Contemporary Clinical Trials Communications 5 (2017) 12–18

Contents lists available at ScienceDirect

Contemporary Clinical Trials Communications

journal homepage: www.elsevier.com/locate/conctc

Comparative effectiveness of pediatric integrative medicine as an adjunct to usual care for pediatric inpatients of a North American tertiary care centre: A study protocol for a pragmatic cluster controlled trial

Sunita Vohra [a, *], Michael Schlegelmilch [a], Hsing Jou [a], Dawn Hartfield [b], Maria Mayan [f], Arto Ohinmaa [g], Bev Wilson [c], Maria Spavor [d], Paul Grundy [e]

[a] Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta, 1702 College Plaza, 8215 - 112 Street NW, Edmonton, AB T6G 2C8, Canada
[b] Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta, 3-597 Edmonton Clinic Health Academy, 11405 87 Avenue, Edmonton, AB T6G 1C9, Canada
[c] Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta, 3-516 Edmonton Clinic Health Academy, 11405 87 Ave NW, Edmonton, AB T6G 1C9, Canada
[d] Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta, 3-529 Edmonton Clinic Health Academy, 11405 87 Ave NW, Edmonton, AB T6G 1C9, Canada
[e] Department of Pediatrics, Faculty of Medicine & Dentistry, University of Alberta, 3-469 Edmonton Clinic Health Academy, 11405-87 Ave NW, Edmonton, AB, T6G 1C9, Canada
[f] Community-University Partnership, Faculty of Extension, University of Alberta, 2-281 Enterprise Square, 10230 Jasper Avenue, Edmonton, AB T5J 4P6, Canada
[g] School of Public Health, University of Alberta, Institute of Health Economics, 1200 10405 Jasper Avenue, Edmonton, AB T5J 3N4, Canada

ARTICLE INFO

Article history:
Received 9 August 2016
Received in revised form
17 November 2016
Accepted 22 November 2016
Available online 23 November 2016

Keywords:
Pediatric
Integrative medicine
Complementary therapies
Pragmatic clinical trial
Cost-benefit analysis
Pain
Nausea
Vomiting
Anxiety
Safety
Satisfaction

ABSTRACT

Background: Some pediatric tertiary care centres in North America supplement conventional care with complementary therapies, together known as pediatric integrative medicine (PIM). Evidence to support the safety and efficacy of PIM is emerging, but the cost-effectiveness of an inpatient PIM service has yet to be assessed.

Methods/Design: This study is a pragmatic cluster controlled clinical trial. Usual care will be compared to usual care augmented with PIM in three pediatric divisions; oncology, general medicine, and cardiology at one large urban tertiary care Canadian Children's Hospital. The primary outcome of the feasibility study is enrolment; the primary outcome of the main study is cost-effectiveness. Other secondary outcomes include the prevalence and severity of key symptoms (i.e. pain, nausea/vomiting and anxiety), efficacy of PIM interventions, patient safety, and parent satisfaction.

Discussion: This trial will be the first to evaluate the comparative effectiveness, both clinical and cost, of a PIM inpatient service. The evidence from this study will be useful to families, clinicians and decision makers, and will describe the clinical and economic value of PIM services for pediatric patients admitted to hospital.

1. Introduction

When complementary therapies, for which there is evidence of safety and effectiveness, are combined with conventional medicine, it is known as “integrative medicine” [1]. Use and acceptance of integrative therapies among patients is high, especially in those with chronic conditions, and account for nearly US$34 billion in

* Corresponding author.
E-mail addresses: svohra@ualberta.ca (S. Vohra), mschlege@ualberta.ca (M. Schlegelmilch), jou@gmail.com (H. Jou), dawn.hartfield@albertahealthservices.ca (D. Hartfield), maria.mayan@ualberta.ca (M. Mayan), Arto.ohinmaa@ualberta.ca (A. Ohinmaa), bawilson@ualberta.ca (B. Wilson), mspavor@ualberta.ca (M. Spavor), paul.e.grundy@ahs.ca (P. Grundy).

http://dx.doi.org/10.1016/j.conctc.2016.11.002

private and out-of-pocket expenses annually in the US [2]. As children and their parents seek non-pharmacological approaches to managing their health, interventions perceived as being effective and safe are increasingly being sought, despite the relative paucity of high quality published medical literature supporting such therapies. Additionally, the cost-effectiveness of integrative medicine programs has not been systematically studied in pediatrics. Dozens of North American pediatric hospitals have begun to offer pediatric integrative medicine (PIM) services, and are providing PIM therapies to inpatients [3,4]. PIM may be helpful in treating highly prevalent symptoms for hospitalized children, such as pain, nausea/vomiting, and anxiety (PNVA), for which pharmacotherapy is available, but not always effective.

