation of this study is that fidelity (i.e. whether the intervention was performed according to protocol) was not measured by observation/video recordings, but with a self-report registration form, which may cause social desirability bias.

Preliminary results of our randomized controlled trial already showed that the intervention is effective on preventing long-term fatigue, postconcussive symptoms, posttraumatic stress symptoms and preventing the experience of a lower quality of life.This process evaluation has now shown that the ‘Brains Ahead!’ intervention is sufficiently feasible. However, a number of findings have emerged that can be taken into account when optimizing the intervention for implementation.

First, there clearly was need for standardized and for individualized information. This supports the use of the Brains Ahead! intervention, in which both standardized information and an individualized approach are imbedded in session one. Although the intervention is largely standardized which helps replication, tailoring the intervention to the needs of the participants cannot be standardized.

Second, participants indicated that they preferred to receive the information at an earlier stage after the injury, for example at discharge from the emergency room. Regarding the content of the information, this would seem possible for the standardized part. For the individualized information and advice part, the content is personalized based on the individuals’ daily life functioning and on the symptoms the child experiences during the first days after the injury. Based on the literature, a substantial number of patients do not experience symptoms after mild traumatic brain injury and are expected to recover completely without intervention. Therefore, the individualized part of the intervention should be offered a little later, for example, one to two weeks after the injury, to those in need of this information.

Third, regarding the location and person delivering the information, emergency rooms lack the capacity to conduct an extensive intervention such as the 'Brains Ahead!' intervention. Therefore, we advise referral to a – for this purpose well equipped – primary care setting such as general practice, shortly after discharge from the emergency department. However, since this study has shown that the complaints, questions and needs of the participants can be very diverse, a positive effect is expected to be reached when the interventionist can respond to this by improvising and adapting the content to fit these needs. Since professionals in primary care generally are not experienced and educated in child rehabilitation after traumatic brain injury, they should at least be appropriately trained. This could, for example be accomplished by national or regional training days for general practitioners or physician assistants. In addition, the interventionists emphasized that the content of the intervention would be valuable for rehabilitation care as well, since not all children with mild traumatic brain injury may be reached at the early stage.

Clinical messages

- The 'Brains Ahead!' intervention is a feasible intervention according to participants and interventionists.
- One session containing individualized information and reassurance within one to two weeks after the injury seems the most appropriate.
- For implementation in clinical settings, timing, location and distribution of the content of the intervention needs adjustments.

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Authors' contributions

All authors have made substantial contributions to this study and manuscript. M.I.R. participated in the design and coordination of the study, the design of the intervention, recruitment, performed data collection and drafted the manuscript. C.K. participated in the recruitment, performed data collection, statistical analyses and helped to draft the manuscript. J.C.M.v.H. participated in the design of the evaluation protocol and helped to draft the manuscript. C.E.C.-B. participated in the design of the study, the recruitment and helped to draft the manuscript. I.G.L.v.d.P. participated in the design and coordination of the study, statistical analyses and helped to draft the manuscript. S.A.M.L. participated in the design of the study, the design of the intervention and helped to draft the manuscript. C.M.v.H. participated in the design of the study, the design of the intervention, statistical analyses and helped to draft the manuscript. All authors read and approved the final manuscript. M.I.R. is the first author.

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ORCID iD

M Irene Renaud https://orcid.org/0000-0001-7996-5865

References

1. Renaud M, van de Port IG, Catsman-Berrevoets CE, et al. The Brains Ahead! intervention for children and adolescents with mild traumatic brain injury and their caregivers: rationale and description of the treatment protocol. *Clin Rehabil* 2018; 32(11): 1440–1448.
2. Renaud M, Lambregts S, de Kloet AJ, et al. Activities and participation of children and adolescents after mild traumatic brain injury and the effectiveness of an early

intervention (Brains Ahead!): study protocol for a cohort study with a nested randomised controlled trial. *Trials* 2016; 17(1): 236.

3. van Heugten C, Renaud I and Resch C. The role of early intervention in improving the level of activities and participation in youths after mild traumatic brain injury: a scoping review. *Concussion* 2017; 2(3): CNC38.
4. Lumba-Brown A, Yeates K, Sarmiento K, et al. Centers for disease control and prevention guideline on the diagnosis and management of mild traumatic brain injury among children. *JAMA Pediatr* 2018; 172(11): e182853.
5. Saunders R, Evans M and Joshi P. Developing a process-evaluation plan for assessing health promotion program implementation: a how-to guide. *Health Promot Pract* 2005; 6(2): 134–147.
6. Casey R, Ludwig S and McCormick MC. Minor head trauma in children: an intervention to decrease functional morbidity. *Pediatrics* 1987; 80(2): 159–164.
7. Bell K, Hoffman J, Temkin N, et al. The effect of telephone counselling on reducing post-traumatic symptoms after mild traumatic brain injury: a randomised trial. *J Neurol Neurosurg Psychiatry* 2008; 79(11): 1275–1281.
8. Moore GF, Audrey S, Barker M, et al. Process evaluation of complex interventions: Medical Research Council guidance. *BMJ* 2015; 350: h1258.