

TITLE

A randomised controlled trial of the effects of kefir on behaviour, sleep and the microbiome in children with ADHD: study protocol

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JOURNAL

BMJ Open

DATE DEPOSITED

6 December 2023

This version available at

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VERSIONS

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Appendix A – Child participant information and assent form

RESEARCH PROJECT



I WOULD LIKE TO ASK YOU TO

DRINK

Drink a drink that we send you everyday for 6 weeks



COMPUTER TASK & QUESTIONS

Complete a task on the computer and answer some questions about yourself. We would also like to ask your Parents and Teacher some questions.



WEAR A WATCH

Wear a watch for 2 weeks to record your activity and sleep



POOP

Ask your parents to collect a small pot of your poo



IT IS UP TO YOU IF YOU WOULD LIKE TO TAKE PART.

YOU CAN STOP ANY TIME
If you want to stop at anytime then just tell your parent

IF YOU WANT TO TAKE PART
Please write your name



Appendix B – Parent participant information sheet



PARTICIPANT INFORMATION SHEET

A randomised controlled trial of the effects of a probiotic drink in children with ADHD

You and your child are invited to take part in a study investigating the effects of a probiotic drink on symptoms of ADHD in children. This research is being conducted by Dr Kate Lawrence at St Mary's University Twickenham, London. The purpose of this information sheet is to tell you about the study, and what will be involved. Before you decide whether or not you wish to participate in this study, it is important for you to understand why the research is being done and what it will involve. Please take the time to read the following information carefully and discuss it with others if you wish.

THE PURPOSE AND VALUE OF THE RESEARCH PROJECT

Research suggests dietary manipulations may be a helpful treatment option for children with ADHD, although the most effective are highly restrictive, with little known about why they might work. One theory is that they may work by altering the balance of bacteria that live within the gut. Optimising the gut bacteria in individuals with ADHD may help alleviate some of the symptoms of this condition via the gut-brain-axis. A probiotic fermented dairy drink has been associated with an increase in beneficial gut bacteria. The purpose of this study is to assess the effect of six weeks daily probiotic drink consumption on symptoms such as hyperactivity, sleep disturbance and attention which are associated with ADHD.

CAN MY CHILD PARTICIPATE IN THE RESEARCH PROJECT?

Participation in the research is voluntary and open to children aged 8 to 13 years of age with a previous **diagnosis of ADHD from a health care professional.**

Your child will not be eligible to participate in the study if any of the following apply:

- Child is currently undergoing a course of behavioural therapy
- Child has a milk allergy or intolerance

- Child has been diagnosed with, or is suspected of suffering from, an auto-immune condition
- Child has been diagnosed with, or is suspected of suffering from, a gastrointestinal disorder such as Inflammatory Bowel Disease or Coeliac disease.
- Child has taken a course of antibiotics, probiotics, antifungals or steroids within the last four weeks.

If you are unsure whether your child is eligible to take part, please discuss this with the researcher.

You and your child are free to refuse to participate and to withdraw from the study at any time. If you do not wish to take part or would like to withdraw please inform the research team in person, or by emailing Dr Kate Lawrence at kate.lawrence@stmarys.ac.uk.

THE STUDY

- **Intervention** - If you and your child agree to participate, your child will be asked to drink either 125ml of a probiotic dairy drink every day for six weeks or 125ml of a placebo dairy drink. Allocation to the probiotic or placebo group will be at the time of enrolment and will be random. Participants and the primary researchers will be blinded to which group participants are allocated to throughout the trial. The drinks will be delivered to your home at regular time points. You will be able to mix the drink into a smoothie or sweeten with honey if your child would prefer.

The week before starting the drinks and again in the last week of having the drinks, testing will be conducted. This will involve:

- **Questionnaires** - You will be asked to complete an online survey about your child which measures your child's behaviour, sleep habits and gastrointestinal symptoms. This should take approximately 30 minutes. You will be asked to keep a one-day (paper) food diary for your child. Your child will be asked to complete an online questionnaire about their sleep and your child's teacher will also be asked to complete a short online questionnaire (18 questions) about your child's behaviour.
- **Sleep/activity monitoring** - Your child will be provided with an activity tracker watch to wear for the first and final week of the study. This will record their activity during waking periods and sleep. We also ask for a short (paper) sleep diary to be completed by yourself and your child during these weeks.
- **Attention Task** - Your child will be assessed on a short (approximately 6-8 minutes) online measure of attention, the Go/No-Go test.
- **Stool sample** - Your child will provide a small stool sample to be sent to a lab for microbiome analysis. Full instructions and equipment will be provided and this will simply involve collecting one small sample of poo in your own home and transferring this to a small tube.

