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A comparison of psychosocial interventions for children with cancer and their families in low- and middle-income versus resource-rich developing countries: a systematic review and meta-analysis protocol

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Abstract

Objectives: The provision of psychosocial care to address stressors accompanying a cancer diagnosis is instrumental in ensuring quality-adjusted survival for children with cancer. Availability and delivery of these interventions are largely unknown in low- and middle-income countries (LMICs) and in resource-rich developing countries.

This systematic review and meta-analysis aims to investigate and compare the published and unpublished reports of psychosocial interventions for children with cancer and their families in LMICs and resource-rich developing countries.

Results: To be included in this review, studies must explore and report the impact of a psychosocial intervention on the physical, mental, psychological, and/or long-term health outcomes of children with cancer, their siblings, family members, and caregivers. The impact must be reported or quantified according to a patient- and family-centered theoretical framework through patient/family surveys or self-reports.

A comprehensive systematic search of relevant databases (PubMed, PsycINFO, Medline, Cochrane, CINAHL, and grey literature ProQuest databases) will be carried out using an exhaustive list of search terms to identify all related hits with no language or date restrictions. A pooled effect size will be quantified for the meta-analysis.

This study will bridge a significant existing gap and guide relevant authorities.

Introduction

Children residing in LMICs are at a higher risk of cancer, as ~80% of children who develop cancer reside in resource-poor LMICs, and those without access to diagnosis and treatment do not survive [1]. Risk factors are augmented by the higher rates of cancer-related mortality reported in LMICs, where cancer mortality is at least twice or three times as high as in other resource-rich countries [2, 3].

For those experiencing physically and emotionally demanding cancer treatment, risks, morbidities, and mortalities, child life services and psychosocial care are essential components of holistic cancer management that ensure quality-adjusted survival. [4]

Globally, however, the pace of advancing medical care for cancer has not been matched by that of providing much-needed psychosocial care to address associated stressors [5]. The effect of this lag between medical and psychosocial care is largely unknown for LMICs. Moreover, it is not clear if this lag—should it exist—is due to the limited resources or other factors that might be shared with developing countries with rich resources.

This study is thus intended to:

1. Quantify the efficacy and longitudinal impact of psychosocial interventions on the physical, mental, and psychological outcomes of cancer management in LMICs and compared them with the

implementation of psychosocial care in developing countries with high incomes.
2. Explore the causal factors that hinder the implementation of psychosocial care, such as limited resources, healthcare reform, training, and innovative solutions for contextual health care challenges.
3. Recommend policies and guidelines to local health care authorities and global organizations to address identified gaps in providing psychosocial care to children with cancer in LMICs and developing countries with high incomes.

Methods

Search strategy

A systematic and comprehensive search for literature that developed, adapted, or otherwise evaluated psychosocial or psychologically informed interventions for children with cancer and/or their caregivers in LMICs and resource-rich developing countries will be carried out across four databases: PubMed, PsycINFO, CINAHL, and Cochrane for published work and ProQuest for unpublished grey literature.

The search will be restricted to the title field, and no other restrictions will be applied. A review of published literature on similar topics has been carried out to identify appropriate search terms for psychosocial interventions in LMICs and developing resource-rich countries. These search terms will be combined and connected with boolean operators to run the searches (see Appendix A for the search terms list and search syntax).

Eligible countries on the other hand, include those classified by the World Bank as LMICs namely Afghanistan, Albania, Algeria, Angola, Anguilla, Argentina, Armenia, Azerbaijan, Bangladesh, Belarus Belize, Benin, Bhutan, Bolivia, Bosnia and Herzegovina, Botswana, Brazil, Bulgaria, Burkina Faso, Burundi, Cabo Verde, Cambodia, Cameroon, Central African Republic, Chad, China, Colombia, Comoros, Congo, Costa Rica, Côte d'Ivoire, Cuba, Djibouti, Dominica, Dominican Republic, Ecuador, Egypt, El Salvador, Equatorial Guinea, Eritrea, Ethiopia, Fiji, Gabon, Gambia, Georgia, Ghana, Grenada, Guatemala, Guinea, Guinea-Bissau, Haiti, Honduras, India, Indonesia, Iran, Iraq, Jamaica, Jordan, Kazakhstan, Kenya, Kiribati, Kyrgyzstan, Lebanon, Liberia, Libya, Macedonia (FYROM), Madagascar, Malaysia, Montenegro, Morocco, Mozambique, Myanmar (Burma), Namibia, Nepal, Nicaragua, Niger, Nigeria, Pakistan, Palau, Palestine, Papua New Guinea, Paraguay, Peru, Philippines, Rwanda, Samoa, Sao Tome and Principe, Senegal, Serbia, Sierra Leone, Solomon Islands, Somalia, South Africa, Sri Lanka, Sudan, Suriname, Syria, Tajikistan, Tanzania, Thailand, Timor-Leste, Togo, Tonga, Tunisia, Türkiye, Turkmenistan, Tuvalu, Uganda, Ukraine, Uzbekistan, Vanuatu, Vietnam, Yemen, Zambia, and Zimbabwe) or resource-rich developing country (Bahrain, Brunei, Guyana, Kuwait, North Korea, Oman, Qatar, Russian Federation, Saudi Arabia, and United Arab Emirates).