Pediatric inpatients commonly experience PNVA during their stay in hospital [5–7]. Poorly managed PNVA can decrease compliance with conventional care, prolong recovery time, and increase costs to the health care system [8–10]. Pain is common in hospitalized children, and despite efforts to improve pain management, under-recognition and under treatment of pain persist [11,12]. Nausea and vomiting are also commonly experienced, and occur in up to 80% of post-operative and up to 90% of oncology patients [9,13–15]. Though improvements in chemotherapy and anti-emetics have been achieved, nausea and vomiting still are known predictors of increased length of stay (LOS) in hospital, and severe nausea and vomiting can lead to a postponement or discontinuation of chemotherapy [9,16]. Anxiety is not only associated with pain and nausea/vomiting, but also with hospitalization experiences and procedures. Untreated anxiety negatively affects physical and psychological health [17–20].

Pharmacotherapy to manage PNVA has varying levels of effectiveness and can be associated with adverse effects, which may be minor (e.g., sedation) or serious (e.g., respiratory depression) [21]. Children and their parents/caregivers may wish to explore non-pharmacological options to augment care. Various complementary therapies have demonstrated safety and efficacy for pain [22–29], nausea and vomiting [25,30], and anxiety [31,32], but robust pediatric data are lacking.

2. Objectives

This study investigates if PIM therapies (such as acupuncture, massage or reiki), in addition to usual inpatient pediatric care, are feasible and cost-effective for a large tertiary care centre, and effective and safe for patients. The effects on outcomes such as patient symptoms, safety, satisfaction, length of stay and costs will be measured and we will identify which of these key outcomes are most affected, for which children, and why. Through mixed methods research (qualitative, quantitative, and health economics), we will also develop a thorough understanding of why parents choose PIM services and health care providers' experience of the PIM service. Our study is intended to provide the rigorous evidence that health care decision-makers need to determine if and when integrative medicine should be offered to children while they are in hospital, and will help address an important gap in public health policy and practice.

3. Methods

3.1. Design

Complementary therapies are often administered as complex interventions, comprised of a number of separate elements that may interact with each other. A study design suitable for evaluating complex interventions is the pragmatic clinical trial (PCT) [33–35]. As such, we are conducting a 2-arm, cluster controlled, mixed methods pragmatic trial. Each consenting participating Division is assigned to receive PIM services or not in an ABA design, where A is usual care and B is usual care augmented by PIM therapies.

Our design has been informed by two of the largest inpatient integrative medicine programs in the United States. We have chosen target symptoms and complementary therapies based on the successful and long-standing model built by our collaborator, Dr. Tim Culbert, Medical Director, PIM Service, Children's Hospitals and Clinics of Minnesota. We have chosen cost-effectiveness as our primary outcome based on compelling preliminary data from the adult inpatient setting, suggesting that for every $1 spent on integrative therapies, $1.80 is saved (personal communication, Dr. Jeff Dusek, Research Director, Institute of Health and Healing, Abbott Northwestern Hospital).

3.2. Setting

This trial is being conducted at the Stollery Children's Hospital, in Edmonton, Alberta, Canada. We approached many clinical divisions regarding their interest and readiness to participate in our trial. We subsequently partnered with three admitting Divisions: pediatric oncology, general pediatrics and pediatric cardiology.

3.3. Participants: eligibility, screening, and enrolment

Inclusion criteria for study enrolment are: (i) admission to a participating Division; (ii) caregiver communication in English; (iii) caregiver is available to participate; (iv) caregiver consent/child assent. Patients are eligible if they arrive in the ward as a new admission during the study, or if they are currently admitted when the study begins collecting data from their Division. Two additional inclusion criteria are applied at the time of data analysis: (v) length of stay in the participating Division is between 2 and 30 days and (vi) age on admission is less than 16 years. If, at admission, patients are expected to be discharged within 2 days or to stay longer than 30, they will not be approached by the research team.

Length of stay is measured from admission to transfer to ICU, discharge, or death. In the event of a transfer to ICU, data collection is to be paused for that case, and resumed when the patient is transferred back to the admitting Division.

3.4. Blinding and bias

Due to the nature of the intervention, and ethical considerations around parental consent for PIM therapies to be delivered, it is impossible to blind participants, providers or data collection researchers to the intervention. However, we are taking extra precautions to minimize bias with the following:

1) Careful documentation of participant characteristics in order to control for differences between groups, including previous complementary therapy use, as well as beliefs/expectations regarding complementary therapies.
2) Use of an active control group with similar baseline demographics and disease states, being treated in the same Division as the intervention group.
3) Use of cost-effectiveness as an outcome. A conservative assumption is that the patient and provider may be biased towards complementary therapies, leading to their increased use, symptomatic improvement, and satisfaction with care. This will be balanced by measurement of cost-effectiveness, rather than satisfaction or effectiveness alone, as increased use generates increased PIM service related costs.
4) Use of an ABA design. It is possible that the study may bias providers and patients to have a heightened awareness of