RISKS OF TAKING PART IN THE RESEARCH

Some people may experience bloating and an increase in gas when they start to consume fermented foods such as probiotic drinks, this is generally temporary and can be managed by reducing the initial dose for a few days then increasing slowly to the full amount. The research team will be available to discuss any concerns throughout the trial and you and your child are free to withdraw at any time.

POTENTIAL BENEFITS OF TAKING PART IN THE RESEARCH

Half of the children will receive a free supply of the probiotic drink for six-weeks. The drink may potentially elicit some improvements in the symptoms of ADHD. Monitoring sleep may provide you with valuable information about any difficulties in this area.

PARTICIPANTS' RIGHTS

You have the right to have your questions about the study answered (unless answering these questions would interfere with the study's outcome). If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins. Participation is entirely optional. You have the right to refuse to answer or respond to any question. You may decide to withdraw from the research study at any time without explanation. Up until the point that the data have been analysed, you have the right to ask that any data you have supplied be withdrawn/destroyed.

CONFIDENTIALITY/ANONYMITY

Your data will be kept confidential within the research team or shared only with carefully selected bona fide researchers. All data collected will be anonymised, meaning that the data collected from you will not be stored with your personal data from which you could be easily identified such as your name, address and email. Data collected online during the two testing periods will be anonymous using a unique ID and collected on GDPR compliant systems and stored securely on the St Marys University IT systems. Once anonymised, these data may be made available to researchers via accessible data repositories and possibly used for novel purposes. Any publications resulting from this study will be done so with all participant data anonymised so that it will not be possible to identify you or your child from the report.

FEEDBACK & CONTACT

If you wish to be informed of the overall results from the study, this can be requested at the end of the study. Dr Kate Lawrence, of St Mary's University, is leading this study and will be glad to answer your questions about this study at any time. You may contact her at Email:

Kate.Lawrence@stmarys.ac.uk

YOU WILL BE GIVEN A COPY OF THIS FORM TO KEEP TOGETHER WITH A COPY OF YOUR CONSENT FORM

Appendix C – Teacher information sheet



TEACHER INFORMATION SHEET

A randomised controlled trial of the effects of a probiotic drink in children with ADHD

One of your students is taking part in a research study which will look at the effects of a probiotic drink on symptoms of ADHD in children. This research is being conducted by Dr Kate Lawrence at St Mary's University Twickenham, London. As part of this research we would like to gather some information from you (as their teacher) about their behaviour on two separate occasions (several weeks apart). The purpose of this information sheet is to tell you about the study, and what will be involved if you decide to participate. Please take the time to read the following information carefully and discuss it with others if you wish.

BACKGROUND INFORMATION

Research suggests dietary manipulations may be a helpful treatment option for children with ADHD, although the most effective are highly restrictive, with little known about why they might work. One theory is that they may work by altering the balance of bacteria that live within the gut. Optimising the gut bacteria in individuals with ADHD may help alleviate some of the symptoms of this condition via the gut-brain-axis. A probiotic fermented dairy drink has been associated with an increase in beneficial gut bacteria. The purpose of this study is to assess the effect of six weeks daily probiotic drink consumption on symptoms such as hyperactivity, sleep disturbance and attention which are associated with ADHD.

YOUR CONTRIBUTION TO THE STUDY

The participant's parents have given their consent for us to contact you to ask whether you would be kind enough to complete a short questionnaire on two occasions, now and another one at the end of the study in approximately six-weeks' time. This will enable us to track any changes in the participant's behaviour over the course of the study.

TIME COMMITMENT

The study would require you to complete a brief questionnaire, ADHD-symptoms and Normal-behaviour (SWAN) scale, on two occasions. The SWAN scale is an 18-item questionnaire. We would like you to choose a rating for each of the statements based on your impression of the child. There

are no right or wrong answers – your responses should be based on your own personal observations. The questionnaire is online and should take about 5 minutes to complete.