Coding procedure

All search hits will be added to a reference manager software (EndNote v9.3.3), where all duplicates will be deleted through the auto-duplicate function of the software and will be followed by at least two authors screening titles and abstracts independently to screen out unrelated studies. Full text screening will then be carried out by all authors to identify studies that match our inclusion criteria. Next, data will be extracted by all authors on a pre-designed data extraction sheet, which will include study design and characteristics (such as recruitment strategy and location), sample characteristics (ages, parents, caregivers, or children), disease characteristics, intervention characteristics (aims, theoretical orientation, dosage), and outcomes against the pre-determined criteria (listed elsewhere). Lastly, reference lists of the included studies will be manually screened to identify additional studies that may have been missed by the systematic search, and attempts to contact study authors will be made in case of missing data. Any ambiguity or disagreement over the eligibility of studies will be resolved through discussions within the research team, and at least 25% of the included studies will be randomly reviewed by the PI to ensure fidelity to eligibility criteria and minimize the risk of data extraction bias. Reasons for exclusion will be recorded. All extracted data will be made available publicly.

Study design and features

We will code for year of publication, sample size, recruitment strategy, type of control group, study design (Randomized Controlled Trial (RCT), longitudinal, cross-sectional, academic study, or case study), country, and continent.

Participant characteristics

We will code for the age of the patient, gender, targeted individual (patient, parent, siblings, or caregiver), and baseline morbidities.

Disease characteristics

We will code for disease type, disease stage, prognosis, intent of treatment, event-free survival, and disease-free survival.

Intervention components

We will code for the type of intervention (education, psychological, spiritual, group discussion, or financial), qualification and training of the interventionist or intervention team, average time of intervention, number of intervention sessions, completion of intervention, compliance of participants, theoretical framework of intervention, and mode of delivering intervention.

Outcome measures

We will code for physical health, mental health, treatment completion or abandonment, internalizing psychopathology, burnout, and the type of assessment tool (survey, screening, or self-report), and we will avoid health care provider impressions as we focus on a patient and family framework.

Inclusion criteria

Publications will be considered for inclusion if they are: 1) psychosocial interventions; 2) provided to children with cancer (ages 0 to 18 years), their parents, their siblings, or their caregivers; 3) provided to survivors of childhood cancer; 4) involve children under treatment for at least six months or have received at least two sessions of chemotherapy; 5) provided in countries that are classified as LMICs or developing countries by the World Bank; 6) took place in multi-center or mixed-resource settings; 7) targeted symptom alleviation, psychosocial enhancement, or prevention; 8) published as case reports, clinical trials, observational studies, or longitudinal studies.

Study screening and selection

Duplicates will be deleted, and titles and abstracts of retrieved hits will be screened by two authors independently, and full-text articles and theses will be similarly assessed. Any disagreement will be resolved through discussion with all team members until a consensus is reached.

Data Synthesis and Analysis

Pooled effect size, ANOVAs, mediators, heterogeneity, and publication bias analyses will be performed via the Comprehensive Meta-Analysis software (CMA v2), while the quality of included studies will be assessed via the Cochrane software “ROB2” (see below), and the PRISMA guidelines will be followed throughout.

Primary outcomes will be assessed through a weighted random effect model to ensure the generalizability of our study across future studies. Anxiety and depression, fatigue, distress, or burnout, quality of life, treatment completion or abandonment, and pain reduction will be compared between the control and intervention groups. We will aim at answering the following questions as the primary outcome of the study:

1. Are psychosocial interventions beneficial to children with cancer and their families or caregivers in LMICs and developing countries?
2. What is the impact of combining different elements of psychosocial interventions?
3. How is the impact of psychosocial care assessed in LMICs and developing countries?

The secondary outcomes will be extracted for a qualitative synthesis and include participant and intervention characteristics, theoretical grounding, and outcome measurements.

Results

Descriptive analysis

As recommended by PRIMA guidelines, studies will be summarized according to demographics (age, gender, family structure, and primary caregiver), study structure (design, sample size, intervention, measured outcome, assessment tools, type of disease, and targeted individual), and

country (LMICs, developing countries, numerical and categorical development index, and continent).

Statistical analysis

We will use the random effect model of CMA v2.x to estimate the pooled standardized mean differences (hedges *g*) for continuous outcomes [6]. Risk ratios, or odds ratios, with a 95% Confidence Interval (CI) and two-sided *P* values would be calculated for binary outcomes [6].

Should clustering be used as the unit of allocation and effects of clustering have not been accounted for in any of the eligible studies, the Standard Deviations (SDs) will be adjusted for the effect size using intraclass coefficients [7].

Heterogeneity will be assessed using both the x^2 test and the I^2 statistic. In addition, we will report the variance components for level 2 (σ^2 within) and level 3 (σ^2 between) to quantify the between- and within-study heterogeneity [8, 9].

We expect high heterogeneity based on the findings of previous similar meta-analyses and the extended time frame of the intended study. We expect sources of heterogeneity to be included within study variability (study quality, population, type of intervention, or less precision in estimating the impact of intervention). The in-between heterogeneity suggests that the studies are genuinely different from one another in terms of their effect sizes.

Sources of heterogeneity would be identified through subgroup analysis, meta-regression analysis, and one study exclusion analysis.

Risk of Bias Assessment

The Cochrane software “Risk of Bias V2.00 (ROB2) will be employed by two independent members to assess the risk of bias in the included studies. Disagreements will be resolved through discussion among the whole team. The following domains will be assessed: selection bias, performance bias, detection bias, attrition bias, reporting bias, and other biases. The risk in each domain and the overall risk for the study will be judged as low, moderate, or high.

The Cochrane RevMan v5.4 will also be employed by two independent members to demonstrate the risk of bias in the included studies visually. The risk of bias items will include selection bias (random sequence generation and allocation concealment), performance bias, outcome bias, attrition bias, reporting bias, and other biases.

Meta-Analysis Quality

PRISMA and AMSTAR tools will be employed to ensure the moderate or high quality of this observational meta-analysis. At least two independent members will assess the quality according to the tool guidelines, and any disagreement will be discussed amongst the whole team.

Data Synthesis and Analysis

Pooled effect size, ANOVAs, mediators, heterogeneity, and publication bias analyses will be performed via the Comprehensive Meta-Analysis software (CMA v2), while the quality of included studies will be assessed via the Cochrane software “ROB2”.

Primary outcomes will be assessed through a weighted random effect model to ensure the generalizability of our study across future studies. Anxiety and depression, fatigue, distress, or burnout, quality of life, treatment completion or abandonment, and pain reduction will be compared between the control and intervention groups.

Discussion

The primary outcomes will be discussed thoroughly and will include the explanation of the effect size, subgroup analysis, sources of heterogeneity, the quality of the studies included, and the overall quality of this MA.

Where quantitative analysis is not possible, a qualitative narrative of participant and intervention characteristics, including theoretical grounding and outcome measurements, will be discussed.

We will aim to produce evidence-based advice and guiding tips for stakeholders and policymakers.

Conclusion

This meta-analysis of psychosocial interventions will provide a detailed summary of the evidence for their effectiveness in improving the outcomes of treating children with cancer in LMICs and developing countries.

Declarations

Ethics approval and consent to participate:

not applicable as we will be using already-published data.

Consent for publication:

not applicable as there is no indefinable data.

Availability of data and materials:

The authors confirm that data supporting the findings of this study will be made available on the Open Science Framework and shared as supplementary material with journal publications.

Competing interests:

The authors declare no competing interests.

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Authors’ contributions:

Hisham Morsi: conceptualization, methodology, investigation, software, formal analysis, writing: original draft preparation

Tooba Nadeem Akhtar: conceptualization, methodology, investigation, writing - original draft preparation, writing: review and editing.

Ozge Balkaya: data extraction.

Holly Clark: data extraction.

Jeanine Clapsaddle: formal analysis, writing: review and editing.

Harriet Dean Miller: formal analysis, writing: review and editing, supervision.

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Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- SearchSyntaxesv1.2.pdf