YOUR RIGHTS

You have the right to have your questions about the study answered. If you have any questions as a result of reading this information sheet, you should ask the researcher before the study begins. Participation is entirely optional. You have the right to refuse to answer or respond to any question.

If we publish data from this study, this will be done so anonymously so that it will not be possible to identify you or the child from the report.

You may decide to withdraw from the research study at any time without explanation. Up until the point that the data have been analysed, you have the right to ask that any data you have supplied be withdrawn/destroyed.

CONFIDENTIALITY/ANONYMITY

Your data will be kept confidential within the research team or shared only with carefully selected bona fide researchers. We are likely to publicly present and publish the data – but neither you or the child will be identifiable during this process. The child's data will be anonymised – meaning that the data collected from you will not be stored with personal data from the child which could be easily identified such as their name, address and email. The child's family have the right to request to see information on their file at any time. Once anonymised, these data may be made available to researchers via accessible data repositories and possibly used for novel purposes. Up until that point you can decide to remove your responses from inclusions in analyses.

FEEDBACK & CONTACT

If you wish to be informed of the overall results from the study, this can be requested at the end of the study and we will be happy to share this information with you. Information on the progress of the research will be widely available and we will be happy to give out this general information upon request. Dr Kate Lawrence, of St Mary's University, is leading this study and will be glad to answer your questions about this study at any time. You may contact her at Email:

Kate.Lawrence@stmarys.ac.uk

IF YOU ARE HAPPY TO TAKE PART IN THIS STUDY, PLEASE KEEP THIS FORM TOGETHER WITH A COPY OF YOUR CONSENT FORM

Appendix D – Consent form: Parent



**St Mary's
University
Twickenham
London**

Name of Participant: _____

Title of the project: **A randomised controlled trial of the effects of a probiotic drink in children with ADHD**

Main investigator and contact details: Kate Lawrence kate.lawrence@stmarys.ac.uk

1. I agree to my child taking part in the above research. I have read the Participant Information Sheet which is attached to this form. I understand what my child's role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw my child from the research at any time, for any reason and without prejudice.
3. I have been informed that the confidentiality of the information I and my child provides will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Participant Information Sheet.
6. I agree for my child's teacher to be contacted to participate in this research as described in the Participant Information Sheet.
7. I understand that the anonymised data may be made available to researchers via accessible data repositories and possibly used for novel purposes.

Data Protection: I agree to the University processing personal data which I and my child have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of parent (print).....

Signed..... Date.....

If you wish to withdraw your child from the research, please complete the form below and return to the main investigator named above.

Title of Project: _____

I WISH TO WITHDRAW MY CHILD FROM THIS STUDY

Name of Participant: _____

Name of Parent _____

Signed: _____ Date: _____

Appendix E – Consent form: Teacher



St Mary's
University
Twickenham
London

Name of Participant (child): _____

Title of the project: **A randomised controlled trial of the effects of a probiotic drink in children with ADHD**

Main investigator and contact details: Kate Lawrence kate.lawrence@stmarys.ac.uk

1. I agree to take part in the above research by completing two brief questionnaires. I have read the Participant Information Sheet which is attached to this form. I understand what my role will be in this research, and all my questions have been answered to my satisfaction.
2. I understand that I am free to withdraw from the research at any time, for any reason and without prejudice.
3. I have been informed that the confidentiality of the information I provide will be safeguarded.
4. I am free to ask any questions at any time before and during the study.
5. I have been provided with a copy of this form and the Teacher Information Sheet.

Data Protection: I agree to the University processing personal data which I have supplied. I agree to the processing of such data for any purposes connected with the Research Project as outlined to me.

Name of teacher (print).....

Signed..... Date.....

If you wish to withdraw from the research, please complete the form below and return to the main investigator named above.

Title of Project: **A randomised controlled trial of the effects of a probiotic drink in children with ADHD**

I WISH TO WITHDRAW FROM THIS STUDY

Name of teacher: _____

Name of child: _____

Signed: _____ Date: _____

A six week randomised controlled trial

THE EFFECTS OF A PROBIOTIC DRINK IN CHILDREN WITH ADHD



For children aged **8-13 years** of age
with a diagnosis of ADHD
(that are not currently having CBT)



St Mary's
University
Twickenham
London

FOR FURTHER INFORMATION

email: ADHDresearch@stmarys.ac.uk